Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysore – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF BIOCHEMISTRY

UG ☑

PG ☐

NEP Syllabi for I and II Semester B.Sc. Biochemistry

2021-22

DEPARTMENT OF BIOCHEMISTRY

Motto

Science for Future

Vision

Improving knowledge of Science through innovation and research for Better Future

Mission

To provide a broad based fundamental knowledge of Biochemistry by creative research ideas and professional skills

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis - Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3: Design and Development of Solutions -Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research - Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO6: Impact of Science on Society – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

List of BoS Members

Sl No	Category	Name and Designation	Address for Communication	e-Mail & Mobile No.
1.	Chairperson	Ms. Ramie V Assistant Professor & Hod	Department of Biochemistry, SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram, Mysore	ramyav.fgc@mahajana.edu.in 7760108585
2.	Nominee by the Vice Chancellor	Dr. Kemparaju K Professor	DoS in Biochemistry, Manasagangothri University of Mysore, Mysore.	kemparajuom@gmail.com kemparaj@biochemistry.unimysore.ac. 9945996543
3.	Two Experts from Other University	Mr. Haleshappa R Assistant Professor	Department of Biochemistry, Nrupathunga University NrupathungaRoad, Bangalore - 560001	haleshr222@gmail.com 9743896433
4.		Dr. Manjunath M S Assistant Professor & Hod	Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysore.	manju297382@gmail.com 9972023024
5.	One Person from Industry	Dr. Puneeth Kumar Managing Director	Azymus Lifescience Pvt. Ltd. Kellamballi industrial Area, KIADB ,Chamarajanagara	azymus.pharma@gmail.com 8971155575
6.	Alumnus	Ms. Pallavi Assistant Professor	Department of Biochemistry MMK & SDM College, MahilaMahaVidyalaya, Mysore	pallavimr1990@gmail.com 9538582629
7.	Member	Smt. Radhika P Assistant Professor	Department of Biochemistry, SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram, Mysore	radhikap.fgc@mahajana.edu.in 9986585574

Course Structure (NEP 2020)

I Year B.Sc. Biochemistry

Discipline Specific Courses (DSC), Open Elective (OE)

L: Lecture; **T:** Tutorial; **P:** Practical

Course Code, Type and Title		Hours /week		Number of Credits (L:T:P)	Max marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
I SEMESTER									
212169	DSC(1) Chemical Foundation of Biochemistry- 1	4	0	4 : 0 : 2 (6 credits)	20	20	60	2½ Hours	100
	DSC(1)LAB: Volumetric analysis-1	0	4		10	15	25	3 Hours	50
21OEBIC101	OE(1) Biochemistry in Health & Disease	3	0	3 : 0 : 0 (3 credits)	20	20	60	2½ Hours	100
II SEMESTER									
212269	DSC(2) Chemical Foundation of Biochemistry- 2	4	0	4 : 0 : 2 (6 credits)	20	20	60	2½ Hours	100
	DSC(2) LAB Qualitative & Quantitative analysis-2	0	4		10	15	25	3 Hours	50
21OEBIC201	OE(2) Nutrition & Dietetics	3	0	3 : 0 : 0 (3credits)	20	20	60	2½ Hours	100

DSC (1) Syllabus for B.Sc. Biochemistry (Basics and Honors)

Semester-I

Course Code : 212169		
	Theory	**Practical**
Course Title:	**DSC(1)-Chemical Foundations of Biochemistry-1**	**Volumetric analysis**
Total Course credits (L:T:P)(4:0:2)	**04**	**02**
Total contact hours	**56**	**56**
Hours of teaching /week	**04**	**04**
Formative assessment marks	**40**	**25**
Semester End Assessment marks	**60**	**25**
Exam duration	**2½Hrs**	**3Hrs**

COURSE OUTCOMES (COs):

- **CO1:** Illustrate the structure and functions of organelles, classify and quote chemical composition of living organism. Gain knowledge on metric system and identify formulae and apply to solve problems using analytical skills.
- **CO2:** Interpret the concept of atom and depict the electronic configuration of elements. Illustrate the nature and significance of various Chemical bonds and theories of chemical bonding.
- **CO3:** Acquire the knowledge of concept of acids, bases, buffer & its preparation and colligative properties of solutions.
- **CO4:** Elucidate the construction and uses of various electrochemical cells, half-cell reactions. Calculate electrode potential using various methods. Apply laws of thermodynamics in system and epitomize redox reactions and its role as biologically active form in a system.

Course Content : DSC (1) - Chemical Foundations of Biochemistry-1	**56Hr**
Unit 1: Scope of Biochemistry and Units of measurement	**14hr**
• **Scope of Biochemistry**-Definition, aim and scope of Biochemistry. Origin of life (five theories), types of organisms - prokaryotes, eukaryotes, unicellular and multicellular organisms (characteristics & differences). Compartmentalization of cellular functions (lower and higher organisms), subcellular organelles. General physiological events of organisms (plants and animals). Chemical composition of living organisms. • **Units of measurement** - SI units - mass, volume, temperature, amount, length and time. An overview on the metric system - Atomic weight, molecular weight, equivalent weight. Basicity of acids & acidity of bases. Avogadro`s number, concentration units - molarity, normality, molality, mole concept, mole to molar conversion. Oxidation number and its significance. Density and specific gravity and their significances.	**7hr** **7hr**
Unit 2 : Atomic structure and Chemical bonds	**14hr**
• **Atomic structure** –Atom, Dalton's postulates, Structure of an atom, electrons, Quantum numbers and their significance. Orbit, orbitals and their differences. Shapes of s, p, d, and f atomic orbitals. Illustrate the rules for filling up of electrons in various orbitals - Pauli`s exclusion principle, Aufbau principle, and Hund`s rule. Electronic configuration of elements (upto Z = 30), Octet rule & its limitations. • **Chemical bonds** -Different types of bonds, formation and properties – Coordinate bond,	**5hr**

covalent bonds - Sigma & pi bonds, Electrostatic interactions - ionic bonds. Non-covalent bonds - Vander Waals interactions - ion-dipole, dipole-dipole interactions, London forces, hydrogen bonds, hydrophobic interactions and their significance. Concept of back bonding. Outline of theories of bonding (VBT & MOT).	**9hr**
Unit 3: Buffers and Colligative properties	**14hr**
• **Buffers** - Acids, bases, Arrhenius, Lewis and Bronsted- Lowry concept of acid-base (with examples). Structure of water, phase diagram of pure water, ionic product of water, special properties of water. Buffers- composition, types with examples, buffer capacity. Buffers in animal system. pH scale, pKa value, isoelectric pH and its significance. Henderson-Hasselbalch equation. Titration curve of $H_3PO_4$and CH_3COOH (comparative study). Ionization of HCl, HNO_3 and H_2SO_4. • **Colligative properties**-Colligative properties of solutions. Types of solute- ionizable & non-ionizable solutes. Types of solution (hyper, hypo & isotonic). Osmosis, osmotic pressure and its determination by Berkely and Hartley's method.Vant Hoff law, Roult`s law, Reverse osmosis, Vapor pressure and its application in distillation. Elevation in boiling point, depression in freezing point, de-icing. Anomalous colligative properties of solutions.	**6hr** **8hr**
Unit 4: Electrochemistry and Redox reactions	**14hr**
• **Electrochemistry** - Scope of electrochemistry, Electrochemical cells- Daniel cell/galvanic cell. Electrode potential and its measurement. Electrolysis and its applications. Types of electrolytes with examples, primary and secondary batteries (lead & Ni-Cd batteries). Electrodes, half-cell reaction, standard electrodes-SHE, Glass & Calomel. • **Thermodynamics** -Laws of thermodynamics, entropy, enthalpy and their relation. Gibb's energy and free energy change. Standard free energy change in biological system. • **Redox reactions** -Redox reactions, redox potential and its application, energy linked to redox reactions. Reduction of oxygen (respiration), oxidation and reduction of iron in hemoglobin. Biological active forms of zinc, calcium, nickel, molybdenum, selenium, and cobalt (with examples). Redox reactions of - NAD^+/NADH, $NADP^+$/NADPH, FAD/$FADH_2$, FMN/$FMNH_2$. Molecularity and order of a reaction.	**7hr** **7hr**
References: 1. Advanced Inorganic Chemistry: A comprehensive Text, 1999, Cotton A and Geoffrey Wilkinson, 6th edition, Wiley publication. 2. Inorganic Chemistry, 2014, Miessler GL, Paul Fischer PJ, and Tarr DA, 5th edition, Pearson Publication. 3. Inorganic Chemistry, 2004, Catherine E and Sharpe AG, ACS publication 4. Inorganic Chemistry, 2015, Overton, Rourke, Weller, Armstrong and Hagerman,Oxford Press. 5. Physical Chemistry: A molecular approach, 2019, Donald A, McQuarrie and Simon JD, Viva Books Publication. 6. Physical chemistry 2019, Atkins P, Paula JD, Keeler J , 11th edition , Oxford press • https://collegedunia.com/exams/volumetric-analysis-chemistry-articleid-746 • https://www.britannica.com/science/volumetric-analysis • https://www.nagwa.com/en/explainers/809181620245/	

DSC (1)-Practical Syllabus

Course Content – DSC(1) Volumetric analysis- Practical-1	**56 hr**
List of experiments to be conducted	
1. Concept of molarity, molality and normality- Calculation and preparation of molar solutions, normal solutions and percent solutions and dilute solutions. (Problems based on Normality & molarity to be given in exams). 2. Calibration of volumetric glassware's (Burette, pipette). 3. Preparation of standard Sodium carbonate solution, standardization of HCl (Methyl orange) and estimation of NaOH in the given solution. (Methyl orange or phenolphthalein). 4. Preparation of standard Oxalic acid. Standardization of NaOH and estimation of H_2SO_4in the given solution (phenolphthalein) 5. Preparation of standard Oxalic acid solution. Standardization of NaOH solution and estimation of acidity in vinegar. 6. Preparation of standard potassium bipthalate. Standardization of NaOH and estimation of HCl in the given solution. (Phenolphthalein). 7. Preparation of standard potassium bi-phthalate solution, standardization of sodium hydroxide solution and estimation of alkalinity of antacids 8. Preparation of standard Oxalic acid. Standardization of $KMnO_4$ and estimation of H_2O_2 in the given solution. 9. Preparation of standard Oxalic acid solution. Standardization of $KMnO_4$ solution and estimation of calcium in milk. 10. Preparation of $ZnSO_4$. Standardization of EDTA and estimation of total hardness of water using Eriochrome-Black-T indicator. 11. Estimation of sulphuric acid and oxalic acid in a mixture using standard NaOH solution and standard $KMnO_4$ solution. 12. Determination of density and viscosity of the given liquid using specific gravity bottle and Ostwald's viscometer. 13. Determination of density and surface tension of the given liquid using specific gravity bottle and stalagnometer.	

References

1. Svehla, G. Vogel's Qualitative Inorganic Analysis, Pearson Education, 2012.
2. Mendham, J. Vogel's Quantitative Chemical Analysis, Pearson, 2009.
3. Dr. O. P. Pandey, D. N. Bajpai, dr. S. Giri, Practical Chemistry S. Chand and Co. Ltd.,
4. Principles of Practical Chemistry- M. Viswanathan
5. Instrumental Methods of chemical Analysis B.K Sharma.
6. Experiments in Physical Chemistry R.C. Das and B. Behra, Tata Mc Graw Hill
7. Advanced Practical Physical Chemistry J.B.Yadav, Goel Publishing House
8. Advanced Experimental Chemistry. Vol-I J.N.Gurtu and R Kapoor, S.Chand and Co.
9. Practical Chemistry K.K. Sharma, D. S. Sharma (Vikas Publication).
10. General Chemistry experiment – Anil J Elias (University press).
11. Vogel textbook of quantitative chemical analysis G.H. Jeffery, J. Basset.
12. Quantitative chemical analysis S. Sahay (S. Chand & Co.).
13. Practical Chemistry, Dr O P Pandey, D N Bajpai, Dr S Giri. S. Chand Publication
14. College Practical Chemistry. V K Ahluwalia, SunithaDingra, Adarsh Gulati
15. Practical Physical Chemistry- B. Viswanathan, P S Raghavan. MV Learning Publication

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COURSE ARTICULATION MATRIX: DSC (1) -212169

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO 12
CO1	2	3	1	2	1	1	1	1	2	1	-	1
CO2	3	2	1	-	1	1	1	1	1	1	-	-
CO3	2	2	1	1	1	1	1	1	1	1	1	1
CO4	2	2	1	-	1	1	1	1	1	1	1	1
Weighted average	**2.25**	**2.25**	**1**	**1.5**	**1**	**1**	**1**	**1**	**1.25**	**1**	**1**	**1**

OE (1) Biochemistry Syllabus for All Programs (Except Science)

Semester-I

Course Code : 21OEBIC101	
Course Title:	**Biochemistry in Health and Disease**
Total Course credits (L:T:P) (3:0:0)	**03**
Total contact hours	**42**
Hours of teaching /week	**03**
Formative assessment marks	**40**
Semester End Assessment marks	**60**
Exam duration	**2 ½ Hrs**

COURSE OUTCOMES (COs):

- **CO1:** Gain knowledge about health, dimensions of health and various terminologies used in health and disease conditions. Classify diseases and suggest measures for general health care.
- **CO2:**Illustrate symptoms, diagnosis, treatment and preventive measures associated with different types of diseases and disorders
- **CO3:** Identify, assess, and implement personal wellness behaviors and individual health promotion strategies and illustrate the nature of infection and their defensive mechanisms.

Course Content : OE(1)- Biochemistry in Health and Disease	**42hr**
Unit 1: Introduction:	**14hr**
• WHO definition of health, Health and hygiene, General health care. Factors affecting health, Indicators of health and evaluation of health. Classification of diseases - Endemic, Epidemic, Pandemic; Professional health hazards. • **Disease conditions:** Acute disease, chronic disease, Incurable disease, Terminal disease, Illness, disorders, Syndrome, Pre-disease. • **Treatmen**t: Psychotherapy, Medications, Surgery, Medical devices, and Self-care. • **Dimensions of Health**: Physical, Mental, Spiritual, Emotional, Environmental, and Philosophical.	
Unit 2: Diseases and Disorders	**14 hr**
• **Bacterial diseases:** Tuberculosis, Cholera, Typhoid, conjunctivitis. • **Sexually transmitted diseases (STD):** Syphilis and AIDS - Information, treatment guidelines and Prevention. • **Non-communicable diseases:** Malnutrition - Under nutrition, Over nutrition, Nutritional deficiencies - Anemia, Stroke, heart diseases, Cancer, mental illness, Iodine deficiency, Epilepsy, Asthma. (Causative agents/Causes, symptoms, diagnosis, treatment, prognosis, prevention) • **Genetic disorders:** Down's syndrome &Sickle cell anemia. • **Lifestyle disorders:** Obesity, Liver cirrhosis, Diabetes mellitus, Hypertension (Causes, effects, prevention and treatment)	
Unit 3: Health Promotions:	**14 hr**
• Preventing drug abuse, Oral health promotion by tobacco control. • Mental hygiene and mental health: Concepts of mental hygiene and mental health, Characteristics of mentally healthy person, Warning signs of poor mental health,	

promotive mental health strategies and services, Ego defense mechanisms and implications, Personal and social adjustments, Guidance and Counseling.

- Infection control: Nature of infection, Chain of infection transmission, Defenses against infection transmission

References

1. Modern Nutrition in Health and Disease 2006 10th Edition by Maurice E. Shils, Moshe Shike, A Catharine Ross.
2. Clinical Biochemistry and Metabolic Medicine, 2012 Eighth Edition by Martin Andrew Crook, CRC Press,
3. Nutrition & Health in Developing Countries, 2000, Editors: R. Semba and M.W. Bloem, Humana Press

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https://www.journals.elsevier.com/international-journal-of-medical-microbiology

COURSE ARTICULATION MATRIX: OE(1)- 21OEBIC101

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	3	1	1	1	1	1	1	2	-	2
CO2	2	2	3	1	1	1	1	1	1	2	1	2
CO3	2	2	3	1	1	1	1	1	1	2	1	2
Weighted Average	**2**	**2**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**2**

DSC (2) Syllabus for B.Sc. Biochemistry (Basics and Honors)

Semester-II

Course Code : 212269		
	Theory	**Practical**
Course Title:	**DSC(2)-Chemical Foundations of Biochemistry-2**	**Qualitative & Quantitativeanalysis-2**
Total Course credits:(L:T:P) (4:0:2)	**04**	**02**
Total contact hours	**56**	**56**
Hours of teaching/week	**04**	**04**
Formative assessment marks	**40**	**25**
Semester End Assessment marks	**60**	**25**
Exam duration	**2 ½ Hrs**	**3Hrs**

COURSE OUTCOMES (COs):

- **CO1:** Illustrate the properties, characteristics and applications of different types of catalysts and colloids in daily life and elucidate the stability and purification of colloids using different methods.
- **CO2:** Categorize organic compounds and nomenclature it using IUPAC rules. Implement the different types of stereoisomer and their configuration using CIP rules and illuminate the role of stereochemistry in biological systems.
- **CO3:** Classify organometallic compounds, minerals and ores and acquire knowledge about preparations, applications of organometallic compounds and extraction, purification and importance of minerals and ores.Illustrate the structure, occurrence and role of metalloporphyrins in biological systems.
- **CO4:** Categorize the inorganic molecules and nomenclature it by implementing rules. Depict coordination complexes, its stereochemistry and application in various fields. Illustrate the sources, types, poisoning, signs and symptoms of heavy metals. Gain competenceinfree radicals-generation and its role in biological system.

Course Content :DSC (2) -Chemical Foundations of Biochemistry-2	**56hr**
Unit 1: Chemical Catalysis & Colloids	**14hr**
• **Chemical Catalysis**: Definition, characteristics, catalytic promoters and types of catalysts. Multifunctional catalysis. Theories of catalysis (intermediate compound formation & adsorption theory). Properties, characteristics of enzyme catalysis, autocatalysis and acid-base catalysis. Industrial catalysis and its applications. • **Colloids:** Colloids, suspension and true solutions. Classification of colloids (based on physical state, particle size and interaction between dispersed phase & medium). Differences between lyophobic & lyophilic sols. Properties of colloids- kinetic property (Brownian movements), electric properties (electrophoresis & electro-osmosis). Stability of colloids - coagulation; Effect of boiling and addition of electrolytes. Peptization with examples. Mutual precipitation of colloids, Purification of colloids – dialysis, electro-dialysis, ultrafiltration and ultracentrifugation. Colloids in daily life and applications. Emulsion- types, micelles, applications of emulsions.	
Unit 2: Nomenclature of Organic Compounds & Stereochemistry	**14hr**

- Classification, naming- IUPAC nomenclature, compounds containing one, two functional groups with chains, homologous series.
- **Stereochemistry**- Definition and types, Structural Isomerism- types with examples. Stereoisomerism - Optical isomerism (Lactic acid, tartaric acid), symmetry of elements, plane polarized light and optical purity. Molecular chirality. Geometrical isomerism (maleic & fumaric acid). Nomenclature properties of enantiomers and diastereomers, epimers & anomers with examples. Racemic mixture & resolution (chemical & biological methods). Fischer and Newman projection formulae (molecule with one and two chiral and achiral centers). Priority rules (CIP rules) - E and Z, R and S, D and L notations, absolute and relative configuration. Role of stereochemistry in biological systems.

Unit 3: Organometallic Compounds & Metalloporphyrins **14hr**

- **Organometallic Compounds:** Definition, Classification with examples. Preparation of Grignard reagents, reactions, applications & limitations. Organolithium compounds, Organozinc compounds - preparation and synthetic applications. Metallocenes: ferrocenes- structure, properties & its importance.
- Introduction to mineral and ores, classification. Extraction of crude metal from their ores (General steps), Extraction of Nickel from sulphide ore followed by Mond's process of purification, Gold from native ore by cyanide process and refining by quartation process. Uses of metals, Importance of minerals.
- **Metalloporphyrin:** Definition, basic porphyrin nucleus structure, types (brief). Role of metal ions in biological systems- Fe, Co**,** Zn, Mg (occurrence, structure and functions) and iron-sulphur clusters with suitable example (Nitrogenase) and their role in biological systems.

Unit 4: Inorganic Chemistry & Heavy metal poisons **14hr**

- Nomenclature of inorganic molecules- IUPAC nomenclature (ionic, molecular and inorganic acids). Coordination compounds – formula, IUPAC nomenclature, central metal ion, ligand & its types, coordination number & its significance, coordination sphere, complex ion. Oxidation number of central atom, stock notations. Homoleptic and heteroleptic complexes. Isomerism in complexes – structural (ionization, hydrate, linkage and coordination isomerism). Stereoisomerism- geometrical (coordination number 4), optical isomerism with simple inorganic complexes. Applications of qualitative, quantitative analysis, photographic, metallurgy, medicine, catalysis and bio-systems.
- **Heavy Metal Poisons:** Introduction, sources, poisoning/entry, signs and symptoms- lead, mercury, aluminium, arsenic, cyanide, phosphorus, CO, SO_2, NO_2, halides (F & Br) and corrosives.
- **Free radicals**: Introduction, sources (exogenous & endogenous), types of free radicals, generation (enzymatic & non-enzymatic) and scavenger systems. Redox reactions. Endergonic and exergonic reactions with examples. The Importance of free radicals in biological systems.

References

1. Physical Chemistry 2006, Peter Atkins. 8th edition, W.H. Freeman and Company
2. Inorganic Chemistry: Principles of structure and Reactivity, 2006, Huheey JE, Keiter, EA, Keiter RL, Pearson Education India
3. Stereochemistry: Conformation and Mechanism, 2009, Kalsi PS, New Age International Publications
4. Introduction to Stereochemistry 2012, Kurt Mislow, Dover Publications
5. A text book of Organic Chemistry 2016, Raj K Bansal, 6th edition, New Age International Publications

6. Advanced Inorganic Chemistry 1999, Cotton et al , 6th edition, A Wiley -International
7. Principles of physical Chemistry by Puri, Sharma and Pathania.
8. Physical Chemistry by R. L. Madan, G. D. Tuli. S. Chand and Co.
9. A Text Book of Physical Chemistry by K.L.Kapoor. Vol.2.Mc. Millan Publisher, India Ltd.
10. Advanced Organic Chemistry by Bahl and Bahl.

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https://www.chemistrynotesinfo.com/2019/07/iron-metalloporphyrins-complexes-in.html
file:///C:/Users/admin/Downloads/biosensors-08-00095-1.pdf
https://iupac.org/wp-content/uploads/2016/07/Inorganic-Brief-Guide-V1-1.pdf
https://www.healthline.com/health/heavy-metal-poisoning

DSC-2- Practical Syllabus

Course Content–DSC(2):Qualitative and quantitative analysis – 2	**56hr**
List of experiments to be conducted	
1. Systematic Semi micro–Qualitative Analysis of Inorganic Salt Mixtures Systematic semi micro qualitative analysis of two acid and two basic radicals in the given inorganic salt mixture. The constituent ions in the mixture to be restricted to the following. (Any **five** binary mixtures shall be given) **Anions:** HCO_3^-, CO_3^{2-}, Cl^-, Br^-, NO_3^-, BO_3^{3-}, SO_4^{2-} and PO_3^{2-}. **Cations**: Pb^{4+}, Al^{3+}, Fe^{2+}, Fe^{3+}, Mn^{2+}, Zn^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, K^+, Na^+&NH_4^+. 2. Determination of molecular weight of non-volatile solute by Walker-Lumsden method. 3. Determination of rate constant of decomposition of H_2O_2 using $KMnO_4$ by volumetric analysis method using ferric chloride as catalyst. 4. Determination of distribution coefficient of benzoic acid between water and benzene or iodine between water and carbon tetrachloride. 5. Determination of distribution coefficient of benzoic acid between water and toluene. 6. Determination of role of emulsifying agents in stabilising the emulsions of different oils.(Demonstration) 7. Verification of Beer's Law. Estimation of unknown concentration of glucose by using colorimeter 8. Calibration of pH meter and determination of pH of aerated soft drinks.	

References :

1. Svehla, G. Vogel's Qualitative Inorganic Analysis, Pearson Education, 2012.
2. Mendham, J. Vogel's Quantitative Chemical Analysis, Pearson, 2009.
3. Dr. O. P. Pandey, D. N. Bajpai, dr. S. Giri, Practical Chemistry S. Chand and Co. Ltd.,
4. Principles of Practical Chemistry- M. Viswanathan
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6. Experiments in Physical Chemistry R.C. Das and B. Behra, Tata Mc Graw Hill
7. Advanced Practical Physical Chemistry J.B.Yadav, Goel Publishing House
8. Advanced Experimental Chemistry. Vol-I J.N.Gurtu and R Kapoor, S.Chand and Co.
9. Practical Chemistry K.K. Sharma, D. S. Sharma (Vikas Publication).

10. General Chemistry experiment – Anil J Elias (University press).
11. Vogel textbook of quantitative chemical analysis G.H. Jeffery, J. Basset.
12. Quantitative chemical analysis S. Sahay (S. Chand & Co.).
13. Practical Chemistry Dr O P Pandey, D N Bajpai, Dr S Giri. S. Chand Publication
14. College Practical Chemistry. V K Ahluwalia, SunithaDingra, Adarsh Gulati
15. Practical Physical Chemistry- B. Viswanathan, P S Raghavan. MV Learning Publication.

- https://www.researchgate.net/publication/332029217_Qualitative_analysis_of_organic_mixtre_Binary_and_Ternary_chart_for_MSc_organic_students
- https://chem.libretexts.org/Ancillary_Materials/Laboratory_Experiments/Wet_Lab_Experiments/Organic_Chemistry_Labs/Intermediate_Chemical_Experimentation/02%3A_Qualitative_Organic_Analysis/2.01%3A_New_Page

COURSE ARTICULATION MATRIX: DSC (2)-212269

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	1	1	1	1	1	1	1	-	1
CO2	3	2	2	1	1	-	1	1	1	-	-	-
CO3	2	1	1	1	1	1	1	1	1	-	1	1
CO4	2	1	1	1	1	2	1	1	1	1	-	1
Weighted average	**2.5**	**1.5**	**1.5**	**1**	**1**	**1.33**	**1**	**1**	**1**	**1**	**1**	**1**

OE (2) Biochemistry Syllabus for All Programs (Except Science)

Semester-II

Course Code : 21OEBIC201	
Course Title:	**Nutrition and Dietetics**
Total Course credits (L:T:P) (3:0:0)	**03**
Total contact hours	**42**
Hours of teaching/week	**03**
Formative assessment marks	**40**
Semester End Assessment marks	**60**
Exam duration	**2 ½ Hrs**

COURSE OUTCOMES (COs):

- **CO1:** Acquire the knowledge on the basic principles of balance diet in providing energy requirements, Recommended Dietary Allowances and factors influencing BMR.
- **CO2:** Gain competence in connecting the role of various nutrients in maintaining health and ability to describe the functions and role of macronutrients and micronutrients, their requirements and the effect of deficiency and excess.
- **CO3:** Apply basic nutrition knowledge in diet planning and diet considerations in disease conditions and the impact of various functional foods on our health.

Course Content : OE (2)- Nutrition and Dietetics	**42 hr**
Unit 1: Basic Concepts of Nutrition:	**14 hr**
• Introduction, Basic principles of a balanced diet to provide energy and nutrients. Composition of foods and proximate analysis of foods. Calorific value of foods and Basal metabolism. Basal Metabolic Rate (BMR), Factors affecting BMR, Energy requirements for different physical activities, Specific dynamic action of food, Nutritive value of proteins. Energy requirements and recommended dietary allowance (RDA) for infants, children and pregnant women. Protein calorie malnutrition.	
Unit 2: Macronutrients and Micronutrients:	**14 hr**
• Carbohydrates- Digestible and non-digestible, Dietary fibers, Essential fatty acids, lipoproteins and cholesterol. • Essential amino acids, Fortification of foods, Protein requirement for different categories. • Vitamins-Sources, requirements, functions and deficiency symptoms of Vitamin-C, Thiamine, Riboflavin, Pyridoxine, Folic acid, Vitamin B12. Absorption of fat-soluble vitamins- A, D, E and K. • Micronutrients: Source, Daily requirement, functions and deficiency disease symptoms of Macro-minerals (Ca, P, and Cl) and micro minerals/trace elements (I, Fe, Zn and Se).	
Unit 3: Dietetics and Diet Therapy:	**14 hr**
• Introduction, Food pyramid, Diet planning and introduction to diet therapy. Nutritional requirements for different age groups, anemic child, expectant women, and lactating women. Diet planning for prevention and cure of nutritional deficiency disorders. • Diet therapy: Functional foods, Anthropometric measurements, dietary considerations during fever, malaria, and tuberculosis. Prevention and correction of obesity, underweight, and	

metabolic diseases by diet therapy. Dietary interventions to correct and or manage the gastrointestinal diseases (indigestion, peptic ulcer, constipation, diarrhea, steatorrhea, irritable bowel syndrome. • Functional foods-based diet therapy for diabetes, cardiovascular disease and cancer.	

References:

1. Clinical Dietetics and Nutrition, 2002, Antia FP and Abraham P. Oxford University Press; 4th Edition. ISBN-10: 9780195664157.
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3. Krause's Food, Nutrition and Diet therapy, 2003, Mahan KL and Escott-Stump S. Elsevier, ISBN: 9780721697840.
4. Human Nutrition and Dietitics. 1986, Passmore R. and Davidson S. Churchill Livingstone Publications, ISBN-10: 0443024863.
5. Rosemary Stanton's Complete Book of Food & Nutrition, 2007, Simon & Schuster Publishers, Australia, ISBN 10: 0731812999
6. Food Science and Nutrition, 2018, Roday S. Oxford University Press Publishers, ISBN: 9780199489084/0199489084.
7. Food Science, 2007, Srilakshmi S. New Age International (P) Limited Publishers, ISBN: 9788122420227/ 8122420222.

https://www.livestrong.com
https://www.mayoclinic.org
https://www.medicalnewstoday.com
https://www.med-health.net/Lifestyle-Diseases.html

COURSE ARTICULATION MATRIX: OE (2) - 21OEBIC201

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	1	1	1	1	1	1	2	-	2
CO2	3	2	2	1	1	1	1	1	1	2	1	2
CO3	3	2	2	1	1	1	1	1	1	2	1	2
Weighted average	**3**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**2**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is **40:60** for IA and Semester End Theory Examinations respectively and **50:50** for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1(C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	40 Marks	25Marks

Evaluation Process of IA Marks shall be as follows:

- The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.
- The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.
- During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
- In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.
- The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

TheoryFormativeassessment	C1 Mark	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the marks is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

PracticalFormative assessment	C1 Mark	C2 Marks	Total Marks
Session Test	10	-	10
Record/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	15	15
Total	10	15	25

- For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.
- The teachers concerned shall conduct test/seminar/case study etc., the students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department.
- Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.
- The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.
- The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.
- There shall be no minimum in respect of internal assessment marks.
- Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

B.Sc. Biochemistry Semester I
Practical Examination- Scheme of Valuation

(DSC-1): Volumetric analysis- Practical-1

Duration: 3 hours **Practical Proper Max. Marks: 25**

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The students will be evaluated on the basis of skill, comprehension and recording the results.

The student has to compulsorily submit the practical record during C1 and C2. For C3, the record has to be certified by the Head of the Department.

The student is evaluated for **C1 & C2** respectively as per the following scheme:

Heading	Marks
C1 - Principle writing + Problem solving	10
C2- Experiment + Record/Continuous assessment	10+05=15
Total	**25**

The student is evaluated for **25 marks** in **C3**as per the following scheme.

- **PART- A: Principle writing** **Marks- 05**
- **PART- B:Minor Experiment** **Marks- 03**
- **PART- C: Major Experiment** **Marks- 17**

PART- A: Principle writing (Time-15min) **Marks- 05**

Principle of any ONE of the following experiment to be given for writing:

1. Determination of density and viscosity of the given liquid using specific gravity bottle and Ostwald's viscometer.
2. Determination of density and surface tension of the given liquid using specific gravity bottle and stalagnometer.
3. Preparation of standard potassium bi-phthalate solution, standardization of sodium hydroxide solution and estimation of alkalinity of antacids
4. Preparation of standard Oxalic acid solution. Standardization of $KMnO_4$ solution and estimation of calcium in milk.
5. Preparation of standard oxalic acid solution. Standardization of NaOH solution and Estimation of acidity in vinegar.

PART- B: Minor Experiment **Marks-03**

Any ONE problem for calculation based on Normality /Molarity is to be given.
(Equivalent & Molecular weight is to be specified)

Formula + Calculation + Report ----------→**Marks (1+1+1=03)**

PART- B: Experiment – Volumetric analysis **Marks- 17**

Any **ONE** of the following experiments is to be given for conducting.

(Tabular column & Calculations to be written)

NOTE: Standard solutions to be prepared by the candidate .The link solution and solution to be estimated is to be provided in reagent bottles.

1. Preparation of standard potassium bipthalate. Standardization of NaOH and Estimation of HCl in the given solution. (Phenolphthalein).
2. Preparation of standard Sodium carbonate solution, standardization of HCl (Methyl orange) and Estimation of NaOH in the given solution. (Methyl orange or phenolphthalein).
3. Preparation of standard Oxalic acid. Standardization of NaOH and Estimation of H_2SO_4 in the given solution (phenolphthalein).
4. Preparation of standard Oxalic acid. Standardization of $KMnO_4$ and Estimation of H_2O_2 in the given solution.
5. Preparation of $ZnSO_4$. Standardization of EDTA and estimation of total hardness of water using Eriochrome-Black-T indicator
6. Estimation of sulphuric acid and oxalic acid in a mixture using standard NaOH solution and standard $KMnO_4$ solution.

Assessment of Experimental results

- Preparation of Standard solution & Calculation of Normality **Marks= 03**
- Standardization & Estimation **Marks = 14**(7+7)

Discrepancy	**Standardization Marks(7m)**	**Estimation Marks(7m)**
± 0.2 cm^3	**05**	**05**
± 0.3 cm^3	04	04
± 0.4 cm^3	03	03
± 0.5 cm^3	02	02
Any other value	01	01
Calculation of Normality & Weight/Litre of solution	**02**	**02**

B.Sc. Biochemistry Semester II
Practical Examination- Scheme of Valuation

(DSC-2): Qualitative & quantitative analysis- Practical-2

Duration: 3 hours **Practical Proper Max. Marks: 25**

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The students will be evaluated on the basis of skill, comprehension and recording the results.

The student has to compulsorily submit the practical record during C1 and C2. For C3, the record has to be certified by the Head of the Department.

The student is evaluated for **25 marks** in **C3** as per the following scheme:

Heading	Marks
C1 - Principle writing with formula	10
C2- Experiment + Record/Continuous assessment	10+05=15
Total	**25**

The student is evaluated for **25 marks** in **C3** as per the following scheme.

- **PART- A: Principle & formula writing** **Marks- 05**
- **PART- B: Experiment** **Marks- 20**

PART- A: Principle writing **Marks- 05**

Principle of any of the following experiment may be given for writing: (Time-15min)

(Candidate has to write the procedure instead of formulae for the experiments which does not include any without formulae)

1. Determination of molecular weight of non-volatile solute by Walker-Lumsden method.
2. Determination of rate constant of decomposition of H_2O_2 using $KMnO_4$ by volumetric analysis method using ferric chloride as catalyst.
3. Determination of distribution coefficient of benzoic acid between water and toluene
4. Verification of Beer's Law. Estimation of unknown concentration of a biomolecule by using colorimeter.
5. Determination of role of emulsifying agents in stabilising the emulsions of different oils.
6. Calibration of pH meter and determination of pH of aerated soft drinks.

PART- B:

Systematic semi micro qualitative analysis of an inorganic salt mixture **Marks- 20**

The candidate has to perform the Systematic semi micro qualitative analysis of two acid and two basic radicals in the given inorganic salt mixture.

The constituent ions in the mixture to be restricted to the following (Any five binary mixtures shall be given)

- **ANIONS**: Carbonates, Bicarbonates, Chloride, Bromide, Nitrate, Borate, Sulphate, and Phosphate. (CO_3^{2-}, HCO_3^-, Cl^-, Br^-, NO_3^-, BO_3^{3-}, SO_4^{2-} and PO_3^{2-})

- **CATIONS:** Lead, Aluminium, iron, Manganese, Zinc, Barium, Strontium, Calcium, Magnesium, Ammonium, Potassium and Sodium (Pb^{4+}, Al^{3+}, Fe^{2+}, Fe^{3+}, Mn^{2+}, Zn^{2+}, Ba^{2+} ,Sr^{2+} ,Ca^{2+}, , Mg^{2+}, NH_4^+ K^+& Na^+)

NOTE:

- A minimum of 8-10 salts covering all the above acid and basic radicals should be provided to the examiners.
- Ammonium radical shall be analyzed either in the zeroth group or in the sixth group.
- Salts that yield insoluble salts like lead sulphate, Barium sulphate, Strontium sulphate and Calcium sulphate on double decomposition shall be avoided
- In second group acid radical either Chloride or Bromide or Nitrate shall be given. More than one radical in this group shall be avoided.
- The two cations in the mixture should belong to different groups. However the mixture may contain Ammonium and any one of the other cations in the sixth group.
- Mixtures requiring elimination of Phosphate and Borate ions shall not be given as they are interfering ions [when phosphate and borate are given, cations like Manganese, Zinc, Barium, Strontium, Calcium, Magnesium shall be avoided. The Cations that can be given are Lead, Aluminium, Potassium, Sodium]

Assessment of Experimental results

1. **Preliminary tests** **Marks – 03**

   (Physical state, colour, Solubility in water and dilute HCl)

2. **Identification & confirmatory test** **Marks-16**

Tests	Anion (07)	Cation (09)
Correct identification test	**2x1=02**	**2x1=02**
Correct confirmatory test	**2x2=04**	**2x2=04**
Group Separation table	**–**	**02**
Balanced ionic equation for any one of the confirmatory test	**01**	**01**

3. **Report the identified ions** **Marks–01**

B.Sc. I/II Semester Examination

Model question paper Discipline Specific Course (DSC)

Biochemistry

Duration: 2.30 hours **Max. Marks: 60**

Instructions: Answer any FIVE questions from Part A and any FIVE questions from Part B.

Part –A **2 x 5 = 10**

1. a.
   b.
   c.
   d.
   e.
   f.
   g.

Part –B **5 x 10= 50**

2. a.
   b
3. a.
   b.
4. a.
   b.
5. a.
   b.
6. a.
   b.
7. a.
   b.
8. a.
   b.

****

NOTE:

1. **Ten marks questions may be divided in to 6+4 or 5+5 & Sub division under each main question shall be from different units.**
2. **Question and marks on each unit should be proportional to the number of teaching hours allotted.**

I Semester B.Sc. Biochemistry Examination

Practical: Model question paper

DSC (1): Volumetric analysis- Practical-1

Duration: 3 hours **Max. Marks: 25**

1.	Write the principle of _____ experiment.	**05 Marks**
2.	Minor experiment (Solving problem)	**03 Marks**
3.	Major experiment (Conduct the experiment and report the results)	**17 Marks**

II Semester B.Sc. Biochemistry Examination

Practical: Model question paper

(DSC-2): Qualitative & quantitative analysis- Practical-2

Duration: 3 hours **Max. Marks: 25**

1. Write the principle and formula of _____ experiment. **05 marks**
2. Major experiment (Conduct the experiment and report the results) **20 Marks**

Semester I/II Examination

Open Elective-Model question paper

Biochemistry

Duration: 2.30 hours **Max. Marks: 60**

Instructions: Answer any FIVE questions from Part A and any FIVE questions from Part B.

Part -A **2 x 5 = 10**

1. a.
   b.
   c.
   d.
   e.
   f.
   g.

Part –B **5 x 10= 50**

2. a.
   b
3. a.
   b.
4. a.
   b.
5. a.
   b.
6. a.
   b.
7. a.
   b.
8. a.
   b.

****

NOTE:

1. **Ten marks questions may be divided in to 6+4 or 5+5 & Sub division under each main question shall be from different units.**
2. **Question and marks on each unit should be proportional to the number of teaching hours allotted.**

Board of Studies

Sl No	Name and Address	Designation	Signature
1	Ms. Ramya V HoD, Department of Biochemistry, SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram, Mysuru Mobile No:7760108585 ramyav.fgc@mahajana.edu.in	Chairperson	
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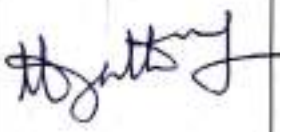
3	Mr. Haleshappa R Assistant Professor, Department of Biochemistry, Nrupathunga University Nrupathunga Road, Bengaluru - 560001 Mobile No:9743896433 haleshr222@gmail.com	Member	
4	Dr. Manjunath M S HoD, Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysuru. Mobile No:9972023024 manju297382@gmail.com	Member	
5	Dr. Puneeth Kumar Managing Director, Azymus Lifescience Pvt. Ltd. Kellamballi Industrial Area, KIADB, Chamarajanagara Mobile No:8971155575 azymus.pharma@gmail.com	Member	
6	Ms. Pallavi Assistant Professor, Department of Biochemistry MMK & SDM College, Mahila Mahavidyalaya, Mysuru Mobile No:9538582629 pallavimr1990@gmail.com	Member	Absent
7	Ms. Radhika P Assistant Professor, Department of Biochemistry SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram,' Mysuru Mobile No:9986585574 radhikap.fgc@mahajana.edu.in	Member	

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DEPARTMENT OF BIOCHEMISTRY

UG ☑

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NEP Syllabi for III and IV Semester B.Sc. Biochemistry

2022-23

DEPARTMENT OF BIOCHEMISTRY

Motto

Science for Future

Vision

Improving knowledge of Science through innovation and research for Better Future

Mission

To provide a broad based fundamental knowledge of Biochemistry by creative research ideas and professional skills

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis - Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3: Design and Development of Solutions -Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research - Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO6: Impact of Science on Society – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

List of BoS Members

Sl No	Category	Name and Designation	Address for Communication	e-Mail & Mobile No.
8.	Chairperson	Ms. Ramya V Assistant Professor & HoD	Department of Biochemistry, SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram, Mysuru	ramyav.fgc@mahajana.edu.in 7760108585
9.	Nominee by the Vice Chancellor	Dr. Kemparaju K Professor	DoS in Biochemistry, Manasagangothri University of Mysore, Mysuru.	kemparajuom@gmail.com kemparaj@biochemistry.unimysore.ac. 9945996543
10.	Two Experts from Other University	Mr. Haleshappa R Assistant Professor	Department of Biochemistry, Nrupathunga University NrupathungaRoad, Bangalore - 560001	haleshr222@gmail.com 9743896433
11.		Dr. Manjunath M S Assistant Professor & HoD	Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysore.	manju297382@gmail.com 9972023024
12.	One Person from Industry	Dr. Puneeth Kumar Managing Director	AzymusLifescience Pvt. Ltd. Kellamballi industrial Area, KIADB, Chamarajanagara	azymus.pharma@gmail.com 8971155575
13.	Alumnus	Ms. Pallavi Assistant Professor	Department of Biochemistry MMK & SDM College, MahilaMahaVidyalaya, Mysuru	pallavimr1990@gmail.com 9538582629
14.	Member	Ms. Radhika P Assistant Professor	Department of Biochemistry, SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram, Mysuru	radhikap.fgc@mahajana.edu.in 9986585574

Course Structure (NEP 2020)

II Year B.Sc. Biochemistry

Discipline Specific Courses (DSC), Open Elective (OE)

L: Lecture; **T:** Tutorial; **P:** Practical

Course Code, Type and Title		Hours /week		Number of Credits (L:T:P)	Maximum marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
III SEMESTER									
222369	**DSC(3) Bio-Organic Chemistry**	4	0	4 : 0 : 2 (6credits)	20	20	60	2½ Hours	100
	DSC (3) LAB	0	4		10	15	25	3 Hours	50
22OEBIC301	**Any One to be opted OE(3) Biochemical Techniques**	3	0	3 : 0 : 0 (3 credits)	20	20	60	2½ Hours	100
22OEBIC302	**OE(3) Hormones-Biochemistry & Function**								
IV SEMESTER									
222469	**DSC (4) Analytical Biochemistry**	4	0	4 : 0 : 2 (6 credits)	20	20	60	2½ Hours	100
	DSC (4) LAB	0	4		10	15	25	3 Hours	50
22OEBIC401	**Any One to be opted OE(4) Biochemical Toxicology**	3	0	3 : 0 : 0 (3 credits)	20	20	60	2½ Hours	100
22OEBIC402	**OE(4) Plant Biochemistry**								

DSC (3) Syllabus for B.Sc. Biochemistry (Basics and Honors)

Semester-III

Course Code :	222369	
Course Title:	DSC(3)- Bio-organic Chemistry	
	Theory	Practical
Total Course credits (L:T:P) (4:0:2)	04	02
Total contact hours	56	56
Hours of teaching/week	04	04
Formative assessment marks	40	25
Semester End Assessment marks	60	25
Exam duration	2 ½ Hrs	3Hrs

COURSE OUTCOMES (COs):

CO1: Classify the organic reactions and illustrate the concept of reactive intermediates of organic compounds and the fundamental aspects of reaction mechanism.

CO2: Elucidate the mechanism, stereochemistry and energy profile diagrams of substitution and elimination reactions and addition reactions of with examples.

CO3: Develop competence in relating the chemistry and role of co-enzymes and interpret the mechanism of electrophilic aromatic substitution reaction.

CO4: Acquire the knowledge the Isolation, classification, structure, properties and biological importance of various bio-organic compounds.

Course Content : DSC (3) - Bio-organic Chemistry	56Hr
Unit-1: Reaction mechanisms and aliphatic hydrocarbons	**14hr**
• **Introduction:** Meaning of the terms - kinetic and non-kinetic. Fundamental aspects: Homo and heterolytic cleavage. Classification of organic reactions - substitution, addition, elimination and re-arrangement with two examples for each. Concepts of reactive intermediates – Carbocations, carbanions, free radicals, carbenes, nucleophiles and electrophiles (Formation and Stability). Concept of inductive effect and mesomeric effect. Resonance and hyperconjugation • **Aliphatic Hydrocarbons** - Mechanism of addition of HCl to propene, Markovnikov's rule, Alkenes – Ozonolysis, oxidation. Alkynes – formation of acetylides and their importance. Dienes– types with examples. Conjugate dienes-1, 3-butadiene - stability, mechanism of addition of HBr. Conformational analysis of ethane and n–butane.	
Unit 2 : Mechanism of substitution, elimination, and addition reactions	**14hr**
• **Substitution reaction**- SN_1 and SN_2 reactions on tetrahedral carbon, energy profile diagrams, Stereochemistry of SN_2 and SN_1 reactions. Factors affecting SN_2 and SN_1 reactions.Substitution reactions in synthesis of ether (Williamson ether synthesis) and amines. • **Elimination reactions** - E_2 reaction, Zaitsev rule, E_1 reaction. Stereochemistry of E1 & E_2 reactions, E_2 & E_1 elimination from cyclic compounds. Elimination reactions in synthesis of alkynes. • **Addition reactions** – Nucleophilic addition reactions of Aldehydes and Ketones with HCN,	

Formation of acetals& ketals. Addition reactions of Ammonia, primary amines and other ammonia derivatives. Nucleophilic addition in alpha and beta unsaturated aldehydes and ketones: 1, 2 and 1, 4 additions.

Unit 3: Mechanism of electrophilic aromatic substitution reactions **14 hr**

- **Aromatic compounds** – Aromaticity, Huckel's rule, criteria for aromaticity, anti-aromatic, and non-aromatic compounds with examples. Mechanism of electrophilic substitution reactions - Halogenation, nitration and Sulfonation.Mechanism of Friedel crafts alkylation and Friedel crafts acylation. Effect of substituents on reactivity and orientation of mono substituted benzenes and polycyclic benzenoid hydrocarbons (E.g.: Naphthalene)
- **Structure and Role of coenzymes**

Thiamine pyrophosphate- structure and its role in decarboxylation of alpha- keto acids.

Biotin- structure and its role in carboxylation of some important biochemical reactions of carbohydrate and lipid metabolism.

Vit B_{12} its role in rearrangement reactions.

Vit B_2 coenzymes and its role in redox reactions with suitable examples.

Unit 4: Bio-organic compounds **14 hr**

- **Alcohols**: Classification, Monohydric alcohols: examples, general and distinguishing reactions. Dihydric alcohols: glycols, Tri hydric alcohols: glycerol – synthesis from propene, properties and uses.
- **Phenols:** Classification, electronic interpretation of acidity of phenols, mechanism of Kolbe, Reimer– Tiemann and bromination reactions
- **Hydroxy acids**: Structure and properties: Lactic acid, Citric acid and Isocitric acid. Dicarboxylic acids: Maleic and Fumaric acid. Ketoacids: Pyruvic, α-Ketoglutaric, Oxaloacetic acid.
- **Carbonyl compounds**: General properties, Keto-enol tautomerism. Mechanisms: addition of HCN to acetaldehyde, Claisen and aldol condensations. Quinones: o and p-benzoquinones-structure andproperties.
- **Amines**: Classification, properties, functional group – Basicity of amines, acylation. Reaction with HNO_2 & Schiff's base formation. Distinguishing reactions of primary, secondary and tertiary amines.
- **Heterocyclic compounds:** Definition, classification with examples, structure and biological importance of furan, pyrrole, thiophene, pyridine, pyran, thiazole, pyrimidine, purine, indole, imidazole, quinoline and isoquinoline. Basicity of pyrrole and pyridine.
- **Terpenes**: Definition, Isoprene rule, classification, isolation, structure and biological importance of menthol, camphor, farnesol, phytol, lanosterol, lycopene, and dolichols.
- **Steroids**: Basic ring structure in steroids. Structure and biological importance of cholesterol, phytosterols, ergosterol, cortisol, β-estradiol, testosterone, and aldosterone. Bile acids (Mono, Di & Tri cholic acids).
- **Alkaloids**: Definition, classification based on their structure and biological functions, Isolation of alkaloids, structure and physiological action of morphine, nicotine and atropine.

References:

1. Textbook of Organic Chemistry 22nd Edition S. Chand Publishers2019.
2. Organic Chemistry. Vol. I Fundamental Principles. I. L. Finar. 6th Edn. ELBS,2002
3. Organic Mechanisms, Peter Sykes, Longman,1977
4. Organic Chemistry. R.T. Morrison and R.N. Boyd. 6th Edn. Prentice Hall, India,2018
5. Lehninger- Principles of Biochemistry; DL Nelson and MM Cox [Eds), 6th Edn. Macmillan Publications2012
6. Chemistry- An Introduction to General, Organic and Biological Chemistry, 7th Edn. Karen C. Timberlake, Benjamin Cummings,1999

7. Reaction Mechanisms at a Glance, ed. M. Moloney, Blackwell Science2000.

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https://www.chemistrylearner.com/addition-reaction.html

DSC (3): Practical Syllabus

Course Content–DSC(3): Bioorganic Chemistry -Practical-3	**56 hr**
List of experiments to be conducted	
I. Systematic qualitative analysis of organic compounds. (6 practical) 1. Urea 2. Aniline 3. Benzoic Acid 4. Salicylic acid 5. Benzaldehyde 6. Acetophenone 7 Nitrobenzene 8.Chlorobenzene	
II. Extractions (2 practical) 1. Extraction of starch from potatoes 2. Extraction of casein from milk. 3. Extraction of caffeine from tealeaves	
III. Preparation of the following organic compounds. (2 practical) 1. Acetylation: Preparation of acetyl salicylic acid from salicylic acid. 2. Oxidation: Preparation of benzoic acid from benzaldehyde. 3. Nitration: Preparation of m-dinitrobenzene from nitrobenzene. 4. Hydrolysis: Preparation of benzoic acid from ethyl benzoate.	

References

1. Practical Organic Chemistry: Qualitative Analysis by S.P. Bhutani, A. Chhikara2009.
2. Textbook of PracticalOrganicChemistryIncludingQualitativeOrganic Analysis by Arthur Israel Vogel 2003
3. Comprehensive practical organic chemistry- preparation and quantitative analysis. V. K. Ahluwalia and Renu Aggarwal2004
4. Practical Hand Book of Systematic Organic Qualitative Analysis. Md. Rageeb Md. Usman, S. S. Patil2017
5. Laboratory Manual of Inorganic &Organic Chemistry (Qualitative Analysis) Kalpa Mandal, Sonia Ratnani2020.
https://www.researchgate.net/publication/356748750_Qualitative_Analysis_of_Organic_Compounds_Systematic_Approachfile:///C:/Users/admin/Downloads/biomolecules-11-01571-v2.pdf
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3218439/
https://www.sciencedirect.com/topics/earth-and-planetary-sciences/nitration

COURSE ARTICULATION MATRIX: DSC (3)- 222369

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO 12
CO1	3	1	1	2	1	1	1	1	1	1	-	1
CO2	3	1	1	2	1	-	1	1	1	1	-	1
CO3	3	1	1	2	1	-	1	1	1	1	-	2
CO4	3	1	1	2	1	1	2	1	1	1	1	2
Weighted average	**3**	**1**	**1**	**2**	**1**	**1**	**1.25**	**1**	**1**	**1**	**1**	**1.5**

OE (3) Biochemistry Syllabus for All Programs (Except Science)

Semester-III

Course Code :	22OEBIC301
Course Title:	**Biochemical Techniques**
Total Course credits (L:T:P) (3:0:0)	03
Total contact hours	42
Hours of teaching/week	03
Formative assessment marks	40
Semester End Assessment marks	60
Exam duration	2 ½ Hrs

COURSE OUTCOMES (COs):

- **CO1:** Explicate the different types of microscope and their characteristics.Implement the knowledge of basic principles of centrifugation, their types and applications.
- **CO2:** Develop competence in handling various chromatographic, electrophoretic techniques and apply them in isolating and characterizing different biological molecules
- **CO3:** Acquire the knowledge of basic principle, methodology and applications of radio isotopic methods and spectroscopic methods in bio-analysis.

Course Content : OE(3)-Biochemical Techniques	**42hr**
Unit 1: Microscopy and Centrifugation techniques	**14hr**
• **Microscopy:** Different types of microscopes – electron microscopes – TEM, SEM. Fluorescence and confocal microscopes used in fine structure studies. • **Centrifugation Techniques:** Introduction, basic principle – sedimentation, Sedimentation coefficient. Centrifuge - Basic instrumentation. Types of Centrifuge - Small bench centrifuges, high speed refrigerated centrifuges, analytical ultracentrifuge Preparative ultra- centrifuge (density gradient and differential centrifugation).Applications of centrifuge.	
Unit 2:Chromatography and Electrophoresis techniques	**14 hr**
• **Chromatography:** Introduction, Classification, Principle, theory and applications - paper chromatography, thin layer chromatography, column chromatography- adsorption chromatography and gel permeation. Principle and applications of ion exchange chromatography, affinity chromatography. Applications of High performance liquid chromatography (HPLC). • **Electrophoresis techniques:** Introduction, types, Principle of paper electrophoresis, starch gel electrophoresis. Principle, procedure and applications of agarose gel electrophoresis and PAGE. Principles and applications - Isoelectric focusing, Pulse field electrophoresis, two-dimensional electrophoresis and Capillary electrophoresis.	

Unit 3: Radio isotopic techniques and Spectroscopy	14 hr
• **Radio isotopic techniques:** Introduction to isotopes, stable and unstable radioisotopes, Nature of radioactive decay, decay constant, units of radioactivity. Measurement of radioactivity using proportional counter and GM counter. Principle and applications of autoradiography. Applications of radioisotopes in biological sciences. Harmful effects of radioisotopes on environment and human. Safety measures in handling radio isotopes. • **Spectroscopy:** Introduction, Definition, Nature of electromagnetic radiations. Principles and applications- of UV- Visible spectroscopy, Fluorescence spectroscopy and Infrared spectroscopy. Brief principle of Atomic Absorption spectroscopy. Principle and Applications of NMR, electron spin resonance (ESR) and Mass spectroscopy.	

References:

1. Modern Experimental Biochemistry: Rodney Boyer, 3rd Edn. Benjamin Cummings,2000
2. Practical Skills in Biomolecular Sciences: R Reed, D. Holmes, J. Weyers, and A. Jones 1998
3. Physical Biochemistry: David Frifielder 2nd Edition,1983
4. Biophysical Chemistry Upadya and Upadya,2016
5. Introductory Practical Biochemistry: SK Sawhney and Randhir Singh,2001

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http://www.nature.com/subjects/analytical-biochemistry
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5206469/
https://www.britannica.com/science/chromatography

COURSE ARTICULATION MATRIX: OE (3): 22OEBIC301

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO9	PO10	PO11	PO12
CO1	2	1	2	2	1	1	1	1	1	1	-	2
CO2	2	1	2	2	2	2	1	1	1	1	2	2
CO3	2	1	2	2	1	3	1	2	1	1	1	2
Weighted average	**2**	**1**	**2**	**2**	**1.33**	**2**	**1**	**1.33**	**1**	**1**	**1.5**	**2**

OE (3) Biochemistry Syllabus for All Programs (Except Science)

Semester-III

Course Code :	22OEBIC302
Course Title:	**Hormones- Biochemistry and function**
Total Course credits (L:T:P) (3:0:0)	03
Total contact hours	42
Hours of teaching/week	03
Formative assessment marks	40
Semester End Assessment marks	60
Exam duration	2 ½ Hrs

COURSE OUTCOMES (COs):

- **CO1:** Classify hormones anddemystify functions of various hormones**.**
- **CO2:** Interpret the hormonal systems act in an integrated manner to regulate overall body functions.
- **CO3:** Analyze the failure of the normal physiologic functions and integrations associated with some endocrine disorders.

Course Content : OE(3)-Hormones biochemistry and functions	**42hr**
Unit 1: Introduction	**14hr**
• Introduction to the system and concepts of signaling. Classification, intercellular communication, regulation of synthesis and secretion of hormones.Chemical signaling-endocrine, paracrine, autocrine, juxtacrine, and neuroendocrine mechanisms. • Mechanisms of hormone action: synergism, antagonism, and permissive effects. Classification of hormones by the origin, chemical structure, location, and mechanism of action.Physiological role and disorders of Pituitary, Pineal, Thyroid and Parathyroid hormones.Introduction to the hypothalamus as the true master gland with Releasing hormones and inhibitory substances. Neurohypophysis and its secretions – Vasopressin (ADH) and Oxytocin	
Unit 2: Mechanism of Hormones and Signal transduction pathways	**14 hr**
• Physiological role and disorders of hormones of pancreas, adrenal, and placenta. Introduction to gastrointestinal hormones and neurotransmitters (Acetyl choline, GABA, Serotonin). Mechanism of action, target tissues, and the physiological effects of gastrointestinal hormones. Functions of sex hormones. Hormones during ovarian and uterine phases of menstrual cycle; Placental hormones: role of hormones during parturition and lactation. Hormone receptors: receptors in the cell membrane and in the cell. • Secondary and tertiary messengers (cAMP and Ca^{+2}). Overview on signal transduction pathways for steroidal and non-steroidal hormones (One example each).	
Unit 3: Clinical Endocrinology	**14 hr**

Clinical endocrinology- Blood volume, composition and functions of plasma and serum. Separation and storage of body fluids. Methods of hormone estimation, principles of assay systems, normal range of hormones in tissues and clinical conditions leading to abnormal levels with interpretations. Thyroid function test- Determination of T3, T4, and TSH. Infertility profile: Determination of LH, FSH, TSH, Estrogen, Progesterone, Total Testosterone, Free testosterone. Major manifestations of disease of the endocrine pancreas, thyroid, hypothalamus, and pituitary disease

References:

1. Norman AW, Litwack G (1997), Hormones, 2nd Edition, ElsevierPublications.
2. Bolander F (2004), Molecular Endocrinology, 3rd Edition, ElsevierPublications.
3. Rifai N (2007), Teitz Fundamentals of Clinical Chemistry, 6th Edition, Elsevier Publications.
4. Henry's Clinical Diagnosis and Management by Laboratory Methods (2011), 22ndEdition, Elsevier.
5. Vasudevan DM (2011), Text book of Medical Biochemistry, 6th Edition, Jaypee Publishers.
6. Chatterjea MN & Shinde R (2012), Text book of Medical Biochemistry, 8th Edition, JayppePublications.
7. Bishop ML, Fody EP, Schoeff LE (2013), Clinical Chemistry: Principles, Techniques, and Correlations, 7th Edition, WileyPublications.

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- https://www.healthline.com/health/the-endocrine-system
- https://www.britannica.com/science/hormone

COURSE ARTICULATION MATRIX: OE (3)- 22OEBIC302

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	2	2	1	1	2	1	1	1	-	1
CO2	2	1	2	2	1	2	2	1	1	1	-	1
CO3	2	1	2	2	1	3	2	1	1	1	-	1
Weighted average	**2**	**1**	**2**	**2**	**1**	**2**	**2**	**1**	**1**	**1**	**-**	**1**

DSC (4) Syllabus for B.Sc. Biochemistry (Basics and Honors)

Semester- IV

Course Code :	222469	
Course Title:	DSC(4)- Analytical Biochemistry	
	Theory	Practical
Total Course credits (L:T:P) (4:0:2)	04	02
Total contact hours	56	56
Hours of teaching/week	04	04
Formative assessment marks	40	25
Semester End Assessment marks	60	25
Exam duration	2 ½ Hrs	3Hrs

COURSE OUTCOMES (COs):

- **CO1:** Illustrate different methods of extraction and biological sample preparation. Get acquainted with care and maintenance of equipment and chemicals. Acquire the knowledge of basic principles of centrifugation, their types and applications.
- **CO2:** Develop competence in handling various chromatographic techniques and apply the principle of chromatography in isolating and characterizing different biological molecules i.e., proteins, electrolytes, hormones etc.
- **CO3:** Implement the knowledge of basic principle, methodology, applications ofvarious electrophoretic techniques and radio isotopic methods in various fields
- **CO4:** Elucidate the principle, methodology and applications of different types of spectroscopic methods of bio-analysis.

Course Content : DSC (4) - Analytical Biochemistry	56hr
Unit 1: Biological sample preparation and fractionation and centrifugation	**14hr**
• Introduction to bio-analysis, objectives of bio-analysis, Extraction of molecules from tissue and cells, types of biological sample - living and post-mortem, sample preparation and preservation of biological sample. Extraction of macromolecules from cells and tissues: liquid-liquid, liquid-solid and precipitation methods. • **Centrifugation:** Introduction, principle of centrifugation, sedimentation, sedimentation coefficient, angular velocity, centrifugal field and relative centrifugal field. Basic instrumentation, types of rotors and their design. Types of centrifuge: desk top, high speed and ultra-centrifuge. Construction and applications of Ultra-centrifuge. Types of Ultra centrifuge – Preparative: Differential and density gradient ultra-centrifuge (Principle and applications) and Analytical ultra-centrifuge. Operational instruction and applications of Laboratory centrifuge in sub-cellular fractionation. Care and maintenance of instrument	

Unit 2: Chromatography	14hr
• General principles of chromatography, history of chromatography, Classification based on - nature of stationary and mobile phase: Gas chromatography and liquid chromatography, principle or mode of operation: adsorption and partition, based on geometry: Planar and column chromatography. • Principle, methodology and applications of Paper chromatography - ascending, descending and circular, 2D chromatography, Rf values, Thin layer Chromatography (TLC), Adsorption chromatography, gel-filtration, Ion-exchange and affinity- chromatography. • Advanced chromatography- HPLC and FPLC, UPLC and GLC	
Unit 3: Electrophoretic and radio isotopic methods	**14hr**
• **Electrophoresis:** General principle of electrophoresis, velocity of a charged molecule in the applied electric field in relevance of ohm's law on electrophoretic separation. Factors affecting electrophoresis, supporting media for electrophoresis- work of Tiselius, paper, agarose and polyacrylamide. • Principle, methodology and applications of - Agarose gel, Pulse field electrophoresis, native PAGE and SDS- PAGE, 2-D electrophoresis, diagonal electrophoresis. Identification of proteins; post electrophoresis- dyes and biological activities. Brief principle and applications of applications of capillary electrophoresis, isoelectric focusing, cellulose acetate electrophoresis and immuno- electrophoresis. • **Radioisotopic methods**: Radioactivity, radioactive decay, types of radioactive decay, Properties of α, β, γ radiations. Group displacement law, decay law, decay constant, Half-life period and average life of a radioactive element. Detection of radioactivity – GM counter and scintillation counters (Construction, principle and working) Applications of radioisotopes – ^{3}H, ^{14}C, ^{131}I, ^{60}Co and ^{32}P. Biological effects of radiations, radio labeling, Safety measure in handling radioisotopes.	
Unit 4:Spectroscopic methods of bio-analysis	**14hr**
• Introduction, Wave particle duality of light, electromagnetic spectrum, transition in spectroscopy. Beer-Lambert's and its limitations. Determination of molar absorption coefficient of molecules. • **Spectroscopic methods:** Working principle and applications of a colorimeter, flame photometer and fluorimeter. Principle, design and applications of UV-Visible spectrophotometer. Principle and applications of IR, and Raman spectroscopy, ESR and NMR spectroscopy.	

References:

1. Analytical techniques in Biochemistry and Molecular Biology; Katoch, Rajan. Springer2011
2. Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology 8th Edn. Andreas Hoffman and Samuel Clockie, Ed., Cambridge University Press, 2018.
3. Biochemistry and Molecular Biology; 5th Edn. D. Papachristodoulou, A. Snape, W.H. Elliott,and D. C. Elliott, Oxford University Press 2014.

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https://www.britannica.com/science/chromatography
https://www.youtube.com/watch?v=SnbXQTTHGs4
https://www.youtube.com/watch?v=WQBJjrqK24U

DSC (4) - Practical Syllabus

Course Content–DSC(4): Analytical ChemistryPractical-4	**56hr**
List of experiments to be conducted	
1. Preparation of human lymphocytes using clinical centrifuge **2.** Determination of packed cell volume/ hematocrit **3.** Resolution of basic, acidic & aromatic amino acids by ascending /descending Paper chromatography. **4.** Identification and resolution of amino acids using circular paper chromatography. **5.** Identification and resolution of plant pigments by thin layer chromatography **6.** Separation of plant pigments by Gel permeation chromatography **7.** Determination of Void volume of Gel filtration chromatography **8.** Recording the absorption spectrum of Riboflavin. **9.** Colorimetric estimation of glucose by DNS method/ protein by biuret method **10.** Estimation of DNA by diphenylamine method. **11.** Electrophoretic Separation of plasma proteins by SDS PAGE.	

References :

1. Analytical techniques in Biochemistry and Molecular Biology; Katoch, Rajan. Springer,2011
2. Wilson and Walker's Principles and Techniques of Biochemistry and Molecular Biology 8thEdn. Andreas Hoffman and Samuel Clockie, Ed., Cambridge University Press, 2018.
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- https://www.academia.edu/37972088/Lab_Manual_STK1211_Practical_For_Analytical_Chemistry_Semester_1_Session_2018_2019_pdf
- https://www.researchgate.net/publication/338224715_Practical_analytical_chemistry_lab_manual_lab

COURSE ARTICULATION MATRIX: DSC (4) - 222469

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO 12
CO1	3	2	2	2	1	1	1	1	1	1	2	1
CO2	3	2	2	2	1	-	2	1	2	1	2	1
CO3	3	2	2	2	1	-	2	2	1	1	2	1
CO4	3	2	2	2	1	1	2	1	1	1	2	1
Weighted average	**3**	**2**	**2**	**2**	**1**	**1**	**1.75**	**1.25**	**1.25**	**1**	**2**	**1**

OE (4) Biochemistry Syllabus for All Programs (Except Science)

Semester-IV

Course Code :	22OEBIC401
Course Title:	**Biochemical Toxicology**
Total Course credits (L:T:P) (3:0:0)	03
Total contact hours	42
Hours of teaching/week	03
Formative assessment marks	40
Semester End Assessment marks	60
Exam duration	2 ½ Hrs

COURSE OUTCOMES (COs):

- **CO1:** Gain basic idea about biochemical basis various toxins, route of administration, their site of action, dose response, effects and its risk assessments.
- **CO2:** Categorize the classes of toxicants with specific examples and explain the factors effecting toxic responses, absorption, metabolism and elimination of toxins.
- **CO3:** Illustrate the methods of identifying the damages to the targets or organs and biochemical mechanism of toxicity.

Course Content : OE(4)-Biochemical toxicology	**42 hr**
Unit 1: Fundamentals of toxicology and dose response	**14 hr**
Introduction, aim and Scope of toxicology; Toxins/xenobiotics (drugs) and Grading toxicity, use of animal models for toxicity studies, *in vitro* toxicity, organ toxicity (liver and kidney toxicity). Indicators of toxicity/drug effects; biomarkers. Concentration and site of action, dose response, effect of route of administration, ED_{50}, LD_{50}/TD_{50}. Hazard and risk assessment, acceptable daily intake (ADI) and tolerable daily intake (TDI).	
Unit 2: Factors affecting toxic responses	**14 hr**
Disposition- Outline of toxin/drug uptake, entry to cells and systemic circulation. Effect of size, shape, solubility, and charge on their uptake. Major sites of absorption - liver, intestine, and skin. Role of transporters, role of plasma proteins in toxins distribution, levels of toxins/drugs in plasma and its half-life, excretion- disposition by kidney, biliary excretion. Metabolism: Types of metabolic changes of foreign compounds, biotransformation/detoxification reaction, phase-1 and phase -2 reactions, nature of phase-1 and phase 2 enzymes.	
Unit 3: Targets of toxic substances and biochemical mechanism of toxicity	**14 hr**
Toxins/drugs causing liver, kidney, gall bladder, and lung damage. Methods of identifying the damages.Examples of biochemical toxicity mechanisms;	

- Chemical carcinogens- Benzo[a]pyrene, Tamoxifen.
- Liver necrosis- carbon tetrachloride, Valproic acid, and Iproniazid, Kidney damage- Chloroform, Antibiotics- gentamycin,
- Lung damage- 4-Ipomeanol
- Neurotoxicity – Isoniazid, parquet, primaquine and cyclo phosphamide.

References:

1. Biopharmaceuticals Biochemistry and Biotechnology 2nd Edn. Gary Walsh, John Wiley & Sons, Ltd, England, 2003
2. Fundamentals of Experimental Pharmacology, Ghosh, M.N. 2nd Edition, Scientific Book Agency, Kolkatta, 1984.
3. Introduction to Biochemical Toxicology, 3rd Edn., Ernest Hodgson , Robert C. Smart; Wiley-Interscience; , 2001
4. Principles of Biochemical Toxicology, John A. Timbrell, 4th Edn. 2009, Taylor &Francis
5. Remington Pharmaceutical Sciences, Lippincott, Williams and Wilkins,2000

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COURSE ARTICULATION MATRIX: OE (4)- 22OEBIC401

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	1	1	1	2	2	1	1	1	1	1
CO2	2	1	1	1	1	2	2	1	1	1	1	1
CO3	2	1	1	1	1	2	2	1	1	1	1	1
Weighted average	**2**	**1**	**1**	**1**	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**1**

OE (4) Biochemistry Syllabus for All Programs (Except Science)

Course Code :	22OEBIC402
Course Title:	**Plant Biochemistry**
Total Course credits (L:T:P) (3:0:0)	03
Total contact hours	42
Hours of teaching/week	03
Formative assessment marks	40
Semester End Assessment marks	60
Exam duration	2 ½ Hrs

COURSE OUTCOMES (COs):

- **CO1:** Gain the knowledge of plant cell, Photosynthesis, transporters and important primary metabolites of plants.
- **CO2:** Illustrate plant growth regulators, plant's responses to various biotic and abiotic stresses.
- **CO3:** Ability to explain secondary metabolites of plants and their functional importance.

Course Content : OE(4)-Plant Biochemistry	**42 hr**
Unit 1: Introduction	**14 hr**
• **Plant cell- structure and molecular components:** Cytoskeleton- an overview. Plant cell division and cell cycle. Outlines of energy production in plant cells, Carbon assimilation and nitrogen assimilation. • **An overview of photosynthesis:** Introduction**,** Photosynthesis and it's importance, Photosynthesis in C3, C4 plants and Crussulacean acid metabolism (CAM) plants, photorespiration- definition and significance, Differences between photorespiration and photosynthesis, Phytochromes, cryptochromes and phototropins (definition, examples and function). Sulfur cycle. • **Plant cell membranes and membrane transport:** Introduction to plant cell membranes and membrane constituents. Organization of transport systems across plant membranes; Different types of pumps operate at plant cell and organelle membranes, importance of H^+-ATPases. Ion channels-properties and significance; Aquaporins and water transport. • **Important Primary metabolites of plants:** Definition of primary metabolites, Cellulose, starch, sucrose, oligosaccharides; fructans, gums, mucilages, poly unsaturated fatty acids, lignin, suberin, surface waxes, sulfides and sweet proteins.	
Unit 2: Plant growth regulators and responses.	**14 hr**
• **Plant growth regulators:** Auxins, cytokinins, gibberellins, abscisic acid, ethylene, brassino steroids, polyamines, jasmonic acid, salicylic acid. • **Plant responses to biotic and abiotic stresses:** Introduction; Plant pathogens and diseases; plant defense systems - hypersensitive response; systemic acquired resistance; induced systemic resistance; Plant biotic stress response to pathogens and insects. • **Plant abiotic stress responses**: Salt stress, drought, and heavy metal stress responses; osmotic adjustment and significance of osmotic agents such as proline,	

sugar alcohols and quaternary ammonium compounds; an overview of oxidative stress and oxidative damage. Antioxidant enzymes and stress tolerance	
Unit 3: Plant secondary metabolites	**14 hr**
• **Plant secondary metabolites (Natural products):** Introduction, secondary metabolites (natural productions), classification of plant secondary metabolites. An overview of primary metabolism contribution to secondary metabolites biosynthesis. • **Alkaloids:** Definition, Classification of alkaloids; Contribution of amino acids for alkaloid biosynthesis; Isolation, purification and characterization of alkaloids. (S)-Seticuline-the chemical chameleon. • **Phenolics:** Definition, Classification of phenolic compounds, flavonoids and anthocyanins; Isolation, purification and characterization of phenolics. • **Terpenoids:** Definition, Classification of terpenoids, isoprene rule; volatile compounds – menthol, camphor, limonene; plant growth regulators – gibberellin, abscisic acid; brassinosteroids and saponins. Isolation, purification, and characterization of terpenoids • **Biological properties of secondary metabolites**: Role of secondary metabolites - in plants defense; in insects signaling, morphogenesis, and defense. Physiologically active secondary metabolites in modern medicine and therapeutic compounds for human ailments	

References:

1. Lehninger's Principles of Biochemistry - Nelson & Cox. CBS Publishers & Distributors, 2013
2. Principles of Biochemistry - Moran, Horton, Scrimgeour, Perry. Pearson, 5th Edition ,2011
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4. Plant Biochemistry and Molecular Biology - P. Lea & Richard C Leegood., John Wiley & Sons.1999
5. Introduction to Plant Biochemistry - Goodwin and Mercer. CBS Publisher and Distributors. 2005
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7. Natural Products from plants. Peter B. Kaufman, Leland J. Cseke, Sara Warber, James A. Duke, Harry L. Brielmann, CRC Press, Boca Raton1999.
8. Natural Products Targeting Clinically Relevant Enzymes. Paula B. Andrade, Patricia Valentao David M. Pereira. Wiley-VCH Verlag GmbH & Co2017
9. Plant Cell Tissue and Organ Culture: Fundamental Methods - O.L. Gamborg & G.C. Phillips Narosa Publishers, New Delhi, 1995.
10. Kant R. Sweet proteins – Potential replacement for artificial low calorie sweeteners. Nutrition J. 2005; 4:5doi:10.1186/1475-2891-4-5.
11. Misaka T. Molecular mechanisms of the action of miraculin, a taste-modifying protein. Seminars Cell Develop Biol. 24:222-225 2013.

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https://www.longdom.org/plant-biochemistry-physiology/archive.html
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COURSE ARTICULATION MATRIX: OE (4)- 22OEBIC402

PO / CO	Program Outcomes											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	1	1	1	2	2	1	1	1	-	1
CO2	2	1	1	1	1	2	2	1	1	1	-	1
CO3	2	1	1	1	1	2	2	1	1	1	2	1
Weighted average	**2**	**1**	**1**	**1**	**1**	**2**	**2**	**1**	**1**	**1**	**2**	**1**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is **40:60** for IA and Semester End Theory Examinations respectively and **50:50** for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1(C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	40 Marks	25Marks

Evaluation Process of IA Marks shall be as follows:

- The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.
- The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.
- During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
- In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.
- The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

Theory Formative assessment	C1 Mark	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the marks is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

Practical Formative assessment	C1 Mark	C2 Marks	Total Marks
Session Test	10	-	10
Record/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	15	15
Total	10	15	25

- For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.
- The teachers concerned shall conduct test/seminar/case study etc., the students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department.
- Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.
- The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.
- The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.
- There shall be no minimum in respect of internal assessment marks.
- Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

B.Sc. Biochemistry Semester III

Practical Examination- Scheme of Valuation (2022-23)

(DSC3): Bio-Organic Chemistry– Practical 3

Duration: 3 hour **Practical Proper Max. Marks: 25**

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The students will be evaluated on the basis of skill, comprehension and recording the results.
The student has to compulsorily submit the practical record during C1and C2.For C3, Students must submit completed practical records duly signed by batch teachers and certified by HOD at the time of examination. (No evaluation of record)

The student is evaluated for **C1** and **C2** respectively as per the following scheme:

Heading	Marks
C1 Principle writing and Minor Experiment	10
C Experiment + Record/Continuous assessment	10 + 05=15
Total	**25**

The student is evaluated for **25 marks** in **C3** as per the following scheme.

- **PART- A: Principle and reaction writing** **Marks- 03**
- **PART- B: Minor Experiment** **Marks- 07**
- **PART- C: Major Experiment** **Marks- 15**

PART- A: Principle writing (Time-15min) **Marks- 03**

Principle and reaction of any ONE of the following experiment to be given for writing:

a. Acetylation: Preparation of acetyl salicylic acid from salicylic acid.
b. Oxidation: Preparation of benzoic acid from benzaldehyde.
c. Nitration: Preparation of m-dinitrobenzene from nitrobenzene.
d. Hydrolysis: Preparation of benzoic acid from ethyl benzoate.

PART- B: Minor Experiment **Marks- 07**

Any ONE of the following extraction is to be given for conduction.

1. Extraction of caffeine from tealeaves
2. Extraction of starch from potatoes
3. Extraction of casein from milk

Assessment of Experimental results

- Principle …… **2 M**
- Performance and Calculation ……..... **.3M**

- Confirmatory test…… **2M**

PART- C: Systematic Qualitative analysis of Organic Compounds **Marks- 15**

Any ONE of the following organic compounds is to be given for identification.

1. Urea	2. Aniline	3. Benzoic Acid
4. Salicylic acid	5. Benzaldehyde	6. Acetophenone
7 Chlorobenzene	8 Nitrobenzene	

Assessment of Experimental results

- Preliminary test ……**1M**
- Detection of elements…….**3M**
- Solubility Test……**2M**
- Functional Group test (min 2 test) ……...**4M**
- Determination of Physical Constant …… **2M**
- Naming of Organic compound and Structure …… **2M**
- Preparation of Solid derivative……..**1M**

B.Sc. Biochemistry Semester IV

Practical Examination- Scheme of Valuation (2022-23)

(DSC4): Analytical Biochemistry– Practical 4

Duration: 3 hours **Proper Max. Marks: 25**

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The students will be evaluated on the basis of skill, comprehension and recording the results.

The student has to compulsorily submit the practical record during C1and C2.For C3, Students must submit completed practical records duly signed by batch teachers and certified by HOD at the time of examination. (No evaluation of record)

The student is evaluated for **C1 & C2** respectively as per the following scheme:

Heading	Marks
C1 Principle writing and Minor Experiment	10
C Experiment + Record/Continuous assessment	10 + 05=15
Total	**25**

The student is evaluated for **25 marks** in **C3** as per the following scheme.

- **PART- A: Principle writing** **Marks- 05**
- **PART- B: Minor Experiment** **Marks- 08**
- **PART- C: Major Experiment** **Marks- 12**

PART- A: Principle writing **Marks- 05**

Principle of any of the following experiment may be given for writing: (Time-15min)

1. Preparation of human lymphocytes using clinical centrifuge
2. Determination of packed cell volume/ hematocrit.
3. Separation of plant pigments by Gel permeation chromatography
4. Electrophoretic separation of plasma proteins by SDS PAGE

PART- B: Minor Experiment **Marks- 08**

Any ONE of the following experiment is to be given for conduction.

1. Colorimetric estimation of glucose by DNS method/Protein by biuret method
2. Estimation of DNA by diphenylamine method.
3. Recording the absorption spectrum of riboflavin

Assessment of Experimental results: (EXP 1 & 2)

- Tabular column……... **2M**
- Graph…….. **2M**
- Result:…….**4M**

% Error	Marks awarded
<10%	4
10-15%	3
16-20%	2
Any other value	1

Assessment of Experimental results: (EXP 3)

- Principle……..……... **2M**
- Graph…….. **4M**
- Report:…….**2M**

PART- C: Major Experiment **Marks- 12**

1. Resolution of basic, acidic and aromatic amino acids by ascending/descending paper chromatography.
2. Identification and resolution of amino acids using circular paper chromatography
3. Identification and resolution of plant pigments by thin layer chromatography
4. Determination of void volume of Gel filtration chromatography.

Assessment of Experimental results:

- Principle…… **3M**
- Performance…….. **3M**
- Calculation ……. **4M**
- Identification and report…… **2M**

B.Sc. (Basic) Semester III/IV Examination

Model question paper: Discipline Specific Course (DSC)

Biochemistry

Duration: 2.30 hours **Max. Marks: 60**

Instructions: Answer any FIVE questions from Part A and any FIVE questions from Part B.

Part -A **2 x 5 = 10**

1. a.
   b.
   c.
   d.
   e.
   f.
   g.

Part –B **5 x 10= 50**

2. a.
   b
3. a.
   b.
4. a.
   b.
5. a.
   b.
6. a.
   b.
7. a.
   b.
8. a.
   b.

****

NOTE:

3. **Ten marks questions may be divided in to 6+4 or 5+5 & Sub division under each main question shall be from different units.**
4. **Question and marks on each unit should be proportional to the number of teaching hours allotted**

III Semester B.Sc. Biochemistry Examination

Model question paper Practical 3

DSC (3) -Bio-Organic Chemistry

Duration: 3 hours **Max. Marks: 25**

1. Write the principle and reaction of _____ experiment	**03 Marks**
2. Minor experiment (Conduct the experiment and report the results)	**07 Marks**
3. Major experiment (Systematic qualitative analysis of organic compounds)	**15Marks**

IV Semester B.Sc. Biochemistry Examination

Model question paper Practical 4

DSC (4) - Analytical Biochemistry

Duration: 3 hours **Max. Marks: 25**

1. Write the principle of _____ experiment.	**05 marks**
2. Minor experiment (Conduct the experiment and report the results)	**08 Mark**
3. Major experiment (Perform, Identify the experiment and report)	**12 Marks**

Semester III/IV Examination

Model question paper: Open Elective

Biochemistry

Duration: 2.30 hours **Max. Marks: 60**

Instructions: Answer any FIVE questions from Part A and any FIVE questions from Part B.

Part -A **2 x 5 = 10**

1. a.
   b.
   c.
   d.
   e.
   f.
   g.

Part –B **5 x 10= 50**

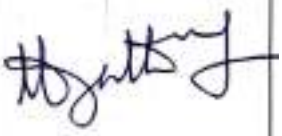
2. a.
   b
3. a.
   b.
4. a.
   b.
5. a.
   b.
6. a.
   b.
7. a.
   b.
8. a.
   b.

****

NOTE:

3. **Ten marks questions may be divided in to 6+4 or 5+5 & Sub division under each main question shall be from different units.**
4. **Question and marks on each unit should be proportional to the number of teaching hours allotted.**

Board of Studies

Sl No	Name and Address	Designation	Signature
1	Ms. Ramya V HoD, Department of Biochemistry, SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram, Mysuru Mobile No:7760108585 ramyav.fgc@mahajana.edu.in	Chairperson	
2	Dr. Kemparaju K Professor, DoS in Biochemistry, Manasagangothri University of Mysore, Mysuru. Mobile No:9945996543 kemparajuom@gmail.com kemparaj@biochemistry.uni-mysore.ac.in	Member	
3	Mr. Haleshappa R Assistant Professor, Department of Biochemistry, Nrupathunga University Nrupathunga Road, Bengaluru - 560001 Mobile No:9743896433 haleshr222@gmail.com	Member	
4	Dr. Manjunath M S HoD, Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysuru. Mobile No:9972023024 manju297382@gmail.com	Member	
5	Dr. Puneeth Kumar Managing Director, Azymus Lifescience Pvt. Ltd. Kellamballi Industrial Area, KIADB, Chamarajanagara Mobile No:8971155575 azymus.pharma@gmail.com	Member	
6	Ms. Pallavi Assistant Professor, Department of Biochemistry MMK & SDM College, Mahila Mahavidyalaya, Mysuru Mobile No:9538582629 pallavimr1990@gmail.com	Member	Absent
7	Ms. Radhika P Assistant Professor, Department of Biochemistry SBRR Mahajana First Grade College, Autonomous Jaylakshmipuram, Mysuru Mobile No:9986585574 radhikap.fgc@mahajana.edu.in	Member	

Education to Excel

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College with Potential for Excellence

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Department of Biochemistry

Motto

To understand the mechanism of biological processes

Vision

Improving knowledge through innovation and research

Mission

To provide a fundamental knowledge of Biochemistry by innovative research and professional skills

Syllabi for V and VI Semester B.Sc. Biochemistry

2021-2022

Board of Studies

Sl.No.	Name and address	Designation	Signature
1	Dr.Anitha S R HOD, Department of Biochemistry SBRR Mahajana First Grade College, Mysuru Mobile No: 9019989583 anithasr.fgc@mahajana.edu.in	Chairperson	
2	Dr.Gopal K Marathe Professor, DoS in Biochemistry, Manasagangothri University of Mysore, Mysuru Mobile No: 9686423624 marathe1962@gmail.com	Member	
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8	Ms.Radhika P Assistant Professor SBRR Mahajana First Grade College, Mysuru Mobile No: 9986585574 radhikap.fgc@mahajana.edu.in	Member	

BoS meeting (Online/Offline) of the Department Biochemistry was held on 24.07.2021 at 10.30am.

Proposed syllabi of V and VI Semester Biochemistry and list of Board of Examiners for the year 2021-22 have been approved by the following BoS Members.

List of the Members	Signature
1. Dr.SAJEEDA NIKETH	
2. Mrs.RASHMI.D	

B.Sc. Program in Biochemistry
Semester with Choice Based Credit System (CBCS)

Semester	Subject Code	Title of the Subject	No. of Credits [L:T:P]	Theory Exam	Practical Exam	Total Marks
I	192118	Chemistry of Biomolecules	4 : 0 : 2 = 6	80+20	40+10	150
II	192218	Bio-Organic chemistry and Biomolecules-I	4 : 0 : 2 = 6	80+20	40+10	150
III	202318	Biomolecules – II and Enzymology	4 : 0 : 2 = 6	80+20	40+10	150
IV	202418	Metabolism and Human Physiology	4 : 0 : 2 = 6	80+20	40+10	150
V	212518 212528	No. of courses- 1 DSE 1 - Nutrition DSE 2 – Molecular Basis of Infectious Diseases	3 : 0 : 3 = 6	80+20	80+20	200
	212558 212568	No. of courses-1 SEC 1 - Biochemical Techniques SEC 2 – Protein Purification techniques	2 : 0 : 0 = 2	40+10	-	50
VI	212638 212648	No. of courses-1 DSE 1 - Molecular Biology and Immunology DSE 2 – Plant Biochemistry	3 : 0 : 3 = 6	80+20	80+20	200
	212658 212668	No. of courses - 1 SEC 3 - Bioinformatics SEC 4 – Clinical Biochemistry	2 : 0 : 0 = 2	40+10	-	50

Credit means the unit by which the course work is measured. One hour session of Lecture or Tutorial per week for 16weeks amounts to 1credit. Two hour's session of practical's per week for 16week's amounts to 1 credit per semester

V SEMESTER

DSE-1: NUTRITION

Course duration: 16 weeks with 3 hours of instruction per week (48 hrs)

Subject Code: 212518

No. of Credits: 3

Course objectives: The main objective of the course is to provide the basic knowledge of human nutritional need and to understand the importance of macro and micro nutrients in maintaining health and its biochemical implications. Students will learn the concepts like balanced diet, glycemic index, calorie intake, RDA, regulation of water balance, antinutritional factors, energy requirements and its utilization.

Learning outcomes:

- Students are trained to carry out basic research in nutrition based projects.
- Enable the students to find employment in food based industries.
- Students will get acquainted with the techniques used in the experimental determination of different nutrients such as vitamins, minerals and amino acids in food samples.
- Students will be able to understand the nutritional significance of vitamins and the role of minerals in metabolism.

UNIT I: **16 hrs**

Introduction **6hrs**

Concept of nutrition, calorific value of foods and its determination (Bomb calorimeter), different components of energy expenditure, energy expenditure at rest and work, respiratory quotient, Basal metabolic rate (BMR), determination of BMR by indirect calorimetric method (Benedict's Roth apparatus), factors affecting BMR, Specific dynamic action of foods.

Carbohydrates: **3 hrs**

Dietary sources of carbohydrates, dietary fibers (types, beneficial & adverse effects), protein sparing action, Glycemic index- importance with examples, lactose intolerance.

Proteins: **4 hrs**

Dietary sources of proteins, Essential amino acids, nutritional classification, nutritive value of proteins-PER and biological value (BV). Nitrogen balance, mutual Supplementation of proteins. Malnutrition-Kwashiorkar and Marasmus.

Fats: **3 hrs**

Dietary sources of fats, visible and invisible fat, trans fats, omega fatty acids and their biological importance, role of DHA and EPA.

UNIT II: **16 hrs**

Vitamins: **8hrs**

Dietary sources, requirements, deficiency symptoms and biological role of water soluble vitamins-thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, biotin, folic acid, vitamin-B_{12} and vitamin-C.

Fat soluble vitamins-A, D, E and K & hypervitaminosis

Minerals: **8 hrs**

Dietary sources, physiological functions, deficiency disorders, absorption and excretion.

Macronutrients- Ca, P, Na, Cl, Mg and K and micronutrients-Fe, Zn, Cu, I_2, Se and Cr.

UNIT III: **16 hrs**

Water Metabolism: **3 hrs**

Functions and distribution of water in body fluid compartments. Factors influencing water metabolism, deficiency and water intoxication in human body.

Antinutritional Factors: **3 hrs**

Sources and harmful effects of anti vitamins (example: - avidin and dicoumarol), natural toxicants (example: - Lathyrus sativus) and adulterants (Butter yellow, lead chromate and malachite green).

Digestion and absorption: **7 hrs**

GIT: secretion, composition and functions of saliva, gastric, bile, pancreatic and intestinal juices. Gastro intestinal hormones and its effects. Appetite, digestion, absorption and transport of carbohydrates, proteins and fats.

Nutraceuticals and Balanced diet: **3hrs**

Nutraceuticals: Introduction, functional foods and pre and pro-biotics in health and disease prevention. Balanced diet - Composition of balanced diet for children, pregnancy and old age.

Books for References:

1. Swaminathan M, Advanced Text Book On Food & Nutrition - Volume I & II , The Bangalore printing and publishing Co Ltd (1985).

2. Mahtab S Bamji, Prahlad Rao N and Vinodini Reddy, Text book of Human Nutrition, Oxford and IBH Publishing Co. PVT. LTD, New Delhi (2003)
3. Sumati R Mudambi and Rajagopal M V , Fundamentals of Foods, Nutrition And Diet Therapy, New Age International Private Limited.
4. Srilakshmi B, Food Science, 3rd Edn., New Age International Publishers(2003).
5. Tom Brody, Nutritional Biochemistry 2nd Edn., Academic press(1999).
6. Garrow, J. S. and James, Human Nutrition and Dietetics, 10th Edn., Churchill Livingstone Publishers, UK(2000).
7. Lanham S, Mac Donald I and Roche H, Nutrition and Metabolism, 2nd Edn., The Nutrition Society, London, UK, (2012).

Web links:

- https://www.livestrong.com
- https://www.mayoclinic.org
- https://www.healthline.com
- https://www.medicalnewstoday.com
- https://www.med-health.net/Lifestyle-Diseases.html

V SEMESTER

DSE-1: PRACTICAL V

Course duration: 16 weeks with 3 hours of lab work per week (1.5Credits)

1. Determination of iodine value of oil/fat.
2. Determination of saponification value of oil/fat.
3. Extraction and estimation of calcium in ragi.
4. Estimation of reducing sugars from jams and jellies by Fehling's method.
5. Extraction and estimation of ascorbic acid in biological sample by 2, 6-dichloro phenol indophenol dye method.
6. Extraction and estimation of iron from mustard.
7. Estimation of amino acid by Sorensen's formal titration.
8. Estimation of lactic acid in milk.
9. Gravimetric estimation of sulphate as Barium sulphate.

V SEMESTER

DSE-1: PRACTICAL VI

Course duration: 16 weeks with 3 hours of lab work per week (1.5Credits)

1. Detection of adulterants in food.
2. Extraction of casein from milk.
3. Extraction of albumin from egg.
4. Purification of polysaccharides (Starch and glycogen).
5. Determination of pH of the given sample of fruit juice (Eg: lemon, papaya, apple, sugar cane, bejois juice etc).
6. Determination of moisture content of foods.
7. Determination of peroxide value of oil/fat.
8. Determination of acid value of oil/fat.

V SEMESTER

DSE-2: MOLECULAR BASIS OF INFECTIOUS DISEASES
Course duration: 16 weeks with 3 hours of instruction per week (48 hrs)

Subject Code: 212528

No. of Credits: 3

Course objectives:

Students will get acquainted with various classes of infectious agents, its entry to the hosts, subsequently survive within host tissues and its pathogenicity. The most significant bacterial, viral, fungal, and parasitic infectious diseases are covered in detail. This course will also provide the basic and advance concepts of important infectious diseases, its outbreak and spread of infection. The course also focus on preventive methods and treatment with antimicrobial drugs.

Learning outcomes:

At the end of the course, students will able to:

- Distinguish between infectious and noninfectious diseases.
- Understand the characteristics of parasites, Fung, bacteria and viruses.
- Understand the significance of drug and vaccine development, diagnostics, hygiene and prevention of infectious diseases.
- Have a detail understanding about the epidemiology and preventive methods of different infectious diseases.

UNIT I: 10 hrs

Classification of Infectious agents 10 hrs

Bacteria, viruses, protozoa and fungi. Past and present emerging and re-emerging infectious diseases and pathogens. Source, reservoir and transmission of pathogens, antigenic shift and antigenic drift. Host parasite relationship, types of infections associated with parasitic organisms.

UNIT II: 22 hrs

Overview of diseases caused by bacteria: 12 hrs

Detailed study of tuberculosis, typhoid, pneumonia and tetanus: Causative agent, molecular basis of host specificity, infection and pathogenicity, diagnostic method, therapeutics, inhibitors and vaccines.

Overview of diseases caused by viruses: 10 hrs

Detailed study of AIDS- history, causative agent, pathogenesis, diagnostic method, drugs and inhibitors. Other viral diseases including hepatitis, influenza, rabies, chikungunya and dengue.

UNIT III: 16 hrs

Overview of diseases caused by parasites: 10 hrs

Detailed study of malaria- causative agents, vectors, life cycle, host parasite interactions, diagnostic method, drugs and inhibitors, resistance and vaccine development. Other diseases including leishmaniasis and amoebiasis.

Overview of diseases caused by other organisms: 6 hrs

Fungal diseases –Etiology, characteristics and diagnosis of Candidiasis, Sporotrichosis, Aspergillosis and Ring worm.

Books for References:

1. Tortora G J, Funke B R and Case C, Microbiology-An Introduction. Benjamin Cummings, San Francisco (2004).

2.Presscott L M, Harley J P and Klein D A, Microbiology, 4th Edn., WCB Mc Graw-Hill (1999).

3. Pelczar M, E.C.S. Chan and M R Krieg, MICROBIOLOGY, McGraw Hill (1997).

4. Kenneth J Ryan C and George Ray- Sherris Medical Microbiology: An introduction to infectious diseases, McGraw-Hill (2010).

5. Geo F Brooks, Karen C Carroll, Janet S Butel and Stephen A Morse- Jawetz, Melnick and Adelbergs Medical Microbiology, 24th Edn., McGraw Hill Education (2007).

6. Patricia M , Bailey & Scott's Diagnostic Microbiology, 13th Edn., Elsevier(2014).

Web links:

- https://www.escmid.org/
- https://www.ncbi.nlm.nih.gov/books/NBK7627/
- https://www.journals.elsevier.com/international-journal-of-medical-microbiology
- https://asm.org/Certifications/American-Board-of-Medical-Microbiology
- https://www.gfmer.ch/Medical_journals/Infectious_diseases_microbiology_tropical_medicine.htm

V SEMESTER

DSE-2: PRACTICAL V

Course duration: 16 weeks with 3 hours of lab work per week (1.5Credits)

1. **Qualitative analysis of urine:**

- Organic constituents: urea, uric acid, creatinine and amino acid.
  Inorganic constituents: chlorides, sulfates, phosphates and ammonia
- Abnormal constituents -glucose, albumin, bile pigments, bile salts and ketone bodies.

2. Determination of antigen-antibody reaction by immunodiffusion technique.

3. Liver function test: Assay of SGOT, SGPT and Alkaline phosphatase.

4. Photographic demonstration of infectious diseases.

V SEMESTER

DSE-2: PRACTICAL VI

Course duration: 16 weeks with 3 hours of lab work per week

Quantitative estimations:

- Titratable acidity in urine
- Ammonia in urine
- Creatinine in urine
- Urea in blood
- Blood glucose
- Hemoglobin
- Conjugated and total bilirubin in serum (Diazo method)

V SEMESTER

SEC-1: BIOCHEMICAL TECHNIQUES

Course duration: 16 weeks with 2 hours of instruction per week (32 hrs)

Subject Code: 212558

No. of Credits: 2

Course objectives:

Students will be exposed to various chromatographic and electrophoresis techniques and their application in separation and characterizing biological samples. Students will acquire knowledge about safety aspects of handling and maintenance of laboratory instruments. The course also focus to understand the fundamentals of centrifugation techniques and spectroscopic methods

Learning outcomes: Students will

- Acquainted with the practical training to handle the instruments like colorimeter, spectrophotometer, centrifuge and electrophoresis used for the isolation of biological molecules.
- Develop skill and proficiency in preparation of laboratory reagents and maintenance of instrument.
- Learn safety practices required for working in a laboratory.
- Equipped with practical skill in chromatographic techniques like gel filtration, ion exchange, thin layer chromatography and affinity chromatography. This will help them in undertaking research in the area of biochemistry in research institution.

UNIT I : : 18hrs

Biochemical reagents & solutions: 6 hrs

Safety practices in the laboratory. Safety aspects of laboratory instruments. Preparation: concept of solution concentration and storage of solutions. Quantitative transfer of liquids. Concept of a buffer, Henderson-Hasselbach equation, working of a pH meter.

Exercise

Preparation of buffer solution of given pH and molarity.

Chromatography- 12 hrs

Definition**,** types, principle of adsorption and partition chromatography.
Techniques of circular, 2D chromatography, thin layer chromatography and its advantages.
Column chromatography – Principle, procedure and applications of gelfiltration, affinity, ion exchange, adsorption chromatography, principle and applications of HPLC and GLC.

UNIT II: 14 hrs

Electrophoresis: 3 hrs

Principle, procedure and applications of electrophoresis technique- Agarose Gel electrophoresis and SDS – PAGE.

Centrifugation: 3 hrs

Principle of differential and density gradient centrifugation. Ultra centrifuge – construction and applications.

Spectrophotometric techniques: **8 hrs**

Principle, instrumentation and applications of UV-visible, infra red and fluorescence spectroscopy. Principle and applications of NMR.

Exercises

Determination of the absorption maxima and molar extinction coefficient (of a relevant organic molecule).

Determination of concentration of a protein solution by Lowry/BCA method.

Books for References:

1. Keith Wilson and John Walker, Principles & Techniques of Practical Biochemistry, Cambridge University press.
2. Randhir Singh and S.K.Sawhney , Introductory Practical Biochemistry, 10th Edn., Narosa Publishers(2014).
3. Sharma B K, Instrumental methods of Chemical analysis, 24th Edn., Goel Publishing House (2005).
4. David T. Plummer, An Introduction to Practical Biochemistry, 3rd Edn., Tata Mc GRAW Hill Education Pvt. Ltd, New Delhi(1998).
5. Wilson K and Walker J, Principles and Techniques of Biochemistry and Molecular Biology, 7th Edn., Cambridge University Press(2010).
6. Boyer R.F, Biochemistry Laboratory: Modern Theory and Techniques, 6 th Edn., Prentice Hall(2012).
7. Upadhyay, Upadhyay and Nath , Biophysical Chemistry: Principles & Techniques, Himalaya Publ. House
8. Debajyothi Das, Biophysical chemistry, 6th Edn., Academic Publishers (2007).

Web links:

- http://www.nature.com/subjects/analytical-biochemistry
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5206469/
- https://www.britannica.com/science/chromatography
- https://www.youtube.com/watch?v=SnbXQTTHGs4
- https://www.youtube.com/watch?v=WQBJjrqK24U

V SEMESTER

SEC-2: BIOCHEMICAL TECHNIQUES

Course duration: 16 weeks with 2 hours of instruction per week (32 hrs)

Subject Code: 212568

No. of Credits: 2

Course objectives:

Students will develop skills in latest method used for isolation, purification and characterization of protein. Students will learn basic principle and applications of different chromatographic

techniques like gel filtration, affinity chromatography, ion exchange and thin layer chromatography. In addition to understanding the applications of chromatography, they will also learn the basic principle, types and applications of electrophoresis techniques.

Learning outcomes:

- The students will have hands on training in various chromatographic techniques and their applications in isolation of different biological molecules.
- Students will get acquainted with the practical training in the separation of proteins by PAGE.

Unit 1: **24hrs**

Purification and characterization of a protein from a complex mixture (native or heterologously expressed) involving the following methods/techniques.

Exercises

Preparation of the sample
Ion-exchange chromatography
Gel filtration chromatography
Affinity chromatography
Electrophoresis

Unit 2: **8hrs**

Demonstration of High Performance Liquid Chromatography (HPLC)

Books for References:

1. Keith Wilson and John Walker, Principles & Techniques of Practical Biochemistry, Cambridge University press.
2. Randhir Singh and S.K.Sawhney, Introductory Practical Biochemistry, 10th Edn., Narosa Publishers (2014).
3. Sharma B K, Instrumental methods of Chemical analysis, 24th Edn., Goel Publishing House (2005).
4. David T. Plummer, An Introduction to Practical Biochemistry , 3rd Edn., Tata Mc GRAW Hill Education Pvt. Ltd, New Delhi(1998).
5. Wilson K and Walker J, Principles and Techniques of Biochemistry and Molecular Biology, 7 th Edn., Cambridge University Press(2010).
6. Boyer R.F, Biochemistry Laboratory: Modern Theory and Techniques, 6th Edn., Prentice Hall(2012).
7. Upadhyay, Upadhyay and Nath , Biophysical Chemistry:Principles & Techniques, Himalaya Publ. House
8. Debajyothi Das, Biophysical chemistry, 6th Edn., Academic Publishers(2007).

Web links:

- http://www.nature.com/subjects/analytical-biochemistry
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5206469/
- https://www.britannica.com/science/chromatography
- https://www.youtube.com/watch?v=SnbXQTTHGs4
- https://www.youtube.com/watch?v=WQBJjrqK24U

VI SEMESTER

DSE 1: MOLECULAR BIOLOGY AND IMMUNOLOGY
Course duration: 16 weeks with 3 hours of instruction per week (48 hrs)

Subject Code: 212638

No. of Credits: 3 Credits

Course objectives:

Course in molecular biology and immunology aims to introduce the students to the basic concepts of molecular biology related to discovery of DNA as genetic material, central dogma of molecular biology, DNA replication, transcription, mutation, DNA repair, Protein biosynthesis and gene expression in prokaryotes.

It also provides knowledge of applications of vectors, cosmids, cDNA , DNA finger printing, blotting techniques, Polymerase chain reaction. The course also focus on the fundamental concept

of immune system, humoral and cell-mediated immunity, structure and functions of different classes of immunoglobulins, importance of vaccine, immunological techniques, immunological disorders and different types of hypersensitivity reactions.

Learning outcomes: Students will

- Acquainted with the experimental techniques of recombinant DNA technology, isolation and digestion of plasmid DNA, separation of DNA fragments by agarose gel electrophoresis and amplification of DNA fragment by PCR.
- Understand the overall organization of the immune system in establishing immunity against infection and diseases.
- Understand the cellular and molecular basis of immune response, antigen antibody reaction in disease diagnosis and role of immunity in protection against pathogens.

UNIT I: **20 hrs**

Introduction: **2 hrs**
Nucleic acids as genetic information carriers, experimental evidences –Hershey Chase experiment. Central dogma of molecular biology and its modification.

Replication of DNA: **3 hrs**
DNA replication in prokaryotes- conservative, semi conservative and dispersive types. Meselson and Stahl experiment. Enzymes and protein factors involved in replication, mechanism of replication in prokaryotes.

Prokaryotic RNA Synthesis: **3 hrs**
Role of RNA polymerase. Initiation, elongation and termination and Post transcriptional modifications .

Genetic code: **1 hrs**
General features, wobble hypothesis

Prokaryotic Protein biosynthesis: **4hrs**
Activation of Amino acids, amino acyl tRNA synthesis. Initiation, elongation and termination of protein synthesis. Inhibitors of protein synthesis. Post translational modifications.

Mutations: **3 hrs**
Concept of gene mutation- Point mutation and frameshift mutation. Concept of missense, nonsense mutation. Effect of mutagens – effect of HNO_2, alkylating agents, intercalating agents and UV radiation.

Repair of DNA: **2 hrs**
DNA repair, Types -direct reversal of damage, excision repair and SOS repair.

Concept of gene: **2 hrs**
Gene expression in prokaryotes - concept of Lac operon and trp operon.
Functional unit in a typical eukaryotic gene – Promoter, introns and exons.

UNIT II : **10hrs**

Outline of techniques of genetic engineering:

Historical development, aim and scope of genetic engineering. Restriction endonucleases –Types, staggered cut and blunt end cut. Vectors- plasmid (pBR 322), bacteriophage, cosmids, phagemid and plant vectors. Insertion of foreign DNA into vectors- linkers,adaptors and homopolymer tailing. Transfection of vectors into host cells. cDNA. Principle of polymerase chain reaction and applications. Gene therapy.

Principle and applications of Southern, northern and western blotting. Dot blot technique. DNA finger printing.

UNIT III :

IMMUNOLOGY **18hrs**

Overview of the Immune system: **8 hrs**

Role of immunologically important organs and cells - bone marrow, thymus, spleen and lymphocytes. Innate and adaptive immunity. Passive and active immunity. Cellular and humoral immunity: formation and functions of T & B Lymphocytes. Helper T-cells and killer T-cells. Macrophages and dendritic cells.

Antigens and Antibodies: **3hrs**

Antigens- Definition, types, chemical nature and antigenicity. Epitopes, paratopes, haptens and adjuvants.

Antibodies:

Definition, types and structure of a typical immunoglobulin (IgG), Polyclonal and monoclonal antibodies. Production and applications of monoclonal antibodies.

Antigen –antibody reaction *in-vitro*: **3 hrs**

Formation of antigen-antibody complex. Agglutination and precipitation. Principle, procedure and applications of immunodiffusion, RIA and ELISA.

Immunization: **2 hrs**

Vaccines and their preparations**,** primary and secondary immune response.

Hypersensitivity and Immunological disorders: **2hrs**

Type of hypersensitivity reaction

Immunological disorders:

Autoimmune disorder- systemic lupus erythomatous and rheumatoid arthritis.

Books for References:

1. Harvey Lodish, Arnold Berk, Paul Matsudaira, Chris A Kaiser, Monty Krieger, Matthew P Scott, Lawrence Zipursky and James Darnell, Molecular Cell Biology , 5th Edn., W.H. Freeman & Company.
2. Garret R H and Grisham C M, Biochemistry 6th Edn., Cengage Learning(2016).
3. Voet D J , Voet, J G and Pratt C W , Principles of Biochemistry, 3rd Edn., JohnWiley & Sons, Inc (2008).
4. Nelson D L and Cox M M, Lehninger: Principles of Biochemistry,7th Edn., W.H. Freeman and Company (2017).

5. Primrose S B and Twyman R M, Principles of Gene Manipulation and Genomics 7th Edn., Blackwell publishing(2006).
6. Brown T A, Gene Cloning and DNA Analysis, 6th Edn., Wiley-Blackwell publishing (2010).
7. Glick B R, Pasternak J J and Patten C L, Molecular Biotechnology: Principles and Applications of Recombinant DNA, 4th Edn., ASM Press (2010).
8. David Freifelder and George M Malacinski, The Essentials of Molecular Biology, 3rd Edn., Jones and Bartlett Publishers (1998).
9. Baltimore, Molecular Cell Biology, 5th Edition, W.H.Freeman Company(2003).
10. William H Elliott & Daphne C Elliott, Biochemistry and Molecular Biology, 4th Edn., Oxford University press (2009).
11. Edward Staunton West, Wilbert R Todd, Howard S Mason, John T Van Bruggen, Textbook of Biochemistry, The Macmillan Company (1966).
12. Sandhya Mitra, Genetic Engineering - Principles and Practice, Mac Millan India Ltd.
13. Geoffrey M Cooper and Robert E Hausman, The Cell - A Molecular Approach, 3rd Edn., Sinauer Associates Inc., (2003).

Web links:

1. www.nature.com/nsmb
2. https://www.genengnews.com/
3. https://onlinelibrary.wiley.com/journal/13652567
4. https://dnalc.cshl.edu/resources/3d/04-mechanism-of-replication-advanced.html
5. https://www.frontiersin.org/journals/immunology
6. https://www.youtube.com/watch?v=bee6PWUgPo8

VI SEMESTER

DSE-1: PRACTICAL VII

Course duration: 16 weeks with 3 hours of lab work per week (1.5 credits)

1. Conductometric titration of strong acid against strong base.
2. Conductometric titration of weak acid against strong base.
3. Conductometric titration of amino acid against strong base.
4. Preparation of acidic and basic buffers and determination of pH using pH meter.
5. Determination of pKa value of amino acid by using pH meter.
6. Determination of pKa value of acetic acid by using potentiometer.

VI SEMESTER

DSE-1: PRACTICAL VIII

Course duration: 16 weeks with 3 hours of lab work per week (1.5 credits)

1. Determination of molar extinction coefficient.
2. Determination of UV spectra of proteins and nucleic acid.
3. Extraction of DNA from coconut endosperm.
4. Estimation of DNA by diphenylamine method.
5. Extraction of RNA from plant source
6. Estimation of RNA by orcinol method.
7. Western blotting
8. Agarose gel electrophoresis for separation of DNA fragments.
9. Separation of proteins by PAGE and SDS-PAGE.

VI SEMESTER

DSE 2: PLANT BIOCHEMISTRY

Course duration: 16 weeks with 3 hours of instruction per week (48 hrs)

Subject Code: 212648

No. of Credits: 3 Credits

Course objectives:

The course is intended for students in plant sciences. The main objective of the course is to understand the mechanism and physiological processes in plants. It focus on the regulation of plant growth, role of various phytohormones, photo systems of plants, nitrogen metabolism, different mechanisms of carbon fixation in the plants, importance of sulfur and its assimilation , secondary metabolites and various types of plant cultures.

Learning outcomes:

Successful completion of this course will provide students knowledge of

- Biochemical pathways that occur in plants
- Laboratory organization of plant tissue culture

UNIT I: **15 hrs**

Introduction to plant cell structure, **3 hrs**

vacuole and tonoplast membrane, cell wall, plastids and peroxisomes.

Photosynthesis and carbon assimilation: 12 hrs

Structure of PSI and PSII complexes, light reaction, cyclic and non cyclic photophosphorylation, Calvin cycle and regulation, C4 cycle and Crassulacean acid metabolism (CAM), photorespiration.

UNIT II: 19 hrs

Nitrogen metabolism: **13hrs**

Biological nitrogen fixation by free living and in symbiotic association, structure and function of enzyme Nitrogenase. Nitrate assimilation: Nitrate and Nitrite reductase. Primary and secondary ammonia assimilation in plants, ammonia assimilation by Glutamine synthetase-glutamine oxoglutarate amino transferase (GS-GOGAT) pathway. Seed storage proteins in legumes and cereals.

Regulation of plant growth: 6hrs

Introduction to plant hormones and their effect on plant growth and development. Regulation of plant morphogenetic processes by light.

UNIT III: 14 hrs

Secondary metabolites: 10 hrs

Representatives alkaloid group and their amino acid precursors, function of alkaloids, examples of major phenolic groups; simple phenylpropanoids, coumarins, benzoic acid derivatives, flavonoids, tannins and lignin, biological role of plant phenolics, classification of terpenoids and representative examples from each class, biological functions of terpenoids.

Plant tissue culture: 4 hrs

Cell and tissue culture techniques, types of cultures: organ and explants culture, callus culture, cell suspension culture and protoplast culture. Plant regeneration pathways: organogenesis and somatic embryogenesis. Applications of cell and tissue culture and somoclonal variation.

Books for References

1. Bob B Buchana, Wilhelm Gruissem and Russell L Jones, Biochemistry and Molecular Biology of Plants, I K International(2007).
2. Taiz and Zeiger, Plant Physiology, 5th Edn., Sinauer Associates Inc(2010).
3. Dey P M and Harborne J B, Plant Biochemistry, Academic Press.
4. Lea P J and Leagood R C, Plant Biochemistry and Molecular Biology, John Wiley and Sons Ltd (1999).
5. Devi P, Principles and Methods Of Plant Molecular Biology, Biochemistry And Genetics, Agrobios (India), (2016) .
6. David L Nelson and Michael M Cox, Lehninger: Principles of Biochemistry, 7th Edn., WH Freeman Publishers(2017).
7. Evans D E, Coleman and Kearns A, Plant Cell Culture, Taylor & Francis (2003).

Web links:

1. https://www.journals.elsevier.com/plant-physiology-and-biochemistry
2 https://www.sciencedirect.com/book/9780123849861/plant-biochemistry
3. https://www.longdom.org/plant-biochemistry-physiology/archive.html
4. https://www.internetchemistry.com/chemistry/plant-biochemistry.php

VI SEMESTER

DSE-2: PRACTICAL VII

Course duration: 16 weeks with 3 hours of lab work per week (1.5 credits)

1. Extraction and assay of Urease from Jack bean.
2. Estimation of carotene in fruits and vegetables.
3. Estimation of ascorbic acid in fruits and vegetables.
4. Estimation of phenols in fruits and vegetables.
5. Estimation of tannins in fruits and vegetables.

VI SEMESTER

DSE-2: PRACTICAL VIII

Course duration: 16 weeks with 3 hours of lab work per week (1.5 credits)

1. Separation and identification of leaf pigments by Paper chromatography.
2. Separation of photosynthetic pigments by TLC.
3. Separation of leaf pigments by column chromatography using silica gel.
4. Culture of plants (explants).
5. Preparation of synthetic seeds.
6. Isolation of protoplast.
7. Callus culture/ Protoplast culture.
8. Organ culture / Embryo / Seed culture.

VI SEMESTER

SEC-1: BIOINFORMATICS

Course duration: 16 weeks with 2 hours of instruction per week (32 hrs)

Subject Code: 212658
No. of Credits: 2 Credits
Course objectives:

The course will provide the basic frame work of Bioinformatics and its significance in biological data analysis. Students get exposed to various tools and methodologies used in multiple sequence alignment, biological databases, data retrieval, phylogenetic analysis and genetic diversity analysis in biological sequences. The course also provides the fundamentals of proteomics and genomics with reference to the structure prediction.

Learning outcomes:

After completion of this course, students will able to

- Understand various computational tools and techniques employed in biological sequence analysis.
- Retrieval of biological data from different database.
- Use of various software for biological data interpretation.
- Construct phylogenetic tree.

Unit 1: 15 hrs

Introduction to bioinformatics 4 hrs

Computer fundamentals - programming languages in bioinformatics, role of supercomputers in biology. Historical background. Scope of bioinformatics - genomics, proteomics, computer aided drug design (structure based and ligand based approaches) and Systems Biology. Applications of bioinformatics.

Biological databases and data retrieval 8 hrs

Introduction to biological databases - primary, secondary and composite databases, NCBI, nucleic acid databases (GenBank, EMBL, DDBJ, NDB), protein databases (PIR, Swiss-Prot, TrEMBL, PDB), metabolic pathway database (KEGG, EcoCyc, and MetaCyc), small molecule databases (PubChem, Drug Bank, ZINC, CSD). Structure viewers (Ras Mol, J mol),

file formats.

Exercises

Sequence retrieval (protein and gene) from NCBI.

Structure download (protein and DNA) from PDB.

Molecular file formats - FASTA, GenBank, Genpept, GCG, CLUSTAL, Swiss-Prot, FIR.

Molecular viewer by visualization software.

Sequence alignment **3 hrs**

Similarity, identity and homology. Alignment – local and global alignment, pairwise and multiple sequence alignments, alignment algorithms, amino acid substitution matrices (PAM and BLOSUM), BLAST and CLUSTALW.

Exercises

BLAST suite of tools for pairwise alignment.

Multiple sequence alignment using CLUSTALW.

Unit II: **17 hrs**

Phylogenetic analysis **3hrs**

Construction of Phylogenetic tree, dendrograms, methods of construction of phylogenetic trees - maximum parsimony, maximum likelihood and distance methods.

Exercise

Generating phylogenetic tree using PHYLIP.

Protein structure prediction and analysis **8 hrs**

Levels of protein structure. Protein tertiary structure prediction methods - homology modeling, fold recognition and *ab-initio* methods. Significance of Ramachandran map.

Exercises

Primary sequence analyses (Protparam).

Secondary structure prediction (GOR, nnPredict).

Tertiary structure prediction (SWISSMODEL).

Protein structure evaluation - Ramachandran map (PROCHECK).

Genomics **6 hrs**

Introduction to genomics, comparative and functional genomics, gene structure in prokaryotes and eukaryotes, gene prediction methods and tools.

Exercise

Gene prediction using GENSCAN and GLIMMER.

Books for References

1. Sharma and Munjal, Text book of Bioinformatics, 1st Edn., Rastogi Publications(2008).
2. Gautham N, Bioinformatics Data bases & Algorithms, Narosa Publishing (2005).
3. Mount D W, Bioinformatics: Sequence and Genome Analysis, Cold Spring Harbor Laboratory Press (2004).
4. Baxevanis A D and Francis Ouellellette B F, Bioinformatics - A Practical Guide to the Analysis of Genes and Proteins, Wiley India Pvt Ltd (2009).
5. Teresa K Attwood and David Parry Smith, Introduction to bioinformatics, Pearson Education (1999).

6. Michael Gromiha M, Protein Bioinformatics: From Sequence to function, Academic Press (2010).

Web links:

1 www.ncbi.nlm.nih.gov
2. www.ebi.ac.uk
3. www.bioinformatics.org/

VI SEMESTER

SEC-2: CLINICAL BIOCHEMISTRY

Course duration: 16 weeks with 2 hours of instruction per week (32 hrs)

Subject Code: 212668
No. of Credits: 2 Credits

Course objectives:

The main objective of this course is to impart students an understanding of clinical biochemistry. Students will learn about the normal constituents of urine, blood and their significance in maintaining health. Students will get acquainted with the role of enzymes in diagnosis of various diseases.

Learning outcomes:

After completion of this course, students will

- Apply biochemical knowledge in normal & diseased states.
- Have knowledge regarding the biological sample collection,analysis of biological fluids for its chemical constituents and to correlate the same in health and disease.
- Develop skills of performing biochemical techniques and interpreting the data.
- Understand the importance of enzymes in diagnosis of diseases.
- Understand the physiological and clinical importance of Haemoglobin.

UNIT I **17 hrs**

Introduction: **1 hr**

Clinical biochemistry: Definition, scope, collection & preservation of biological fluids.

Urine: **6 hrs**

Normal composition of urine – Volume, pH, colour and specific gravity.

Chemical analysis and normal values of the constituents- urea, uric acid, creatinine, pigments and their clinical significance.

Abnormal constituents - glucose, albumin, ketone bodies and bile pigments and their pathological significance.

Blood: **10 hrs**

Normal constituents of blood and their variation in pathological conditions- urea, uric acid, creatinine, glucose, bilirubin, total protein, albumin/globulin ratio.

Blood- RBC, WBC and platelets: structure and functions. Total WBC count, differential count, erythrocyte count, platelet count, glycated haemoglobin, Hb%, ESR. C-reactive protein and subpopulation of blood cells.
Lipid profile: cholesterol, triglycerides, lipoproteins: chylomicrons, VLDL, LDL and HDL. Hypo and lipoproteinemia, atherosclerosis.

UNIT II: **15hrs**

Clinical enzymes: **3 hrs**

Alkaline phosphatase, serum transaminases (SGPT & SGOT),
Cardiac injury profile- CPK and LDH.

Liver disorders: **6 hrs**

Cirrhosis, hepatitis, fatty liver and jaundice (pre, post and hepatic). Estimation of conjugated and total bilirubin in serum (Diazo method). Detection of bilirubin and bile salts in urine (Fouchet's test and Hay's test).

Inborn errors of Metabolism: **6 hrs**

Glycogen storage disease (Von-Gierke's disease), fructosuria, galactosemia, phenylketonuria, alkpatonuria, albinism, Lesch-Nyhan syndrome, Niemann-Pick disease.

Books for References:

1. Sembulingam K and Prema Sembulingam, Essential of Medical Physiology, 3rd Edn., Jaypee Brothers, New Delhi(2005).
2. Geoffrey Beckett, Simon Walker, Peter Rae and Peter Ashby, Clinical Biochemistry, 7th Edn., Blackwell Publishing (2005).
3. Prasad R Manjeshwar, Textbook of Biochemistry For Medical students, 4th Edn., RM Publications, Mangalore, India.
4. Shivananda Nayak B, Manipal Manual of Clinical Biochemistry, 3rd Edn., JAYPEE Brothers, New Delhi(2007).
5. Ranjna Chawla, Practical Clinical Biochemistry: Methods and Interpretations, 4th Edn., Jaypee Brothers, New Delhi(2014).
6. Chatterjea M N and Rana Shinde, Textbook of Medical Biochemistry, 6th Edn., Jaypee Brothers, New Delhi(2005).
7. Satyanarayan U and Chakrapani U, Biochemistry, 3rd Edition, Books and Allied (P) Ltd, Kolkata.
8. Vasudevan D M , Sreekumari S and Kannan Vaidyanathan , Textbook of Biochemistry For Medical Students, 6th Edn., Jaypee Brothers, New Delhi(2011).
9. Lauralee Sherwood, Human Physiology: from Cells to Systems, 5th Edn., Thomson Brooks/Cole.
10. Delvin T M, Text book of Biochemistry with Clinical Correlation, John Wiley & Sons Inc. USA(1982),

Web links:

1 https://www.journals.elsevier.com/clinical-biochemistry
2. https://www.medicalnewstoday.com/articles/322380
3. https://www.springer.com/journal/12291

QUESTION PAPER PATTERN

DSE COURSES

Maximum Marks – 80 **Duration: 3 hours**

Instructions: Answer any TEN questions from Part A and any SIX questions from Part B.

Part -A **2 x 10 = 20**

1. a.
   b.
   c.
   d.
   e.
   f.
   g.
   h.
   i.
   j.
   k.
   l.

Part –B **6 x 10 = 60**

2. a.
   b
3. a.
   b.
4. a.
   b.
5. a.
   b.
6. a.
   b.
7. a.
   b.
8. a.
   b.
9. a.
   b.

****

NOTE: Ten marks questions may be divided in to 6+4 or 5+5 or 3+3+4

QUESTION PAPER PATTERN

SEC COURSES

Maximum Marks – 40 **Duration: 2 hours**

Instructions: Answer any FIVE questions from Part A and any THREE questions from Part B.

Part -A **5x 2 = 10**

1. a.
   b.
   c.
   d.
   e.
   f.
   g.

Part –B **3x 10 = 30**

2. a.
   b
3. a.
   b.
4. a.
   b.
5. a.
   b.
6. a.
   b.

****

NOTE: Ten marks questions may be divided in to 6+4 or 5+5 or 3+3+4

V SEM- SCHEME OF VALUATION FOR PRACTICALS

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3hours for first to fourth semesters and for fifth and six semesters it will be for 4 hours. The student will be evaluated on the basis of skill, comprehension and recording the results.

The student has to compulsorily submit the practical record during C1 and C2. For C3, the record has to be certified by the Head of the Department.

• The student is evaluated for 10 marks in C1 and C2.

• The student is evaluated for 40 marks in C3 as per the following scheme:

Heading	Marks
Experiment	30
Record &Viva	10
Total	40

V SEMESTER

DSE-1: PRACTICAL V

The student is evaluated for 40 marks as per the following scheme

PART- A: Principle and Procedure writing 10 Marks
PART- B: Estimation 20 Marks
PART- C: Record and Viva 10 Marks

PART- A: For Procedure writing, any one of the experiments other than the one given for estimation mentioned in **PART-B** may be given

Principle: 04 marks, Procedure: 06 marks

PART- B: For **Estimation**, any one of the following experiments may be set

1. Determination of iodine value of oil/fat.
2. Determination of saponification value of oil/fat.
3. Extraction and estimation of calcium in ragi.
4. Estimation of reducing sugars (From jams and jellies) by Fehling's method.
5. Extraction and estimation of vitamin – C in biological sample.
6. Extraction and estimation of iron from mustard.
7. Estimation of amino acid by Sorensen's formal titration.
8. Estimation of lactic acid in milk.

Assessment of experimental results

- For **estimation** of amino acid/ Ascorbic acid / lactic acid /calcium

  Principle and Reaction: 03marks

  Preparation of standard solution and Calculation: 04marks

Discrepancy in titre value	Standardization	Estimation
±0.1 - 0.4ml	5m	6m
±0.5 - 0.8ml	4m	5m
±0.9 - 1.2ml	3m	4m
Any other value	2m	3m
Calculation	1m	1m

- For determination of saponification or iodine value of an oil/fat:

Principle and Reaction: 03marks

Discrepancy in titre value	Standardization	Estimation
±0.1 - 0.4ml	6m	7m
±0.5 - 0.8ml	4m	5m
±0.9 - 1.2ml	3m	4m
Any other value	2m	3m
Calculation	2m	2m

- For **estimation** of iron / reducing sugars by Fehling's method

Principle and Reaction: 03marks

Preparation of standard solution: 04marks

Discrepancy in titre value	Marks
±0.1 - 0.4ml	10m
±0.5 - 0.8ml	8m
±0.9 - 1.2ml	6m
Any other value	4m
Graph	3m

- **For gravimetric estimation of sulphate as Barium sulphate**

A known volume of standard solution is to be supplied in 400ml beaker for estimation. Different volumes of stock solution are to be given to the candidate.

Experimental Skill (Precipitation & ignition):5

Calculation: 3

% Error	Marks
±0.1 - 0.2	12m
±0.3 - 0.4	10m
±0.5 - 0.6	6m
Any other value	4m

V SEMESTER

DSE-1: PRACTICAL VI

The student is evaluated for 40 marks as per the following scheme

PART- A: Extraction **10 Marks**
PART- B: Detection of Food adulterants **10 Marks**
PART- C: Comment **10 Marks**
PART- D: Record and Viva **10 Marks**

Assessment of experimental results

PART- A: Extraction **10 Marks**

Any one of the following extractions may be given

1. Extraction of casein from milk
2. Extraction of Starch from Potatoes
3. Extraction of glycogen from liver

Principle and procedure writing – 4 **Marks**
Experiment and Calculation -- 6 **Marks**

PART- B: Detection of Food Adulterants **10 Marks**

Candidate has to write test for the detection of adulterants in any three food items (Edible oil, ghee, tea powder, dhal, pepper seeds and chilli powder)

PART- C: Comment on any one of the following **10 Marks**

1. Determination of moisture content of foods
2. Determination of peroxide value of oil or fat
3. Determination of acid value of oil or fat
4. Impact of pH on food and nutrition

V SEMESTER

BIOCHEMISTRY (DSE-2): PRACTICAL V

The student is evaluated for 40 marks as per the following scheme

PART- A: Qualitative analysis of urine **20 Marks**
PART- B: Comment **10 Marks**
PART- C: Record and Viva **10 Marks**

Assessment of experimental results

PART- A: **5 ×4 =20 Marks**

- Qualitative analysis of normal & abnormal constituents of urine

- Five tests for different normal & abnormal constituents of urine to be performed. Each test carry 4 marks

PART- B: comment **10 Marks**

- Determination of antigen-antibody reaction by immunodiffusion technique
- Assay of SGPT/SGOT
- Alkaline phosphatase
- Photographic demonstration of infectious diseases.

V SEMESTER

DSE-2: PRACTICAL VI

The student is evaluated for 40 marks as per the following scheme

PART- A: Estimation **30 Marks**
PART- B: Record and Viva **10 Marks**

Assessment of experimental results

PART- A:
Any one of the following estimation may be set

1. Titratable acidity in urine
2. Ammonia
3. Urea in blood
4. Blood glucose

5. Conjugated and total bilirubin in serum
6. Creatinine in urine

- **For estimation of urea / Conjugated and total bilirubin/ Blood glucose/ammonia**

  Principle and Clinical significance: **06 marks**

  Procedure for preparation of standard solution (Stock and Working): 03 **marks**

  Tabular column: 05 **marks**

  Graph: 04 **marks**

  Result: 12 **marks**

% Error	Marks awarded
<10%	12
10-15%	10
16-20%	8
Any other value	6

- **For estimation of Titratable acidity**

  Principle and Clinical significance: **07marks**

  Preparation of standard solution and Calculation**: 04marks**

Discrepancy in titre value	Standardization	Estimation
±0.1 - 0.4ml	7m	8m
±0.5 - 0.8ml	4m	5m
±0.9 - 1.2ml	3m	4m
Any other value	2m	3m
Calculation	1m	3m

VI SEMESTER

DSE-1: PRACTICAL VII

The student is evaluated for 40 marks as per the following scheme

PART- A: Biophysical experiments **30 Marks**
PART- B: Record and Viva **10 Marks**

PART- A: Biophysical experiments

Any one of the following experiments may be set

1. Conductometric titration of strong acid against strong base.
2. Conductometric titration of weak acid against strong base.
3. Conductometric titration of amino acid against strong base.
4. Preparation of acidic and basic buffers and determination of pH using pH meter.
5. Determination of pKa value of amino acid by using pH meter.

6. Determination of pKa value of acetic acid by using potentiometer.

Assessment of experimental results

- For conductometric titration (strong acid or weak acid against strong base)

Principle: 3marks
Graph: 4 marks
Calculation: 3 marks

Discrepancy in titre value	Marks
± 0.1 - 0.3ml	20
±0.4 - 0.7ml	15
±0.8 - 1.2ml	11
Any other value	09

- For determination of pKa value(pKa_1 and pKa_2) of an aminoacid using pH meter/ potentiometer

Principle: 4marks
Graph: 6 marks

Discrepancy in titre value	Marks
± 0.1 - 0.3ml	20
±0.4 - 0.7ml	14
±0.8 - 1.2ml	12
Any other value	09

- For preparation and determination of one acidic and one basic buffer solutions using pH meter

Principle: 4marks
Calculation and preparation of acidic buffer: **3 marks**
Calculation and preparation of basic buffer: **3 marks**

Discrepancy in titre value	Marks
± 0.1 - 0.3ml	20
±0.4 - 0.7ml	14
±0.8 - 1.2ml	12
Any other value	09

VI SEMESTER

DSE-1: PRACTICAL VIII

The student is evaluated for 40 marks as per the following scheme

PART- A: Estimation **20 Marks**
PART- B : Principle and procedure writing **10 Marks**
PART- C : Record and Viva **10 Marks**

PART- A: Estimation **20 Marks**

Any one of the following experiments may be set

1. Determination of molar extinction coefficient.
2. Determination of UV spectra of proteins and nucleic acid.
3. Estimation of DNA by diphenylamine method.
4. Estimation of RNA by orcinol method.

PART- B: Principle and procedure **Marks- 10**

Any one of the following experiments may be given

1. Extraction of DNA from coconut endosperm.
2. Extraction of RNA from spinach leaves.
3. Western blotting
4. Agarose gel electrophoresis

Assessment of experimental results

- For determination of molar extinction coefficient

Marks distribution:

Principle: **4 Marks**
Procedure for preparation of standard solution (Stock and Working): **3 Marks**
Calculation : **6 Marks**, Graph: **3 Marks**
Result: 4**Marks** (Less than 10% error)

- For Estimation of DNA and RNA

Marks distribution:

Principle and reaction: 4 **Marks**
Procedure for preparation of standard solution (Stock and Working): 2 **Marks**
Tabular column: 4 **Marks**, Graph: 4 **Marks**
Result: 6 **Marks**

% Error	Marks awarded
<10%	6M
10-15%	5M
16-20%	4M
Any other value	2M

- For determination of absorption max of DNA/RNA and Protein

  Principle: 04 **Marks**

  Procedure for preparation of standard solution: 04**Marks**

  Performance and Report: 12 marks

  Performance: **6 Marks**
  Graph: **4 Marks**
  Report: **2 Marks**

VI SEMESTER

DSE-2: PRACTICAL VII

The student is evaluated for 40 marks as per the following scheme

PART- A: Estimation **30 Marks**
PART- B: Record and Viva **10 Marks**

PART- A: For estimation, any one of the experiments may be given

1. Extraction and assay of urease from Jack bean.
2. Estimation of carotene in fruits and vegetables.
3. Estimation of ascorbic acid in fruits and vegetables.
4. Estimation of phenols in fruits and vegetables.
5. Estimation of tannins in fruits and vegetables.

Assessment of experimental results

- For estimation of carotene/ ascorbic acid/ phenols/ tannins:

Marks distribution:

Principle: **03 Marks**
Procedure for preparation of standard solution (Stock and Working): **02 Marks**
Tabular column: **05 Marks**, Graph: **05 Marks**
Result: **15 Marks**

% Error	Marks awarded
<10%	15
10-15%	12
16-20%	10
Any other value	8

- For extraction and assay of urease from Jack bean

  Marks distribution:

  Extraction: 6 Marks

  Determination of activity of urease

  Principle: **4 Marks**

  Tabular column [Standard and activity]: **6 Marks**

  Performance and Calculation: **7 Marks**

  Graph: **5 Marks** and report: **2 Marks**

VI SEMESTER

DSE-2: PRACTICAL VIII

The student is evaluated for 40 marks as per the following scheme

PART- A: Experiment Marks- 20
PART- B: Comment Marks- 10
PART- c: Record and Viva Marks- 10

PART- A:

Any one of the experiments may be given

1. Separation and identification of leaf pigments by Paper chromatography
2 Separation of photosynthetic pigments by TLC
3. Separation of leaf pigments by column chromatography using silica gel

Assessment of experimental results

- **For identification of plant pigments (** Paper and TLC chromatography)

Principle and procedure writing: **4 Marks**
Development of chromatogram: **8 Marks**
Calculation of Rf values: **4 Marks**
For correct identification: **4 Marks**

- **For separation of plant pigments (**column chromatography)

Principle and procedure writing: **5 Marks**
Performance: **10 Marks**
Report: **5 Marks**

PART- B: Comment **Marks- 10**

- Preparation of synthetic seeds.
- Isolation of protoplast.
- Callus culture
- Organ culture / Embro / Seed culture

List of Examiners

Department of Biochemistry

Sl. No.	Name	Designation	Address for Communication
1	Dr.Anitha S R	Assistant Professor	SBRR Mahajana First Grade College, Mysuru
2	Ms.Ramya V	Assistant Professor	SBRR Mahajana First Grade College, Mysuru
3	Ms.Radhika P	Assistant Professor	SBRR Mahajana First Grade College, Mysuru
4	Smt.Sunitha	Assistant Professor	Department of Biochemistry Maharani's Science College for Women, Mysuru
5	Dr.Shobha N	Assistant Professor	Department of Biochemistry Maharani's Science College for Women, Mysuru
6	Dr.Nanda B L	Assistant Professor	Post Graduate Department of Biochemistry Maharani's Science College for Women, Mysuru
7	Smt.Kavitha K R	Assistant Professor	Post Graduate Department of Biochemistry Maharani's Science College for Women, Mysuru
8	Sri.Bhargava C S	Assistant Professor	Post Graduate Department of Biochemistry Maharani's Science College for Women, Mysuru
9	Dr.Savitha G	Assistant Professor	Department of Chemistry Maharani's Science College for Women, Mysuru
10	Dr.Gulnaz A R	Guest Faculty	Post Graduate Department of Biochemistry Maharani's Science College for Women, Mysuru
11	Dr.Rajesh J	Associate Professor	Yuvaraja's College, Mysuru
12	Smt.Aiyesha Firdouse	Assistant Professor	Yuvaraja's College, Mysuru
13	Dr.Kumar	Assistant Professor	Government College for Women (Autonomous) Mandya
14	Dr.Jyothsna	Assistant Professor	Government College for Women (Autonomous)

	Karanth		Mandya.
15	Dr.Nataraj A	Associate Professor	Karnataka State Open University Mysuru.
16	Dr.Manjunath	Assistant Professor	Department of Biochemistry JSS College of Arts, Commerce and Science, Ooty Road, Mysuru.
17	Dr. Latha B V	Assistant Professor	P G Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysuru.
18	Smt. Hazeera Banu	Assistant Professor	Post Graduate Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysuru
19	Dr.Chethan Kumar	Assistant Professor	Post Graduate Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysuru
20	Smt.Chandra kumari	Assistant Professor	JSS College for Women's Saraswathipuram, Mysuru
21	Dr.W**ethroe Kapfo**	Assistant Professor	SDM & MMK Mahila Maha Vidyalaya Mysuru
22	Dr. Puneeth	Guest faculty	Maharani's Science College for Women, Mysuru
23	Dr.Girish K S	Associate Professor	DoS in Biochemistry Tumkur University, Tumkur
24	Dr.Nagaraju S	Assistant Professor	DoS in Biochemistry, Tumkur University Tumkur.
25	Dr.Sharath Chandra	Assistant Professor	Department of Biochemistry Government Science College, Hassan.
26	Dr.Devaraju	Assistant Professor	DoS in Biochemistry Tumkur University, Tumkur.
27	Dr.Dharmappa K.K	Assistant Professor	DoS in Biochemistry, Chikkalavara Kushalnagar, Kodagu
28	Dr.Pramod S	Assistant Professor	Sahyadri Sceince College, Kuvempu University, Shimoga
29	Dr.Prabhakara B T	Assistant Professor	Sahyadri Sceince College Kuvempu University, Shimoga
30	Smt.Noelin Renita Ross	Assistant Professor	St. Philomena's College, Mysuru
31	Dr.Nagan Gowda	Assistant Professor	Maharani's Science College for women Bangalore
32	Sri.Raghuhar	Assistant Professor	Department of Biochemistry Sarada Vilas College, Mysuru
33	Likith clement	Guest faculty	Department of Biochemistry Sarada Vilas College, Mysuru

34	Smt.Shruthi K P	Guest faculty	Department of Biochemistry Maharani's Science College for women, Mysuru
35	Dr.Manjunath	Guest faculty	Department of Biochemistry Maharani's Science College for women, Mysuru
36	Smt. Pallavi M R	Assistant Professor	SDM & MMK Mahila Maha Vidyalaya Mysuru
37	Dr. Jagadish S	Guest faculty	Yuvaraja's College, Mysuru
38	Smt. Manjula S	Assistant Professor	JSS College for Women's, Saraswathi puram, Mysuru
39	Smt.Umadevi B	Assistant Professor	JSS College for Women's Saraswathi puram, Mysuru
40	Dr. Rakesh K S	Assistant Professor	Yuvaraja's College, Mysuru
41	Dr. Rashmi R	Assistant Professor	Department of Biochemistry, JSS College of Arts, Commerce and Science, Ooty Road, Mysuru

Signature:

1. **(Dr.Anitha S R)**

2. **(Dr.Gopal K Marathe)**

3. **(Mrs.Sajeeda Niketh)**

4. **(Mrs.Rashmi D)**

5. **(Dr. Shyamala Hegde)**

6. **(Dr.Shruthi G)**

7. **(Ms.Ramya V)**

8. **(Mrs.Radhika P)**

Proceedings of BOS Meeting - 2021

Department of Biochemistry

SBRR Mahajana First Grade College Autonomous, Mysore

Bos meeting in Biochemistry held on 24/3/2021 at 10.30am in the Department of Biochemistry, SBRR MFGC Autonomous, Mysore through Online and offline mode

At the onset, the Chairman of BOS in Biochemistry welcomed the membus to the meeting of BOS and briefed about the agenda to be discussed.

The following agenda were placed by the Chairman, which were discussed and resolved as follows :-

Agenda

01. To discuss and approve the syllabus under choice based credit system for V & VI semester Bsc Biochemistry for the academic year 2021 onwards. ⇒ Approved

02. Approval of the panel of Examiners for Bsc Biochemistry examination for the year 2021 onwards ⇒ Approved

03. To discuss about scheme of valuation for practicals and theory examination for the year 2021 onwards ⇒ Approved.

* **Suggestions :**

01. Membus suggested to include the specific methods in DSE practical paper - Molecular basis of Infectious diseases in V sem

02. All the members recommended to include Visit to industries and Research institutions as a part of Curriculum

Sl. NO	MEMBERS	SIGNATURE
01.	Dr. ANITHA · S · R HOD, Department of BIOCHEMISTRY SBRR Mahajana First Grade College (Autonomous) email ID - anithasr.fgc@mahajana.edu.in Mysore Mob NO → 9019989583	Anitha 24/7/2021
02.	Dr. GOPAL · K · MARATHE Professor, DOS in Biochemistry, Manasagangothri University of Mysore, Mysuru gmarathe@sbcglobal.net - email ID Mob NO → 9686423624	24/07/2021
03.	Mrs. SAJEEDA NIKETH Assistant Professor, Department of Biochemistry Government Science College, Bengaluru - 560001 email-ID - sajeedaniketh@gmail.com mob NO → 9945044354	ONLINE
04.	Mrs. RASHMI · D Assistant Professor, Department of Biochemistry Maharani's Science College for Women, Bengaluru-01 email-ID → drashmi13@gmail.com mob NO → 9972023024	ONLINE
05.	Dr. SHYAMALA HEGDE Senior Scientific Officer, Supreme Pharmaceutical Mysore Pvt Ltd. KIADB Industrial area, Nanjungud email ID → shyamalahegde@gmail.com mob. NO → 9480376758	Shyamala Hegde
06.	Dr. SHRUTHI · G Director, GLIMETOMICS Biosolve, Pvt Ltd, Mysuru email ID - shruthigovindaraju@gmail.com Mob NO → 7899284388	

Sl. NO	MEMBERS	SIGNATURE
07.	Ms. RAMYA . V Assistant Professor, Department of Biochemistry SBRR MFGC College Autonomous, Mysore email ID - ramyav.fgc@mahajana.edu.in mob NO - 7760108585	24/7/2021
08.	Mrs. RADHIKA . P Assistant Professor, Department of Biochemistry SBRR MFGC College. Autonomous, Mysore email ID - radhikap.fgc@mahajana.edu.in mob NO - 9986585574	24/07/2021

Department of Biotechnology

Motto

Science for Future

Vision

To pave way for an innovative future and welfare of society by enhancing technical skills in solving real world problems.

Mission

To understand biotechnology at molecular level.

To create skilled researchers to meet practical challenges.

To provide quality education and attain new heights in achieving goals.

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis – Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3: Design and Development of Solutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

List of Board of Studies Members

Sl.No	Category	Name and Designation	Address of Communication	e-Mail & Mobile number
1	Chairperson	Saraswathi.P Assistant Professor & HoD	Department of Biotechnology SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	Ph No. 9663218437 saraswathip.fgc@mahajana.edu.in
2	Nominee by the Vice Chancellor, UOM.	Dr. Geetha, N Associate Professor	Associate Professor, DOS in Biotechnology Manasagangothri, Mysuru	Ph No. 9986203018 geethabiotech.uom@gmail.com
3	Two Experts from Other University	Dr. Sumana K. Associate Professor	Department of Microbiology, JSS Academy of Higher education and Research, Mysore	Ph No 91740390666 mnsumana@jssuni.edu.in
		Dr. Chandrashekar S Assistant Professor	Department of studies in Biotechnology Davangere University, Davengere	Ph No 9164176224 chandru.s@davangereuniversity.ac.in
4	One Person from Industry/ Corporate Sector/Allied Area	Dr. IrfanullaSharieff Chief scientific officer	Triphase pharmaceuticals Pvt Ltd, KSSIDC Industrial estate, hebbal, Mysore-16	Ph No 9845881086 Sharieffirfan17@gmail.com
5	Member	Dr. Aishwarya S Assistant Professor	Dept of Biotechnology SBRR Mahajana First Grade College.	Ph No: 9844250946 aishwaryas.fgc@mahajana.edu.in
6	Alumnus	Ms. Brunda A	Department of Biochemistry, School	Ph No 7259722515

Tutor | of Life sciences, JSS Academy of Higher education and Research, Mysore | brundaa@jssuni.edu.in

Course Structure (NEP 2020)

Discipline Specific Courses (DSC) and Open Elective (OE)
I Year

	Course Type Code and Title	Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Biotechnology – I Semester									
212159	**DSC(1)** Cell Biology and Genetics	4	0	4:0:2 (6 Credits)	20	20	60	2 ½ hours	150
	DSC(1) lab Cell Biology and Genetics	0	4		10	15	25	3 hours	
OE(1)	Biotechnology for Human welfare **21OEBIT101**	3	0	3:0:0 (3 Credits)	20	20	60	2 ½ hours	100
Biotechnology – II Semester									
212259	**DSC(2)** Microbiological Methods	4	0	4:0:2 (6 Credits)	20	20	60	2 ½ hours	150

	DSC(2) lab Microbiological Methods	**0**	**4**		**10**	**15**	**25**	**3 hours**	
OE(2)	Applications of Biotechnology in Agriculture **21OEBIT201**	**3**	**0**	**3:0:0 (3 Credits)**	**20**	**20**	**60**	**2 ½ hours**	**100**

DSC (1) Syllabus for B.Sc. Biotechnology (Basic and Honors)

Semester I

Course Code: 212159

Course Title:

Cell Biology and Genetics (Theory)

Cell Biology and Genetics (Practical)

Course Credits: 06 (4:0:2)

Hours of Teaching/Week: 8 hrs

04 (Theory) + 04 (Practical)

Total Contact Hours: 56 Hours (Theory)

56 Hours (Practical)

Formative Assessment Marks: 40 (Theory)

25 (Practical)

Exam Duration: 2.5 Hours (Theory)

3 Hours (Practical)

Semester End Examination Marks: 60 (Theory)

25 (Practical)

Course Outcomes:

1. Appreciate the concepts of Biotechnology and demonstrate knowledge acquired in Interdisciplinary skills in cell biology, genetics, biochemistry, microbiology, and molecular biology.

2. Describe the ultra structure of cells, structure and function of organelles, cytosol and Cytoskeleton, phases of cell cycle, cell division, reductional division in gametes, molecular mechanisms that regulate life and death of a cell including programmed cell death or apoptosis and differentiation in plants.

3. Comprehend organization and structure of chromosomes, banding techniques and Mendelian laws of inheritance, deviations and exceptions to these laws, types of mutations, genetic or hereditary disorders and concepts in population genetics

Contents Hours

Unit 1

Cell as a Basic unit of Living Systems and Cellular Organelles

Concept, development and scope of biotechnology. Historical perspectives. Discovery of cell, the cell theory. Ultra structure of a eukaryotic cell- (Both plant and animal cells).
Surface Architecture: Structural organization and functions of plasma membrane and cell wall of bacteria and plants.

Cellular Organelles: Structure and functions of cell organelles – Endoplasmic reticulum, Golgi complex, Mitochondria, Chloroplast, Ribosome, Lysosomes, Peroxisomes, Nucleus (Nuclear envelope with nuclear pore complex, Nucleolus, Nucleoplasm and Chromatin). Vacuole, Cytosol and Cytoskeleton structures (Microtubules, Microfilaments and Intermediate filaments).

14

Unit II

Chromosomes and Cell Division

General introduction, discovery, morphology and structural organization – Centromere, Secondary constriction, telomere, chromonema, euchromatin and heterochromatin. Chemical composition and karyotype.
Single-stranded and multi-stranded hypothesis- folded fibre and nucleosome models.
Special type of chromosomes: Salivary gland and lampbrush chromosmes.

Cell Division: Cell cycle, phases of cell cycle. Regulation of cell cycles cell cycle checkpoints, and enzymes involved in regulation. Significance of cell cycle, interphase nucleus, Stages of mitosis and meiosis, achromatic apparatus, synaptonemal complex.
Cell senescence and programmed cell death.

14

Unit III

Genetics

History of genetics: Introduction and brief history of genetics.

Mendelian theory: Laws of inheritance- dominance, segregation, incomplete dominance, co dominance with an example. Law of independent assortment, test cross, back cross.

Gene interaction: Deviations to Mendelian inheritance-

Supplementary factors: comb pattern in fowls, Complementary genes- Flower colour in sweet peas, Multiple factors–Skin colour in human beings, Epistasis– Plumage colour in poultry (13:3), Multiple allelism: Blood groups in Humans- ABO and Rh. **14**

Maternal Inheritance: Plastid inheritance in Mirabilis, petite characters in yeast and Kappa particles in paramecium,

Sex-linked inheritance - Colour blindness, hemophilia, Y-linked traits.

Unit IV

Linkage and Crossing Over

Introduction, chromosome theory of inheritance, coupling and repulsion hypothesis, Linkage in maize and Drosophila. Mechanism of crossing over and its importance, chromosome mapping-linkage map in maize.

Chromosomal variations: A general account of structural and numerical aberrations, chromosomal evolution of wheat and cotton.

Mutations: Types of mutations, spontaneous and induced. Mutagens: Physical and chemical mutagens. Mutation at the molecular level, application of mutation-plants, animals and microbes.

Sex Determination in plants and animals: Concept of allosomes and autosomes, XX- XY, XX-XO, ZW-ZZ, ZO-ZZ types. **14**

Human Genetics: Karyotype in man, inherited disorders – Allosomal (Klinefelter syndrome and Turner'ssyndrome), Autosomal (Down syndrome and Cri-Du-Chat syndrome).

Epigenetics: Plants and humans.

I SEMESTER PRACTICAL PAPER

CELL BIOLOGY AND GENETICS

1. Study and maintenance of simple and compound microscope

2. Use of Micrometer and calibration, measurement of onion epidermal cells and yeast
3. Study of divisional stages in mitosis from onion root tips
4. Study of divisional stages in meiosis in grasshopper testes/onion or Rhoeo flower buds.
5. Mounting of polytene chromosomes
6. Buccal smear - Barr bodies
7. Karyotype analysis - Human and Onion
8. Human – Normal and Abnormal – Down and Turner's syndromes
9. Isolation of Mitochondria and chloroplast and marker enzyme assay.
10. Morphological study of Wild male and female Drosophila and mutants of drosophila (Eye, Wing and body mutation).
11. Counting yeast Cell using haemocytometer.
12. Simple genetic problems based on theory

Text Books / References

1. Molecular Biology of Cell - Bruce Alberts et al, Garland publications.

2. Animal Cytology and Evolution- MJD, White Cambridge University Publications
3. Molecular Cell Biology-Daniel, Scientific American Books
4. Cell Biology - Jack d Bruke, The William Twilkins Company
5. Principles of Gene Manipulations- Old & Primrose, Black Well Scientific Publications
6. Cell Biology-Ambrose &Dorothy M Easty, ELBS Publications
7. Fundamentals of Cytology- L. W. Sharp, McGraw Hill Company
8. Cytology-Willson&Marrison, Reinform Publications
9. Molecular Biology- Christopher Smith, Faber & Faber Publications
10. Cell Biology & Molecular Biology – EDP De Robertis& EMF Robertis, Saunder College.
11. Cell Biology- C.B Powar, Himalaya Publications
12. Basic Genetics- Daniel L. Hartl, Jones &Barlett Publishers USA
13. Human Genetics and Medicine lark Edward Arnold P London
14. Genetics – Monroe W Strickberger, Macmillain Publishers, New York
15. Genes V - Benjamin Lewin, Oxford University Press.
16. Genes I - Benjamin Lewin, Wiley Eastern Ltd., Delhi
17. Genes II - Benjamin Lewin, Wiley & Sons Publications
18. Genes III- Benjamin Lewin, Wiley & Sons Publications
19. Principles of Genetics- Sinnott, L.C. Dunn, Dobzhansky, McGraw-Hill.
20. Genetics – Edgar Altenburg Oxford & IBH publications
21. Principles of Genetics – E.J. Gardener, M.J. Simmons and D.P. Snustad, John Wiley & Son Publications
22. Genetics- P.K.Gupta, Rastogi Publication, Meert, India

Web links:

1. https://www.genome.gov/genetics-glossary/Mitochondria
2. https://www.genome.gov/genetics-glossary/Cell-Cycle
3. https://bio.libretexts.org/Bookshelves/Human_Biology/Book%3A_Human_Biology_(Wakim_and_Grewal)/07%3A_Cell_Reproduction/7.2%3A_Cell_Cycle_and_Cell_Division
4. https://courses.lumenlearning.com/biology1/chapter/control-of-the-cell-cycle/

Course Articulation Matrix: 212159

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	-	-	1	3	2	-	-	-	2	-	2
CO2	3	-	1	1	3	2	-	2	-	2	-	2
CO3	3	2	1	3	3	2	2	2	-	2	-	2
Weighted Average	**3**	**2**	**1**	**1.66**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**2**

OE (1) Biotechnology syllabus for All Programs (Except Science)

Semester 1

Course code: 21OEBIT101	**Course Title: Biotechnology for human welfare**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week: 3 hrs** (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40 (Theory)
Exam Duration: 2.5 Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes:

After successful completion of this Course, students will be able to:

1. Comprehend the biotechnological applications in the industry, environmental management and forensic science.
2. Appreciate contributions of biotechnology to biomedical fields, such as diagnostics, genomics and therapeutics.
3. Describe the applications of Biotechnology in solving major environmental issues related to non-biodegradable materials and production of eco-friendly products as an alternative solution.

Contents — Hours

Unit 1

Industry: Introduction, Scope, branches and applications of Biotechnology.
Biotechnology in industry: Industrial production of alcoholic beverage (wine),

antibiotic (Penicillin), enzyme (lipase).

Applications of biotechnology in food, detergent and pharmaceutical industries — **14**

Unit II

Environment: Application of biotechnology in environmental aspects.

Bioremediation: Degradation organic pollutants, hydrocarbons andagricultural wastes, superbug.

14

Bioplastics and Biofuels.

Unit III

Forensic science and health science: Application of biotechnology in forensic science. Solving crimes of murder and rape, paternity testing and theft using DNA finger

printing techniques.

14

Application of biotechnology in health:

Genetically engineered insulin, recombinant vaccines, gene therapy,

diagnostics-ELISA and PCR, human genome project.

References

1. Crueger W and Crueger A. (2000). Biotechnology: A textbook of Industrial Microbiology.2nd edition. Panima Publishing Co. New Delhi.
2. Patel AH. (1996). Industrial Microbiology. 1st edition, Macmillan India Limited.
3. Stanbury PF, Whitaker A and Hall SJ. (2006). Principles of Fermentation Technology. 2nd edition, Elsevier Science Ltd.
4. Environmental Biotechnology, Pradipta Kumar Mohapatra
5. Environmental Biotechnology – Concepts and Applications, Hans-Joachim Jordening and Jesef Winter
6. B.B. Nanda and R.K. Tiwari, Forensic Science in India: A Vision for the Twenty 1st First Century, Select Publishers, New Delhi (2001).
7. M.K. Bhasin and S. Nath, Role of Forensic Science in the New Millennium, University of Delhi, Delhi (2002).
8. S.H. James and J.J. Nordby, Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton (2005).
9. W.G. Eckert and R.K. Wright in Introduction to Forensic Sciences, 2nd Edition, W.G.Eckert (ED.), CRC Press, Boca Raton (1997).

Web links:

1. https://microbenotes.com/microbial-production-of-penicillin/
2. https://www.news-medical.net/health/Penicillin-Production.aspx
3. https://www.onlinebiologynotes.com/penicillin-production-commercially-by-fermentation-biotechnology/
4. https://courses.lumenlearning.com/boundless-microbiology/chapter/the-microbiology-of-food/#:~:text=Yeasts%20are%20the%20main%20fermentor,to%20alcohol%20and%20carbon%20dioxide.
5. https://www.britannica.com/topic/wine/Fermentation

Course Articulation Matrix

Course Code: 21OEBIT101

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	-	1	-	3	2	-	3	-	2	-	2
CO2	3	2	1	-	3	2	-	3	-	2	-	2
CO3	3	2	-	-	3	2	3	3	-	2	-	2
Weighted Average	**3**	**2**	**1**	**-**	**3**	**2**	**3**	**3**	**-**	**2**	**-**	**2**

DSC (2) Syllabus for B.Sc. Biotechnology (Basic and Honors)

Semester II

Course Code: 212259

Course Title:

Microbiological Methods (Theory)

Microbiological Methods (Practical)

Course Credits: 06 (4:0:2)

Hours of Teaching/Week: 8 hrs

04 (Theory) + 04 (Practical)

Total Contact Hours: 56 Hours (Theory)

56 Hours (Practical)

Formative Assessment Marks: 40 (Theory)

25 (Practical)

Exam Duration: 2.5 Hours (Theory) **Semester End Examination Marks:** 60 (Theory)

3 Hours (Practical) 25 (Practical)

Course Outcomes:

1. Apply the principles of microscopy to study microorganisms
2. Comprehend the importance and different methods of sterilization to carry our aseptic work in microbiology.
3. Analyze the different types of media, culture methods and staining techniques for isolation, characterization of microbes.
4. Classify the types and applications of antimicrobial agents and how to perform anti-microbial assays.

Contents Hours

Unit 1

General Microbiology and Instrumentation

General Introduction to Microbiology: Scope and relevance of microbiology, important contributions by Robert Koch, Leeuwenhoek, Jenner, Pasteur, Flemming, Ivanowsky.

General account on structure, classification and reproduction of bacteria, virus and fungi

Microscopy: Principles and applications of Compound microscope, Dark field microscope, Phase contrast microscope, Fluorescence Microscope, Confocal microscope, Electron Microscopes- TEM and SEM.

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Analytical techniques: Working principles and applications: Centrifuge, Ultracentrifuge, Spectrophotometer, Chromatography: Paper, TLC, Column(adsorption, gel-filtration, ion exchange, affinity), HPLC, GC.

Unit II

Sterilization techniques

Definition of terms-sterilization, disinfectant, antiseptic, sanitizer, germicide, microbicidal agents, micro biostatic agent and antimicrobial agent.

Physical methods of control: Principle, construction and applications of moist heat sterilization- Pasteurization, Boiling, Fractional sterilization-Tyndallization and autoclave. Dry heat sterilization-Incineration and hot air oven.

Filtration – Diatomaceous earth filter, seitz filter, membrane filter and HEPA

Radiation : Ionizing radiation-γ rays and non ionizing radiation- UV rays.

Chemical methods: Alcohol, aldehydes, phenols, halogen, metallic salts, quaternary ammonium compounds and sterilizing gases as antimicrobial agents. **14**

Unit III

Microbiological Techniques **Culture Media:** Components of media, natural and synthetic media, chemically, defined media, complex media, selective, differential, indicator, enriched and enrichment media.
Pure culture methods: Serial dilution and plating methods (pour, spread, streak); cultivation, maintenance and preservation/stocking of pure cultures; cultivation of anaerobic bacteria.

Microbial growth and its measurements: Growth curve, enumeration methods

(turbidity, cell counting, colony counting). **14**

Stains and staining techniques: Principles of staining, Types of stains simple stains.

Unit IV

Antimicrobial Agents
Antibiotic sensitivity testing methods: Disc and Agar well diffusion techniques.

Five modes of action with one example each: Inhibitor of nucleic acid synthesis; inhibitor of cell wall synthesis; Inhibitor of cell membrane function; Inhibitor of protein synthesis; Inhibitor of metabolism.

Antifungal agents: Mechanism of action of Amphotericin B, Griseofulvin

Antiviral agents: Mechanism of action of Amantadine, Acyclovir, Azidothymidine Antibiotic resistance, MDR, XDR, MRSA, NDM-.1

14

II SEMESTER PRACTICAL PAPER

MICROBIOLOGICAL METHODS

1. To study the principle and applications of important instruments (biological safety cabinets, autoclave, incubator, BOD incubator, hot air oven, light microscope, pH meter) used in the microbiology and Biotechnology laboratory.
2. Sterilization of medium using Autoclave and assessment for sterility
3. Sterilization of glassware using Hot Air Oven and assessment for sterility
4. Sterilization of heat sensitive material by membrane filtration and assessment for Sterility.
5. Preparation of culture media for bacteria, fungi and their cultivation.
6. Plating techniques: Spread plate, pour plate and streak plate.
7. Isolation of bacteria and fungi from soil, water and air
8. Study of Rhizopus, Penicillium, Aspergillus using temporary mounts
9. Colony characteristics study of bacteria from air exposure plate
10. Staining techniques: Bacteria– Gram, Negative, Capsule, Endospore staining
11. Fungi – Lactophenol cotton blue staining
12. Water analysis - MPN test
13. Biochemical Tests – IMViC, Starch hydrolysis, Catalase test, Gelatin hydrolysis
14. Bacterial cell motility - hanging drop technique.

References :

1. Atlas RM. (1997). Principles of Microbiology. 2nd edition. Wm C Brown Publishers.
2. Black JG. (2008). Microbiology: Principles and Explorations. 7th Ed., Prentice Hall
3. Madigan MT, Martinko JM and Parker J. (2014). Brock Biology of Micro-organisms. 14th Ed., Prentice Hall International, Inc.
4. PelczarJr MJ, Chan ECS, and Krieg NR. (2004). Microbiology, 5th Ed., Tata McGraw Hill.
5. Srivastava S and Srivastava PS. (2003). Understanding Bacteria. Kluwer Academic Publishers, Dordrecht
6. Stanier RY, Ingraham JL, Wheelis ML and Painter PR. (2005). General Microbiology. 5th Ed., McMillan.
7. Tortora GJ, Funke BR, and Case CL. (2008). Microbiology: An Introduction. 9th Ed., Pearson Education.

Web Links:

1. https://www.sciencedirect.com/journal/journal-of-microbiological-methods
2. http://nhp.mowr.gov.in/docs/HP2/MANUALS/Water%20Quality/5014/-download-manuals-WaterQuality-WQManuals-21MicrobiologicalLa.pdf
3. https://www.ssqllp.com/types-sterilization-method-used-microbiology/
4. https://www.basu.org.in/wp-content/uploads/2020/11/
5. https://www.britannica.com/science/antimicrobial-agent

Course Articulation Matrix: 212259

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	-	-	1	2	-	-	-	-	2	-	1
CO2	3	1	1	1	2	2	-	2	-	2	-	1
CO3	3	1	-	1	2	2	-	1	-	2	-	2
CO4	3	1	2	1	2	2	-	3	-	2	-	2
Weighted Average	**3**	**1**	**1.5**	**1**	**2**	**3**	**-**	**2**	**-**	**2**	**-**	**1.5**

OE (2) Biotechnology Syllabus for All Programs (Except Science)

Semester II

Course code: 21OEBIT201

Course Title: Applications of biotechnology in Agriculture

Course Credits: 03 (3:0:0)

Hours of Teaching/Week: 3 hrs

03 (Theory)

Total Contact Hours: 42 Hours (Theory)

Formative Assessment Marks: 40 (Theory)

Exam Duration: 2.5 Hours (Theory)

Semester End Examination Marks: 60 (Theory)

Course Outcomes:

After successful completion of this Course, students will be able to:

1. Appreciate the concepts and scope of plant tissue culture in entrepreneurship and setting up small scale bioenterprises.

2. Interpret the importance, safety and ethical issues associated with GM crops and applications and advantages of Biopesticides

3. Comprehend production of edible vaccines, Nutraceuticals, antisense technology and bioethical issues.

Contents	**Hours**
Unit 1	
Agricultural Biotechnology	
Concepts and scope of biotechnology in Agriculture. Plant tissue culture, micro propagation, entrepreneurship in commercial plant tissue culture. Banana tissue culture - primary and secondary commercial setups, Small scale bioenterprises: Mushroom cultivation	**14**
Unit II	
Transgenic plants	
The GM crop debate – safety, ethics, perception and acceptance of GM crops GM crops case study : Bt cotton, Bt Brinjal	
Biopesticides: Baculovirus pesticides, Mycopesticides Genetic Engineering for quality improvement: Golden rice, Seed storage proteins, Flavours– capsaicin, vanillin	**14**
Unit III	
Molecular pharming and post harvest protection	
Plants as biofactories for molecular pharming: edible vaccines, plantibodies, nutraceuticals Post-harvest Protection: Antisense RNA technology for extending shelf life of fruits and shelf life of flowers. Biosafety, bioethics and IPR	**14**

References

1. Chrispeels M.J.et al. Plants, Genes and Agriculture-Jones and Bartlett Publishers, Boston.1994.

2. Gamborg O.L. and Philips G.C.Plant cell, tissue and organ culture (2nd Ed.) Narosa Publishing House. New Delhi.1998

3. Hammound J, P McGravey&Yusibov.V. Plant Biotechnology, Springer verlag.2000

4. Heldt. Plant Biochemistry and Molecular Biology.Oxford and IBH Publishing Co. Pvt.Ltd. Delhi. 1997

5. LydianeKyte and John Kleyn.Plants from test tubes. An introduction to

6. Micropropagation (3 rd. Ed.). Timber Press, Portland. 1996

7. Murray D.R. Advanced methods in plant breeding and biotechnology.Panima Publishing Corporation.1996

8. NickoloffJ.A.Methods in molecular biology, Plant cell electroporation and electrofusion protocols-Humana press incorp, USA. 1995.

9. Sawahel W.A. Plant genetic transformation technology.Daya Publishing House, Delhi.1997

10. Gistou, P and Klu, H.Hand book of Plant Biotechnology (Vol. I & II).John Publication.2004

11. Sateesh M.K. 2008. Biosafety and Bioethics. Oxford and IBH Publishers, New Delhi.

WEB LINKS

1. https://www.fda.gov/food/consumers/agricultural-biotechnology
2. https://dbtindia.gov.in/schemes-programmes/research-development/agriculture-animal-allied-sciences/agriculture-biotechnology
3. https://www.isaaa.org/resources/publications/pocketk/26/default.asp
4. https://www.frontiersin.org/articles/10.3389/fpls.2018.01893/full

Course Articulation Matrix: 212260

Course code: 21OEBIT201

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	1	-	1	2	2	2	1	-	2	3	2
CO2	3	1	-	1	2	2	3	3	-	2	1	2
CO3	3	1	-	1	2	2	3	3	-	2	1	2
Weighted Average	**3**	**1**	**-**	**1**	**2**	**2**	**3**	**2.6**	**-**	**2**	**1.6**	**2**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

Assessment Criteria	**Theory**	**Practical**
Continuous Assessment -1(C1)	20	10
Continuous Assessment -2 (C2)	20	15
Semester End Final Exam (C3)	60	25
Total Marks	**100**	**50**

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment,

seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total Marks	**20**	**20**	**40**

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awardedfor Practical Record Maintenance (the ratio is 25 (10 + 15):25).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decidedby the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department.
- Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours.

The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2.

For C3, the record has to be certified by the Head of the Department.

The student is evaluated for 50 marks in C1, C2 and C3 as per the following scheme

Assessment Criteria	Assessment type	Marks
C1	Test Performance	**10**
C2	Test Performance + Record	**(10 + 5) = 15**
C3	Practical Exam	**25**
Total		**50**

PATTERN OF DSC QUESTION PAPER FOR I AND II SEMESTER EXAMINATION

Time: 2 ½ hours **Max Marks: 60**

I. Answer any 6 questions **6X2=12**

a)
b)
c)
d)
e)
f)
g)
h)

II. Answer any one question (UNIT-1) **1X12=12**

2.

3.

III. Answer any one question (UNIT-1I) **1X12=12**

4.

5.

IV. Answer any one question (UNIT-1II) **1X12=12**

6.

7.

V. Answer any one question (UNIT-1V) 1X12=12

8.

9.

Scheme for Practical Examination

I Semester Biotechnology Practical Examination
Cell Biology and Genetics

Maximum Marks 25 **Time: 3 hrs**

1. **Subject the given onion root tip for squash /Grasshopper testis preparation Show different mitotic /meiotic stages. Write the procedure for the same**

Or

Determine the number of cells in the given sample using Haemocytometer. Write the procedure for the same

Or

Calibrate and measure the given organism using ocular and stage micrometer. Write the procedure for the same.

(Conducting experiment- 02 M, Procedure- 02 M, Calculation/ identification of stages- 03 M, Result- 01 M) **08M**

2. **Identify the given Drosophila mutants A and B**
(Identification 01 M, Comment 01M and Diagram 01 M) **06 M**

3. Comment on C and D
(Identification 01 M, comment 01 M) **04 M**

4. Solve the given genetic problem **02 M**

5. Viva Voce **05 M**

Scheme for Practical Examination

II Semester Biotechnology Practical Examination
Microbiology Methods

Max Marks: 25 **Time: 3hr**

1. **Perform gram staining technique** **08 M**
(Performance - 4M, Procedure - 2M, Result - 2M)

2. **Demonstration of pure culture technique (Streak, spread, pour plate)** **04 M**
(Performance - 2M, Procedure - 2M)

3. **Write 2 colony characteristics of an identified colony** **02 M**

4. **Calculate the CFU for the problem** **02 M**

5. **Comment on A and B** **(2 x 2) = 04 M**
(Identification - 1M, Comment -1M)

6. **Viva** **05 M**

PATTERN OF OPEN ELEECTIVE QUESTION PAPER FOR
I AND II SEMESTER EXAMINATION

Time: 2 ½ hours **Max Marks: 60**

I. Answer any 10 questions **10X2=20**

a)
b)
c)
d)
e)
f)
g)
h)
i)
j)
k)
l)

II. Answer any 4 questions. **4X10=40**

2.
3.
4.
5.

6.

7.

Board of Studies

Sl.No.	Name and address	Designation	Signature
1	Ms.Saraswathi P Assistant Professor and Head, Dept of Biotechnology SBRR Mahajana First Grade College Mysuru. Ph No. 9663218437 saraswathip.fgc@mahajana.edu.in	Chairman	Saraswathi P 28/09/2022
2	Dr. Geethu, N Associate Professor, DOS in Biotechnology Manasagangothri, Mysuru Ph No. 9986203018 geethubiotech.uom@gmail.com	Member	Geethu 28/09/22
3	Dr. Dr.Sumana K. Associate Professor Department of Microbiology, JSS Academy of Higher education and Research, Mysore Ph No 91740390666 mnsumana@jssuni.edu.in	Member	K. Sumana 28/9/2022
4	Dr.Chandrashekar S Assistant Professor Department of studies in Biotechnology Davangere University, Davengere Ph No 9164176224 chandru.s@davangereuniversity.ac.in	Member	Not Present
5	Irfanulla Sharieff Chief scientific officer Triphase pharmaceuticals Pvt Ltd, KSSIDC industrial estate,hebbal, Mysore-16 Ph No 9845881086 Sharieffirfan17@gmail.com	Member	Irfanulla 28/09/2022
6	Dr. Aishwarya S Assistant Professor, Dept of Biotechnology SBRR Mahajana First Grade College. Ph No: 9844250946 aishwaryas.fgc@mahajana.edu.in	Member	Aishwarya 28/9/2022
8	Ms. Brunda A Tutor Department of Biochemistry, School of Life sciences, JSS Academy of Higher education and Research, Mysore Ph No 7259722515 brundaa@jssuni.edu.in	Member	Not Present

Department of Biotechnology

Motto

Science for Future

Vision

To pave way for an innovative future and welfare of society by enhancing technical skills in solving real world problems.

Mission

To understand biotechnology at molecular level.

To create skilled researchers to meet practical challenges.

To provide quality education and attain new heights in achieving goals.

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis – Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3: Design and Development of Solutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources f.or examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

List of Board of Studies Members

Sl.No	Category	Name and Designation	Address of Communication	e-Mail & Mobile number
1	Chairperson	Saraswathi.P Assistant Professor & HoD	Department of Biotechnology SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	Ph No. 9663218437 saraswathip.fgc@mahajana.edu.in
2	Nominee by the Vice Chancellor, UOM.	Dr. Geetha, N Associate Professor	Associate Professor, DOS in Biotechnology Manasagangothri, Mysuru	Ph No. 9986203018 geethabiotech.uom@gmail.com
3	Two Experts from Other University	Dr. Sumana K. Associate Professor	Department of Microbiology, JSS Academy of Higher education and Research, Mysore	Ph No 91740390666 mnsumana@jssuni.edu.in
		Dr. Chandrashekar S Assistant Professor	Department of studies in Biotechnology Davangere University, Davengere	Ph No 9164176224 chandru.s@davangereuniversity.ac.in
4	One Person from Industry/ Corporate Sector/Allied Area	Dr. IrfanullaSharieff Chief scientific officer	Triphase pharmaceuticals Pvt Ltd, KSSIDC Industrial estate, hebbal, Mysore-16	Ph No 9845881086 Sharieffirfan17@gmail.com

5	Member	Dr. Aishwarya S Assistant Professor	Dept of Biotechnology SBRR Mahajana First Grade College.	Ph No: 9844250946 aishwaryas.fgc@mahajana.edu.in
6	Alumnus	Ms. Brunda A Tutor	Department of Biochemistry, School of Life sciences, JSS Academy of Higher education and Research, Mysore	Ph No 7259722515 brundaa@jssuni.edu.in

Course Structure (NEP 2020)

Discipline Specific Courses (DSC) and Open Elective (OE)
II Year

	Course Type Code and Title	Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
Biotechnology – III Semester									
222359	**DSC(3)** Biomolecules	4	0	4:0:2 (6 Credits)	20	20	60	2 ½ hours	150
	DSC(3)-Lab Biomolecules	0	4		10	15	25	3 hours	
OE(3)	Nutrition and Health **22OEBIT301**	3	0	3:0:0 (3 Credits)	20	20	60	2 ½ hours	100
Biotechnology – IV Semester									

222459	**DSC(4)** Molecular Biology	**4**	**0**	**4:0:2 (6 Credits)**	**20**	**20**	**60**	**2 ½ hours**	
	DSC(4)-Lab Molecular Biology	**0**	**4**		**10**	**15**	**25**	**3 hours**	**150**
OE(4)	Intellectual Property Rights **22OEBIT401**	**3**	**0**	**3:0:0 (3 Credits)**	**20**	**20**	**60**	**2 ½ hours**	**100**

DSC (3) Syllabus for B.Sc. Biotechnology (Basic and Honors)

Semester III

Course Code: 222359

Course Title:

Biomolecules (Theory)

Biomolecules (Practical)

Course Credits: 06 (4:0:2)

Hours of Teaching/Week: 8 hrs

04 (Theory) + 04 (Practical)

Total Contact Hours: 56 Hours (Theory)

56 Hours (Practical)

Formative Assessment Marks: 40 (Theory)

25 (Practical)

Exam Duration: 2.5 Hours (Theory)

3 Hours (Practical)

Semester End Examination Marks: 60 (Theory)

25 (Practical)

Course Outcomes:

1. Acquire knowledge about types of biomolecules, structure, and their functions
2. Demonstrate the skills to perform bioanalytical techniques
3. Apply comprehensive innovations and skills of biomolecules to biotechnology field

Contents Hours

Unit 1

a) Carbohydrates: Introduction, classification of carbohydrates. Structure, function and properties of carbohydrates.

Monosaccharides- Isomerism and ring structure, sugar derivatives – amino sugars and ascorbic acid.

Disaccharides – Maltose, Lactose and Sucrose
Polysaccharides – Classification as homo and heteropolysaccharides.
Homopolysaccharides - storage polysaccharides (starch and glycogen- structure, reaction and properties), structural polysaccharides (cellulose and chitin-structure, properties). Heteropolysaccharides - glycoproteins and proteoglycans (structure and functions).

14

b) Amino Acids, Peptides and Proteins: Introduction, classification and structure of amino acids. Concept of – Zwitterion, isoelectric point, pKa values. Essential and nonessential amino acids. Peptide bond and peptide. Structural organization of proteins [primary, secondary (α, beta, tertiary and quaternary]. Fibrous and globular proteins, Denaturation and renaturation of proteins.

Unit II

a) Lipids Classification and function of lipids, Saturated and unsaturated fatty acids, properties (saponification value, acid value, iodine number, rancidity), Hydrogenation of fats and oils. General structure and biological functions of - phospholipids, sphingolipids, glycolipids, lipoproteins, prostaglandins, cholesterol, ergosterol.

b) Enzymes Introduction, nomenclature and classification. Enzyme kinetics: Enzyme activity, specific activity, factors influencing enzyme activity (temperature, pH, substrate concentration), metalloenzymes, activation energy and transition state. Cofactors, Coenzymes and their functions (one reaction involving TPP, FAD, NAD). Enzyme inhibition- Irreversible and reversible (competitive, non-competitive and uncompetitive inhibition with an example each) Zymogens (trypsinogen, chymotrypsinogen and pepsinogen), Isozymes (LDH, Creatine kinase and their clinical significance).

14

Unit III

a) Vitamins: Water and fat soluble vitamins, dietary source and biological role of vitamins. Deficiency manifestation of vitamin A, B, C, D, E and K

b) Nucleic acids: Structure of nucleosides, nucleotides in DNA and RNA. Structure and functions of DNA and RNA, Watson and Crick model of DNA and other forms of DNA (A and Z). Types of RNA (rRNA, tRNA, mRNA, snRNA, hnRNA, miRNA), ribozymes.

c) Hormones: Classification of hormones based on chemical nature and mechanism of action. Chemical structure and functions of Glucagon, insulin, Epinephrine, Testosterone and Estradiol. **14**

Unit IV

Bioanalytical Tools

a) Electrophoresis: Principle, procedure and applications of electrophoresis (paper electrophoresis, gel electrophoresis -PAGE, SDS- PAGE & agarose electrophoresis) and isoelectric focusing.

b) Spectroscopy: Colorimetry**,** UV-Vis spectrophotometry, Spectrofluorimetry, IR and NMR spectroscopy, atomic absorption spectroscopy, mass spectroscopy.

c) Radioisotope techniques: Radioactivity, half life, radioisotopes, GM counter, scintillating counting, autoradiography, applications, biosafety. **14**

III SEMESTER PRACTICAL PAPER

BIOMOLECULES

1. Introduction to basic instruments: Principle, standard operating procedure with demonstration of colorimeter, Spectrophotometer, pH meter, Centrifuge, Electrophoresis unit.
2. Definitions and calculations: Molarity, Molality, Normality, Mass percent % (w/w), Percent by volume (% v/v), parts per million (ppm), parts per billion (ppb), Dilution of concentrated solutions. Standard solutions, stock solution, solution of acids. Reagent bottle label reading and precautions.
3. Preparation of standard buffers by Hendersen-Hasselbach equation – Acetate, phosphate, Tris and determination of pH of solution using pH meter.
4. Estimation of maltose by DNS method
5. Determination of α-amylase activity by DNS method
6. Estimation of proteins by Biuret method
7. Estimation of amino acid by Ninhydrin method
8. Extraction of protein from soaked/sprouted green gram by salting out method
9. Separation of amino acids by circular paper chromatography
10. PAGE
11. Determination of iodine number of lipids

Text Books / References

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4. Introductory Practical biochemistry, S. K. Sawhney&Randhir Singh (eds) Narosa Publishing. House, New Delhi, ISBN 81-7319-302-9.
5. Standard Methods of Biochemical Analysis, S. K. Thimmaiah (ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067.
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https://www.britannica.com/science/biomolecule
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https://www.researchgate.net/publication/323551103_UNIT-I_Biomolecules

Course Articulation Matrix: 222359

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	-	-	2	2	1	-	-	-	2	-	-
CO2	2	-	2	2	2	1	-	1	3	1	-	-
CO3	2	2	2	1	2	2	-	2	3	1	1	2
Weighted Average	**2.3**	**2**	**2**	**1.6**	**2**	**1.3**	**-**	**1.5**	**3**	**1.3**	**1**	**2**

OE (3) Biotechnology Syllabus for All Programs (Except Science)

Semester III

Course code: 22OEBIT301

Course Title: Nutrition and Health (Theory)

Course Credits: 03 (3:0:0)

Hours of Teaching/Week: 03 (Theory)

Total Contact Hours: 42 Hours (Theory)

Formative Assessment Marks: 40 (Theory)

Exam Duration: 2.5 Hours (Theory)

Semester End Examination Marks: 60 (Theory)

Course Outcomes:

At the end of the course the student should be able to:

1. Study the concepts of food, nutrition, diet and health
2. To apply the best practices of food intake and dietary requirements
3. Acquire knowledge about various sources of nutrients and good cooking practices

Contents **Hours**

Unit 1

Introduction

Concepts of nutrition and health. Definition of Food, Diet and nutrition, Food groups. Food pyramids. Functions of food. Balanced diet. Meal planning. Eat right concept. Functional foods, Prebiotics, Probiotics, and antioxidants

14

Unit II

Nutrients

Macro and Micronutrients - Sources, functions and deficiency. Carbohydrates, Proteins, Fats – Sources and calories. Minerals –Calcium, Iron, Iodine. Vitamins – Fat soluble vitamins –A, D, E & K. Water soluble vitamins – vitamin C Thiamine, Riboflavin, Niacin. Water–Functions and water balance. Fibre –Functions and sources. Recommended Dietary Allowance, Body Mass Index and Basal Metabolic Rate. **14**

Unit III

Nutrition and Health

Methods of cooking affecting nutritional value. Advantages and disadvantages. Boiling, steaming, pressure cooking. Oil/Fat – Shallow frying, deep frying. Baking. Nutrition through life cycle. Nutritional requirement. Dietary guidelines: Adulthood, pregnancy, lactation, infancy complementary feeding, pre-school, adolescence, geriatric. Nutrition related metabolic disorders- diabetes and cardiovascular disease. **14**

References

1 Sri Lakshmi B, (2007), Dietetics. New Age International publishers. New Delhi
2 Sri Lakshmi B, (2002), Nutrition Science. New Age International publishers. New Delhi
3 Swaminathan M. (2002), Advanced text book on food and Nutrition. Volume I. Bappco
4 Gopalan.C., RamaSastry B.V., and S.C.Balasubramanian (2009), Nutritive value of Indi Foods.NIN.ICMR.Hyderabad.
5 Mudambi S R and Rajagopal M V, (2008), Fundamentals of Foods, Nutrition & diet therapy by New Age International Publishers, New Delhi

Web links:

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https://www.healthline.com/health/food-nutrition/micros-vs-macros#how-it-works
https://mynutrition.wsu.edu/nutrition-basics
https://www.publichealthnotes.com/15-differences-between-macro-nutrients-and-micro-nutrients/
https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/metabolism

Course Articulation Matrix
Course Code: 22OEBIT301

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	2	3	4	5	6	7	8	9	10	11	12

CO1	3	2	-	-	2	2	-	-	-	-	-	1
CO2	-	2	2	-	-	2	-	-	-	-	2	2
CO3	3	-	-	-	2	2	-	-	-	2	2	2
Weighted Average	**3**	**2**	**2**	**-**	**2**	**2**	**-**	**-**	**-**	**2**	**2**	**1.6**

DSC (4) Syllabus for B.Sc. Biotechnology (Basic and Honors)

Semester IV

Course Code: 222459

Course Title:

Molecular Biology (Theory)

Molecular Biology (Practical)

Course Credits: 06 (4:0:2)

Hours of Teaching/Week: 8 hrs

04 (Theory) + 04 (Practical)

Total Contact Hours: 56 Hours (Theory)

56 Hours (Practical)

Formative Assessment Marks: 40 (Theory)

25 (Practical)

Exam Duration: 2.5 Hours (Theory)

3 Hours (Practical)

Semester End Examination Marks: 60 (Theory)

25 (Practical)

Course Outcomes:

At the end of the course the student should be able to:

1. Appreciate the advancements in molecular biology with latest trends.
2. Comprehend the structure, functional relationship of proteins and nucleic acids.
3. Describe the basic cellular processes such as transcription, translation, DNA replication and repair mechanisms.

Contents Hours

Unit 1

DNA as genetic material, Replication and Repair:

Experimental proof of DNA as genetic material (Griffith's, Avery-Mcleod-McCarty, Martha-Chase). Central dogma, Replication of DNA in prokaryotes and eukaryotes– semiconservative mode (Messelson and Stalh experiment), Theta, linear and rolling circle models.
Enzymes and proteins involved in replication-DNA polymerases, helicases, gyrases, ligase, SSB proteins, RNAse H.
The replication complex: Pre-primming proteins, primosome, replisome, unique aspects of eukaryotic chromosome replication, Fidelity of replication.

14

Unit II

Transcription and RNA processing: Transcription in prokaryotes- RNA polymerase, sigma factor, promoter, initiation, elongation and termination.

Transcription in eukaryotes: Eukaryotic RNA polymerases, transcription factors, promoters, enhancers, mechanism of transcription initiation, promoter clearance, elongation and termination.
RNA processing of pre-mRNA: 5' cap formation, polyadenylation, splicing.

14

Unit III

Translation: Genetic code and its characteristics, Wobble hypothesis. Translation- in prokaryotes and eukaryotes- ribosomes, enzymes and factors involved in translation. Activation of amino acids, aminoacyl tRNA synthetases. Mechanism of translation- initiation, elongation and termination of polypeptide chain.
Fidelity of translation, Inhibitors of translation (Chloramphenicol and Tetracycline)

Post translational modifications of proteins (Phophorylation and Methylation).

14

Unit IV

Regulation of gene expression:

Prokaryotic gene regulation- operon concept- regulation of *lac* operon and *trp* operon, attenuation control. Eukaryotic gene regulation- Activators, repressors binding to enhancers, coordinated control (tissue specific gene expression), DNA methylation, chromatin remodeling, Translational control of gene expression-ferritin mRNA regulation, RNAi- miRNA and siRNA. **14**

IV SEMESTER PRACTICAL PAPER
MOLECULAR BIOLGY

1. Estimation of DNA by DPA method
2. Estimation of RNA by Orcinol method
3. DNA isolation from plant/ animal/ microbial sources
4. Concentration and purity of isolated DNA samples
5. Agarose gel electrophoresis of DNA
6. Charts on- DNA replication, transcription, translation, Types of DNA, RNA

References

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7. Karp. G (2002) Cell & Molecular Biology, 3rdEdition, John Wiley & Sons;
8. Molecular Biology - by Freifelder.
9. Genetics, A Conceptual Approach - by Benjamin A Pierce
10. Molecular Biology of The Cell, 6th Edition - By Bruce Alberts
11. Principles of Genetics, 8th ed – by Gardner, M. J. Simmons, D. P. Snustad
12. Genes VIII – By Benjamin LewisGenetic Engineering by N. Arumugam, A. Thangamani, L.M : Saras Publication.
13. Molecular Biology and Genetic Engineering – By P K Gupta.

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2. https://hbmahesh.weebly.com/uploads/3/4/2/2/3422804/dna_estimation_by_dpa_method.pdf
3. https://hbmahesh.weebly.com/uploads/3/4/2/2/3422804/estimation_of_rna_by_orcinol_reaction.pdf
4. https://info.gbiosciences.com/blog/ammonium-sulfate-protein-precipitation-the-key-to-salting-out
5. https://ruo.mbl.co.jp/bio/e/support/method/sds-page.html

Course Articulation Matrix: 222459

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	-	-	-	3	1	-	-	-	2	-	3
CO2	3	1	-	-	3	2	-	-	-	2	-	1
CO3	3	1	1	2	3	2	-	1	-	2	-	1

Weighted Average	**3**	**2**	**1**	**2**	**3**	**1.6**	**-**	**1**	**-**	**2**	**-**	**1.6**

OE (4) Biotechnology syllabus for All Programs (Except Science)

Semester IV

Course Code: 22OEBIT401	**Course Title:** Intellectual Property Rights
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40 (Theory)

Exam Duration: 2.5 Hours (Theory) **Semester End Examination Marks:** 60 (Theory)

Course Outcomes:

At the end of the course the student should be able to:

1. Appreciate the need and scope of Intellectual property rights.
2. Acquire knowledge about filing patents, process, and infringement.
3. Describe about trademarks, industrial designs, and copyright.

Contents Hours

Unit 1

Introduction to Intellectual property rights (IPR):
Genesis and scope. Types of Intellectual property rights - Patent, Trademarks, Copyright, Design, Trade secret, Geographical indicators, Plant variety protection. National and International agencies – WIPO, World Trade Organization (WTO), Trade-Related Aspects of Intellectual Property Rights (TRIPS), General Agreement on Tariffs and Trade (GATT). **14**

Unit II

Patenting, process, and infringement
Basics of patents - Types of patents; Patentable and Non-Patentable inventions, Process and Product patent. Indian Patent Act 1970; Recent amendments; Patent Cooperation Treaty (PCT) and implications. Process of patenting. Types of patent applications: Provisional and complete specifications; Concept of "prior art", patent databases (USPTO, EPO, India). Financial assistance, schemes, and grants for patenting. Patent infringement- Case studies on patents (Basmati rice). **14**

Unit III

Trademarks, Copy right, Industrial Designs
Trademarks- types, Purpose and function of trademarks, trademark registration, Protection of trademark. Copy right- Fundamentals of copyright law, Originality of material, rights of reproduction, industrial Designs: Protection, Kind of protection

provided by industrial design. **14**

References

1. Manish Arora. 2007. Universal's Guide to Patents Law (English) 4th Edition) -Publisher: Universal Law Publishing House
2. Kalyan C. Kankanala. 2012. Fundamentals of Intellectual Property. Asia Law House
3. Ganguli, P. 2001. Intellectual Property Rights: Unleashing the knowledge economy. New Delhi: Tata McGraw-Hill Pub
4. World trade organization.
5. World Intellectual Property organization – www.wipo.int Office of the controller general of Patents, Design & Trademarks.

Web links

1. http://www.wto.org
2. www.ipindia.nic.in
3. https://www.uspto.gov/patents/basics
4. https://sagaciousresearch.com/blog/what-is-patent-cooperation-treaty-pct/
5. https://www.wipo.int/edocs/mdocs/sme/en/wipo_ip_bak_03/wipo_ip_bak_03_www_34147.pdf

Course Articulation Matrix
Course Code: 22OEBIT401

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	-	-	2	2	3	1	3	-	2	1	1
CO2	3	1	1	2	2	3	2	3	-	2	1	1
CO3	3	1	-	2	2	3	-	3	-	2	2	1
Weighted Average	**3**	**1**	**1**	**2**	**2**	**3**	**1.5**	**3**	**-**	**2**	**1.3**	**1**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

Assessment Criteria	Theory	Practical
Continuous Assessment-1 (C1)	20	10
Continuous Assessment-2 (C2)	20	15
Semester End Final Exam (C3)	60	25
Total Marks	**100**	**50**

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment,

seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Programn Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their

own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	**C2 Marks**	**Total Marks**
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total Marks	**20**	**20**	**40**

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the ratio is 25 (10 + 15):25).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department.
- Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours.

The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2.

For C3, the record has to be certified by the Head of the Department.

The student is evaluated for 50 marks in C1, C2 and C3 as per the following scheme

Assessment Criteria	Assessment type	Marks
C1	Test Performance	**10**
C2	Test Performance + Record	**(10 + 5) = 15**
C3	Practical Exam	**25**
Total		**50**

PATTERN OF DSC QUESTION PAPER FOR III AND IV SEMESTER EXAMINATION

Time: 2 ½ hours **Max Marks: 60**

VI. Answer any 6 questions **6X2=12**

a)
b)
c)
d)
e)
f)
g)
h)

VII. Answer any one question (UNIT-1) **1X12=12**

2.

3.

VIII. Answer any one question (UNIT-1I) **1X12=12**

4.

5.

IX. Answer any one question (UNIT-1II) **1X12=12**

6.

7.

X. Answer any one question (UNIT-1V) 1X12=12

8.

9.

Scheme for Practical Examination

III Semester Biotechnology Practical Examination,

Maximum Marks 25 **Time: 3 hrs**

1. **Major Experiment for performance (**Colorimetric Estimation of maltose, α Amylase activity, Proteins, amino acids.
(Calculation- 03M, Procedure -02M, Performance-02M, pH adjustment 01M, repot-01M)

Or

Buffer preparation
(Calculation- 03M, Procedure -02M, Performance-02M, pH adjustment 01M, repot-01M) **8M**

2. Minor experiment/ Calculations using appropriate formulae
(Molarity, Molality, Normality, Mass percent % (w/w), Percent by volume (% v/v), parts per million (ppm), parts per billion (ppb), Dilution of concentrated solutions) **4M**

3. Demonstration of circular paper chromatography & Rf value calculation
(Setting up experiment - 2M, Calculation -2M) **4M**

4. Comment on A and B
(Identification - 1M, Comment -1M) **(2 x 2) = 4M**

5. Viva voce **5M**

Scheme for Practical Examination

IV Semester Biotechnology Practical Examination, Molecular Biology

Maximum Marks: 25 **Time: 3 hrs**

1. **Extraction of DNA from plant source** **08M**
   (Conducting experiment- 4M, Procedure -2M, Result- 1M, Report -1M)

2. **Colorimetric estimation of DNA by DPA method**
   OR
   Colorimetric estimation of RNA by Orcinol method
   (Conducting experiment- 2M, Procedure -2M, Graph-1M, Report -1M) **06M**

3. **Demonstrate the sample loading for Agarose gel electrophoresis** **02M**

4. **Comment on A and B**
   (Identification - 1M, Comment -1M) **(2 x 2) = 04M**

5. **Viva voce** **05M**

PATTERN OF OPEN ELEECTIVE QUESTION PAPER FOR III AND IV SEMESTER EXAMINATION

Time: 2 ½ hours **Max Marks: 60**

III. Answer any 10 questions **10X2=20**

a)
b)
c)
d)
e)
f)
g)
h)
i)
j)
k)
l)

IV. Answer any 4 questions. **4X10=40**

2.
3.
4.

5.
6.
7.

Board of Studies

Sl.No.	Name and address	Designation	Signature
1	Ms.Saraswathi P Assistant Professor and Head, Dept of Biotechnology SBRR Mahajana First Grade College Mysuru. Ph No. 9663218437 saraswathip.fgc@mahajana.edu.in	Chairman	Saraswathi P 28/09/2022
2	Dr. Geetha, N Associate Professor, DOS in Biotechnology Manasagangothri, Mysuru Ph No. 9986203018 geethabiotech.uom@gmail.com	Member	28/09/22
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4	Dr.Chandrashekar S Assistant Professor Department of studies in Biotechnology Davangere University, Davengere Ph No 9164176224 chandru.s@davangereuniversity.ac.in	Member	Not Present
5	Irfanulla Sharieff Chief scientific officer Triphase pharmaceuticals Pvt Ltd, KSSIDC industrial estate,hebbal, Mysore-16 Ph No 9845881086 Sharieffirfan17@gmail.com	Member	28/09/2022
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8	Ms. Branda A Tutor Department of Biochemistry, School of Life sciences, JSS Academy of Higher education and Research, Mysore Ph No 7259722515 brundaa@jssuni.edu.in	Member	Not Present

Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Affiliated to University of Mysore &Accredited by NAAC with A Grade

College with potential for excellence

Jayalakshmipuram, Mysuru - 570 012

Department of Biotechnology

Motto

Science for Future

Vision

To pave way for an innovative future and welfare of society by enhancing technical skills in solving real world problems.

Mission

- *To understand Biotechnology at molecular level.*
- *To create skilled researchers to meet practical challenges.*
- *To provide quality education and attain new heights in achieving goals.*

Syllabi of V and VI Semester

B.Sc. – Biotechnology

Choice Based Credit System – 2021-22

Board of Studies

Sl.No.	Name and address	Designation	Signature
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3	Dr. Hanumanthappa Makari Assistant Professor and Head, Department of Biotechnology, IDSG Government College, Chickamagaluru-577102 Ph No.9964820065 makari.hk@gmail.com	Member	HK Makari 27/07/21
4	Dr. N.G.Raju Assistant Prof and Chairman, Department of Biotechnology, Karnataka State Open University, Mukthagangothri, Mysuru-570006. Ph No: 9448267256 raju_119@yahoo.com	Member	Member not Present
5	Dr.Sudheer Shetty, Chairman, Labland Biotech, KRS Road, Metagalli, Mysuru Ph No: 8050006777 info@lablandbiotechs.com	Member	26.07.2021
6	Dr. Aishwarya S Assistant Professor, Dept of Biotechnology SBRR Mahajana First Grade College. Ph No: 9844250946 aishwaryas.fgc@mahajana.edu.in	Member	Aishya 26/07/21
8	Miss. Vidhyalakshmi A, Alumni Ph No: 9483509802 Vidhyalakshmi.acharya@gmai.com	Member	Member not Present

Se m	Type	Subject Code	Course	Total	L + T + P = Theory	Practical	Total

			Any one of the following				
V	DSE	BIT- 17	Molecular Biology and Genetic Engineering	3 + 0 + 0 = 3	80+20	80+20	200
V	DSE	BIT- 17	Practical 5 & 6	0 + 0 + 3 = 3			
V	DSE	BIT- 27	Immunology and Medical Biotechnology	3 + 0 + 0 = 3			
V	DSE	BIT- 27	Practical 5 & 6	0 + 0 + 3 = 3			
			Any one of the following				
V	SEC	SEC I-57	Intellectual Property Rights.	2 + 0 + 0 = 2	40+10	--	50
V	SEC	SEC II-67	Biophysics and Biochemical Techniques	2 + 0 + 0 = 2			
			Any one of the following				
VI	DSE	BIT – 37	Microbial Technology and Agricultural Biotechnology	3 + 0 + 0 = 3	80+20	80+20	200
VI	DSE	BIT – 37	Practical 7 & 8	0 + 0 + 3 = 3			
VI	DSE	BIT – 47	Environmental Biotechnology and Bioinformatics	3 + 0 + 0 = 3			
VI	DSE	BIT - 47	Practical 7 & 8	0 + 0 + 3 = 3			
			Any one of the following				
VI	SEC	SEC I-57	Molecular Biology Techniques.	2 + 0 + 0 = 2	40+10	--	50
VI	SEC	SEC II -67	Fermentation Technology	2 + 0 + 0 = 2			

Credit Pattern of the Course

L: Lecture; T: Tutorial; P: Practicals

Credit means the unit by which the course work is measured. One hour session of lecture or tutorial per week for 16 weeks amounts to 1 credit. Three hours session of practical's per week for 16 weeks amounts to 1.5 credit per semester.

BSc Biotechnology

V – SEMESTER

Molecular Biology and Genetic Engineering

Choice Based Credit System [CBCS]

Subject Code: BIT-17

	Subject	Hours	Credits
	DSE	**3**	**3**
	SEC	**2**	**2**
Total teaching hours =11hr/week	**Practical**	**6**	**3**

Course objectives

Introducing students to basic concept of molecular biology and genetic engineering. The course will give foundation knowledge related to gene, DNA/RNA their organization, function and processing. It will help students to understand genetic engineering tools like restriction enzymes, cloning, electrophoresis, hybrization and sequencing

Course / Learning outcomes:

- Students will be able to understand the concept of DNA/RNA and genome organization in molecular level in both prokaryotic and eukaryotic organisms. Understanding the molecular events of DNA replication, transcription, translation and gene regulation.
- The path and events of recombinant DNA technology development. DNA manipulation enzymes like restriction endonucleases. The concept of DNA cloning using vectors. Understanding the preparation of gene libraries and probes.
- Principles of Genetic Engineering tools like gel electrophoresis, hybridization and blotting techniques. Basic principles of gene sequencing and gene transfer techniques.

Molecular Biology — Total hours: 24

Unit 1

DNA as genetic material and replication of DNA

Experiments of Griffith, Avery and Hershey & Chase.

Structure and chemistry of DNA – Watson and Crick Model

Prokaryotic DNA synthesis:

Types and functions of prokaryotic DNA polymerases

Semi conservative replication of DNA

7 h

Unit-II

Concept of gene:

Functional units of eukaryotic and prokaryotic gene

Promoter, introns and exons (coding and non-coding DNA)

Regulation of gene expression in prokaryotes:

Importance of gene regulation

Operon concept

Positive and negative regulation (Eg: Lac operon concept)

Transcripton: Coding and noncoding strand,RNA polymerase,Initiation of transcription at promoter sites,elongation and termination.

Inhibitors of transcription (Actinomycin-D,rifamycin)

7 h

Unit-III

Genetic code:

Deciphering genetic code, major features of genetic code, wobble hypothesis, universality of genetic code.

Translation in prokaryotes:

Activation of amino acids, ribosomes, formation of initiation complex, initiation, elongation and termination of protein synthesis.

Fidelity of protein synthesis.

Inhibitors of protein synthesis.(Eg:Tetracycline, Chloramphenicol, Rifamycin)

10h

Genetic Engineering Total hours:24

Unit I:

General introduction and different types of enzymes used in genetic engineering:
Importance, history, concepts and developments of genetic engineering

Enzymes: Restriction endonucleases: Nomenclature and types restriction enzymes, ligases, alkaline phosphatases, polynucleotide kinase, terminal deoxynucleotidyl transferase, S1 nuclease, DNA polymerase, klenow fragment, Taq DNA polymerase, high fidelity polyrmerases, ribonuclease, reverse transcriptase

7 h

Unit II

Gene cloning vectors

Cloning vector: Characteristics and types of vectors.

Importance of plasmids as cloning vectors, different types of plasmids with examples, stability of plasmids, vector map for pUC18, pBR322.

Expression vector:

Components of expression vector

Cloning host: Prokaryotic host (E.coli) and eukaryotic host (Yeast) **7h**

Unit III

Recombinant DNA technology:

Isolation of gene, mRNA

Preparation of complementary DNA .

Preparation of genomic and cDNA libraries,

Probes and hybridization (colony hybridisation)

Genetic engineering techniques:

Gel electrophoresis: Agarose gel electrophoresis, PAGE (SDS and Native)

Blotting techniques: Southern and northern blotting

Gene cloning by PCR

DNA sequencing: Maxam and Gilbert method and Sanger's method

Outline of gene transfer methods (Physical, chemical and biological methods).

10 h

Reference Books

1. Molecular Biology - by Freifelder
2. Genetics, A Conceptual Approach - by Benjamin A Pierce
3. Molecular Biology of The Cell, 6th Edition - By Bruce Alberts
4. Principles of Genetics, 8th ed – by Gardner, M. J. Simmons, D. P. Snustad

5. Genes VIII – By Benjamin LewisGenetic Engineering by N. Arumugam, A. Thangamani, L.M : Saras Publication.
6. **Genetic Engineering - by Sandhya Mitra, McGraw Hill**
7. Molecular Biology and Genetic Engineering – By P K Gupta.

Web links

https://www.jove.com/science-education/coremolbio?utm_source=google&utm_medium=search_emea&utm_campaign=core-mol-bio-Q3-

https://en.wikipedia.org/wiki/Molecular_biology

https://www.nature.com/scitable/topicpage/translation-dna-to-mrna-to-protein-393/

https://ib.bioninja.com.au/standard-level/topic-2-molecular-biology/27-dna-replication-transcri/

https://proteopedia.org/wiki/index.php/DNA_Replication%2C_Transcription_and_Translation

https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/cdna-libraries

https://bio.libretexts.org/Bookshelves/Biochemistry/Supplemental_Modules_(Biochemistry)/3._Biotechnology_1/3.6%3A_cDNA_and_Genomic_Libraries

https://courses.lumenlearning.com/boundless-microbiology/chapter/tools-of-genetic-engineering/

BSc Biotechnology
V – SEMESTER PRACTICAL PAPER

Molecular Biology and Genetic Engineering

Choice Based Credit System [CBCS]

Subject Code: BIT-17

Practical-5

Molecular Biology

1. Preparation of stock solutions for molecular biology
2. Colorimetric estimation of DNA
3. Colorimetric estimation of RNA
4. Determination of Tm value of DNA
5. Determination of purity of DNA

Genetic Engineering

1. Extraction of DNA from plant or animal source
2. Quantification of DNA by spectrophotometry
3. Linearization of plasmid DNA (pUC 18 with Sma I)
4. Gel electrophoresis of circular and linearized plasmid
5. Southern blotting (demonstration)

Practical-6

1. Studying different parts of compound microscope**.**
2. Preparation of Buffers-: Tris-Buffer, Citrate-Buffer and Phosphate-Buffer (Calculation and preparation)
3. Circular paper chromatography for separation of amino acids.
4. Demonstration of PAGE

5. Instrumentation and working of centrifuge
6. Calibration of pH meter
7. Instrumentation and working of spectrophotometer
8. Estimation of absorption maxima using spectrophotometer

BSc Biotechnology

V – SEMESTER

Immunology and Medical Biotechnology

Choice Based Credit System [CBCS]

Subject Code: BIT-27

	Subject	Hours	Credits
	DSE	**3**	**3**
	SEC	**2**	**2**
Total teaching hours=11hr/week	**Practical**	**6**	**3**

Course objectives:

Provides students with the basics of immunology, various organs involved in the immune responses, different types of immunity. Principle of immunization, primary, secondary responses, memory cells, autoimmune disorders and various immune techniques involved in detection of diseases.

To understand the concepts, developments, applications of medical biotechnology, recollect the biotechnological approaches in healthcare and prevention of diseases and to know the novel methods used in the treatment of various diseases.

Course / Learning outcomes:

Students will …

- Learn the basic organization and functioning of the immune system. Distinguish the mechanisms that lead to beneficial immune responses and immune disorders
- Learn the various immuno techniques and their application.

- Learn the principle and concepts in medical biotechnology. Updating the role of biomolecules in healthcare. Understand the advanced developments in medical biotechnology application of various advanced therapeutic methods for the treatment of diseases.

Immunology Total hours: 24

Unit-I

Historical account – Contributions of Edward Jenner and Louis Pasteur
Types of immunity: Innate- mechanisms of innate immunity.
Adaptive – active, passive and adaptive immunity.
Antigens: Definition, antigenicity, epitopes, blood group antigens, haptens.
Antibodies: Definition, types, structure of IgG. **7 h**

Unit-2

Immunization: Passive and active immunization, adjuvants, vaccines, primary and secondary responses.
Cellular basis of immunity: T-cells, B-cells and macrophages, their role in antigen recognition, clonal selection, immunological memory.
Immunological aspects of viral (HIV), bacterial and parasitic infection. **7 h**

Unit-3

Immune disorders: Autoimmune disorders- Grave's disease and systemic lupus erythromatosus. Hypersensitivity and its types.
Immunotechniques: Affinity and avidity, precipitation reaction, immunodiffusion, ELISA, western blotting. **10 h**

Medical Biotechnology Total hours: 24

Unit-I

Vaccines: History and importance of vaccines

Types of Vaccines: Live-attenuated vaccines, **inactivated/killed, s**ubunit, toxoid vaccines. nucleic acid based vaccines: DNA, RNA vaccines and viral vector vaccines.

Production of vaccines using genetically engineered organisms:
E.g., HBV and edible vaccines.
Drawbacks of conventional vaccines, advantages and disadvantages of novel vaccines.

Enzymes in diagnostics Eg: Glucose oxidase, cholesterol oxidase and urease.
Enzyme Immobilization and immobilized enzymes as diagnostic tools Eg: Glucose monitoring kit.
Diagnostic proteins: Eg: AIDS diagnosis. **10hr**

Unit-II

Nucleic acid analysis:
Features of DNA probe and its applications in diagnosis
Eg: Identification of *Mycobacterium tuberculosis* in clinical samples using PCR.
Antibiotics: Introduction, strain development and improvement of strain by genetic engineering

Enzymes in therapy: Eg: Enzyme therapy for myocardial infarction, cystic fibrosis and cancer.
7hr

Unit-III

Hormone therapy: Hormones produced by recombinant DNA technology and their therapeutic applications.
Eg: Production of humulin
Therapeutic proteins: Cytokines as therapeutic proteins
Eg: Preparation of interferon by recombinant DNA technology
Human gene therapy: Definition, differences between somatic versus germline gene therapy, one example each for *ex-vivo (Haemophilia)* and *in-vivo (Cystic Fibrosis)* gene therapy.
Antisense technology: Principle and applications

Transgenic animals and plants for production of biopharmaceuticals **7hr**

Reference Books

1. Immunology, by Barbara Anne Osborne and Janis Kuby; WH Freeman Publication.
2. Immunology by Fathima; Saras Publication.
3. Immunology and Serology by Philip L Carpenter; Saunders Publication.
4. Kuby Immunology by Jenni Punt, Sharon Stranford, Patricia Jones; WH Freeman Publication.
5. A textbook of Immunology and Immunotechnology by B Annadurai; S. Chnd publication.
6. Medical Biotechnology by S N Jogdand; Himalaya Publications.
7. Medical Biotechnology by Pratibha Nallari & V. Venugopal Rao; Oxford University Press.
8. Medical Biotechnology by Judit Pongracz, Mary Keen; Elsevier Health Sciences.

Web links

http://www.biology.arizona.edu/immunology/tutorials/immunology/page2.html

https://www.health.mil/Military-Health-Topics/Health-Readiness/Immunization-Healthcare/Clinical-Consultation-Services/Immunology-Basics

https://www.immunology.org/public-information/what-is-immunology

https://thebiologynotes.com/immunological-techniques/

BSc Biotechnology

V – SEMESTER PRACTICAL PAPER

Immunology and Medical Biotechnology

Choice Based Credit System [CBCS]

Subject Code: BIT-27

Practical-5

Immunology

1. Blood grouping
2. Diffusion test - ODD
3. ELISA

Medical Biotechnology

1. Culturing of antibiotic resistant strains of bacteria and verification for resistance
2. Demonstration of PCR for diagnosis of a disease

Practical-6

1. Studying different parts of compound microscope**.**
2. Preparation of Buffers-: Tris-Buffer, Citrate-Buffer and Phosphate-Buffer (Calculation and preparation)
3. Circular paper chromatography for separation of amino acids.
4. Demonstration of PAGE
5. Instrumentation and working of centrifuge
6. Calibration of pH meter
7. Instrumentation and working of spectrophotometer

8. Estimation of absorption maxima using spectrophotometer

BSc Biotechnology

V – SEMESTER

SKILL ENHANCEMENT COURSE-SEC

Choice Based Credit System [CBCS]

Intellectual Property Rights/ Biophysics and Biochemical techniques

Course objectives

This course is intended to provide basic concepts of biophysics which involves concept of atom, molecules, interaction and bonds. It provides a detailed insight into understanding principles of thermodynamics, reaction kinetics and colligative properties. The syllabus also provides an account of separation techniques, chromatography and principles of microscopy.

The course introduces students to a new subject of intellectual property rights which involves knowledge about safeguarding copyright, patents, trademarks and inventions and research. It also provides an insight into issues and advantages of IPR, commercializing biotechnology related products and licensing.

Course / Learning outcomes

- The students will learn the basic chemical interactions and bonding, different chromatographic, separation techniques and microscopy.
- Students will be able to understand the importance of copyrights, process to obtain them and safeguard their work. They will also learn the real world problems associated with obtaining license, patents and trademarks.

Subject Code: SEC- 57

Intellectual Property Rights **32 hrs**

Unit 1

Overview of intellectual property

Introduction and the need for intellectual property right (IPR) in India: Genesis and development IPR in abroad. Some important examples of IPR. **10 hrs**

Unit 2

Definition of copyright, patents, trademarks, geographical
Indications industrial designs and biological inventions. **10hrs**

Unit 3

Enforcement of intellectual property rights

Infringement of intellectual property rights Enforcement Measures

Emerging issues inintellectual property.

Overview of biotechnology and intellectual property

Biotechnology research and intellectual property rights management licensing and enforcing intellectual property, commercializing biotechnology invention.

Unfair competition: What is unfair competition? relationship between unfair competition and intellectual property laws?

12h

Subject Code: SEC- 67

Biophysics and Biochemical techniques **32 hrs**

Unit 1

Basic biophysics: Structure of atoms and molecules.
Chemical bonds and stabilizing interactions: Covalent bonds, Van der Waals, electrostatic, hydrogen bonding, hydrophobic interaction.

Principles of biophysical chemistry: pH and buffer.
Reaction kinetics (rate of reaction, factors affecting rate of reaction)
Thermodynamics (First and second law of thermodynamics, Gibbs free energy change). colligative properties. **10 hr**

Unit 2

Chromatography: Basic principle of chromatography, principle, procedure and application of- paper chromatography, TLC, gel permeation chromatography, ion-exchange chromatography. HPLC and GC.

Separation techniques: Homogenization, membrane filtration and dialysis, solvent fractionation, centrifugation, electrophoresis: paper electrophoresis, gel electrophoresis, SDS-PAGE, disc gel, gradient gel, isoelectric focusing
Spectroscopy: Electromagnetic spectrum, properties of the electromagnetic radiations. Basic principle and applications of absorption spectroscopy, colorimetry and UV-visible spectrophotometry, fluorescence spectroscopy, circular dichroism, and NMR.
12hr

Unit 3

Microscopy: Resolving power and magnification
Light Microscopy: Bright, dark field and phase contrast microscopy, fluorescence and confocal microscopy.

Electron Microscopy: Working principle, sample preparation and contrast enhancement techniques. Comparison between SEM, STEM, STM.
Atomic Force Microscopy (AFM): Instrumentation and applications. **10hr**

Reference Books

1. Law Relating to Intellectual Property Rights by V K Ahuja.
2. Intellectual Property Rights-Infringement and Remedies by Ananth Padmanabhan.
3. Bioseparations: Principles and techniques by B Sivasankar; PHI Learning Pvt. Ltd.
4. Fundamentals of Light Microscopy and Electronic Imaging by Douglas B. Murphy, Michael W. Davidson.
5. An introduction to Microscopy by Suzanne Bell.
6. Principles and Techniques of Biophysics by Saras Publishing.
7. Essentials of Biophysics by P Narayanan.

Web links

https://libguides.princeton.edu/c.php?g=535242&p=3662273

https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/intellectual-property-rights

https://mrcet.com/downloads/digital_notes/IT/IPR%20final%20Digital%20notes.pdf

https://docplayer.net/186763620-Bioseparations-principles-and-techniques.html

https://www.cliffsnotes.com/study-guides/biology/microbiology/microscopy/types-of-microscopes

BSc Biotechnology

VI – SEMESTER

Microbial Technology and Agriculture Biotechnology

Choice Based Credit System [CBCS]

Subject Code: BIT-37

	Subject	Hours	Credits
	DSE	**3**	**3**
	SEC	**2**	**2**
Total teaching hours=11hr/week	**Practical**	**6**	**3**

Course objectives:

The objective of this course is to understand the basic skills applied in the production of microbial products using fermentation technology.
It gives insight into the microbial growth kinetics and product formation in batch and continuous culture using mathematical models. It also describes the mode of action of microbial biocides and mechanism of biological control of plant diseases.

The course gives insight into the conventional crop improvement techniques and the application of modern biotechnological aspects in it. It describes the application of genetic engineering in producing various transgenic plants and the role of biotechnology in food and dairy industry.

Course / Learning outcomes:

Students will understand

- The different modes of fermentation process, the problems in isolation, strain improvement and growth of microorganisms in industrial processes. The recovery and purification of microbial products through fermentation process.
- The application of kinetic models for the study of growth and product formation in batch and continuous cultures.
- Advantages and disadvantages of chemical pesticides and microbial biocides and also underlying mechanism in biological control of plant diseases.

- The difference between conventional and modern crop improvement techniques and the use of genetic engineering in creation of virus and herbicide resistant plants.
- The use of various enzymes in food and dairy industry.

Microbial Technology — Total hours: 24

Unit-I

Introduction to biotechnological importance of microorganisms
Metabolic pathways involved in microbial products.
Primary and secondary metabolites.
Microbial biomass: Single cell proteins and their applications

Microbial production:
Production of vitamins (Vit-C)
Enzymes (Amylase)
Organic acids (Citric acid)
Amino acids (Glutamic acid)
Polysaccharides (Xanthum gum)
Antibiotics (Penicillin) **7hrs**

Unit-II

Kinetics of microbial growth and product formation:
Batch, fed batch and continuous culture (Turbidostat and Chemostat)
Phases of cell growth in batch cultures and continuous culture.
Monad's equation for batch and continuous culture.

Product formation kinetics
Growth associated (primary) and non-growth associated (secondary) products.
Leudeking-Piert model.
Substrate and product inhibition on cell growth and product formation
Introduction to mathematical models: Unstructured and structured models for growth and product formation. **10h**

Unit-III

Microbial biocides: Pesticides, fungicides and herbicides.
Bacterial bioagent (*Bacillus thuringensis* (Bt)),
Fungal bioagent (*Beauveriabassiana*) and
Viral bioagent (Baculoviruses).

Mechanism of biological control of plant diseases:
Induced resistance, systemic acquired resistance, hypovirulence, competition, antibiosis, mycoparasitism. **7h**

Agricultural biotechnology **Total hours: 24**

Unit-I

Introduction: Conventional crop improvement techniques and their limitations, biotechnology for crop improvement, future prospects of biotechnology for agriculture.

Biological nitrogen fixation: Nitrogen fixing microorganisms, structure of nitrogenase, role of nitrogenase and mechanism of nitrogen fixation, *nif* gene organization, regulation of *nif* gene expression.

7hr

Unit-II

Genetic engineering of crops and plants: Gene transfer techniques for desirable traits in crop plants.
Eg: *Agrobacterium* mediated gene transfer
Direct gene transfer to protoplasts and biolistic gene transfer.
Transgenic plants obtained through gene transfer techniques:
Eg: Bt-cotton (pest resistant), Soybean (herbicide tolerant), Papaya (virus resistance- ring spot).

10hr

Unit-III

Food biotechnology:
Biotechnological approaches in food processing: fruit ripening and its manipulation,
Role of ACC synthase.
Genetically modified foods: Eg: Golden rice and transgenic fish,
Biotechnology in dairy industry: Role of enzymes in dairy industry
Eg: Chymosin in cheese processing
Lactase in ice cream processing
Lipases as flavor enhancer
Protease in yogurt production. **7hr**

Reference Books

1. Fundamentals of Biochemical Engineering by Bailey, J. E. and D. F. Ollis - McGraw-Hill Book Co.
2. Microbial Biotechnology by Alexander N Glazer, Hiroshi Nikaido- Freeman and Company.

3. Biochemical Engineering Principles and Concepts by Syed Tanveer Ahmed Inamdar.
4. Biotechnology by B D Singh
5. Agriculture Biotechnology – by Rajmohan Joshi, Gyan Publishing House.

6. Agriculture Biotechnology – by H D Kumar, Daya Publishing House.
7. Food Biotechnology – by Kalidas Shetty, Anthony Pometto and Robert E. Levin.
8. Dairy Biotechnology – by Sunita Grover, V. K. Batish, V. Padmanabha Reddy.

Web links

https://thebiologynotes.com/immunological-techniques/

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https://www.intechopen.com/chapters/67793

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http://npic.orst.edu/ingred/ptype/biopest.html

https://biocomm.eu/2017/12/18/biopesticide-mode-action-labcoat-guide-pesticides-biopesticides/

https://bio.libretexts.org/Bookshelves/Microbiology/Book%3A_Microbiology_(Boundless)/5%3A_Microbial_Metabolism/5.15%3A_Nitrogen_Fixation/5.15E%3A_Genetics_and_Regulation_of_N%E2%82%82_Fixation

https://www.biologydiscussion.com/nitrogen-fixation/biological-nitrogen-fixation-and-its-genetic-engineering-a-close-look/11857

https://www.nature.com/scitable/knowledge/library/transgenic-animals-in-agriculture-105646080/

https://www.ncbi.nlm.nih.gov/books/NBK217998/

https://www.biologydiscussion.com/gene/gene-transfer/methods-of-gene-transfer-6-methods/9826

BSc Biotechnology

VI – SEMESTER PRACTICAL PAPER

Microbial Technology and Agriculture Biotechnology

Choice Based Credit System [CBCS]

Subject Code: BIT-37

Practical-7

1. Identification of important microorganisms relevant to biotechnology: *E.coli, Saccharomycescerevisiae, Spirulina*
2. Demonstration of commercial microbial products – single cell proteins, microbial flavours
3. Entrapment of yeast for enzyme production
4. Preparation of wine
5. Estimation of alcohol by specific gravity method
6. Photographic demonstration of transgenic crop plants/animals and agriculture
7. Preparation of bio control formulations
8. Bio-fertilizer formulation
9. In-vitro antagonism

Practical-8

1. Basic design of fermentor

2. Production of ethanol from fermentation and estimation of alcohol

   Eg: Fermentation of sugar by yeast

3. Effect of pH and temperature on the growth of yeast cells during fermentation

4 .Cell disruption technique: Osmotic Shock

5. Centrifugation: Calculation of 'g' and RPM

6. Quantitative estimation of citric acid

BSc Biotechnology

VI – SEMESTER

Environmental Biotechnology and Bioinformatics

Choice Based Credit System [CBCS]

Subject Code: BIT-47

	Subject	Hours	Credits
	DSE	**3**	**3**
	SEC	**2**	**2**
Total teaching hours =11hr/week	**Practical**	**6**	**3**

Course objectives:

This course includes several topics pertaining with solutions to certain difficult environmental problems such as, detection of pollutants, elimination and treatment of toxic wastes, development of environment friendly products and improved energy sources. Application of biotechnology in environmental management and biofuel production.

The course introduces the student to the basic aspects of bioinformatics. Introduction to nucleic acid and protein data bases, evolutionary studies using phylogenetic analysis. The course also gives an insight into data retrival, sequence alignment using various bioinformatics tools. Analyzing primary, secondary structure and folding classes of proteins with an introduction to microarray technology.

Course / Learning outcomes:

Students will

- Understand the damage caused to the environment by the use of various toxic chemicals.
- Learn the use of biotechnological methods to detect the pollutants, degradation of xenobiotic compounds , waste treatment and production of environmental friendly products.

- Learn the use of bioinformatics tools to understand DNA/RNA/Protein sequences, retrieve data and analyse their structures. Able to analyse evolutionary relationships between organisms belonging to different species.
- Compare gene sequences from different organisms using sequence alignment tools

Environmental Biotechnology Total hours: 24

Unit-I

Introduction: Major issues in environmental pollution – role of biotechnology to solve the problems.

Biotechnological methods of pollution detection:

General bioassay

Cell biological methods

Immunoassays

DNA-based methods and use of biosensors.

Biotechnological methods in pollution abatement: Reduction of CO_2 emission. Waste water treatment – conventional wastewater treatment, use of algae, bioreactors for waste-water treatment.

7 h

Unit-2

Current status of biotechnology in environment protection.

Bioremediation: Concepts and principles, bioremediation using microbes, in situ and ex situ bioremediation, biosorption and bioaccumulation of heavy metals.

Xenobiotics: Degradation by microorganisms with reference to pesticides, herbicides, poly aromatic hydrocarbons.

Solid waste management: Waste as a source of energy, biotechnology in paper and pulp industry, production of oil and fuels from wood waste, anaerobic and aerobic composting, vermiculture.

Biotechnology and Biodegradation: Degradation of xenobiotic compounds- simple, aromatic, chlorinated hydrocarbons.

Biohydrometallurgy and biomining: Bioleaching, biosorption, oil degradation, creation of superbug.

10 h

Unit-3

Treatment of Industrial wastes:

Dairy, pulp, dye, leather and pharmaceutical industries.

Genetically engineered microbes for waste treatment

Eco-friendly bio-products:

Biomass resources, Biogas, alcohol as fuel, biological hydrogen generation, biodegradable plastics.

7 h

Bioinformatics Total hours: 24

Unit 1

Internet Basics:
Introduction to Bioinformatics, internet basics, connecting to the internet and World Wide Web.

Bioinformatics: Introduction to databases
DNA sequence databases Eg: Genbank, EMBL, DDBJ
Protein sequence databases Eg: PIR-PSD and SWISSPROT.
Evolutionary Analysis: Dendrograms and Phylogenetic Analysis
Mutation Databases Eg: Mammalian gene mutation database, human genome mutation database and OMIM.
Literature databases (searching and downloading) Eg: PubMed. **7hr**

Unit II

Information retrieval and sequence alignment:
Database similarity searching Eg: FASTA and BLAST
Sequence alignment: Pairwise and multiple sequence alignment
Pairwise Alignment Eg: Global alignment and local alignment
Multiple Sequence Alignment Eg: ClustalW, ClustalX, Multalin
Predictive methods using protein sequences: Proteomics
Protein identity based on composition, physical properties based on sequence, motifs and patterns.

Secondary structure of proteins, folding classes and tertiary structure**.** **10hr**

Unit III

Genomics: genome analysis, bacterial genome sequence project and human genome project.

Microarray technologies: Expression, profiles and protein functions and applications. **7hr**

Reference Books

1. Environmental Biotechnology by Foster C F, John ware D A; Ellis Horwood Limited.
2. Bioprocess Technology: Fundamentals and Application by S O Enfors and L Hagstrom; Stockholm Publication.

3. Environmental Biotechnology by Indu Shekhar Thakur; International Publishing House Pvt. Limited.
4. Biotechnology: A text book of Industrial Microbiology by T D Brock; Samaeur Associates.

5. Environmental Biotechnology by M.H. Fulekar;
6. Essential Bioinformatics by Jin Xiong; Cambridge University Press.
7. Bioinformatics: Methods and Application: (Genomics, Proteomics and Drug Discovery) by S. C. Rastogi, Namita Mendiratta, Parag Rastogi.
8. Bioinformatics: Sequence and genome analysis by David W Mount; Cold Spring Harbor.

Web links

http://www.eolss.net/sample-chapters/c17/e6-58-09-08.pdf

https://www.nap.edu/read/2131/chapter/4

https://www.ncbi.nlm.nih.gov

https://prosite.expasy.org/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1347426/

https://bmcbioinformatics.biomedcentral.com/articles/10.1186/1471-2105-5-128

BSc Biotechnology

VI – SEMESTER PRACTICAL PAPER

Environmental Biotechnology and Bioinformatics

Choice Based Credit System [CBCS]

Subject Code: BIT-47

Practical-7

Total Marks: 40

1. Analysis of sewage water for
- BOD
- Toxic chemicals
- Microbial flora

2. Identification of biological indicators of water

Practical-8

Total Marks: 40

1. Basic design of fermentor

2. Production of ethanol from fermentation and estimation of alcohol

   Eg: Fermentation of sugar by yeast

3. Effect of pH and temperature on the growth of yeast cells during fermentation

4. Cell disruption technique: Osmotic Shock

5. Centrifugation: Calculation of 'g' and RPM

6. Quantitative estimation of citric acid

BSc Biotechnology

VI – SEMESTER

SKILL ENHANCEMENT COURSE-SEC

Choice Based Credit System [CBCS]

Molecular Biology Techniques/ Fermentation Technology

Course objectives

The Course Introduces the student to fermentation process, types of fermentation, design of a fermentor. It provides an insight about scaling up of fermentation process, microbial biomass production, upstream and downstream processing. Various techniques involved in downstream processing.

The course deals with an understanding of vectors, types of vectors, characteristics of an ideal vector, molecular probes, preparation and labeling of probes, polymerase chain reaction (PCR) and its types and their application, gene mapping, isolation and sequencing of gene.

Course / Learning outcomes:

Students will …

- ➢ Know the role of the several molecular tool applied in gene cloning for construction of recombinant molecules (DNA and Vectors)
- ➢ Several techniques involved in production of cDNA and genomic library and primer synthesis
- ➢ Classification and properties of an ideal plasmid, plasmid as cloning vector
- ➢ Different types of cloning vectors used in genetic engineering
- ➢ Understand isolation of gene and different methods of gene sequencing

Subject Code: SEC II -57

Molecular Biology Techniques **Total: 32 hrs**

Unit I

Recombinant DNA and molecular probes:

Recombinant DNA: Restriction enzymes for cloning.

Technique of restriction mapping

Construction of chimeric DNA

Cloning in plasmid, phage and cosmid vectors.

Hosts for cloning vectors.

Molecular probes: Preparation, labelling, amplification, techniques of molecular probing, applications of molecular probes, molecular markers. **10 hrs**

Unit-II

Gene analysis and library construction

Gene analysis techniques: Nucleic acid hybridization, southern and northern blotting, mapping genes to chromosomes and *in situ* hybridization.

Polymerase chain reaction- Types, RAPD, AFLP,RT-PCR, realtime PCR, microsatellites, applications.

Gene libraries: Construction and screening of genomic and cDNA libraries, chromosome walking, Chromosome Jumping, BAC libraries. **10 hrs**

Unit-III

Isolation, sequencing and synthesis of genes:

Isolation of Gene: Isolation of genes for specific proteins, proteins having tissue-specific expressions, isolation of genes using DNA or cDNA probes.

Sequencing of Gene:

Sequencing by Maxam and Gilberts methods,

Sangers dideoxy method,

Automatic DNA sequencing by PCR

DNA sequencing through transcription,

Sequencing using DNA chips

Sequencing by DE-MALDI-TOF-MS.

Gene Synthesis: Gene synthesiser, gene amplification using PCR. **12 hr**

Subject Code: SEC II -67

Fermentation Technology **Total: 32 hrs**

Unit-I

General introduction:

History and scope of fermentation technology. Fermentation methodology

Types of fermentors; External recycle airlift fermentor, internal recycle airlift fermenters, tubular tower fermentor, nathan fermentor, stirred fermentor.

Design of bioreactors: control systems, operation, optimization, control and monitoring of variables such as temperature, agitation, pressure, pH, online measurements and control**,** use of biosensors in bioreactors. **12 hours**

Unit II

Types of fermentation process: Batch, fed Batch and continuous.

Transport phenomena in bioprocess: Scale up of bioreactors, mass transfer resistance, oxygen transfer coefficients, biological heat transfer, heat transfer coefficients.

Categories of fermentation technology: Microbial biomass production

Microbial metabolite production: Primary and secondary metabolites, microbial enzymes, bioconversion and biotransformation with two examples each. **10 hours**

Unit-III

Downstream processing of biologicals: Upstream and downstream processing.

Separation of cells: Foam separation, flocculation, filtration, centrifugation, mechanical and non-mechanical methods, membrane filtration, ultra filtration and reverse osmosis, chromatographic techniques, absorption, spray drier, drum dryers, freeze dryers.

10 hours

Reference Books

1. Genes VIII – by Benjamin Lewis
2. Genetic Engineering by N. Arumugam, A. Thangamani, L.M : Saras Publication
3. **Genetic Engineering - by Sandhya Mitra, McGraw Hill**

4. Molecular Biology and Genetic Engineering – By P K Gupta.
5. Principles of Fermentation Technology by Peter F. Stanbury, Allan Whitaker, Stephen J. Hall.
6. Fundamentals of Biochemical Engineering – By Bailey, J. E. and D. F. Ollis - McGraw-Hill Book Co.
7. Bioprocess technology: modelling and transport phenomena; Oxford Publishing.
8. Bioprocess Engineering by Shule and Kargi ; Prentice Hall.

Web links

https://www.cheric.org/files/education/cyberlecture/e200402/e200402-901.pdf

https://www.sathyabama.ac.in/sites/default/files/course-material/2020-10/UNIT-V_11.pdf

https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/cdna-libraries

https://bio.libretexts.org/Bookshelves/Biochemistry/Supplemental_Modules_(Biochemistry)/3._Biotechnology_1/3.6%3A_cDNA_and_Genomic_Libraries

https://courses.lumenlearning.com/boundless-microbiology/chapter/tools-of-genetic-engineering/

PATTERN OF DSE QUESTION PAPER FOR V AND VI SEMESTER EXAMINATION

Time: 3 hours **Max Marks: 80**

XI. Answer any 5 questions from part A and B **12X5=60**

PART-A

1.
2.
3.

PART-B

4.
5.
6.

XII. Answer any 10 questions from part-C **10X2=20**

PART-C

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

PATTERN OF SEC QUESTION PAPER FOR V AND VI SEMESTER EXAMINATION

Time: 2 hours **Max Marks: 40**

I. Answer any 3 questions from part-A **3X10=30**

PART-A

1.
2.
3.
4.
5.

II. Answer any 5 questions from part-B **2X5=10**

PART-B

1.
2.
3.
4.
5.
6.
7.

Scheme of Evaluation for Practical Examination

C1 and C2 are internal tests to be conducted during the 6th and 8th week of semester. The student is evaluated for 10 marks in C1 and C2 .The marks scored is then normalised for 5. The students have to compulsorily submit the practical record during C1 and C2.
For C3, the record has to be certified by the head of the department.

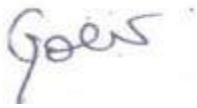
C3 is the final practical examination which is to be conducted for 80 marks. It consists of 2 parts, Part-A and Part-B. Examination for both the parts should be completed in 4 hours. Each part is evaluated for 40 marks as per the following scheme. The student will be evaluated on the basis of skill, comprehension and recording the results.

Heading	Marks
Experiment	30
Record	05
Viva-voce	05

Department of Biotechnology
Approved List of Examiners

Sl. No.	Name	Designation	Address for Communication
1	Saraswathi.P	Asst Professor and Head	SBRR Mahajana First Grade College, Mysuru
2	Dr. Ranjini P	Asst Professor	Maharani's Science College for women, Mysuru
3	Dr. P.H. Thejaswini	Asst Professor	Maharani's Science College for women, Mysuru
4	Smt.Umme Najma	Asst Professor	Maharani's Science College for women, Mysuru
5	Sri. Yadhunandan C	Asst Professor	Maharani's Science College for women, Mysuru
6	Smt Padmavathi M	Asst Professor	Maharani's Science College for women, Mysuru
7	Dr. A.S. Zareena	Asst Professor	Teresian College, Mysuru
8	Smt.Nazeeya Habeeb, M	Asst Professor	St. Philomena's College, Mysuru
9	Sri. Abhijith M Singh	Asst Professor	JSS College for Women (Autonomous), Mysuru
10	Smt.Uma, S	Asst Professor	JSS College, Ooty Road, Mysuru.
11	Dr. M.K. Mahesh	Asst Professor	Yuvaraja's College, Mysuru
12	Dr. K Krishna	Asst Professor	Yuvaraja's College, Mysuru
13	Sri. Nijalingu	Asst Professor	Bharathi College, Bharathi Nagara, K M Doddi
14	Smt. Maheshwari, M S	Asst Professor	JSS College for Women(Autonomous), Mysuru
15	Smt Shwetha S	Asst Professor	JSS College for Women (Autonomous), Mysuru
16	Dr. Saritha V	Asst Professor	JSS College for Women (Autonomous), Mysuru
17	Dr.Vinay Raghavendra	Asst Professor	Teresian College, Mysuru
18	Dr.Brijesh	Asst Professor	MMK and SDM college,Mysuru

19	Dr. Rashmi K C	Asst Professor	Yuvaraja's College,, Mysuru
20	Mr. Narayanappa, M	Asst Professor	Govt Science College, Hassan
21	Smt. Latha, K	Asst Professor	Govt Science College, Hassan
22	Mr. Altaf Hussain	Asst Professor	Govt Science College, Hassan
23	Mr. Abhilash H S	Asst Professor	Govt Science College, Hassan

Members	Signature
Saraswathi.P	
Dr.Geetha.N	
Dr.Hanumanthappa Makri	
Dr.Sudeer Shetty	
Dr. Aishwarya.S	

Mahajana Education Society (R.)

Education to Excel

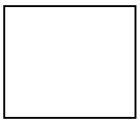
SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF BUSINESS ADMINISTRATION

UG ✓

PG 

NEP Syllabi for I and II Semester BBA 2021-22

DEPARTMENT OF BUSINESS ADMINISTRATION

Motto

TO CREATE BUSINESS LEADERS WITH
SOCIAL RESPONSIBILITY

Vision

To create and develop entrepreneurs who exhibit professionalism, accountability, transparency, human values and uphold Indian heritage in high esteem.

Mission

- Giving practical orientation to entrepreneurial ability.
- Giving professional exposure and building up leadership ability by organizing seminars, workshops, management fests and to make students participate in other similar activities.
- Make students to understand the importance of social responsibility in the corporate governance.
- Giving exposure on Indian ethos to future business leaders.

Programme outcomes for Business Administration

POs	Programme Outcomes (POs)
PO1	**Domain knowledge: Acquire** knowledge of management theories and practices with special focus on professional accounting and finance.
PO2	**Problem analysis:** Identify, formulate and analyze complex business problems in a structured approach to focus upon real issues.
PO3	**Design/development of solutions:** Developing solutions by using critical thinking and analytical reasoning with appropriate qualitative, quantitative techniques and software applications in solving business and research problems.
PO4	**Investigation and research:** Implementation of research methods to investigate specific business problems and draw conclusions.
PO5	**Use of modern techniques/tools**: Ability to analyze and interpret data using mathematical, statistical, ICT and risk management techniques to solve business problems.
PO6	**Business and Society**: Entrepreneurs/Managers with socio-economic value system.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and channelize inclination towards sustainable development.
PO8	**Moral and Ethical values**: Assimilate ethical, value based leadership skills and moral principles.

PO9 **Individual and Team work:** Ability to perform as an individual or leader in diverse settings.

PO10 **Communication and leadership skills:** Harness communication and leadership skills effectively to adapt to the growing business world.

PO11 **Project management and Finance:** Design methods and process; apply skills and knowledge to complete projects in accordance with project acceptance criteria and financial considerations.

PO12 **Lifelong Learning**: Evolve and improve as an individual by updating knowledge to enable oneself to thrive in social and professional life.

OBJECTIVES

1. To develop the skills required for the application of business concepts and techniques learnt in the classroom at the workplace.
2. To provide competent and technical skills personnel to the industry in the area of Marketing, Finance, Human Resource, Data Analytics, Retailing and Logistics And Supply Chain Management. To enhance the employability skills of the management students.
3. To enhance the capability of the students to improve their decision-making skills.
4. To encourage entrepreneurship among students pursuing education in the field of Business Administration.

5. To empower students for pursuing professional courses like MBA, Chartered Accountancy, Company Secretary, etc.,

6. To ensure holistic development of Business administration students

LIST OF BoS MEMBERS

Sl. No.	Category	Name Smt./Sri	Designation	Address for Communication	E-mail and Mobile No.
1	HoD & Chairman	Dr.Shyla S	Assistant Professor	SBRR Mahajana First Grade College, Mysore	shylas.fgc@mahajana.edu.in 9845859475
2	Faculty Members	1. Dr. Manjunath V	Assistant Professor	SBRR Mahajana First Grade College, Mysore	vmanjunath.joge@gmail.com 9900306941
		2. Dr.Anita B R	Assistant Professor	SBRR Mahajana First Grade College, Mysore	anitaprapti@gmail.com 9901114867
		3. Sunil.N	Assistant Professor	SBRR Mahajana First Grade College, Mysore	sunil9284@gamil.com 9900148051
		4. Dr. Nirmala.N	Assistant Professor	SBRR Mahajana First Grade College, Mysore	nirmalamysore223@gmail.com 7483907737
3	Two Experts from external university	1. Prejna.N. Pai	Assistant Professor	Jain Deemed-to-be-university Bangalore	prejna@gmail.com 9900212911
		2. Sunayana	Assistant Professor & HOD	Amritha school of Arts& Science, Mysore	sunayanadiger@gmail.com 9880980506
4	Nominee by the Vice Chancellor	Dr. R Mahesh	Associate Professor	DoS in Management BIMS, Manasa Gangothri, Mysore	mahesh@bims.uni-mysore.ac.in 9886639536
5	Two Person from	1. Rajesh R	Chartered Accountant	B S Ravi kumar & Associates Chartered Accountants,	rajesh@bsra.in 9448229994

	Industry /Corporate Sector / Allied area	2. Lokesh V	Managing Director & CEO	Mysore Innomantra consulting Pvt. Ltd. Bangalore	lokeshv@innomantra.com 9845272555
6	Alumnus	Tejasvi Nathan	Vice President, HR	Swiss Re Global Business solutions India Pvt. Ltd., Bangalore	tejasvinathan@gmail.com 9900084170

Course Structure (NEP 2020)

Discipline Specific Course (DSC), Open Elective (OE)

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
				I Semester					
DSC (1) 214129	Management Principles& Practice	4	0	4:0:0	20	20	60	2 ½ hrs.	100
DSC (2) 214130	Fundamentals of Business Accounting	4	0	4:0:0	20	20	60	2 ½ hrs.	100
DSC (3) 214131	Marketing Management	4	0	4:0:0	20	20	60	2 ½ hrs.	100
OE (1)	1. Business Organization 21OEBBA101	3	0	3:0:0	20	20	60	2 ½ hrs.	100

BBA – I Year

2. Office Organization and Management 21OEBBA102

(Any one to be opted)

II Semester

DSC (4) 214229	Financial Accounting andReporting	4	0	4:0:0	20	20	60	2 ½ hrs.	100
DSC (5) 214230	Human Resource Management	4	0	4:0:0	20	20	60	2 ½ hrs.	100
DSC (6) 214231/32	Business Environment/ Business Mathematics	4	0	4:0:0	20	20	60	2 ½ hrs.	100
OE (2)	1. People Management 21OEBBA201 2. Retail Management 21OEBBA202 (Any one to be opted)	3	0	3:0:0	20	20	60	2 ½ hrs.	100

DSC (1) Syllabus for BBA
Semester - I

Course Code: 214129	Course Title: Management Principles & Practice
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56 Hrs	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, Group discussion, Seminar, Case studies & field work etc.,

Course Outcomes: On successful completion of the course, the Students will;

CO1: Acquire knowledge on the concepts of business management, principles and function of management.

CO2: Analyze and interpret the process of planning and decision making.

CO3: Design organization structures based on authority, task and responsibilities.

CO4: Gain knowledge and apply the principles of direction, importance of communication, barrier of communication, motivation theories and leadership styles.

CO5: Analyze the real rime scenarios requirement of good control system and control techniques.

CO6: Evaluate the concepts of CSR as a device for promoting sustainable development.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO MANAGEMENT	**10**
Introduction –Meaning, Schools of Management Thought (in brief), Nature and Characteristics of Management - Scope and Functional areas of Management; Management as a Science, Art or Profession; Management and Administration; Principles of Management.	
Module No. 2: PLANNING AND DECISION MAKING	**08**
Nature, Importance and Purpose of Planning - Planning Process; Objectives; Types of plans (Meaning only); Decision making- Importance and steps; MBO and MBE (Meaning only)	
Module No. 3: ORGANIZING AND STAFFING	**12**
Nature and purpose of Organization; Principles of Organizing; Delegation of Authority; Types of Organization - Departmentation, Committees; Centralization vs Decentralization of Authority and Responsibility, Span of Control; Nature and importance of Staffing	
Module No. 4: DIRECTING AND COMMUNICATING	**12**
Meaning and Nature of Direction, Principles of Direction; Communication - Meaning and Importance, Communication Process, Barriers to Communication, Steps to overcome Communication Barriers, Types of Communication;. Leadership –Meaning, Formal and Informal Leadership, Characteristics of Leadership; Leadership Styles – Autocratic Style, Democratic Style, Participative Style, Laissez Faire Leadership Styles, Transition Leadership, Charismatic Leadership Style.	
Module No. 5: COORDINATING AND CONTROLLING	**10**
Coordination–Meaning, Importance and Principles. Controlling-Meaning and steps in controlling, Essentials of Effective Control system, Techniques of Control (in brief).	

Module No. 6: BUSINESS SOCIAL RESPONSIBILITY AND MANAGERIAL ETHICS	**04**
Business Social Responsibility - Meaning, Arguments for and against Business Social Responsibility; Green management - Meaning, Green management concepts; Managerial Ethics – Meaning - Importance of Ethics in Business, Factors that determine Ethical or Unethical behavior.	
Skill Developments Activities: 1. Two cases on the above syllabus should be analyzed by the teacher in the classroom and the same needs to be recorded by the student in the Skill Development Book. 2. Draft different types of Organization structure. 3. Draft Control charts.	
Text Books: 1. Stephen P. Robbins, Management, Pearson 2. Koontz and O‟Donnell, Management, McGraw Hill. 3. L M Prasad, Principles of management, Sultan Chand and Sons 4. V.S.P Rao/Bajaj, Management process and organization, Excel Books.GH25 5. Appanniah and Reddy, Management, HPH. 6. T. Ramaswamy : Principles of Management, HPH. **Note: Latest edition of text books may be used.**	

Course Articulation Matrix - 214129

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	-	1	1	-	1	1	2	1	1
CO2	2	2	2	1	1	1	2	2	2	2	-	2
CO3	2	1	2	1	1	1	-	2	1	1	-	2

CO4	2	2	2	-	2	1	-	2	1	3	-	1
CO5	2	3	2	2	2	1	1	1	2	2	1	1
CO6	3	2	1	2	2	1	3	2	2	2	1	2
WA	**2.16**	**1.83**	**1.6**	**1.5**	**1.5**	**1**	**2**	**1.66**	**1.5**	**2**	**1**	**1.5**

DSC (2) Syllabus for BBA

Semester - I

Course Code: 214130	Course Title: Fundamentals of Business Accounting
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week: 4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and problem solving.

Course Outcomes: On successful completion of the course, the Students will;

CO1: Acquire the knowledge on framework of accounting as well accounting standards.
CO2: Pass journal entries, prepare ledger accounts and trail balance independently
CO3: Analyze and prepare cash book and Bank Reconciliation Statement.
CO4: Illustrate and draw up final accounts of proprietary concern.
CO5: Construct final accounts through application of tally.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO FINANCIAL ACCOUNTING	**08**
Introduction – Meaning and Definition – Objectives of Accounting – Functions of Accounting– Users of Accounting Information – Limitations of Accounting – Accounting Cycle - Accounting Principles – Accounting Concepts and Accounting Conventions. Accounting Standards – objectives- significance of accounting standards. List of Indian Accounting Standards.	
Module No. 2: ACCOUNTING PROCESS	**12**
Meaning of Double entry system − Process of Accounting − Kinds of Accounts − Rules - Transaction Analysis − Journal − Ledger − Balancing of Accounts − Trial Balance − Problemson Journal, Ledger Posting and Preparation of Trial Balance.	
Module No. 3: SUBSIDIARY BOOKS	**14**
Meaning − Significance − Types of Subsidiary Books −Preparation of Purchases Book, Sales Book, Purchase Returns Book, Sales Return Book, Bills Receivable Book, Bills Payable Book. Types of Cash Book- Simple Cash Book , Double Column Cash Book ,Three column cash book(Problems on Three column cash book) Depreciation Accounting (simple problems on straight line and WDV method), Bank Reconciliation Statement − Preparation of Bank Reconciliation Statement (Problems on BRS)	
Module No. 4: FINAL ACCOUNTS OF PROPRIETARY CONCERN	**10**
Preparation of Statement of Profit and Loss and Balance Sheet of a proprietary concern with special adjustments like depreciation, outstanding and prepaid expenses, outstanding and received in advance of incomes, provision for doubtful debts, drawings and interest on capital.	

Module No. 5: ACCOUNTING SOFTWARE	**12**
Introduction-meaning of accounting software, types accounting software-accounting software Tally-Meaning of Tally software − Features − Advantages, Creating a New Company, Basic Currency information, other information, Company features and Inventory features. Configuring Tally - General Configuration, Numerical symbols, accounts/inventory info − master configuration -voucher entry configuration. Working in Tally: Groups, Ledgers, writing voucher, different types of voucher, voucher entry Problem on Voucher entry - Generating Basic Reports in Tally-Trail Balance, Accounts books, Cash Book, Bank Books, Ledger Accounts, Group Summary, Sales Register and Purchase Register, Journal Register, Statement of Accounts, and Balance Sheet**.**	
Skill Developments Activities: 1. List out the accounting concepts and conventions. 2. Prepare a Bank Reconciliation Statement with imaginary figures 3. Collect the financial statement of a proprietary concern and record it. 4. Prepare a financial statement of an imaginary company using tally software.	
Text Books: 1. Hanif and Mukherjee, Financial Accounting, Mc Graw Hill Publishers 2. Arulanandam & Raman; Advanced Accountancy, Himalaya Publishing House 3. S.Anil Kumar,V.Rajesh Kumar and B.Mariyappa–Fundamentals of Accounting, 4. Himalaya Publishing House. 5. Dr. S.N. Maheswari, Financial Accounting, Vikas Publication 6. S P Jain and K. L. Narang, Financial Accounting, Kalyani Publication 7. Radhaswamy and R.L. Gupta, Advanced Accounting, Sultan Chand 8. M.C. Shukla and Goyel, Advanced Accounting, S Chand. **Note: Latest edition of text books may be used.**	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	1	-	-	1	1	1	1
CO2	3	2	2	-	-	1	-	-	1	1	1	1
CO3	3	2	2	-	-	1	-	-	1	1	1	1
CO4	3	2	2	-	-	1	-	-	1	1	1	1

CO5	3	-	1	-	2	1	-	-	1	1	1	1
WA	**3**	**2**	**1.75**	**-**	**2**	**1**			**1**	**1**	**1**	**1**

Course Articulation Matrix - 214130

DSC (3) Syllabus for BBA

Semester - I

Course Code: 214131	Course Title: Marketing Management
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, Group discussion, Seminar, Case studies & field work etc.,

Course Outcomes: On successful completion of the course, the Students will;

CO1: Acquire knowledge on the concepts and functions of marketing.

CO2: Analyze the marketing environment impacting the business.

CO3: Segment the market and analyze consumer behaviour

CO4: Gain knowledge about 4 P's of marketing and also strategize marketing mix

CO5: Acquire knowledge of 7 P's of service marketing mix.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO MARKETING	**10**
Meaning and Definition, Concepts of Marketing, Approaches to Marketing, Functions of Marketing. **Recent trends in Marketing**-E- business, Tele-marketing, M-Business, Green Marketing, Relationship Marketing, Concept Marketing, Digital Marketing, social media marketing and E-tailing (Meaning only).	
Module No. 2: MARKETING ENVIRONMENT	**10**
Micro Environment – The company, suppliers, marketing intermediaries competitors, public and customers; **Macro Environment**- Demographic, Economic, Natural, Technological, Political, Legal, Socio-Cultural Environment.	
Module No. 3: MARKET SEGMENTATION AND CONSUMER BEHAVIOUR	**10**
Meaning and Definition, Bases of Market Segmentation, Requisites of Sound Market Segmentation; Consumer Behavior-Factors influencing Consumer Behavior; Buying DecisionProcess.	
Module No. 4: MARKETING MIX	**20**
Meaning, Elements of Marketing Mix (Four P's) – Product, Price, Place, Promotion. Product-Product Mix, Product Line, Product Lifecycle, New Product Development, Reasons for Failure of New Product, Branding, Packing and Packaging, Labeling(Concepts only) Pricing – Objectives, Factors influencing Pricing Policy, Methods of Pricing; Physical Distribution–Meaning, Factors affecting Channel Selection (Concepts only) . Promotion – Meaning and Significance of Promotion, Personal Selling and Advertising (Meaning Only)	
Module No. 5: SERVICES MARKETING	**06**
Meaning and definition of services, difference between goods and services, features of services, seven P's of services marketing (concepts only).	

Skill Developments Activities:

1. Two cases on the above syllabus should be analyzed and recorded in the skill development
2. Design a logo and tagline for a product of your choice
3. Develop an advertisement copy for a product.
4. Prepare a chart for distribution network for different products.

Text Books:

1. Philip Kotler, Marketing Management, Prentice Hall.
2. Lovelock Christopher, Services Marketing: People, Technology, Strategy, PHI
3. William J. Stanton, Michael J.Etzel, Bruce J Walker, Fundamentals of Marketing, McGrawHill Education.
4. Bose Biplab, Marketing Management, Himalaya Publishers.
5. J.C. Gandhi, Marketing Management, Tata McGraw Hill.
6. Ramesh and Jayanti Prasad: Marketing Management, I.K. International
7. Sontakki, Marketing Management, Kalyani Publishers.
8. P N Reddy and Appanniah, Marketing Management

Note: Latest edition of text books may be used.

Course Articulation Matrix - 214131

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	-	2	2	1	1	2	2	1	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	3	2	2	2	1	2	2	3	1	2
CO4	3	2	3	2	2	1	1	1	2	2	2	2
CO5	2	2	2	1	1	2	2	2	2	2	1	2
WA	**2.2**	**1.8**	**2.2**	**1.75**	**1.8**	**1.8**	**1.4**	**1.6**	**2.0**	**2.2**	**1.4**	**2**

OE (1) Syllabus for BBA

Semester - I

Course Code: 21OEBBA101	Course Title: Business Organisation
Course Credit (L:T:P): 3(3:0:0)	Teaching Hours/Week:3
Total Contact Hours:45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, Group discussion, Seminar, Case studies & field work etc.,

Course Outcomes: On successful completion of the course, the Students will :

CO1: Acquire the knowledge on the nature, objectives and social responsibilities of business

CO2: Exemplify the different forms of organizations

CO3: Appraise the features and functions of public enterprises

CO4: Identify and compare different types of business combinations

CO5: Illustrate the basic concepts and functions of management

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO BUSINESS	**10**
Business: Meaning, Nature**,** Scope and Social responsibility of Business, Objectives, Essentials of successful business; Functional areas of business. Concept of Business Organisation.	
Module No. 2: FORMS OF BUSINESS ORGANIZATION:	**12**
Sole proprietorship: Definitions, Features, Merits and Demerits. Partnership: Definitions, partnership deed, Features, Merits and Demerits. Joint Stock Company: Definitions, Features, Merits and Demerits.Co-operatives: Definitions, Features, Merits and Demerits.	
Module No. 3:PUBLIC ENTERPRISES	**08**
Departmental Undertaking: Definitions, Features, Merits and Demerits. Public Corporations: Definitions, Features, Merits and Demerits. Government Companies: Definitions, Features, Merits and Demerits	
Module No. 4:BUSINESS COMBINATIONS	**08**
Meaning Definitions, Causes, Types, Forms, merits and demerits ofBusiness Combinations, Recent Trends in Business Combinations.	
Module No 5: **MANAGEMENT OF ORGANIZATIONS**	**07**
Management- Meaning, Definitions, Difference between Management and Administration, Levels of Management, Objectives of Management, Functions of management- planning, organizing, staffing, directing, coordinating, controlling, Principles of Management.	

Skill Developments Activities:

1. Preparation of partnership deed
2. Draw a business tree
3. Make a list of 10 PSUs
4. Prepare a list of different types of business combinations

Text Books:

1. C B. Guptha - Business Organisation and Management, Sultan Chand & Sons.
2. Dr. S. C. Saxena - Business Administration & Management, Sahitya Bhawan.
3. M. C. Shukla - Business Organisation and Management. S Chand & Company Pvt. Ltd.
4. S.A Sherlekar - Business Organization, Himalaya Publishing House.
5. Y.K. Bhushan. Fundamentals of Business Organisation and Management, Sultan Chand& Sons.
6. R.K. Sharma, Business Organisation & Management Kalyani Publishers
7. Dr. I.M. Sahai, Dr. Padmakar Asthana,' **Business Organisation & Administration',** Sahitya Bhawan Publications Agra.

Note: Latest edition of text books may be used.

Course Articulation Matrix - 21OEBBA101

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	-	-	-	-	1	-	1	1	-	1	1
CO 2	2	-	-	-	-	1	-	1	1	-	1	1
CO 3	2	-	-	-	-	1	-	1	1	-	1	1
CO 4	2	-	-	-	-	1	-	1	1	-	1	1
CO 5	2	-	-	-	-	1	-	1	1	-	1	1

WA 2 - - - - 1 - 1 1 - 1 1

OE (1) Syllabus for BBA
Semester - I

Course Code: 21OEBBA102	Course Title: Office Organisation and Management
Course Credit (L:T:P): 3(3:0:0)	Teaching Hours/Week:3
Total Contact Hours: 45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, Group discussion, Seminar, Case studies & field work etc.,

Course Outcomes: On successful completion of the course, the Students will;

CO1: Acquire knowledge with respect to office organisation and management
CO2: Apply skills in effective office organisation
CO3: Proficiency to maintain office records
CO4: Maintain digital records effectively
CO5: Analyze different types of organisation structures and responsibilities asfuture office managers.

Syllabus:	**Hours**
Module No. 1: FUNDAMENTALS OF OFFICE MANAGEMENT	**08**

Introduction: Meaning, importance and functions of modern office
Modern Office Organisation: Meaning; Steps in office organisation; Principles of Office organisation, Organisation structure types,
Nature of office services: Types of services in a modern office, decentralisation and centralisation of office services, Departmentation of Office
Office management: Meaning, Elements and major processes of Office management
Office Manager: Functions and qualifications of Office manager.

Module No. 2: ADMINISTRATIVE ARRANGEMENT FACILITIES	**07**

Office Accommodation and its Importance: Location of Office, Choice of Location: Urban vsSuburban, Factors to be Considered in Selecting the Site, Securing Office Space,
Office Lay-out: Objectives of Office Lay-out, Principles of Office Lay-out, Steps in Lay-outPlanning, Advantages of a Good Lay-out.
Types of offices: Open Office and Private Office- advantages and disadvantages.

Module No. 3: OFFICE ENVIRONMENT:	**10**

Meaning and Components of Office Environment
Interior Decoration: Colour Conditioning, Floor Coverings, Furnishings,
Furniture and Fixtures: Types of Furniture, Choice between Wooden and Steel Furniture,Principles Governing Selection of Furniture
Lighting and Ventilation,
Noise: Internal Noise, External Noise
Cleanliness, Sanitation and HealthSafety and Security

Module No. 4: RECORDS MANAGEMENT	**10**
Introduction to records: Importance of Records, types of office records, **Records Management:** Meaning, Principles of Record Keeping, Functions of 'RecordsManagement **Filing:** Elements of Filing and Filing Functions, Objectives and Importance of Filing, Advantages of Filing, Essentials of a Good Filing System, Classification of Files, Filing Procedure or Routine.	
Filing Methods: Horizontal Filing -meaning, types and advantages, Vertical Filing-meaning,equipment used, advantage and disadvantages. **Centralisation and Decentralisation of Filing**- Centralised filing and Decentralised Filing **Office manual**: contents, Importance, types of office manuals. **Indexing:** Meaning, importance, advantages and essentials of good indexing, type of index **Retention and disposal of files**: Meaning and benefits of record retention, need for disposal of files, life-cycle stages of files.	
Module No. 5: OFFICE MECHANISATION AND DATA PROCESSING	**10**
Meaning, Importance and Objectives of Office Mechanisation, Advantages and disadvantages of Office Mechanisation, Factors Determining Office Mechanisation **Kinds of Office Machines:** Duplicating Machines and Photocopying Machines, Accounting, tabulating and computing machines, communication machines **Introduction to Data and Information:** Distinction between Data and Information, Importance of Data and Information, Classification of Data, Classification of Information, Data Lifecycle (chart), **Data Collection Methods-** Primary and secondary data collection methods **Data presentation** Methods of Presentation of Data **Data processing using computers**: Components of Computers, Input and Output Devices, Software used in Computers (names and uses only), Computer Applications in Office' Management, Advantages and Limitations of Computerisation	

Skill Developments Activities:

1. Visit an office and enlist the different types of machines used in the office
2. Identify the different types of stationery used in offices today
3. Draw a data life cycle chart
4. Draw charts indicating different types of office layouts.

Text Books:

1. S.P Arora, Office Organisation and Management, Vikas Publishing House Pvt Ltd
2. M.E Thakuram Rao, Office organisation and Management, Atlantic
3. Judith Read, Mary Lea Ginn, Record Management, 10th Edition, Cengage Learning.

Note: Latest edition of text books may be used.

Articulation Matrix - 21OEBBA102

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	1	2	2	2	2	2
CO2	2	2	2	2	2	2	-	2	2	2	2	2
CO3	2	2	2	2	2	2	-	2	2	2	2	2
CO4	2	2	2	2	3	2	-	2	2	1	2	2
CO5	2	2	2	2	2	3	1	2	2	2	2	2
WA	**2.2**	**2**	**2**	**2**	**2.2**	**2.2**	**1**	**2**	**2**	**1.8**	**2**	**2**

DSC (4) Syllabus for BBA

Semester - II

Course Code: 214229	Course Title: Financial Accounting and Reporting
Course Credit (L:T:P):4 (4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will;

CO1: Analyze and prepare final accounts of partnership firms

CO2: Acquire knowledge about the process of public issue of shares and accounting for thesame

CO3: Construct final accounts of joint stock companies.

CO4: Analyze and evaluate vertical and horizontal analysis of financialstatements

CO5: Analyze, interpret and understand company's annual reports.

Syllabus:	**Hours**
Module No. 1: FINAL ACCOUNTS OF PARTNERSHIP FIRM	**10**
Meaning of Partnership Firm, Partnership deed-clauses in partnership deed, Preparation of Final accounts of partnership firm-Trading and Profit and Loss Account, Profit and Loss Appropriation Account, Partners capital account and Balance sheet. Goodwill- Nature, Factors influencing goodwill and methods of valuation of goodwill (Average and super profit methods)	
Module No. 2: ISSUE OF SHARES	**12**
Meaning of Share, Types of Shares – Preference shares and Equity shares – Issue of Shares at par, at Premium, at Discount: Forfeiture and Re-issue of Shares (Theory only), Pro-Rata Allotment; Journal Entries relating to issue of shares; Preparation of respective ledger accounts; Preparation of Balance Sheet in the Vertical form (Practical Problems).	
Module No. 3: FINAL ACCOUNTS OF JOINT STOCK COMPANIES	**12**
Statutory Provisions regarding preparation of Company Final Accounts – Treatment of Special Items, Managerial Remuneration, Tax deducted at source, Advance payment of Tax, Provision for Tax, Depreciation, Interest on debentures, Dividends, Rules regarding payment of dividends, Transfer to Reserves, Preparation of Profit and Loss Account and Balance Sheet (Vertical Form Schedule -III) (Practical Problems).	
Module No. 4: FINANCIAL STATEMENTS ANALYSIS	**12**

Comparative Statements - Comparative Income Statement, Comparative Balance Sheet; Common size Statements – Common Size Income Statement, Common Size Balance Sheet –Trend Percentages. (Analysis and Interpretation)

Module No. 5: CORPORATE FINANCIAL REPORTING PRACTICES	**10**
Corporate Financial Reporting - meaning, types, characteristics of Corporate financial report, users of corporate financial report; Components corporate financial report– general corporate information, financial highlights, letter to the shareholders from the CEO, management's discussion and analysis; Financial Statements-balance sheet, income statement, cash flow statement, and notes to the financial statements; Auditor's report; Significant Accounting Policies; Corporate Governance Report; Corporate Social Responsibility Report (Discuss only Role and Significance of above components of corporate financial report).	
Skill Developments Activities: 1. Collect financial statement of a company for five years and analyse the same usingtrend analysis. 2. Refer annual reports of two companies and list out the components. 3. Draft a partnership deed as per Partnership Act. 4. List out the accounting policies in annual report of the company	
Text Books: 1. Stephen P. Robbins, Management, Pearson 2. Koontz and O"Donnell, Management, McGraw Hill. 3. L M Prasad, Principles of management, Sultan Chand and Sons 4. V.S.P Rao/Bajaj, Management process and organization, Excel Books.GH25 5. Appanniah and Reddy, Management, HPH. 6. T. Ramaswamy : Principles of Management, HPH. **Note: Latest edition of text books may be used.**	

Course Articulation Matrix - 214229

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

CO1	3	3	2	1	2	1	-	1	2	3	2	2
CO2	3	3	2	2	3	2	2	2	1	2	2	2
CO3	2	2	3	1	2	1	-	2	2	2	2	2
CO4	3	3	3	2	3	1	1	2	2	2	2	2
CO5	2	1	1	2	2	1	-	2	2	2	2	2
WA	**2.6**	**2.4**	**2.2**	**1.6**	**2.4**	**1.2**	**1.5**	**1.8**	**1.8**	**2.2**	**2**	**2**

DSC (5) Syllabus for BBA Semester - II	
Course Code: 214230	Course Title: Human Resource Management
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classroom's lecture, tutorials, Group discussion, Seminar, Case studies & field work etc.,

Course Outcomes: On successful completion of the course, the students will;

CO1: Acquire knowledge on the role and responsibility of Human resources management functions on business
CO2: Analyze HRP, Recruitment and Selection process
CO3: Acquire knowledge on induction, training, and compensation aspects.
CO4: Analyze performance appraisal and its process.
CO5: Gather knowledge on Employee Engagement and Psychological Contract.

Syllabus:	**Hours**
Module No. 1: Introduction to Human Resource Management	**10**
Meaning and Definition of HRM – Features Objectives, Differences between Human Resource Management and Personnel Management, Importance, Functions and Process of HRM, Role of HR Manager, Trends influencing HR practices	

Module No. 2: Human Resource Planning, Recruitment & Selection	**14**
Human Resource Planning: Meaning and Importance of Human Resource Planning, Process of HRP **HR Demand Forecasting**- Meaning and Techniques (Meanings Only) and HR supply forecasting. **Job Analysis**: Meaning and Uses of Job Analysis, Process of Job Analysis – Job Description, Job Specification**,** Job Enlargement, Job Rotation, Job Enrichment (Meanings Only) **Recruitment** – Meaning, Methods of Recruitment, Factors affecting Recruitment, Sources of Recruitment **Selection** – Meaning, Steps in Selection Process, Psychometric tests for Selection, Barriers to effective Selection, Making Selection effective; Placement, Gamification – Meaning and Features	
Module No. 3: Induction, Training and Compensation	**10**
Induction: Meaning, Objectives and Purpose of Induction. **Training**: Need for training, Assessment of Training Needs andMethods of Training and Development; Kirkpatrick Model; Career Development. **Compensation:** Direct and Indirect forms of Compensation (Meaning Only).	

Module No. 4: Performance Appraisal, Promotion & Transfers	14
Performance appraisal: Meaning and Definition, Objectives and Methods of Performance Appraisal – Uses and Limitations of Performance Appraisal, Process of Performance Appraisal **Promotion**: Meaning and Definition of Promotion, Purpose of Promotion, Basis of Promotion **Transfer:** Meaning of Transfer, Reasons for Transfer, Types of Transfer.	
Module No. 5: Employee Engagement and Psychological Contract	**08**
Employee Engagement (EE): Meaning and Types of EE, Drivers of Engagement -Measurement of EE, Benefits of EE.	

Skill Developments Activities:

1. Preparation of Job Descriptions and Job specifications for a Job profile
2. Choose any MNC and present your observations on training program
3. Develop a format for performance appraisal of an employee.
4. Discussion of any two Employee Engagement models.
5. Analysis of components of pay structure based on the CTC sent by theCorporate to the institute for the various jobs of different sectors.

Textbooks:

Aswathappa, Human Resource Management, McGraw HillEdwin Flippo, Personnel Management, McGraw Hill C.B.Mamoria, Personnel Management, HPH

Subba Rao, Personnel and Human Resources Management, HPHReddy & Appanniah, Human Resource Management, HPH Madhurimalal, Human Resource Management, HPH

S.Sadri & Others: Geometry of HR, HPH
Rajkumar: Human Resource Management
I.K. Intl

Michael Porter, HRM and Human Relations, Juta & Co.Ltd.

K. Venkataramana, Human Resource Management, SHBPChartered Accountants of India, New Delhi.

Note: Latest edition of textbooks may be used.

Course Articulation Matrix - 214230

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	-	1	1	-	2	2	2	-	2
CO2	2	2	2	2	1	2	-	2	2	2	-	2
CO3	2	2	2	2	2	2	-	2	2	2	1	2
CO4	2	2	2	2	2	1	-	1	2	2	-	2
CO5	1	2	2	2	1	1	-	2	2	2	-	2
WA	**1.8**	**1.8**	**2**	**2**	**1.4**	**1.4**	**-**	**1.8**	**2**	**2**	**1**	**2**

DSC (6) Syllabus for BBA
Semester - II

Course Code: 214231	Course Title: Business Environment
Course Credit (L:T:P): 4 (4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, Group discussion, Seminar, Case studies.

Course Outcomes: On successful completion Student will;

CO1: Acquire the knowledge on components of business environment.
CO2: Analyze the environmental factors influencing business organisation.
CO3: Evaluate Competitive structure analysis for select industry.
CO4: Illustrate impact of fiscal policy and monetary policy on business.
CO5: Draw Inference about the impact of economic environmental factors on business.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION BUSINESS ENVIRONMENT	**12**
Meaning of business, scope and objectives Business, business environment, Micro and Macro-environment of business (social, cultural, economic, political, legal technological and natural) Impact of these factors on decision making in business, Environmental analysis, and Competitive structure analysis of Business.	
Module No. 2: GOVERNMENT AND LEGAL ENVIRONMENT	**16**
Government Functions of the State, Economic role of government, State intervention in business- reasons for and types of state intervention in business. Impact of Monetary policy, Fiscal policy, Exim policy and industrial policy on business. **Legal environment -** Various laws affecting Indian businesses	
Module No. 3: ECONOMIC ENVIRONMENT AND GLOBAL ENVIRONMENT	**13**
An overview of economic environment, nature of the economy, structure of economy, factors affecting economic environment. **Globalisation of business;** meaning and dimensions, stages, essential conditions of globalisation, foreign market entry strategies, merits and demerits of globalisation of business, Impact of Globalisation on Indian businesses, Forms of globalisation of businesses - MNCs, TNCs etc..	
Module No. 4: TECHNOLOGICAL ENVIRONMENT	**10**

Meaning and features; types of innovation, Impact of Technological changes on business, Technology and Society, Technological Acquisition modes, IT revolution and business, Management of Technology.
Module No. 5: NATURAL ENVIRONMENT **05**
Meaning and nature of physical environment. Impact of Natural environment on business.
Skill Developments Activities: a) List out key features of recent Monetary policy published by RBI impacting businesses. b) Give your observation as to how technology has helped society. c) Draft Five Forces Model for Imaginary business. d) Identify the benefits of Digital transformation in India.

Course Articulation Matrix - 214231

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1	2	2	2	1	1	1	2
CO2	2	1	1	1	1	1	2	2	1	1	2	2
CO3	2	2	2	2	2	2	-	2	2	2	2	2
CO4	2	1	1	1	1	1	-	-	-	-	1	1
CO5	2	2	2	1	1	2	1	2	2	1	2	2
WA	**2.2**	**1.6**	**1.6**	**1.4**	**1.2**	**1.6**	**1.6**	**2**	**1.25**	**1.25**	**1.6**	**1.4**

DSC (6) Syllabus for BBA
Semester - II

Course Code: 214232	Course Title: Business Mathematics
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classroom's lecture, tutorials, Problem solving.

Course Outcomes: On successful completion of the course, the students will;

CO1: Apply basic concepts of business maths to solve and interpret application problems in business

CO2: Build types of equation to solve business problem

CO3: Solve problems on Matrices, determinants and evaluate them.

CO4: Utilize the concept of simple interest and compound interest and apply them in day-to-day life.

CO5: Analyze the problems on Arithmetic progression, Geometric progression and c:nstruct logical application of these concepts.

Syllabus:	**Hours**
Module No. 1: NUMBER SYSTEM	**04**
Introduction – Natural Numbers - Even Numbers – Odd Numbers – Integers – Prime Numbers – Rational and Irrational numbers, Real Numbers, HCF and LCM (Simple problems).	
Module No. 2: THEORY OF EQUATIONS	**10**
Introduction – Meaning - Types of Equations – Simple/ Linear Equations and Simultaneous Equations (only two variables), Elimination and Substitution Methods only. Quadratic Equation - Factorization and Formula Method ($ax^2 + bx + c = 0$ form only). Simple problems.	
Module No.3: MATRICES AND DETERMINANTS	**16**
Meaning – types – operation on matrices – additions – subtractions and multiplication of two matrices – transpose – determinants – minor of an element – co-factor of an element – inverse – crammers rule in two variables – problems.	
Module No. 4: COMMERCIAL ARITHMETIC	**16**
Simple Interest, Compound Interest including yearly and half yearly calculations, Percentages, Ratios and proportions	
Module No. 5: PROGRESSIONS	**10**
PROGRESSIONS: Arithmetic Progression - Finding the 'n^{th}' term of AP and Sum to nth term of AP.– Finding the 'n^{th}' term of GPand sum to 'n^{th}' term of GP .	

Skill Developments Activities:

1. Develop an Amortization Table for Loan Amount – EMI Calculation.
2. Secondary overhead distribution summary using Simultaneous Equations Method.
3. Application of Matrix In Business Problems

Text Books:

1. Saha: Mathematics for Cost Accountants, Central Publishers
2. R.G. Saha and Others – Methods and Techniques for Business Decisions, VBH
3. Dr. SanchetiandKapoor: Business Mathematics and Statistics, Sultan Chand
4. Zamarudeen: Business Mathematics, Vikas
5. R.S Bhardwaj :Mathematics for Economics and Business
6. Madappa, mahadi Hassan, M. IqbalTaiyab – Business Mathematics, Subhash
7. G.R. Veena and Seema : Business Mathematics and Statistics I.K. Intl Publishers

Note: Latest edition of text books may be used.

Course Articulation Matrix - 214232

P / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	1	1	-	1	1	-	1	2
CO2	2	1	1	1	1	1	-	-	1	-	1	1
CO3	2	2	2	2	1	1	-	1	2	1	2	2
CO4	2	2	2	2	1	1	-	1	-	-	1	1
CO5	2	1	1	1	1	1	-	-	-	-	1	1
WA	**2.2**	**1.6**	**1.6**	**1.6**	**1**	**1**	**-**	**1**	**1.3**	**1**	**1.2**	**1.4**

OE (2) Syllabus for BBA
Semester - II

Course Code: 21OEBBA201	Course Title: People Management
Course Credit(L:T:P): 3 (3:0:0)	Teaching Hours/Week:3
Total Contact Hours:45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classroom's lecture, tutorials, Group discussion, Seminar, Case studies.

Course outcome: On successful completion of the course, student will:

CO1: Examine the difference between People Management with Human resource Management

CO2: Perform the role of manager in different stages of performance management and List modern methods of performance and task assessment.

CO3: Illustrate the importance of peer network and essentials of communication

CO4: Analyze and relate the concept of motivation.

CO5: Examine the importance of self management, stress management and work life balance

Syllabus:	**Hours**
Module No. 1: Introduction to People Management	**06**

Diversity in organisation: age, gender, ethnicity, race, and ability. People Management: Meaning, Features, Significance of people management, Difference between People Management and Human Resource Management, impact of individual and organizational factors on people management.

Module No. 2: Getting Work Done and Assessment and Evaluation	**12**

Getting work done: Challenges of getting work done, significance of prioritization and assigning work to team members.

Performance Management: meaning, role of a manager in the different stages of the performance management process, Types of Performance assessment, Assessment and Evaluation Process of evaluation of tasks in the organisation. Modern tools of assessment and evaluation of tasks and performance.

Module No. 3: Building Peer Networks and Essentials of Communication	**12**

Building Peer Networks: Understanding the importance of peer networks in an organization; being able to influence those on whom you have no authority; challenges Peernetworking and different types of people networking in the workplace.

Essentials of Communication: Concept of the communication process with reflection on various barriers to effective communication and ways to overcome, Types of Communication and Channels of Communication.

Module No. 4: Motivation	**08**
Meaning, Importance and need for motivation, team motivation- meaning, importance team motivation, types of Motivators and Modern methods of motivation	
Module No. 5: Managing Self	**07**
Reflection on what does it mean to be a people manager; building a personal development plan for oneself, Self-Stress Management: Causes for stress, work life Balance, Importance of Work life balance, Factors influencing Work life Balance.	

Skill Developments Activities:

1. Analyse two cases on any of the above content indicated above.
2. List out the modern tools to performance assessment and evaluation.
3. Conduct a survey of work life balance of working individuals
4. Draft a Career development of working individual in the middle level management.

Text Books:

1. McShane, Steven L. and Mary Ann Von Glinow, Organizational Behavior: Emerging Knowledge and Practice for the Real World. McGraw-Hill, latest edition, ISBN: 0-07- 115113-3.
2. Bernardin, H. John and Joyce E. A. Russell. Human Resource Management: An Experiential Approach. McGraw-Hill, 6/e. ISBN: 0078029163
3. Argyris, C. (1974). Personality vs. Organization. Organizational Dynamics. Vol. 3. No. 2, Autumn.
4. Blume, B. Baldwin, T. and Ryan, K. (2013). Communication Apprehension. A barrier to students leadership, adaptability and multicultural appreciation. Academy of Management Learning & Education, Jun, Vol. 12 Issue 2, p158-172.
5. Colquitt, J.A., LePine, J.A., & Wesson, M.J. (2009) Organizational Behavior: Improving Performance and Commitment in the Workplace (International edition). New York: McGraw-Hill.
6. Goleman, D. (1998). Working with Emotional Intelligence. Bantam Books,

Note: Latest edition of text books may be used.

Course Articulation Matrix - 21OEBBA201

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO 1	2	1	-	-	-	1	-	-	1	1	-	1
CO 2	2		1	-	-	1	-	-	1	1	-	1
CO 3	2		1	-	-	1	-	-	1	1	-	1
CO 4	2	1	1	-	-	1	-	-	1	1	-	1
CO 5	2		1	-	-	1	-	-	1	1	-	1
WA	**2**	**1**	**1**	**-**	**-**	**1**	**-**	**-**	**1**	**1**	**-**	**1**

OE (2) Syllabus for BBA
Semester - II

Course Code: 21OEBBA202	Course Title: Retail Management
Course Credit (L:T:P): 3(3:0:0)	Teaching Hours/Week:3
Total Contact Hours:45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classroom's lecture, tutorials, Group discussion, Seminar, Case studies.

Course Outcomes: On successful completion Student will;

Co1: Acquire knowledge on the types and forms of Retail business.

CO2: Review Consumer Behavior in various environment.

CO3: Understand various Retail operations and evaluate them.

CO4: Analyze various marketing mix elements in retail operations.

CO5: Equip with the applications of Information Technology in retail business.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO RETAIL BUSINESS	**08**

Definition – functions of retailing - types of retailing – forms of retail business ownership. Retail theories – Wheel of Retailing – Retail life cycle. Retail business in India: Influencing factors – present Indian retail scenario.

Module No. 2: CONSUMER BEHAVIOUR IN RETAIL BUSINESS	**08**

Buying decision process and its implication on retailing – Influence of group and individual factors, Customer shopping behaviour, Customer service and customer satisfaction.

Module No. 3: RETAIL OPERATIONS	**08**

Factors influencing location of Store - Market area analysis – Trade area analysis – Rating Plan method - Site evaluation. Retail Operations: Stores Layout and visual merchandising,Stores designing, Space planning, Inventory management, Merchandise Management, Category Management.

Module No. 4: RETAIL MARKETING MIX	**14**

Introduction -Product : Decisions related to selection of goods (Merchandise Management revisited) – Decisions related to delivery of service. Pricing : Influencing factors – approaches to pricing – price sensitivity - Value pricing – Markdown pricing. Place : Supply channel – SCM principles – Retail logistics – computerized replenishment system – corporate replenishment policies. Promotion : Setting objectives – communication effects - promotional mix.

Module No. 5: INFORMATION TECHNOLOGY IN RETAILING	**07**

Non store retailing (e-retailing) - The impact of Information Technology in retailing - Integrated systems and networking – EDI – Bar coding – Electronic article surveillance – Electronic shelf labels
– customer database management system.

Skill Developments Activities:

1. Draw a retail life cycle chart and list the stages
2. Draw a chart showing a store operations
3. List out the major functions of a store manager diagrammatically
4. List out the current trends in e-retailing
5. List out the Factors Influencing in the location of a New Retail outlet

Text Books:

1. Suja Nair; Retail Management, HPH
2. Karthic – Retail Management, HPH
3. S.K. Poddar & others – Retail Management, VBH.
4. R.S Tiwari ; Retail Management, HPH

Note: Latest edition of text books may be used.

Course Articulation Matrix - 21OEBBA202

	PO1	PO2	P03	P04	P05	P06	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	--	1	--	1	2	1	2	2	2
CO2	1	2	1	--	1	--	1	1	1	2	2	1
CO3	1	3	2	--	1	--	2	1	1	2	2	2
CO4	1	3	2	--	1	--	2	1	1	2	1	1
CO5	1	3	2	--	1	--	1	1	1	2	1	1
WA	**1.2**	**2.4**	**1.6**	**--**	**1**	**--**	**1.4**	**1.2**	**1**	**2**	**1.6**	**1.4**

Guidelines for Continuous Internal Evaluation and Semester End Examination:

The CIE and SEE will carry 40% and 60% weightage each, to enable the course to be evaluated for a total of 100 marks, irrespective of its credits. The evaluation system of the course is comprehensive& continuous during the entire period of the Semester. For a course, the CIE and SEE evaluation will be on the following parameters:

Sl. No.	Parameters for the Evaluation	Marks
	Continuous Internal Evaluation(CIE)	
1	Continuous & Comprehensive Evaluation(CCE) – (A)	20Marks
2	Internal Assessment Tests(IAT) –(B)	20Marks
	Total of CIE(A+B)	40Marks
3	Semester End Examination(SEE) – (C)	60Marks
	Total of CIE and SEE(A+B+C)	100Marks

Continuous Internal Evaluation:

a. **Continuous & Comprehensive Evaluation (CCE):**

The CCE will carry a maximum of 20% weightage (20marks) of total marks of a course. Before the start of the academic session in each semester, a faculty member should choose for his/her course, minimum of four of the following assessment methods with 5 marks each (4x5=20 marks)

Individual Assignments

i. Seminars/Class Room Presentations/Quizzes
ii. Group Discussions/Class Discussion/Group Assignments
iii. Case studies/Caselets
iv. Participatory &Industry-Integrated Learning/Industrial visits
v. Practical activities/Problem Solving Exercises
vi. Participation in Seminars/Academic Events/Symposia, etc.
vii. Mini Projects/Cap stone Projects

b. **Internal Assessment Tests (IAT):** The IAT will carry a maximum of 20% weightage (20marks) of total marks of a course. Under this component, two tests

will have to be conducted in a semester for 30 marks each and the same is to be scaled downto10 marks each.

PATTERN OF QUESTION PAPER

TIME : 2 ½ HOURS **MARKS: 60**

PART – A

Answer any FIVE of the following questions. Each question carries 2 marks. (5x2= 10)

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------
7. ----------

PART – B

Answer any TWO of the following questions. Each question carries 10 Marks.

(2x10 =20)

8. ----------
9. ----------
10. ----------
11----------

PART – C

Answer any TWO of the following questions. Each question carries 15 Marks

(2X15=30)

12----------

13----------

14----------

15----------

SBRR Mahajana First Grade College (A)
Board of Studies-Business Administration 2021-22

Sl. No.	Name & Address	Designation	Signature
1	Smt. Shyla S Assistant Professor & HOD SBRR Mahajana First Grade College Mysore shylas.fgc@mahajana.edu.in 9845859475	Chairman	Shyla.S 3/9/2022
2	Dr. Manjunath V Assistant Professor SBRR Mahajana First Grade College Mysore vmanjunath.joge@gmail.com 9900306941	Member	Manjunath 4/9
3	Dr.Anita B R Assistant Professor SBRR Mahajana First Grade College Mysore anitaprapti@gmail.com 9901114867	Member	Anita.B.R 3/09/2022
4	Sri.Sunil N Assistant Professor SBRR Mahajana First Grade College Mysore 9900148051 sunil9284@gmail.com	Member	Sunil 3/9/22
5	Dr.Nirmala.N Assistant Professor SBRR Mahajana First Grade College Mysore nimalamysore223@gmail.com 7483907737	Member	Nirmala.N 4/9/2022
6	Dr. R. Mahesh Professor DoS in Business Administration, Manasagagothri, Mysuru mahesh@bims.uni-mysore.ac.in 9886639536	Member	03/09/22
7	Ms.Sunayana Assistant Professor & Head Department of Commerce and Management, Amritha Vishwa Vidyapeetham, Mysore sunayanadiger@gmail.com 9880980506	Member	Not Present
8	Ms. Prejna.N.Pai Assistant Professor Jain Deemed-to-be-university Bangalore prejna@gmail.com 9900212911	Member	Not Present

9	Sri.Lokesh V Managing Director & CEO Innomantra Consulting Pvt. Ltd. Bengaluru lokeshv@innomantra.com 9845272555	Member	Not Present
10	Sri.Rajesh R Chartered Accountant rajesh@bsra.in 9448229994	Member	R. Rajesh
11	Sri.Tejasvi Nathan Vice President - HR Swiss Re Global Business Solutions India Pvt Ltd, Bengaluru tejasvinathan@gmail.com 9900084170	Member	Not present

Chairperson
BOS/BOE in Business Administration
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

Mahajana Education Society (R.)

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF BUSINESS ADMINISTRATION

UG ✓

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NEP Syllabi for III and IV Semester BBA 2022-23

DEPARTMENT OF BUSINESS ADMINISTRATION

Motto

TO CREATE BUSINESS LEADERS WITH
SOCIAL RESPONSIBILITY

Vision

To create and develop entrepreneurs who exhibit professionalism, accountability, transparency, human values and uphold Indian heritage in high esteem.

Mission

- Giving practical orientation to entrepreneurial ability.
- Giving professional exposure and building up leadership ability by organizing seminars, workshops, management fests and to make students participate in other similar activities.
- Make students to understand the importance of social responsibility in the corporate governance.
- Giving exposure on Indian ethos to future business leaders.

Programme outcomes for Business Administration

POs	Programme Outcomes (POs)
PO1	**Domain knowledge: Acquire** knowledge of management theories and practices with special focus on professional accounting and finance.
PO2	**Problem analysis:** Identify, formulate and analyze complex business problems in a structured approach to focus upon real issues.
PO3	**Design/development of solutions:** Developing solutions by using critical thinking and analytical reasoning with appropriate qualitative, quantitative techniques and software applications in solving business and research problems.
PO4	**Investigation and research:** Implementation of research methods to investigate specific business problems and draw conclusions.
PO5	**Use of modern techniques/tools**: Ability to analyze and interpret data using mathematical, statistical, ICT and risk management techniques to solve business problems.
PO6	**Business and Society**: Entrepreneurs/Managers with socio-economic value system.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and channelize inclination towards sustainable development.
PO8	**Moral and Ethical values**: Assimilate ethical, value based leadership skills and moral principles.
PO9	**Individual and Team work:** Ability to perform as an individual or leader in diverse settings.
PO10	**Communication and leadership skills:** Harness communication and leadership skills effectively to adapt to the growing business world.
PO11	**Project management and Finance:** Design methods and process; apply skills and knowledge to complete projects in accordance with project acceptance criteria and financial considerations.
PO12	**Lifelong Learning**: Evolve and improve as an individual by updating knowledge to enable oneself to thrive in social and professional life.

OBJECTIVES

7. To develop the skills required for the application of business concepts and techniques learnt in the classroom at the workplace.

8. To provide competent and technical skills personnel to the industry in the area of Marketing, Finance, Human Resource, Data Analytics, Retailing and Logistics And Supply Chain Management. To enhance the employability skills of the management students.

9. To enhance the capability of the students to improve their decision-making skills.

10. To encourage entrepreneurship among students pursuing education in the field of Business Administration.

11. To empower students for pursuing professional courses like MBA, Chartered Accountancy, Company Secretary, etc.,

12. To ensure holistic development of Business administration students

LIST OF BoS MEMBERS

Sl. No.	Category	Name Smt./Sri	Designation	Address for Communication	E-mail and Mobile No.

1	HoD & Chairman	Mrs.Shyla S	Assistant Professor	SBRR Mahajana First Grade College, Mysore	shylas.fgc@mahajana.edu.in 9845859475
2	Faculty Members	1. Dr. Manjunath V	Assistant Professor	SBRR Mahajana First Grade College, Mysore	vmanjunath.joge@gmail.com 9900306941
		2. Dr.Anita B R	Assistant Professor	SBRR Mahajana First Grade College, Mysore	anitaprapti@gmail.com 9901114867
		3. Sunil.N	Assistant Professor	SBRR Mahajana First Grade College, Mysore	sunil9284@gamil.com 9900148051
		4. Dr.Nirmala. N	Assistant Professor	SBRR Mahajana First Grade College, Mysore	nirmalamysore223@gmail.com 7483907737
3	Two Experts from external university	1. Prejna.N.Pai	Assistant Professor	Jain Deemed-to-be-university Bangalore	prejna@gmail.com 9900212911
		2. Sunayana	Assistant Professor & HOD	Amritha school of Arts& Science, Mysore	sunayanadiger@gmail.com 9880980506
4	Nominee by the Vice Chancellor	Dr. R Mahesh	Associate Professor	DoS in Management BIMS, Manasa Gangothri, Mysore	mahesh@bims.uni-mysore.ac.in 9886639536
5	Two Person from Industry	1. Rajesh R	Chartered Accountant	B S Ravi kumar & Associates Chartered Accountants, Mysore	rajesh@bsra.in 9448229994

/Corporate Sector / Allied area	2. Lokesh V	Managing Director & CEO	Innomantra consulting Pvt. Ltd. Bangalore	lokeshv@innomantra.com 9845272555	
6	Alumnus	Tejasvi Nathan	Vice President, HR	Swiss Re Global Business solutions India Pvt. Ltd., Bangalore	tejasvinathan@gmail.com 9900084170

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
		L	T/P	L:T:P	CI	CA	Exam		
				III Semester					
DSC (7)	Cost Accounting	4	0	4:0:0	20	20	60	2 ½ hrs.	100

Course Structure (NEP 2020)

Discipline Specific Course (DSC), Open Elective (OE)

BBA – II Year

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224329									
DSC (8) 224330	Organizational Behavior	4	0	4:0:0	20	20	60	2 ½ hrs.	100
DSC (9) 224331	Statistics for Business Decisions	4	0	4:0:0	20	20	60	2 ½ hrs.	100
OE (3)	1. Social Media Marketing 22OEBBA301 2. Rural Marketing 22OEBBA302 (Any one to be opted)	3	0	3:0:0	20	20	60	2 ½ hrs.	100
	IV Semester								
DSC (10) 224429	Management Accounting	4	0	4:0:0	20	20	60	2 ½ hrs.	100
DSC (11) 224430/31	1. Business Analytics 2. Financial Markets & Services	4	0	4:0:0	20	20	60	2 ½ hrs.	100
DSC (12) 224432	Financial Management	4	0	4:0:0	20	20	60	2 ½ hrs.	100
OE (4)	1. Business Leadership Skills 22OEBBA401 2. Personal Wealth Management 22OEBBA402 (Any one to be opted)	3	0	3:0:0	20	20	60	2 ½ hrs.	100

DSC (7) Syllabus for BBA
Semester - III

Course Code: 224329	Course Title: Cost Accounting
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will;

CO1: Gather knowledge on the elements of cost and preparation of cost sheet.
CO2: Acquire knowledge on materials and analyze the material cost by various methods of pricing material issues.
CO3: Compare and contrast labour cost techniques.
CO4: Differentiate the kinds of overhead costing.
CO5:.Analyze the reconciliation of cost and financial accounts

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO COST ACCOUNTING	**12**

Introduction: Meaning, Objectives, Importance and Uses of Cost Accounting, Functions of Cost Accounting Department in an Organization, Difference between Cost Accounting and Financial Accounting; Various elements of Cost and Classification of Cost; Cost Object, Cost Unit; Cost Reduction and Cost Control; Limitations of Cost Accounting; Cost Sheet: Meaning and Cost Heads in a Cost Sheet, Presentation of Cost information in Cost Sheet/Statement-Problems on Cost Sheet, Tenders and Quotations, Methods of Costing.

Module No. 2: MATERIALS COST	**12**

Materials: Meaning, Importance and Types of Materials - Direct and Indirect Material.

Materials Procurement: Procedure for procurement of materials and documentation involved in procurement of materials- (Bill of materials, Material requisition note, Purchase requisition note,, Purchase order, Goods received note); Material Storage and Records: Duties of Store keeper, Store records- (Bin cards, Stores Ledger, Stock Control Cards); Material Issues and Valuation: Procedure for material issues, Documents used in
material issues- (Material Requisition Note, Material Transfer Note, Materials Return

Note); Valuation of material issues- preparation of Stores Ledger/ Account - FIFO, LIFO,- problems.

Inventory Control: Inventory control techniques and determination of various stock levels- Problems on Level Setting and Computation of EOQ; ABC Analysis, FSN Inventory, VED Inventory, HML Inventory, (Concepts only).

Module No. 3: EMPLOYEE COST	**10**

Employee Cost: Meaning, Components, Classification and Importance of Employee (Labour) Cost in Organizations; Attendance Procedure- Time keeping and Time Booking, Idle Time- Causes and treatment of Normal and Abnormal Idle Time, Overtime- Causes and treatment (Theory only);

Methods of Remuneration (Payment of Wages and Incentives) Problems on calculation of earnings under Time Rate (Straight time rate, Halsey and Rowan Methods) and Piece rate systems, Employee Turnover- Meaning, Reasons and Effects of LTO/ETO.

Module No. 4: OVERHEADS	**12**

Overheads: Meaning and Classification of Overheads; Accounting and Control of Manufacturing Overheads: Estimation and Collection, Cost allocation, Apportionment, Re-apportionment and Absorption of Manufacturing Overheads; Problems on Primary distribution only; Absorption of overheads: Meaning and Methods of Absorption of overheads; Problems on Machine hour rate

Module No. 5: RECONCILIATION OF COST AND FINANCIAL ACCOUNTS	**10**

Reasons for differences in Profits under Financial and Cost Accounts; Procedure for Reconciliation –Ascertainment of Profits as per Financial Accounts and Cost Accounts and Reconciliation of Profits of both sets of Accounts – Preparation of Reconciliation Statement – Problems.

Skill Developments Activities:

- Prepare a Cost Sheet with imaginary figures.
- List the documents required in Inventory Management.
- Demonstrate the valuation of inventory using any one method of pricing material issues.
- Calculate the amount of Wages under Halsey / Rowan Plans, using imaginary data.

Text Books:

1. Jain and Narang, Cost Accounting, Kalyani Publication House.

2. N.K. Prasad, Cost Accounting, Books Syndicate Pvt. Ltd.

3. P C Tulsian, Cost Accounting, MHE India

4. Nigam & Sharma, Cost Accounting, HPH

5. Dr. B. Mariyappa, Cost Accounting, HPH

6. Khanna, Ahuja & Pandey, Practical Costing, S Chand & Co. Ltd.

7. B.S. Raman, Cost Accounting, United Publisher

Course Articulation Matrix - 224329

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	-	-	-	1	2	1	1	1
CO2	3	2	2	1	1	1	1	1	1	1	1	1
CO3	2	2	2	-	-	1	1	1	1	1	1	1
CO4	2	2	2	-	-	-	1	1	1	1	1	1
CO5	1	1	1	-	-	-	1	1	1	1	1	1
WA	**2.2**	**1.8**	**1.6**	**1**	**1**	**1**	**1**	**1**	**1.2**	**1**	**1**	**1**

DSC (8) Syllabus for BBA
Semester - III

Course Code: 224330	Course Title: Organisational Behaviour
Course Credit (L:T:P): 4 (4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will:

CO1: Acquire knowledge on role of OB in business organization.
CO2: Analyze group dynamics in an organization.
CO3: Evaluate the change management.
CO4: Structure the process of organizational development.
CO5: Implement the kinds of Interventions in OB.

Syllabus:	**Hours**
Module No. 1: ORGANIZATIONAL BEHAVIOUR AND FOUNDATIONS OF INDIVIDUAL BEHAVIOUR	**10**

Organization Behavior– Meaning, Definition of OB, Importance of OB, Foundations of OB. Individual Behavior - Personal Factors, Environmental Factors, organization systemsand resources Personality-Meaning, Nature, Determinants and Traits of Personality Perception- Meaning, Factors influencing perception, Perceptual Process, PerceptualErrors, Managing Perceptions.	
Module No. 2: GROUP AND TEAM DYNAMICS	**8**
Group Dynamics-meaning, Types of Group, Development of Groups- Stages of Group Development, Determinants of Group Behavior, Team Dynamics- meaning, Types of Teams: Conflict-sources of conflict and ways of resolving conflict, managing interpersonal relationships	
Module No. 3: CHANGE MANAGEMENT	**10**
Introduction to Change Management: Importance and Nature of Planned Change; Theories of Planned Change - Action Research Model, Kurt Lewin's Change Model **Introducing Change Effectively**: Basic steps, Factors Influencing Change - Resistance to Change, Overcoming Resistance to Change; Empowering People to Manage Change.	

Module No. 4: ORGANIZATIONAL DEVELOPMENT	**12**
OD: Meaning and Nature of Organizational Development (OD), Competencies of an OD Practitioner, Ethical Guidelines for OD Practitioners Process of Organizational Development: Meaning of Diagnosing, Comprehensive Model for Diagnosing Organizational Systems (Organizational Level, Group Level and Individual Level)	
Module No. 5: OD INTERVENTIONS	**16**
Designing Effective OD Interventions: How to Design Effective Interventions, Overview of OD interventions - Human Process Interventions, Techno Structural Interventions, HRM Interventions and Strategic Change Interventions, Conditions for optimal success of OD **(a) Human Process Interventions** T-Groups, Process Consultation, Third–party Intervention; Team building; Organization Confrontation Meeting, Inter-group relation Intervention: Microcosm Group; Large Group Intervention: Open –Systems Method, and Open-Space Method(in brief) **(b) Techno Structural Interventions** Restructuring Organization: Structural Design: Functional structures, Divisional structure - Product structure, Geographic and Market structure, Metrics structure, Network structure, Boundary less organization; (in brief)	
Skill Developments Activities: • Two cases on the above syllabus should be analyzed and record in the skill development • Draw Blake and Mouton managerial grid • List the determinants of personality	
Text Books: 1. Fred Luthans, Organizational Behaviour. McGraw Hill 2. Robbins, Organizational Behaviour, International Book House. 3. K. Aswathappa, Organizational Behaviour, HPH. 4. Appanniah and, Management and Behavioural Process, HPH 5. Sharma R.K and Gupta S.K, Management and Behaviour Process, KalyaniPublishers.	

Course Articulation Matrix - 224330

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	1	2	-	2	2	2	2	2
CO2	2	1	1	1	1	1	-	2	2	2	2	2
CO3	2	2	1	1	1	2	1	2	2	2	2	2
CO4	2	2	2	2	2	2	1	2	2	2	1	2
CO5	2	2	2	2	2	2	-	1	2	2	2	2
WA	2.2	1.6	1.4	1.4	1.4	1.8	1	1.8	2	2	1.8	2

DSC (9) Syllabus for BBA
Semester - III

Course Code: 224331	Course Title: Statistics for Business Decisions
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will;

CO1: Understand the requirements of statistical framework
CO2: Construct and visualize the data.
CO3: Determine the data adequacy for analysis.
CO4: Review the data by using various tools.
CO5: Illustrate and analyze the impact of probability.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO STATISTICS	**12**

Introduction – Meaning, Functions and Uses of Statistics; Collection of Data - Techniques of Data Collection – Census Technique and Sampling Technique (Concepts). Classification: Meaning, and Methods of Classification of Data, Tabulation: Meaning, Parts of a Table – Simple problems on Tabulation; Diagrammatic Presentation: Bar Diagrams – Simple Bars, Multiple Bars, Percentage Sub-divided Bar Diagram; Two Dimensional Diagrams – Pie Diagram.

Module No. 2: MEASURES OF CENTRAL TENDENCY AND DISPERSION	**14**

Measures of Central Tendency: Calculation of Arithmetic Mean, Median and Mode for Individual, Discrete and Continuous Series – Problems; Empirical relation between Mean, Median and Mode.

Measures of Dispersion: Absolute and Relative measures of Range, Quartile deviation, Standard Deviation in Individual, Discrete and Continuous Series – Problems
Measures of Skewness: Calculation of Karl Pearson's (Uni-modal) and Bowley's Co- efficient of Skewness

Module No. 3: CORRELATION AND REGRESSION ANALYSIS	**10**
Correlation Analysis - Meaning, Types of Correlation, Calculation of Karl Pearson's Coefficient of Correlation, Computation of Probable Error, Spearman's Rank Coefficient of correlation- problems. Regression Analysis – Concept of Regression, Regression equations- Problems. **TIME SERIES ANALYSIS**: Meaning, Components, fitting a straight-line trend using Least Square Method (Problems where ΣX=0 only), calculation and estimation of trend values.	
Module No. 4: TIME SERIES ANALYSIS	**10**
Meaning, Components, fitting a straight-line trend using Least Square Method (Problems where ΣX=0 only), calculation and estimation of trend values.	
Module No. 5: INDEX NUMBERS	**10**
Index number, Construction of Index number, Methods of Index number - simple aggregate method, Weighted method (Laspeyres, Paashes, Marshal - Edgeworth and Fishers Ideal Index number). Tests of Adequacy (Unit test, TRT, FRT, Circular test). Consumer Price Index number	
Skill Developments Activities: **a)** Data Visualization practical session Using Tableu/Power BI. b) Execute Average, Variance, Standard Deviation, CV, Covariance using Excel. c) Execute and Analyse Regression Model using Excel, d) Practical session on Time series models using GRETL e) Collect past years' Indian consumer price index data (as of the current base year)and analyse its impact on any macroeconomic indicator.	
Text Books: **1.** S P Gupta: Statistical Methods- Sultan Chand 2. Dr. B N Gupta: Statistics, Sahithya Bhavan 3. S.C Gupta: Business Statistics, HPH 4. Elhance: Statistical Methods, Kitab Mahal 5. Chikoddi & Satya Prasad: Quantitative Analysis for Business Decision, HPH 6. Sanchethi and Kapoor: Business Mathematics, Sultan Chand	

Course Articulation Matrix - 224331

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	1	-	-	-	-	1	2	1	1

CO2	2	2	2	2	2	-	-	-	1	-	-	1
CO3	2	2	2	2	1	1	-	-	-	-	1	1
CO4	2	2	2	1	1	-	-	-	1	-	1	1
CO5	-	-	-	-	-	-	-	-	-	-	-	-
WA	2	1.75	2	1.5	1.33	1	-	-	1	2	1	1

OE (3) Syllabus for BBA
Semester - III

Course Code: 22OEBBA301	Course Title: Social Media Marketing
Course Credit (L:T:P): 3 (3:0:0)	Teaching Hours/Week:3
Total Contact Hours:45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will:

CO1: Acquire knowledge of social media marketing goal setting for successful online campaigns.
CO2: Analyze the effective social media marketing strategies for various types ofindustries and businesses.
CO3: Design social media content and create strategies to optimize the content's reach to the target audience.
CO4: Appraise the reach and track progress in achieving social media objectives witha variety of measurement tools and metrics.
CO5:Design a suitable social media campaign for the business goals.

Syllabus:	**Hours**
Module No. 1: Social Media Introduction	**10**
Introduction to social media, how to build a successful Social Media Strategy, Goal setting, Overview of Global E-Marketing Issues, Country and Market Opportunity Analysis, User engagement on social networks; Social advertising; Social, media analytics; Impact of online reputation; Social Technology and its marketing influence in India.	
Module No. 2: Facebook -Instagram marketing	**10**
Exploring the use of a Facebook page, Facebook Ad campaign, Facebook groups, Hashtags, Instagram, Creating automation for Instagram, Audience Insights, page Insights, exploring the various IG content types, Setting a theme and flow on Instagram, and generating Leads.	
Module No. 3: Twitter Marketing	**08**

Creating a Twitter account, optimizing a page, content types, posting contents, Integrating apersonal brand on Twitter, Twitter Analytics & Ads, post assistants and automation for Twitter.

Module No. 4: YouTube marketing	**08**
Youtube marketing, creating a youtube channel, posting content, youtube analytics, Google Pages for YouTube Channels, Video Flow, Verify Channel, Webmaster Tool –Adding Asset.	
Module No. 5: Search Engine Optimization-Recent trends and challenges	**09**
Search Engine Optimisation (SEO) Introduction, Understanding SEO, User Insights, Benefits and Challenges, Content Marketing, Traditional Media vs Social Media, recent trends and challenges in Social Media marketing.	

Skill Developments Activities:

a) Prepare Facebook Page in your name.
b) Open a YouTube channel.
c) Create a blog and write an article on Climate change.
d) Create a search engine optimization (SEO) dashboard.

Text Books:

1. Annmarie Hanlon (2022), Digital Marketing Strategic Planning & Integration,2nd Edition, SAGE Publications Ltd.
2. Matt Golden (2022), Social Media Marketing, 1st Edition, Bravex Publications.
3. Simon Kingsnorth (2022), The Digital Marketing Handbook: Deliver Powerful Digital Campaigns, 1st Edition, Kogan Page.
4. Melissa Barker, Donald I. Barker, Nicholas F. Bormann and Debra Zahay (2016), Social Media Marketing: A Strategic Approach, 2nd Edition, Cengage Learning.
5. Tracy L. Tuten and Michael R. Solomon, (2016), Social Media Marketing, 2nd Edition, Sage Publications India Private Limited.

Course Articulation Matrix - 22OEBBA301

	PO1	PO2	P03	P04	PO4	P05	P06	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	3	1	1	3	--	--	1	1	2	3	2
CO2	2	2	2	1	2	3	1	1	1	1	2	2	2
CO3	1	1	1	1	1	3	1	1	2	1	2	2	2
CO4	2	1	2	2	2	3	1	1	2	1	2	2	2

CO5	2	2	2	2	2	3	1	1	2	1	2	2	2
WA	1.8	1.4	2	1.4	1.6	3	1	1	1.6	1	2	2.2	2

OE (3) Syllabus for BBA Semester - III	
Course Code: 22OEBBA302	Course Title: Rural Marketing
Course Credit (L:T:P): 3(3:0:0)	Teaching Hours/Week:3
Total Contact Hours:45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will

CO1: Explore the importance and application of various concepts of rural marketing.
CO2: Examine the appropriate selection of the segmentation, targeting and positioning strategies along with the environmental factors that influence rural consumers' buying behavior.
CO3: Design a Pricing Strategy that suits the characteristics of rural products and the stage in the product life cycle.
CO4: Identify the appropriate marketing communication and rural distribution channel plans to promote and deliver the products.
CO5: Analyze the recent trends in Rural marketing and the application of digital technology in rural marketing.

Syllabus:	**Hours**
Module No. 1: Introduction to Rural Marketing	**10**
Nature and scope of rural marketing, rural vs urban markets, concepts and classification of rural markets, rural marketing environment: rural population, occupation pattern, income generation, location of the rural population, expenditure pattern, literacy level, land distribution, land use pattern, irrigation, development programs, infrastructure facilities.	
Module No. 2: Rural Consumer Behavior	**08**
Consumer buying behavior in rural markets, factors affecting consumer behaviour, rural consumer buying process, the rise of rural consumerism. Market segmentation – Bases for segmenting rural consumer markets.	
Module No. 3: Rural Product and Pricing Strategy	**08**
Rural product, Rural product classification, product life cycle, Product Life Cycle strategies in rural markets, New Product Development in rural markets, Branding for rural markets. Pricing for rural markets – Factors and strategies.	

Module No. 4: Rural Distribution and Communication Strategy	**09**
Wholesaling and retailing in the rural market, rural mobile traders, rural distribution models- FMCG companies, durable companies, Service organizations, emerging distribution models. Rural communication strategy, challenges in rural Communication, creatingpromotion mix for rural audiences: advertisement, sales promotion, publicity.	
Module No. 5: Regulations and Recent Trends in Rural Marketing	**10**
Regulated market, Regulated Market in India, Future of Regulated Markets in India, Role of Govt in Developing rural marketing, Public Distribution Systems (PDS), Food Corporation of India, Self Help Groups (SHG's). Agricultural Credit Policy, Digitalizing rural India, online marketing reach in the rural market, recent trends in packing, labelling, grading, transporting, order processing, payment methods, storage and warehousing and Corporate farming.	
Skill Developments Activities: **a)** Prepare a Product life cycle for a Rural product **b)** Select a Rural Product and conduct a Consumer Satisfaction Survey **c)** Prepare an advertisement copy for a rural product **d)** Visit an APMC Yard/Mandi's and prepare a report on any one Agri product pricing.	
Text Books: 1. Debarun Chakrabaorty and Soumya Kanti Dhara, et al. (2021), Rural Marketing inIndia: Texts and Cases, 1st Edition Atlantic Publishers and Distributors Pvt Ltd 2. Acharya SS and Agarwal NL (2019), Agricultural Marketing in India, 6th Edition,Oxford & IBH Publishing Co Pvt Ltd. 3. Dinesh Kumar and Punam Gupta (2019), Rural Marketing), 1st Edition, SAGEPublications India Pvt Ltd. 4. C. G. Krishnamacharyulu (2010), Rural Marketing: Text and Cases, 2nd Edition, Pearson India Education Services Pvt Ltd. 5. T.P.Gopalaswamy (2009) Rural Marketing-Environment, Problems and Strategies, 3rd Edition, Vikas Publishing House.	

Course Articulation Matrix – 22OEBBA302

	PO1	PO2	P-3	P-4	PO4	P-5	P-6	PO7	PO8	PO9	PO1-	PO11	PO12
CO1	-	1	1	-	-	-	1	1	-	-	-	-	1
CO2	1	-	-	1	-	-	1	1	-	-	-	-	-
CO3	1	-	1	-	-	-	-	1	-	-	-	1	-
CO4	-	-	-	-	-	-	1	1		1	1	-	-

CO5	1	1	-	-	1	1	-	-	-	-	-	-	-
WA	1	1	1	1	1	1	1	1	-	1	1	1	1

DSC (10) Syllabus for BBA Semester - IV	
Course Code: 224429	Course Title: Management Accounting
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will:

CO1: Acquire the knowledge with respect to the concept of Management Accounting.
CO2: Analyze the ratios and apply the same on given case.
CO3: Construct Cash flow statement.
CO4: Apply Marginal costing techniques to make business decisions.
CO5: Utilize the standard costing technique for implementing control over cost.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO MANAGEMENT ACCOUNTING	**8**
Introduction- Meaning and Definition – Objectives – Nature and Scope–Functions- Role of Management Accountant, Relationship between Financial Accounting and Management Accounting, Relationship between Cost Accounting and Management Accounting, advantages and limitations of Management Accounting.	
Module No. 2: RATIO ANALYSIS	**14**
Introduction-Meaning and Definition of ratio, Meaning of Accounting ratio, and Ratio Analysis – Uses and Limitations –Classification of ratios- Liquidity ratios, Profitability ratios and Solvency ratios. Problems on conversion of financial statements into ratios and ratios into financial statements.	
Module No. 3: CASH FLOW ANALYSIS	**12**
Meaning and Definition of Cash Flow Statement – Concept of Cash and Cash Equivalents - Uses of Cash Flow Statement – Limitations of Cash Flow Statement– Differences between Cash Flow Statement and Fund Flow Statement – Provisions of Ind. AS-7. Procedure for preparation of Cash Flow Statement – Cash Flow from Operating Activities – Cash Flow from Investing Activities and Cash Flow from Financing Activities – Preparation of Cash Flow Statement according to Ind. AS- 7	

Module No. 4: MARGINAL COSTING	**12**
Introduction-Meaning and definition of marginal cost, marginal costing, features of marginal costing- terms used in marginal costing – P/V ratio, BEP, Margin of Safety, Angle of Incidence and Break-Even Chart. Break Even Analysis- assumption and uses-problems. Decision Making-Make or Buy, -problems on decision making.	
Module No. 5: STANDARD COSTING	**10**
Historical costing - Introduction – Meaning & Definition of Standard Cost and Standard Costing - Advantages & Disadvantages of Standard Costing –preliminaries in establishing system of standard costing – Variance Analysis – Material Variance, Labour Variance and Overheads Variance – Problems on Material Variances and Labor Variances only.	
Skill Developments Activities: • Collect the financial statement of a company and calculate important ratios. • Collect the annual report of a company and prepare a cash flow statement. • Prepare a Break-even-chart with imaginary figures. • Prepare a flexible budget using imaginary figures of at least three levels. • Draft the chart of various total cost variances.	
Text Books: **1.** Dr. S.N. Maheswari, Management Accounting, Mahavir Publications 2. T.S.Sexana, Advanced Cost and Management Accounting, Sultan Chand 3. Sudhindra Bhat, Management Accounting, Excel Books. 4. Dr. S.N. Goyal and Manmohan, Management Accounting, S.N. Publications. 5. B.S. Raman, Management Accounting, United Publishers. 6. Sharma and Gupta, Management Accounting, Kalyani Publishers. 7. M Muniraju & K Ramachandra, Management Accounting, HPH **8.** PN Reddy & Appanaiah, Essentials of Management Accounting, HPH**.**	

Course Articulation Matrix - 224429

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	-	-	1	-	-	-	1	1	**1**
CO2	3	2	2	-	-	1	-	-	-	1	1	**1**
CO3	3	2	2	-	-	1	-	-	-	1	1	**1**
CO4	3	2	2	-	-	1	-	-	-	1	1	**1**

CO5	3	2	2	-	-	1	-	-	-	1	1	**1**
WA	**3**	**1.8**	**1.8**	**-**	**-**	**1**				**1**	**1**	**1**

DSC (11) Syllabus for BBA Semester - IV	
Course Code: 224430	Course Title: Business Analytics
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will;

CO1: Illustrate the Data Types and storage of Data.
CO2: Classify and compare the various types of analytics and data models.
CO3: Demonstrate visualization of data.
CO4: Make use of the data mining and processing of data.
CO5: Interpret the concepts of different analytics model.

Syllabus:	**Hours**
Module No. 1: INTRODUCTION TO BUSINESS ANALYTICS	**12**

Business Analytics, Terminologies used in Analytics: Business Analytics, Business Intelligence, Meaning, Importance, Scope, Uses of Business Analytics, Architecture of Business Analytics, Types of Analytics: Descriptive, Diagnostics, Predictive, Prescriptive, Application of Business analytics, Introduction to Data Science and Big Data.

Module No. 2: ROLE OF DATA IN THE ORGANIZATION	**10**

Sources of data, Use of Data in Decision making, Importance of data quality, dealing with missing or incomplete data, Types of Digital Data- Structured, Semi Structured, Unstructured Data. Data warehouse, Data mining, Data Integration – What, need, advantages, approaches of Data integration, Data profiling.

Module No. 3: TOOLS USED FOR DATA ANALYTICS	**12**

Introduction to data analytics software – Types of data analytics software – open source andproprietary software.

Lab sessions:

R, JAMOVI, GRETL, Python: Installation of software –Installation of packages / library -Importing of data – Saving of data – Run descriptive Statistics – Interpret result – plotting of charts – inferences of chart. (Using all the four specified softwares).

Module No. 4: DATABASE ORIENTATION	**12**

Database definition, types of structures, DBMs, RDBMS, Relational Database Language , Introduction to SQL, Features of SQL, SQL Languages, DDL commands - Create, Add, Drop, Constraints in SQL, DML Commands – Insert, Delete, Update, Data Query Language – Where clause, Order by, Group by, DCL commands – Grant, Revoke, TCL Commands – Commit, Roll Back, Save point. Aggregate Functions, Relational Algebra.

Module No. 5: DATA VISUALIZATION USING TABLEAU (PUBLIC VERSION)	**10**

Introduction to Dimensions and measures, Types of Charts, (Pie Chart, Column Chart, Line Chart, Bar Chart, Area Chart, Scatter Chart, Bubble Chart, Stock Chart), Basic understanding in dashboard and storyboard. (Explain using practical examples and students executes the examples using tableau.)

Skill Developments Activities:

1. Prepare tree map chart using Tableau.
2. Run a descriptive statistic using R and Python software.
3. Execute a summary chart in JAMOVI.
4. Execute DCL and TCL Command in SQL.

Text Books:

1. Business Analytics: Text and Cases, Tanushri Banerjee, Arvindram Banerjee, Publisher: Sage Publication
2. Business Analytics, U Dinesh Kumar, Publication: Wiley
3. Business Analytics, R. Evans James, Publisher: Pearson
4. Fundamental of Business Analytics, Seema Acharya R N Prasad, Publisher: Wiley
5. Business Analytics: Data Analysis and Decision Making, Albright and Winston published by Cengage Learning**.**
6. Swain Scheps, Business Intelligence for Dummies.
7. Rick Sherman, Business Intelligence Guidebook: From Data Integration to Analytics
8. Cindi Howson. Successful Business Intelligence, Second Edition: Unlock the Value of BI & Big Data
9. Seema Acharya R N Prasad, Fundamentals of Business Analytics, 2ed, Wile

Course Articulation Matrix - 224430

	PO1	PO2	P-3	P-4	PO4	P-5	P-6	PO7	PO8	PO9	PO1-	PO11	PO12
CO1	2	-	2	-	2	-	-	-	-	-	-	-	1

CO2	2	1	2	2	-	1	-	-	-	-	-	2	1
CO3	2	2	2	2	2	2	-	-	-	-	1	1	-
CO4	2	2	2	2	2	2	-	-	-	-	-	-	-
CO5	2	2	2	2	1	1	-	-	-	-	-	-	-
WA	2	1.75	2	2	1.75	1.5	-	-	-	-	1	1.5	1

DSC (11) Syllabus for BBA Semester - IV	
Course Code: 224431	Course Title: Financial Markets & Services
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60
Pedagogy: Classrooms lecture, tutorials, and Problem Solving.	
Course Outcomes: On successful completion of the course, the Students will; CO1: Acquire knowledge on the concepts of financial system. CO2: Examine the current structure and functioning of financial institutions CO3: Acquire knowledge on the concepts of financial services. CO4: Analyze and interpret the trading process of Instruments. CO5: Critically evaluate the concept of stock market.	
Syllabus:	**Hours**
Module No. 1: OVERVIEW OF FINANCIAL SYSTEM	10
Financial System – Features, Constituents of Financial System; Financial Institutions;Financial Services; Financial Markets and Financial Instruments.	
Module No. 2: FINANCIAL INSTITUTIONS	14

Characteristics of Financial Institutions, Broad Categories – Money Market Institutions and Capital Market Institutions. Objectives and Functions of Industrial Finance Corporation of India, Industrial Development Bank of India, State Financial Corporations, Industrial Credit and Investment Corporation of India, EXIM Bank of India, National Small Industrial Development Corporation, National Industrial Development Corporation, RBI Measures for NBFCs.	
Module No. 3: FINANCIAL SERVICES	12
Financial Services – Meaning, Objectives, Functions, Characteristics; Types of Financial Services - Merchant Banking – Functions and Operations, Leasing, Mutual Funds, Venture Capital & Credit Rating.	
Module No. 4: FINANCIAL MARKETS AND INSTRUMENTS	10
Meaning and Definition, Role and Functions of Financial Markets, Constituents of Financial Markets; Money Market Instruments, Capital Market and Instruments; SEBIguidelines for Listing of Shares and Issue of Commercial Papers.	
Module No. 5: STOCK MARKETS	10
Introduction - Functions of Stock Exchange; Stock Market Operations - Trading, Settlement and Custody (Brief discussion on NSDL & CSDL); Brief discussion of BSE, NSEand OTCEI.	
Skill Developments Activities: • Visit any financial institution and prepare a report regarding its structure,functions and performance. • Analyze the ratings given by any credit rating agency, for at least 5 companies. • Conduct a mock stock-trading session and record the outcome. • Identify a company of your choice and record its share prices for one month.	

Text Books:

1. L.M. Bhole, Financial Institutions & Markets, McGraw Hill

2. Khan, M.Y, Indian Financial System, McGraw Hill

3. Sharma, Meera, Management of Financial Institutions, Eastern Economy Edition

4. Bhole and Mahakud, Financial Institutions and Markets – Structure, Growth and Innovations, McGraw Hill

5. Guruswamy, S., Financial Services and System, McGraw Hill

6. Edminister. R.O, Financial Institutions, Markets & Management, McGraw Hill

7. Khan. M.Y, Indian Financial System, Vikas Pub. House

8. H.R Machiraju, Indian Financial System, Vikas Pub. House

9. E.Gorden & K. Nataraj, Financial Markets and Services, HPH

Course Articulation Matrix - 224431

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	1	-	-	1	2	2	2	2
CO2	2	2	2	2	2	2	-	1	1	1	1	1
CO3	3	2	2	1	1	1	-	-	1	1	1	1
CO4	3	3	2	2	3	2	-	1	2	2	2	2
CO5	3	3	2	3	3	2	-	1	2	2	2	2
WA	**2.6**	**2.2**	**1.8**	**1.8**	**2**	**1.75**	**-**	**1**	**1.6**	**1.6**	**1.6**	**1.6**

DSC (12) Syllabus for BBA Semester - IV	
Course Code: 224432	Course Title: Financial Management
Course Credit (L:T:P): 4(4:0:0)	Teaching Hours/Week:4
Total Contact Hours:56	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Course Outcomes: On successful completion of the course, the Students will;

CO1: Evaluate the goals of financial management.
CO2: Appraise the concepts of time value of money.
CO3: Evaluate the different models of dividend policy.
CO4: Analyze the business problem related to investments.
CO5: Appraise the working capital requirements in an organization.

Syllabus:

Module No. 1: INTRODUCTION TO FINANCIAL MANAGEMENT	**Hours**
Introduction – Meaning of Finance, Business Finance, Finance Functions, Organization structure of Finance Department; Financial Management – Goals of Financial Management, Financial Decisions, Role of a Financial Manager; Financial Planning – Steps in Financial Planning, Principles of Sound Financial Planning, Factors influencing a Sound Financial Plan	**12**
Module No. 2: TIME VALUE OF MONEY	
Meaning, Need, Future Value (Single Flow, Uneven Flow & Annuity); Present Value (Single Flow – Uneven Flow & Annuity); Doubling Period; Concept of Valuation -- Valuation of Bonds, Debentures and Shares (Simple Problems)	**12**
Module No. 3: FINANCING & DIVIDEND DECISIONS	
Financing Decision: Sources of Long-Term Finance -- Meaning of Capital Structure, Factors influencing Capital Structure, capital structure theories, Optimum Capital Structure – EBIT, EPS Analysis, Leverages – Problems Dividend Decision: Meaning & Determinants of Dividend Policy, Types of Dividends, Bonus Shares (Meaning only)	**12**

Module No. 4: INVESTMENT DECISION	
Meaning and Scope of Capital Budgeting, Features & Significance, Techniques --Payback Period, Accounting Rate of Return, Net PresentValue, Internal Rate of Return and Profitability Index (Problems)	**10**
Module No. 5: WORKING CAPITAL MANAGEMENT	
Working Capital -- Concept of Working Capital, Significance of Adequate Working Capital, Types of Working Capital, Problems of Excess or Inadequate Working Capital, Determinants of Working Capital, Sources of Working Capital, Estimation of Working Capital (Simple Problems)	**10**

Skill Developments Activities:

- Calculate Equated Installment and prepare Loan Repayment schedule for the loan borrowed by your family / friend.
- Identify the capital budgeting and capital structure practices followed in any firm/company of your choice (using primary/secondary data)
- Visit a business entity and estimate working capital requirement for the entity.
- Develop spreadsheet models for different components of time value of money and capital budgeting.

Text Books:

1. I M Pandey, Financial Management. Vikas Publication.
2. Prasanna Chandra, Financial Management, TMH
3. S N Maheshwari, Financial Management, Sultan Chand
4. Khan and Jain, Financial Management, TMH
5. Dr. V Rajeshkumar and Nagaraju V, Financial management, MH India
6. Dr. Aswathanarayana.T ,Financial Management, VBH
7. K. Venkataramana, Financial Management, SHBP
8. G. Sudarshan Reddy, Financial Management,
9. Sharma and Shashi Gupta, Financial Management, Kalyani Publication

Course Articulation Matrix – 224432

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	2	1	1	1	2	2	2	1	2
CO2	3	2	2	2	2	1	1	1	1	1	3	2

CO3	3	3	3	2	3	1	-	2	2	2	3	2
CO4	3	3	3	2	2	1	-	2	2	2	3	2
CO5	3	2	2	2	2	1	-	2	2	2	2	2
WA	2.8	2.2	2.2	2	2	1	1	1.8	1.8	1.8	2.4	2

OE (4) Syllabus for BBA Semester - IV	
Course Code: 22OEBBA401	Course Title: Business Leadership Skills
Course Credit (L:T:P): 3(3:0:0)	Teaching Hours/Week:3
Total Contact Hours:45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will

CO1: Acquire knowledge about the significance of leadership skills for effective people management

CO2: Evaluate comprehension of leadership through various leadership theories

CO3: Analyze and interpret different leadership styles, types, patterns and functions

CO4: Implement various leadership approaches for effective management of people

CO5: Examine the recent trends in the area of business leadership

Syllabus:	**Hours**
Module No. 1: Introduction to business leadership	10
Introduction to business leadership, meaning/definition of leadership, evolution and growth of leadership; functions and characteristics of leadership; latest trends/current scenario of business leadership.	
Module No. 2: Leadership from managerial perspective	12
Nature of leadership, Significance or importance of leadership, Qualities of an effective leader, leader v/s manager; authority v/s leadership; formal v/s informal leadership; different roles of leadership; different levels of leadership;	
Module No. 3: Leadership from theoretical perspective	8
Great man theory, Trait theory, Situational leadership theory, transactional leadership, transformational leadership theory, Likert's Management System; Fielder's contingency model, Blake and Mouton's Managerial Grid.	
Module No. 4: Leadership from an operational perspective	8
Leadership styles: a) Autocratic leadership, b) Bureaucratic leadership, c) Democratic leadership,	

and d) Laissez faire leadership;	
Module No. 5: Leadership strategies	7
Leadership Strategies a) leading from the front, b) supporting leadership, c) interactive leadership. Group conflict, leader's role in managing group conflict; challenges in leadership; change management.	

Skill Developments Activities:

1. Collect information about the real time corporate leaders with different leadership styles & discuss their leadership styles and traits in the class room.
2. Present the students with a workplace problem, and have each student participant write down what they would do to solve it. Then, have each participant read their response aloud. This can help the teacher to identify the types of leadership styles that are present among the student participants and thereby highlight and discuss them in the class.
3. Student can make a presentation on any famous corporate/political personality

   covering their leadership style, their approach to people management, their effectiveness in managing conflicts and how did they manage the crisis situations and so on.

Text Books:

1. Northouse, P. (2007). Leadership: Theory and Practice. Sage Publications.
2. Stephen, R. P. (1988). Orgaizational Behaviour - Concepts, controversies and Appications. New Delhi: Printice Hall of India Ltd.
3. Subba Rao. (2018). Organizational Behaviour (18th ed.). Himalaya Publishing House.
4. Subba Rao. (2022). Personnel and Human Resource Management (5th ed.). Bangalore: Himalay Publishing House.

Course Articulation Matrix – 22OEBBA401

	PO1	PO2	P-3	P-4	PO4	P-5	P-6	PO7	PO8	PO9	PO1-	PO11	PO12
CO1	1	-	-	-	1	-	-	-	1	-	1	-	1
CO2	-	-	-	-	-	-	-	-	1	1	1	-	1
CO3	1	-	-	-	-	-	-	-	1	1	1	-	1
CO4	1	-	-	-	-	-	1	-	1	1	1	-	1
CO5	1	-	-	-	-	1	1	-	1	1	1	-	1

WA	1	-	-	-	1	1	1	-	1	1	1	-	1

OE (4) Syllabus for BBA Semester - IV	
Course Code: 22OEBBA402	Course Title: Personal Wealth Management
Course Credit (L:T:P): 3(3:0:0)	Teaching Hours/Week:3
Total Contact Hours:45	Formative Assessment Marks: 40
Duration of Exam: 2 ½ Hours	Semester End Examination Marks: 60

Pedagogy: Classrooms lecture, tutorials, and Problem Solving.

Course Outcomes: On successful completion of the course, the Students will;

CO1: Incorporate the importance of Wealth Management and Financial Planning in personal life

CO2: Identify the Real Estate Investment Routes and understand the tax planning that minimizes tax burden

CO3: Select and Apply the Asset Allocation strategies to balance between Risk and Return

CO4: Analyze the Retirement Planning Benefits and retirement strategies s to provide regular income for life.

CO5: Evaluate the basic principles and importance of various insurance polices

Syllabus:	Hours
Module No. 1: Wealth Management and Financial Planning	**09**
Meaning of Wealth Management, Need, Scope and Components of Wealth Management, Process of Wealth Management, Expectations of Clients, Code of Ethics for Wealth Manager. Challenges to WM in India – Financial Planning - Systematic Approach to Investing (SIP, STP & SWP)- Life Cycle and Wealth Cycle - Financial Planning in India, Legal aspects of Financial Planning.	
Module No. 2: Estate Planning and Tax Planning	**09**
Real Estate, Role of Real Estate, Real Estate Investment Routes, Real Estate Indices -Assets & Liabilities, Nomination, Inheritance Law, Will, Understanding Trust and Trust Documents – Tax Planning Concepts, Assessment Year, Financial Year, Income Tax Slabs, TDS, Advance Tax, LTCG, STCG, Carry Forward and Set-off.	
Module No. 3: Asset Allocation Strategies	**09**
Asset allocation Strategies -Asset allocation Decision, Equity portfolio strategies - Active Vs Passive, Management strategies, Value Vs growth investing, -Tactical, Fixed & Flexible. **Portfolio Management Strategies** - Indexing - Active - interest rate anticipation, Valuation analysis, Credit analysis, Yield spread analysis and Bond swaps - Allocation to Speculation, Diversification in Perspective.	

Module No. 4: Retirement Planning and Employee Benefits	**10**
Introduction to Retirement Planning - Types of Retirement Plans - Defined Benefit and Defined Contribution plan, Superannuation Fund and other retirement plans, Pre andPost Retirement Planning Strategies – ESOP and ESPP.	
Module No. 5: Insurance Products in Wealth Management	**08**
Meaning, Basic Principles of Insurance, Functions and Characteristics of Insurance - Group Life and Health Insurance; Types of Life Insurance Policies, Types of General Insurance Policies, Health Insurance and Group Insurance Policy – Risk Management through Insurance.	
Skill Developments Activities: • **List out different Insurance schemes** • **Create your own personal portfolio using imaginary numbers and justify.** • **Conduct a survey of 20 salaried employees on their investment avenues through questionnaire.** • **Prepare technical charts report of any 5 listed stocks in BSE S&P SENSEX.**	
Text Books: • Pawan V. Jhabak – Wealth Management, Himalaya Publishing Hou Himalaya Publishing House Pvt. Ltd., Mumbai - 400 004. • S.K Bagchi – Wealth Management Jaico Publishing House, Firs Edition. • NSE Academy – Financial Planning and Wealth Management. • NCFM Work Book – Financial Markets (Advanced).	

Course Articulation Matrix – 22OEBBA402

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO 1	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**
CO 2	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**

CO 3	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO 4	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO 5	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
WA	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**

Guidelines for Continuous Internal Evaluation and Semester End Examination:

The CIE and SEE will carry 40% and 60% weightage each, to enable the course to be evaluated for a total of 100 marks, irrespective of its credits. The evaluation system of the course is comprehensive& continuous during the entire period of the Semester. For a course, the CIE and SEE evaluation will be on the following parameters:

Sl. No.	Parameters for the Evaluation	Marks
	Continuous Internal Evaluation(CIE)	
1	Continuous & Comprehensive Evaluation(CCE) –(A)	20Marks
2	Internal Assessment Tests(IAT) –(B)	20Marks
	Total of CIE(A+B)	40Marks
3	Semester End Examination(SEE) – (C)	60Marks
	Total of CIE and SEE(A+B+C)	100Marks

Continuous Internal Evaluation:

c. **Continuous & Comprehensive Evaluation (CCE):**

The CCE will carry a maximum of 20% weightage (20marks) of total marks of a course. Before the start of the academic session in each semester, a faculty member should choose for his/her course, minimum of four of the following assessment methods with 5 marks each (4x5=20 marks)

Individual Assignments

i. Seminars/Class Room Presentations/Quizzes
ii. Group Discussions/Class Discussion/Group Assignments
iii. Case studies/Caselets
iv. Participatory &Industry-Integrated Learning/Industrial visits
v. Practical activities/Problem Solving Exercises
vi. Participation in Seminars/Academic Events/Symposia, etc.

vii. Mini Projects/Cap stone Projects

d. **Internal Assessment Tests (IAT):** The IAT will carry a maximum of 20% weightage (20marks) of total marks of a course. Under this component, two tests will have to be conducted in a semester for 30 marks each and the same is to be scaled downto10 marks each.

PATTERN OF QUESTION PAPER

TIME: 2 HOURS **M**

ARKS: 60

PART – A

Answer any FIVE of the following questions. Each question carries 2 marks. (5x2= 10)

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------
7. ----------

PART – B

Answer any TWO of the following questions. Each question carries 10 Marks.

(2x10 =20)

8. ----------
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9. ----------
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10. ----------

11----------

PART – C

Answer any TWO of the following questions. Each question carries 15 Marks

(2X15=30)

12----------
-

13----------

14----------

15----------

SBRR Mahajana First Grade College (A)
Board of Studies-Business Administration 2021-22

Sl. No.	Name & Address	Designation	Signature
1	Smt. Shyla S Assistant Professor & HOD SBRR Mahajana First Grade College Mysore shylas.fgc@mahajana.edu.in 9845859475	Chairman	Shyla.S 3/9/2022
2	Dr. Manjunath V Assistant Professor SBRR Mahajana First Grade College Mysore ymanjunath.joge@gmail.com 9900306941	Member	Manjunath 4/9
3	Dr.Anita B R Assistant Professor SBRR Mahajana First Grade College Mysore anitaprapti@gmail.com 9901114867	Member	Anita.B.R 3/09/2022
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6	Dr. R. Mahesh Professor DoS in Business Administration, Manasagagothri, Mysuru mahesh@bims.uni-mysore.ac.in 9886639536	Member	03/09/22
7	Ms.Sunayana Assistant Professor & Head Department of Commerce and Management, Amritha Vishwa Vidyapeetham, Mysore sunayanadiger@gmail.com 9880980506	Member	Not Present
8	Ms. Prejna.N.Pai Assistant Professor Jain Deemed-to-be-university Bangalore prejna@gmail.com 9900212911	Member	not Present

9	Sri.Lokesh V Managing Director & CEO Innomantra Consulting Pvt. Ltd. Bengaluru lokeshv@innomantra.com 9845272555	Member	Not Present
10	Sri.Rajesh R Chartered Accountant rajesh@bsra.in 9448229994	Member	R. Rajesh
11	Sri.Tejasvi Nathan Vice President - HR Swiss Re Global Business Solutions India Pvt Ltd, Bengaluru tejasvinathan@gmail.com 9900084170	Member	Not Present

Chairperson
(UOS/BOE in Business Administration
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru - 570012 Karnataka, INDIA

Affiliated to University of Mysore,

Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Department of Business Administration

Vision: To nurture and develop entrepreneurs who exhibit professionalism, accountability, transparency, human values and uphold Indian heritage in high esteem.

Mission:

- Imparting practical orientation to entrepreneurial ability.
- Inculcate leadership skills by organizing seminars, workshop, management games and to make students participate in other similar activities.
- Cognize the importance of social responsibility in corporate governance.
- Giving exposure on Indian ethos to future business leaders.

SYLLABI OF V & VI SEMESTER
DEPARTMENT OF BUSINESS ADMINISTRATION

Choice Based Credit System – 2021-22

UG

Sl. No.	Subject title	Subject code	No. of contact hrs per week	IA marks	Exam marks	Duration
			V Semester			
1	Company Law	214514	5	20	80	3hrs
2.	Business Statistics-I	214515	6	20	80	3 hrs
3.	Tax Management-I	214516	6	20	80	3 hrs
4.	Business Research Methods	214517	5	20	80	3 hrs
5	Project Management	214518	5	20	80	3 hrs
6	Financial Management-I	214519	6	20	80	3 hrs
7	Financial Management-II	214522	6	20	80	3 hrs
8	Human Resource Management-I	214520	6	20	80	3 hrs
9	Human Resource Management-II	214523	6	20	80	3 hrs
10	Marketing Management-I	214521	6	20	80	3 hrs
11	Marketing Management-II	214524	6	20	80	3 hrs
			VI SEMESTER			
1.	Entrepreneurship Development and Small	214634	5	20	80	3 hrs

	Business Management					
2.	Business Statistics-II	214635	6	20	80	3 hrs
3.	Tax Management-II	214636	6	20	80	3 hrs
4.	Business Policy	214637	5	20	80	3 hrs
5.	Project	214638	8	60	40	
6	Financial Management-III	214639	6	20	80	3 hrs
7	Financial Management-IV	214642	6	20	80	3 hrs
8	Human Resource Management-III	214640	6	20	80	3 hrs
9	Human Resource Management-IV	214643	6	20	80	3 hrs
10	Marketing Management-III	214641	6	20	80	3 hrs
11	Marketing Management-IV	214644	6	20	80	3 hrs

		V Semester	Credits	L:T:P Pattern	Work hours per week
5.1	**DSC-14**	**Company Law**	**4**	**3:1:0**	**5**
5.2	**DSC-15**	**Business Statistics-I**	**5**	**4:1:0**	**6**
5.3	**DSC-16**	**Tax Management-I**	**5**	**4:1:0**	**6**
5.4	**SEC-1**	**Business Research Methods /**	**4**	**3:1:0**	**5**
	SEC-1	**Project Management 1**		**3:1:0**	**5**
5.5	**DSE-1**	**Elective-I(MM/HRM/FM)**	**5**	**4:1:0**	**6**
5.6	**DSE-2**	**Elective-II (MM/HRM/FM)**	**5**	**4:1:0**	**6**
			28		**39hrs**
		VI Semester			

6.1	**DSC-17**	**Entrepreneurship and Small Business Management**	**4**	**3:1:0**	**5**
6.2	**DSC-18**	**Business Statistics-II**	**5**	**4:1:0**	**6**
6.3	**DSC-19**	**Tax Management-II**	**5**	**4:1:0**	**6**
6.4 A	**SEC-2**	**Business Policy /**	**4**	**3:1:0**	**5**
	SEC-2	**Project Report2**			
6.4 B				**0:2:2**	**8**
6.5	**DSE-3**	**Elective-III(MM/HRM/FM)**	**5**	**4:1:0**	**6**
6.6	**DSE-4**	**Elective-IV(MM/HRM/FM)**	**5**	**4:1:0**	**6**
			28		**42hrs**

SCHEME OF EXAMINATION AND EVALUATION:

There shall be college examination at the end of each semester for maximum marks of 80 for Theory examination and the Continues Assessment will be for 20 marks.

. The pattern of question paper will be as follows:

Part- A: Answer any two out of four questions.	2*15= 30
Part- B : Answer any three out of five questions.	3*10= 30
Part- C : Answer any four out of six questions.	4*05=20
TOTAL	**80**

Evaluation of each course is divided into continuous assessment (CA) and end term examination with marks allocated as shown in the table.

Scheme of Assessment

Course Type	C1	C2 (Including ABFR)	C3		Total
	Marks	Marks	Marks	Duration (Hrs)	

DSC	**10**	**10**	**80**	**3**	**100**
DSE	**10**	**10**	**80**	**3**	**100**
SEC	**10**	**10**	**80**	**3**	**100**
Project Work	**30**	**30**	**40**	**3**	**100**

Continuous assessment may be through Activity Based Field Report, announced and surprise tests, term papers / seminars / quizzes / case discussions, viva, and practicals.

The breakup of marks will be as follows:

a. C1(Internal Test, Covering the first half of the syllabus) -10 Marks
b. C2 (Activity Based Field Report/Assignment/ case studies) -10 Marks
c. C3 (Covering entire syllabus) -80 Marks

Total =100 Marks

Term end examination (C3) will be of 3 hours duration for each course.

Evaluation of Project Report

Evaluation of Project Report is for 100 marks divided into three components.

a. C1 (Finalization & Preparation of Synopsis) -30 Marks
b. C2 (Submission of detailed work dairy) -30 Marks
c. C3 (Final Project Report) -40 Marks

Elective Groups

1. **Marketing Management**:
   Elective I: **Principles of Marketing**
   Elective II: **Rural Marketing and Consumer Behaviour**
   Elective III: **Advertising**
   Elective IV: **Retail and Supply Chain Management**

2. **Human Resource Managements**
   Elective I: **Human Resource Management**
   Elective II:**Human Resource Development**
   Elective III: **Performance Appraisal and Compensation Management**
   Elective IV: **Employee Empowerment and Industrial Relations**

3. Financial Management:
Elective I: **Financial Decisions**
Elective II: **Working Capital Management** Elective III: **Financial Services**
Elective IV: **Investment Analysis and Portfolio Management**

Instructions

1. In the fifth semester candidate can choose between Business Research Methods and Project Management.
2. In the sixth semester the candidate can choose between Business Policy and Project Report.
3. In the fifth and sixth semester the candidate should choose the papers from the elective group.
4. In the fifth and sixth semester the choice will be offered for a minimum strength of 20 students.
5. The project report shall be in the elective group chosen.

Project Report Guidance

- Project Reports are to be prepared on problem/issues related to business or industry or functioning organizations under the guidance of senior teacher.
- Guiding ten students in project work will be considered equivalent to teaching three credits course

COMPANY LAW

Choice Based Credit System (CBCS)

Subject Code: 214514

Teaching Hours: L: 3+T: 1 +P:0=5 hours per week, 4 credits (total no of working hours-80)

Course Objective:

The objective of this course to educate the students by imparting the knowledge of rules and regulations relating to the management of company in India in an ever-changing environment to contribute effectively to the industry in particular and to the society in general.

Course Outcomes:

- To impart students the basic knowledge of the regulatory framework of companies with reference to various provisions of companies Act 2013 there under including case laws
- To familiarize the students with various documents related to companies
- Analyze the law governing various role played by different people like promoters, directors, key managerial personnel (KMP) and company secretaries in the successful functioning of a company
- Learn the process relating regulatory framework, mechanisms and laws relating to meetings.
- Understanding the framework of winding up of companies and also the modes of winding up

Unit – I Introduction: Company and its Characteristics; Types of companies (Meaning and Definition Only) - One Person Company, Private Company, Public Company, Company limited by Guarantee, Company limited by Shares, Holding Company, Subsidiary Company, Government Company, Associate Company, Small Company, Foreign Company, Body Corporate, Listed Company and Dormant Company; Administration of Company Law-MCA; introduction to National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT) & Special Courts. Corporate Veil and lifting of Corporate Veil**.(15 hrs)**

Unit – II Company Formation Meaning, Position and Functions of Promoter; Incorporation – contents of Memorandum of Association and Articles of Association, Difference between Memorandum of Association and Articles of Association; Documents to be filed – E-filing; Certificate of Incorporation; Certificate of Commencement of Business; Prospectus – meaning and contents; Statement in lieu of Prospects and Book Building; Member and their rights; Corporate Social Responsibility-Meaning of CSR, Applicability & Scope for CSR Activities under Schedule VII of the Companies Act, 2013, Constitution of CSR Committee**.(25 hrs)**

Unit – III Company Management & Administration Types of Key Managerial Personnel – Managing Director, Whole Time Directors, Company Secretary, Chief Financial Officer, Resident Director, Non-executive Director, Independent Director; Qualification, Appointment, Powers, Duties and Responsibilities and Removal of Directors; Director Identification Number (DIN); Remuneration of Managerial Personnel; Auditors–Appointment, Eligibility & Qualification, Powers & Duties; Company Secretary - Qualification, Appointment, Functions, Duties & Liabilities**.(15 hrs)**

Unit – IV Meetings Meetings of shareholders and board; Types of meeting; Requisites of a valid meeting; Resolutions and kinds of resolution; Convening and conduct of meetings, quorum, agenda and

proxy forms; meeting through video conferencing, e-voting; Minutes of Proceedings of Meetings**;(15 hrs)**

Unit – V Winding Up Meaning – Modes of Winding up; Consequences of Winding up; Strike off of Company Name**;(10 hrs)**

Books for References

1. Company Law-Avtar singh
2. Company Law-Anoop jain
3. Company Law-.C Tripathi
4. Company Law-Bhadra &Satpathi
5. Company Law-Karan Guptha

Web Links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

BUSINESS STATISTICS-1

Choice Based Credit System [CBCS]

Subject Code: 214515

Teaching Hours: L: 4 +T:1 +P:0=5 hours per week, 5 credits (total no of working hours-96)

Course Objectives

- To Trace the evolution of Statistics
- To *e*xplore the scope and Business Applications of Statistics

Course Outcomes

- To Define Statistics and explain its meaning, evolution and Limitations of Statistics
- To Understand Sources of data Collection methods ,Primary and Secondary data
- To Acquire the knowledge computing Mean ,Median and Mode and their interrelationship
- To understand the concept of measures of dispersion and variation.
- To understand the concept of Skewness, correlation, Regression and probable error of the series.
- To understand the concept of Statistical Modelling and its Business Applications.

Unit 1- Statistics – Meaning – Definition, characteristics, advantages and limitations-Collection of data-methods of collecting primary data and sources of secondary data-Classification and Tabulation of data. Bar diagram, Histogram and Pie chart. How to use a Spreadsheet for generating diagrams**.(15 hrs)**

Unit 2- Measures of central tendency-Arithmetic Mean, Median, quartiles and Mode. Geometric Mean and Harmonic Mean**(20 hrs)**

Unit 3-Measures of Dispersion – Quartile Deviation – Standard deviation – Co-efficient of variation. Skewness-Karl Pearson and Bowles's co-efficient of skewness; Business Application – Case Study oriented; How to use a Spreadsheet for deriving these measures.(**25 hrs)**

Unit 3-Correlation-Meaning-types-Karl Pearson's co-efficient of correlation-Spearman's Rank correlation co-efficient. Probable error; Regression analysis-Construction of regression equations-Estimation. **(20 hrs)**

Unit 4 – Introduction to Statistical Modeling and its Business Applications; SPSS/Excel. **(16 hrs)**

Text Books for Reference

1. Statistical Methods—S P Gupta
2. Fundamentals of Statistics—D N Elhance
3. Statistics—Sancheti and Kapoor
4. Statistics---R S N Pillai and Bhagavathi
5. Statistics for Management – Levin and Rubin

Web links

- https://mathstudy.home.blog/2019/01/17/scope-and-importance-of-statistics/#:~:text=Applications%20of%20statistics%20pervade%20virtually,manpower%20planning%20and%20accounting%20etc.&text=Such%20as%20wages%2C%20price%2C%20time%20series%20analysis%2C%20demand%20analysis.
- https://www.bmj.com/about-bmj/resources-readers/publications/statistics-square-one/11-correlation-and-regression

TAX MANAGEMENT I

Choice Based Credit System [CBCS]

Subject Code: 214516

Teaching Hours: L: 4 +T: 1 +P:0=5 hours per week, 5 credits (total no of working hours-96)

Course Objective:

Comprehensive understanding of the latest amendments in Taxation laws, ability to prepare taxable incomes of an individual's under various Heads of Income

Course outcomes:

- To understand the basic concepts and various definitions, residential status of an individual and exempted incomes
- To impart knowledge on computation of income from salary
- To develop an understanding about computation of income from house property
- To understand the concept of business and profession under Income Tax Act
- To acquire knowledge about deductions under section 80C to 80U

Unit - I Introduction to Income Tax -Meaning and types of Taxes; Difference between direct and indirect taxes; Basic Concepts in Income Tax - Income-Person-Assessment year-Previous year- Assessee-Gross Total Income-Total Income-Exempted Income-Agricultural Income; Concept of Capital & Revenue (a) Receipts (b) Payments (Expenditure); Residential Status and Incidence of Tax (Individuals Only) - Practical problems**.(20 hrs)**

Unit – II Exempted Incomes - Introduction – Exempted Incomes u/s 10 (Restricted to Individual Assessee). **(20 hrs)**

Unit – III Income from Salary - Meaning and chargeability; Treatment of Various Allowances; Perquisites and their Valuation; Treatment of Provident Funds, Leave salary and Pension, Deductions from Gross Salary Computation of Income from Salary**.(20 hrs)**

Unit - IV Income from House Property - Annual Letting Value; Unrealized Rent and Vacancy Allowance; Deductions for let out House Properties; Annual Value of Self Occupied House Property; Deduction for Self-Occupied Property; Computation of Income from Let-Out House Property and Income from Self Occupied House Property – Practical Problems**.(20 hrs)**

Unit – V Profits and Gains of Business and Profession-I - Meaning and Definition of Business and Profession; Allowable Expenses; Expenses expressly disallowed; Depreciation – Meaning and Conditions; Concept of Block of Assets, Rates of Depreciation, Additional Depreciation, Problems on computations of depreciation; Presumptive Scheme of Taxation**;(8 hrs)**

Unit – VI Profits and Gains of Business and Profession-II - Computation of Income from Business & Profession – Practical Problems**(8 hrs)**

Books for Reference

1) Direct taxes-H. C Mehrotra
2) Income tax -Bhagavathi Prasad
3) Direct taxes- Vinod Singhania.
4) Direct taxes T.- Manoharam

Web Links
www.iilsindia.com
www.incometaxmanagement.com
www.icsi.edu
www.taxmann.com

BUSINESS RESEARCH METHODS- BRM

Choice Based Credit System [CBCS]

Subject Code: 214517

Teaching Hours: L: 3+T: 1 +P: 0=5 hours per week, 4 credits (total no of working hours-80)

Course Objectives

To facilitate systematic approaches to search for Knowledge, Truth and its Verification in the areas of Business studies and Social sciences

Course Outcomes

- To enable the students to understand the concept of Research, scope and its importance.
- Understand the steps involved in Research process and formulation of business problem
- To provide essential insights of knowledge to bridge the gap between Management decision problem and Business Research problem
- Understand different types of research designs and types of scales of measurement of decision variables
- To understand the concept of Inferential Statistics and the associated statistical techniques for data analysis.

Unit I - Nature and Scope of Business Research – Role of Business Research in decision making. Applications of Business Research; The Research process – Steps in the research process; the research proposal; Problem Formulation: Management decision problem vs. Business Research problem. Funnel down approach to Research. **(20 hrs)**

Unit II- Research Design: Exploratory, Descriptive & Causal. Validity in

experimentation- internal validity and external validity. Primary Data Collection: Survey Vs Observations, Questionnaire-form &design; Secondary Data Research: Advantages & Disadvantages of Secondary Data, Criteria for evaluating secondary sources, secondary sources of data in Indian Context. (**20 hrs)**

Unit III- Sampling: Sampling techniques– Probability and non-probability, determination of sample size using statistical techniques and reliability of data**. (10 hrs)**

Unit IV- Measurement & Scaling: Primary scales of Measurement-Nominal, Ordinal, and Interval & Ratio. Scaling techniques-paired comparison, rank order, semantic differential scales, itemized ratings, Likert Scale; **(15 hrs)**

Unit V - Methods of Analysis: Analysis of Variance (ANOVA) One-Way & Two-Way, Chi square test (goodness of Fit); Factor Analysis (Principal Component Analysis), Discriminate Analysis; Manwhitney U Test and Friedman Rank Test (only theory) **(15 hrs)**

Text Books:

1. Chawla, D, &Sondhi,N. (2011) Research Methodology Concepts and Cases (1st ed.). Vikas Publishing House
2. Malhotra, N & Dash. S (2010) Marketing Research An Applied Orientation (6th ed.). Pearson, Prentice Hall ofIndia.
3. Zikmund, W.G., Babin, B.J., Carr, J.C. & Griffin, M. (2013). Business Research Methods (9th ed.). Cengage Learning.
4. Johnson, R.A. &Wichern, D.W. (1997) Business Statistics-Decision Making with Data (1st ed.). John Wiley &Sons.

Web links

- https://www.slideshare.net/mujeebrahiman14/business-research-methods-162385363
- https://gfgc.kar.nic.in/magadi/GenericDocHandler/32-b29ae961-fb2a-413c-91a7-fc8599f21be0.pdf
- https://gent.uab.cat/diego_prior/sites/gent.uab.cat.diego_prior/files/02_e_01_introduction-to-research-methods.pdf
- http://www.universityofcalicut.info/SDE/business_research_methods.pdf
- http://sdeuoc.ac.in/sites/default/files/sde_videos/V%20Sem.%20-%20Business%20Research%20Methods.pdf

PROJECT MANAGEMENT

Choice Based Credit System [CBCS]

Subject Code:214518

Teaching Hours: L: 3+T:1 +P:0=5 hours per week, 4 credits (total no of working hours-80)

Course Objectives

- To enable the students to understand the environment in which projects operate.
- To analyze the scope, schedule, cost, risk, and quality associated with business projects

Course Outcomes

- To understand the concept of projects and project life cycle
- Evaluate alternative courses of action to attain project objectives and different techniques of project appraisals
- To acquire the appropriate knowledge of project proposals, Project feasibility and Techniques of project appraisal.
- To understand the functions of Administrative agencies for project approval and Ministry of Finance.
- To understand and interpret the role of a project manager.

Unit 1 - Project – meaning, definition, characteristics, importance, types, steps in identification of projects - features – classification of projects - stages in project cycle – identification, formulation and implementation. **(15 Hours)**

Unit 2 - Project management: meaning and scope, Technical appraisal, Environmental appraisal, Managerial appraisal Concepts of project management: concept of a project, categories of projects - tools and techniques for project management. The project manager - roles and responsibilities of project manager. **(15 Hours)**

Unit 3 - Appraisal of Projects: Market feasibility, technical feasibility, financial feasibility - different types of appraisal to determine feasibility – feasibility report. Project formulation: formulation stages - bottlenecks - feasibility report - financing arrangements - finalization of project implementation schedule. **(20 hours)**

Unit 4 - Financial Appraisal of a Project: Evaluation Techniques – traditional and modern (theoretical aspects only). Administrative agencies for project approval: Ministry of Finance - Bureau of public enterprises planning commission public investment board**.(10 hours)**

Unit 5 - Estimation of Project cost: Preliminary expenses – cost of acquisition of fixed assets, cost on technical knowhow, acquisition of patents and licenses – documentation charges – preparation of project report. Organizing systems and procedures: working of systems - design of systems - project work system' design - work break down structure - project execution plan - project procedure manual project control system - planning scheduling and monitoring - monitoring contracts and project diary. Project evaluation and its objectives, types and methods. **(20 hours)**

Text Books for reference

- Erik Larson-Project Management: The Managerial Process- Erik Larson
- Rory burke, Wiley (India Edition) -Project Management Planning and Control Techniques -
- SL Gupta -Project Management - ISBN 8174464166

- Prasanna Chandra -Project Planning and Analysis: ISBN -978-0-07-007793-5

  ISBN: 0-07-007793-2

Web links

- https://onlineprograms.smumn.edu/mspm/masters-in-project-management/program-outcomes#:~:text=Plan%20complex%20projects%20using%20appropriate%20planning%20tools.&text=Evaluate%20alternative%20courses%20of%20action,Develop%20integrated%20change%20control%20procedures.
- https://lecturenotes.in/subject/171/project-management-PM
- https://bookdown.org/content/e12712f9-eea3-49cb-ad8d-a3e908f52a2f/an-introduction-to-project-management.html
- https://gita.edu.in/lectnote/PM.pdf

FINANCIAL DECISIONS (FM I)

Choice Based Credit System [CBCS]

Subject Code:214519

Teaching Hours:L:4 +T:1 +P:0=5 hours per week, 5 credits (total no of working hours-96)

Course Objective:

To impart knowledge about the basis of finance, to provide detailed exposure about the traditional and modern approaches in financial management.

Course Outcomes:

- To familiarize the concept of time value of money and the role of a financial manager in the current competitive business scenario
- To understand the concept of cost of capital and weighted average cost of capital
- To provide an in-depth view on the allocation, management and funding of financial resources through capital structure theories
- To evaluate the feasibility of various investment options and capital budgeting decisions
- To understand the factors determining the dividend policy adopted by companies

Unit 1- Introduction to Financial Management: Nature, Scope and Objectives of Financial Management- Profit Maximization and Wealth Maximization, Sources of Finance, Risk and Return, Time value of Money.**(13Hrs)**

Unit 2- Financing Decisions: Concept of Leverage- Operating Leverage, Financial Leverage, Combined Leverage, EBIT-EPS analysis ,Computation of Cost of Capital- Cost of Debt, Cost of Preference Capital, Cost of Equity , Cost of Retained Earnings,- Weighted Average Cost of Capital**.(20Hrs)**

Unit 3- Capital Structure Theories-, Theories of Capital Structure- Net Income Approach, Net Operating Income theory, Traditional Approach, MM Hypothesis.**(23Hrs)**

Unit 4- Capital Budgeting Decisions- Meaning, Features, Significance, Problems of Capital Budgeting- Techniques of Capital Budgeting- Traditional Methods, ARR, Pay-back period- Discounted Cash flow techniques- NPV, IRR, Profitability Index.**(25Hrs)**

Unit 5- Dividend Decisions- Concept and Significance, Factors influencing Dividend decision, Relevance of Dividend Policy- Walter's Model, Gordon's Model- Irrelevance of Dividend Policy- Residual theory, MM theory.**(15Hrs)**

Books for references:

1. Financial Management – M Y Khan and P K Jain
2. Financial Management – I M Pandey
3. Financial Management – Prasanna Chandra
4. Financial Management – Rustagi R P

Web Links

www.managementstudyguide.com

www.toppr.com

www.tutorsonnet.com

www.indeed.com

FINANCIAL MANAGEMENT-II

(Working Capital Management0

Choice Based Credit System [CBCS]

Subject Code: 214522

Teaching Hours: L: 4+ T:1 = 6 Hours per week, 5 Credits (Total no. of Working Hours – 96)

Course Objectives: To evaluate the importance of effective working capital management and its role in meeting the firm's strategic objectives and its impact in value creation.

Course Outcomes

- Understand the basic structure and estimation of working capital.
- Learn the basic principles of cash management and the relevance of cash budgeting.
- Analyze and evaluate the credit policies of firms.
- Comprehend inventory management and inventory control techniques.
- Familiarize with the sources of working capital financing.

Unit 1-Working Capital Planning and Management; nature and types of Working Capital, Operating and Cash cycles, Factors influencing working capital, Types of working Capital- Permanent and temporary working capital, Approaches to Financing of Current assets- Working Capital Estimation**.(20hrs)**

Unit 2-Management of Cash-Introduction, motives for holding cash, Objectives of Cash Management, Cash budget, Optimum cash balance; Baumol's Model, Miller-orr model, Management of Marketable securities**.(20hrs)**

Unit 3- Receivables Management-Introduction- Cost and Benefits of receivables, Credit Policy, Credit evaluation, Evaluation of Credit Policies. **.(20hrs)**

Unit 4-Inventory Management- types of inventories, Motives for holding inventory, Techniques of inventory management- ABC analysis, E O Q, Levels of stock, JIT**.(20hrs)**

Unit 5-Financing of Working Capital- Sources- Trade credit- Open account, Bills payable, Accrued expenses, Commercial Papers- Bank Credit for working capital- Types of bank credit- Overdraft, Cash credit, Bills purchased and Discounting, Letter of credit, Working capital term loan- Security for bank credit-Hypothecation, Pledge, Mortgage, Lien**.(16hrs)**

Books for reference:

1. Financial Management - M Y Khan and P K Jain

2. Financial Management - I M Pandey

3. Financial Management - Prasanna Chandra

4. Working capital Management- Bhalla

5. Working Capital Management- Hrishikes Bhattacharya

Weblink

http://www.investopedia.com

https://www.ig.com/uk

https://corporatefinanceinstitute.com
https://www.topperlearning.com

https://cleartax.in

MARKETING MANAGEMENT - I

Choice Based Credit System [CBCS]

Subject Code:214521

Teaching Hours:L:4 +T:1 +P:0=5 hours per week, 5 credits (total no of working hours-96)
Course objective:
To develop proficiency, critical thinking skills, acquire knowledge to excel in the field of current competitive marketing world

Course outcomes:

- To understand the marketing concepts and marketing mix
- To acquire knowledge on product planning and product lifecycle

- To understand the basics related with the consumer behaviour
- To gain knowledge on choice of distribution channels and pricing strategies
- To develop an understanding about various consumer protection act for faster redressal of complaints

Unit 1- Marketing concepts, Marketing Mix, -Product, Price, Place and Promotion, Digital Marketing. (**20 Hrs**.)

Unit 2- Product/Service Strategy- Product Planning and Product development of New Product, Product Life cycle, Product Line and Mix, Product modification and elimination, Branding and Packaging decisions. (**25 Hrs**.)

Unit 3-Market Segmentation-consumer demographic and segmentation-evaluation of market segmentation –Target marketing- marketing positioning and differentiation strategy both nation and International (**15 Hrs.**)

Unit 4- Pricing Policies and strategies, types of pricing, factors affecting pricing decisions types of sales Promotions, Basics of Logistics and Distribution management. (**20 Hrs.)**

Unit 5- Social responsibility of Marketing, Marketing Ethics, Consumer Protection Act 2008. (**16 Hrs.)**

Books for Reference

1.Marketing Management -Philip Kotler

2.Marketing Management- S A Sherlekar

3.Marketing Management- Ranjan Saxena

Web Links:

www.iedunote.com

www.basicconcept.com

www.nau.edu

www.mbaknol,com

MARKETING MANAGEMENT-II

(Rural marketing and consumer Behaviour)

Choice Based Credit System (CBCS)

Subject Code:214524

Teaching Hours:L: 4+T:1 +P:0=6 hours per week, 5 credits (total no of working hours-96)

Course Objective

Critically analyze the various aspects of Indian rural markets and to understand the increasing purchasing power of the rural population and also to identify qualitative and quantitative methods of measuring consumer behaviour.

Course Outcomes

- To explore the various facets of rural marketing and develop an insight into rural marketing regarding different concepts and basic practices in this area.
- Learn the process of Categorizing consumers based on their behavioral aspect and also different models relating to it.
- Analyze the environment and recommend appropriate segmentation targeting and positional strategies for rural markets.
- Recommend suitable product price promotion and distribution strategies for rural markets

Unit 1-Marketing Research and Strategy-Marketing research process**.(15 hrs)**

Unit 2- Rural marketing: introduction, scope, evolution, classification of rural markets, rural vs. Urban markets, need for rural marketing, types of rural customers, factors affecting rural consumer behaviour**. (20 hrs)**

Unit 3- Product branding and promotion in rural market: rural product categories – FMCGs – consumer durables-agriculture goods, services, branding in rural India: fake brands, look-alikes, spell-alikes, duplicates, product promotion through melas, haats, interactive games, folk media, puppet shows**. (21 hrs)**

Unit 4- consumer behaviour: nature, scope, importance of consumer behaviour in marketing decisions, characteristics of consumer behaviour, models of consumer behaviour**.-** Consumer decision making process: problem recognition, pre-purchase search influences, information evaluation, purchase decision (compensatory decision rule, conjunctive decision, rule, lexicographic rule, affect referral, disjunctive rule), post-purchase evaluation; situational influences**(20 Hrs)**

Unit 5-Consumer reference groups and group dynamics: different types of reference groups, reference group influence on products & brands; determinants of social class, characteristics of social class; influence of culture on consumer behaviour, introduction to sub-cultural & cross cultural influences; opinion leadership process**. (20hrs)**

Books for References

1. Consumer Behaviour and Rural marketing in India-Meenu Agrawal
2. Rural Marketing (Challenges and opportunities)-Dinesh kumar and Punamgupta
3. Rural marketing -C.S.G. Krishnamacharyulu& Lalitha Ramakrishna
4. Rural Marketing-Pradeep Kashyap
5. Consumer Behaviour-Rajneesh Krishna

Web links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

HUMAN RESOURCE MANAGEMENT-I

Choice Based Credit System (CBCS)

Subject Code:214520

Teaching Hours: L: 4+T:1 +P:0=6 hours per week, 5 credits (total no of working hours-96)

Course Objective

Critically analyze and understand the theoretical concepts and framework required for effective human resource management.

Course Outcomes

- To provide knowledge about the importance of human resource management in organisations.
- Develop an overview on various functions and processes of human resource management.
- Understanding the importance of staffing decisions including recruitment and selection
- Learn the process and methods of training and development.
- Determine the skills set required for today's HR professionals.

Unit 1-Meaning and Definition; Differences between Personnel Management and HRM; objectives; scope; functions; role of HR executives ,Evolution and Development of HRM- trade union movement era; social responsibility era; Human relations Era; Behavioural Science Era; systems approach era contingency approach era. HRM in India- an overview. **(15 hrs**)

Unit 2-Human Resource Planning: Definition, Man-power Planning vis-à-vis HR planning, objectives of HRP; Need for and Importance of HRP- Human Resource Planning process; Human Resource information system, Barriers to HRP**. (25 hrs)**

Unit 3-Job-analysis and design; Job analysis- job description- job specification, job evaluation- uses of job analysis, process of Job Analysis- methods of data collection, concept of Job Design, factors affecting job design; Techniques of job Analysis-work simplification, job rotation, Job enrichment, Job Enlargement-ways to enrich job. **(20 hrs)**

Unit 4-Recruitment- Meaning and definition; factors affecting recruitment-internal and external sources of recruitment-internal and external sources- evaluation of internal and external sources; recruitment

process; Recruitment practices in India –an overview- Methods of Recruitment-direct, indirect and third-party method- **(16hrs)**

Unit 5- Selection: Meaning and definition, differences between recruitment and Selection, need for scientific selection, Selection process- preliminary interview, application blanks, Selection tests, Types of tests- ability tests, Aptitude tests, Achievement tests, Intelligence tests, Personality tests- interviews objectives, Types, Final selection, Induction, meaning objectives, Phases of induction**. (20 hrs)**

Books for References

1. Human Resource Management-K Aswathappa
2. Human Resource Management-Garry Dessler& Biju Varkkey
3. Human Resource Management-V.S.P. Rao
4. Human Resource Management- Neha verma

Web links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

HUMAN RESOURCE MANAGEMENT-II

(Human Resource Development)

Choice Based Credit System (CBCS)

Subject Code:214523

Teaching Hours: L: 4+T:1 +P:0=6 hours per week, 5 credits (total no of working hours-96)

Course Objective:

The course is intended to make students capable of applying the principles and techniques as professionals for developing human resources in an organization.

Course Outcomes:

- To provide an idea about HRD its concepts and its functions
- To enable the students to understand training and development and various life skills
- To develop competency in HRD
- To familiarize the students with human resources development, the development of human capacity which help them to develop their attitudes and knowledge

Unit 1 -Human Resource Development: Meaning and concept of HRD, training- objectives, methods, difference between training and development, advantages and limitations of training, evaluation of training, performance appraisal – concept, need, methods. Internal mobility and separations- promotion, transfer, demotion, separations. Employee misconduct and disciplinary procedure, grievances and grievances' redressal procedure**. (20 hrs)**

Unit 2-changing role of HR in India, emerging trends in HRM- competency mapping, business process outsourcing, right sizing of workforce, flexi time, talent management, employee engagement –work life balance- happiness index**.(20 hrs)**

Unit 3 -Training- Introduction, meaning and definition, objectives, Training and Development, Need and Importance, Benefits of training to Individuals and organization, Steps in Systematic training plan, training methods—on the job training- Job instruction training, Coaching, Mentoring, position rotation, Apprenticeship, - Off the job training- vestibule training, Apprenticeship training, classroom training, internship training, conferences, role playing, computer-based training**. (20 hrs)**

Unit 4-Executive development: -Introduction, meaning and definition, objectives, importance, process of executive development, methods of executive development- In basket exercise, management games, case study, interpersonal skills-Role playing, sensitivity training, behavioural training, transactional analysis, Multiple Management, Job Knowledge- on the job experience, coaching, understudy, organizational knowledge, Job rotation, General Knowledge**. (20 hrs)**

Unit 5-Career planning and development: introduction, meaning, objectives, career planning vs manpower planning, Individual career planning- factors to be considered – self-awareness- elements of career management programme- career Models- Pyramidal model, obsolescence model, Japanese model- benefits to individual and organizations, Steps in career Planning.- success in career –parameters of judging career success**.(16 hrs)**

Books for References

1. Human Resource Development-Sanjeev Kumar singh
2. Human Resource Development-Biswanath Ghosh
3 Human Resource Development-Randy l Desimone& Jon M Werner
4. Human Resource Development- Dr.Subhash
5. Human Resource Development and Business growth- H.L.Kaila

Web links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

VI SEMESTER

ENTREPRENEURSHIP DEVELOPMENT AND SMALL BUSINESS MANAGEMENT

Choice Based Credit System (CBCS)

Subject Code:214634

Teaching Hours: L: 3+T:1 +P:0=5 hours per week, 4 credits (total no of working hours-80)

Course Objective

The course aims at providing fundamental knowledge and exposure to the concepts, skills and practices in the field of entrepreneurship and also to equip students with the basic understanding in setting up a new venture and different financial institutions providing funds for such ventures.

Course Outcomes

- Develop an understanding of the nature of entrepreneur and entrepreneurship.
- Understand the importance of entrepreneurs and SSIs in country like India.
- Understand what problems are faced by women entrepreneurs.
- Learn the process government policies regarding the promotion of entrepreneurs and small-scale industries
- Understand that how an entrepreneurs can seek financial help for their enterprise from agencies like DICs, NABARD, SIDBI
- Process & develop project report, foreseeing the entry barriers to the industry.
- Familiarize the students about the start up process and types of challenges faced in start ups.

Unit 1: Introduction to Entrepreneurship: Meaning and definition of entrepreneurship, features of entrepreneurship, entrepreneurship and enterprise. Entrepreneur – Meaning and definition, functions of an entrepreneur, types of entrepreneurs, qualities of a successful entrepreneurship, entrepreneur v/s professional manager, Challenges faced by women entrepreneurs**. (20 hrs)**

Unit 2: Entrepreneurship development program: Meaning of entrepreneurship development program - need, objective, relevance and role of EDP. Phases of Entrepreneurship development programs. Problems in conducting EDP, suggestions to make EDP's successful. **(15hrs)**

Unit 3: Introduction to Small Scale Industry in India: Definition, Steps for setting up small industry, Contribution to Indian Economy– steps involved in establishing a business enterprise, selection of location, clearance, permits, licensing, registration, legal considerations and basic start-up problems. **(20 hrs)**

Unit 4: Introduction to start ups- process and its eco system-Types-Challenges of start ups. **(5hrs)**

Unit 5: Institutional Support to entrepreneurs: Need for institutional support, financial assistance through – National Small Industries Corporation (NSIC), Small Industries Development Organization (SIDO), Small Scale Industries Board (SSIB), State finance corporations (SFC), Small industries development bank of India (SIDBI), Industrial Finance Corporation of India (IFCI) and commercial banks. Non-financial assistance from Small Industries Service Institutes (SISI) , District Industries Centers (DIC).

Association of Women Entrepreneurs of Karnataka (AWAKE), Khadi and village industries commission (KVIC)**-** Investment Bankers**.(15 hrs)**

Unit 6: Industry/Entrepreneurship/Start ups Review Report: The purpose of this chapter is to inculcate in students a spirit of inquiry and research rigor to investigate the efforts that go into the working of industry at large and specific companies in detail, also to develop analytic skills through a comparative study. Apart from learning teamwork, students would be equipped to gather, filter relevant information and understand the dynamics of the respective industry**.(5 hrs)**

PARAMETERS FOR ANALYSIS OF COMPANIES OF AN INDUSTRY

1. Name of the enterprise &Year of Establishment
2. No. of. Employees and brief profile of employees
3. Profile of CEO/CMD
4. Total Share Capital& Share holding pattern
5. Total Sales Turn Over including foreign sales
6. Board of Directors/Management Profile.
7. Major Competitors
8. Annual Growth rate last 5 years
9. No of Subsidiaries (If applicable)
10. Headquarters
11. Market Share [during last three years]
12. Mergers and Acquisitions, Joint Ventures, collaborations & Strategic Alliances.
13. Diversification and other businesses (If applicable)
14. Nature of business & main business& other businesses.
15. Product profile (Range of Products)
16. No. of Patents/ Trade Marks/ Copy Rights (if any)
17. Market capitalization (in case of public company) in India or abroad
18. Number of awards & Recognitions (if any)
19. Market capitalization (In case of listed public company)
20. Litigations, if any.

Books for Reference

1.Entrepreneruship Development-Dr.S.S Khanka

2..Entrepreneruship Development-V.K.Joshi

3.Entrepreneruship Development-Vasath Desai

4.Entrepreneurship and Small Business Management- Caroline Glackliln and Steve Mariotti

5.Small Business Management:Entrepreneurship and Beyond- Timothy S Hatten

Web links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

BUSINIESS STATISTICS-II

Choice Based Credit System [CBCS]

Subject Code:214635

Teaching Hours:L:4 +T:1 +P:0=5 hours per week, 5 credits (total no of working hours-96)

Course Objectives

To explore the scope and Business Applications of Statistics

Course Outcomes

- Understand the concept of Business forecasting & different methods of Business forecasting and its business applications
- Understand meaning ,definition ,components of time series and methods of Measurement of trend
- Understand the concept and meaning and business applications of Linear programming (LPP)
- Understand applications of various decision models under the conditions of Certainty and uncertainty and its business applications
- Define the concept of Probability according to different schools of thought and its business applications.

Unit 1-Business forecasting-time series analysis-components-measurement of secular trend by the method of least squares and seasonal trends; Use of E-VIEWS software for time series data; **(20 Hours)**

Unit 2-Linear programming-meaning -features-applications-graphical method and simplex method of finding solution to linear programming problem limitations. Duality in LPP **(20 Hours)**

Unit 3-Statistical decision theory-decision making process-decision making under certainty and under uncertainty-mini-max, maxi-min, Laplace and Hurwitz's criterion-expected opportunity loss criterion. **(30 Hours)**

Unit 4- Probability-Meaning-Uses-Random Experiment- Sample space- Event-Mutually exclusive events-Equally likely events-Independent and Dependent events. Addition and Multiplication theorem. **(15 Hours)**

Unit 5-Theoretical distributions-Binomial, Poisson and Normal distribution. Properties of each distribution and their application in Total Quality Management (TQM) **(11 hours)**

Text Books for Reference

1. Statistical Methods—S P Gupta
2. Fundamentals of Statistics—D N Elhance
3. Statistics: Theory, Methods & Application – Sancheti& Kapoor
4. Statistics---R S N Pillai and Bhagavathi
5. Statistics for Management – Levin and Rubin

Web links

- https://www.toppr.com/guides/fundamentals-of-business-mathematics-and-statistics/time-series-analysis/method-of-least-squares/#:~:text=Least%20Square%20is%20the%20method,used%20in%20time%20series%20analysis.
- https://www.yourarticlelibrary.com/economics/statistical-decision-theory-decision-types-decision-framework-and-decision-criteria-economics/29001
- https://www.yourarticlelibrary.com/linear-programming/applications-of-linear-programming-for-solving-business-problems-economics/28947

TAX MANAGEMENT - II

Choice Based Credit System [CBCS]

Subject Code:214636

Teaching Hours:L:4 +T:1 +P:0=5 hours per week, 5 credits (total no of working hours-96)

Course Objective:

To provide, master and reinforce skills in calculating tax savings and in applying methods of tax planning in companies and financial institutions

Course Outcomes:

- Develop an understanding about computation of capital gain
- To familiar with the computation of income from other sources and also about the assessment of individuals
- To enable the students to understand and acquire knowledge about deductions u/s 80 C to 80 U
- To give an exposure to the students in understanding e-filing of returns, TDS and Advance payment of tax
- To provide the detailed theoretical and practical knowledge about GST

Unit I – Income from Capital Gains - Capital Asset – inclusions/exclusions; Short Term Capital Asset & Long Term Capital Asset; Definition of Transfer &Transactions not regarded as transfer; Meaning of Cost of Acquisition, Cost of Improvement, Indexed Cost of Acquisition, Indexed Cost of Improvement; Exemption with reference to sections 54, 54B, 54D, 54EC, 54ED, 54F, 54G; Sec 54H (Basic Problems with reference to Sec 54, 54EC and 54F only).(**20 hrs)**

Unit - II Income from Other Sources, TDS & Set off & Carry Forward of Losses - Incomes falling under the head "Other Sources"; Deductions allowed; Expenses Not Deductible; Computation; Tax deducted at Source (TDS) – Meaning and Rates of TDS on different kinds of payment; Rules for Carry Forward and Set off of Losses**.(25 hrs)**

Unit - III Gross Total Income (GTI), Deductions under Chapter VIA, Total income and Tax liability - Computation of GTI, Deductions under Chapter VIA - Section 80C to 80U [only deductions applicable to individuals - 80 C and CCC, D, DD, DDB, G, 80TTA, 80TTB, 80E, 80EEA, 80GGB and 80U],Computation of Total Income, Advance Tax& Tax for individual assessees**;(25 hrs)**

Unit - IV Introduction to Goods and Services Tax (GST) – I - Objectives and basic scheme of GST; Salient features of GST; Structure of GST (Dual Model) – Central GST – State / Union Territory GST – Integrated GST; GST Council - Structure, Powers and Functions and provisions for amendments**;(12 hrs)**

Unit - V Introduction to Goods and Services Tax (GST) – II - Definition: Aggregate turnover, Agent, Business, Capital goods, Casual taxable person, Supply, Composite supply, Mixed supply, Exempt supply, Outward supply, Principal supply, Zero Rate Supply, Place of supply, Time of Supply, Supplier, Goods, Job work, Manufacture, Input tax, Input tax credit, Output Tax, Person, Place of business, Reverse charge, Works contract, Export of goods / services, Import of goods / services; Simple problems on utilization of input tax credit**.(14 hrs)**

Skill Development

1) Filling of Challan for making payments oftaxes.
2) Filling and Filing ofITR-4
3) Filling and Filing ofITR-5
4) Filling of Forms No.16A &15H.

Books For Reference

1) Direct taxes H. C Mehrotra
2) Income tax Bhagavathi Prasad
3) Direct taxes Vinod Singhania
4) Jain & Narang Dinakar pagare.
5) Direct taxes T. Manoharam

Web Links

www.incometaxindia.gov.in

www.incometaxmanagement.com

www.coverfox.com

www.gstindia.com

BUSINESS POLICY

Choice Based Credit System [CBCS]

Subject Code:214637

Teaching Hours: L: 3+T:1 +P:0=5 hours per week, 4 credits (total no of working hours-80

Course Objectives

- Equip the students to gain the knowledge about basic concepts of business policies and strategic management
- To acquire new ways and means of developing strategic decision making skills.
- To equip the students with analytical tools for Cracking case studies by scanning the business environment and decision making

Course Outcomes

- To understand the concept of Business policy and strategic Management
- To educate the students with regard to Portfolio management and business strategy
- To educate the students to bridge the relationship between different functional areas of business management and types of business strategies

- To enable the students to establish strategic business units and organisational structures
- To enable the students to develop Quality management systems that will influence the implementation of strategy and Business decisions.

Unit – I: Meaning and Nature; Business policy and Strategic Management;

Directive Principles, Vision, Mission, and Objectives, Strategic Levels in Organisation. **(15 hrs)**

Unit – II: Organisational Structures, Establishing Strategic Business Units, Establishing Profit Centers by Business, Product or Service, Market Segment or Customer Segmentation**.(20 hrs)**

Unit – III: Strategic Planning- Meaning, Stages, Alternatives, Strategy Formulation. Strategic & Situational Analysis – SWOT Analysis, TOWS Matrix, Portfolio Analysis, BCG Matrix. **(20 hrs)**

Unit – IV: Marketing Strategy, Financial Strategy, Production & Operations Strategy with Research & Development, Logistics Strategy, Human Resource Strategy. **(15 hrs)**

Unit –V Case studies in business policy and strategic management. **(10 hrs)**

Text Books for Reference

1. Kazmi A, Business Policy & Strategic Management, Tata McGraw hill, New Delhi.
2. Upendra K, Strategic Management Concepts & Cases, Excel Publications, New Delhi.
3. Glueck W.F., Strategic Management & Business Policy, McGraw Hill, Newyork.
4. Thompson & Strickland, Strategic management Concept & Cases, Tata McGraw Hill, New Delhi

Web links

- https://gurukpo.com/Content/MBA/BPSM.pdf
- https://www.studocu.com/in/document/guru-gobind-singh-indraprastha-university/business-policy-strategy/lecture-notes/business-policy-notes/4112089/view
- https://www.collegetutor.net/notes/Strategic_Management_and_Business_Policy_lecture_notes_by_professor_pdf
- https://www.slideshare.net/sidxp4/business-policy-and-strategic-management-notes

FINANCIAL MANAGEMENT-III

(FINANCIAL SERVICES)

Choice Based Credit System [CBCS]

Subject Code:214639

Teaching Hours:L:4 +T:1 +P:0=5 hours per week, 5 credits (total no of working hours-96

Course Objective:

To provide an in-depth understanding of theoretical and practical knowledge about various types of financial services and their regulatory framework.

Course Outcomes:

- To facilitate the knowledge of various fund based and fee based financial services in India.
- To enable students get familiarized with Merchant Banking services and its regulations
- To acquire the knowledge about venture capital mechanism.
- To familiarize students the concept of Leasing as a financial service
- To understand the concept of factoring services

Unit 1-Financial Services- Meaning, Features, Importance, Contribution of financial services in promoting industry and service sector – financial aspects- types – financial markets- unorganized and organized – money market and capital market, IPO.**(20Hrs)**

Unit 2-Merchant Banking- Meaning, Origin and Growth of merchant banking in India, Scope of merchant banking services Merchant bankers and management of public issues- merchant banking practices in India, Weaknesses in the functioning of merchant bankers in India.**(15Hrs)**

Unit 3-Venture Capital- Concept of Venture Capital fund-Characteristics'-theoretical framework-Growth of venture capital funds in India. Problems and Prospects **(23Hrs)**

Unit 4-Lease financing: Meaning- types of leasing- Finance lease- direct lease, leveraged lease, sale and lease back- Operating lease - factors influencing lease, Treatment of lease transactions – lease v/s buy- Evaluation of lease- buy decision- Lease financing critical evaluation- problems on lease financing.**(23Hrs)**

Unit 5- Factoring- Introduction- need for factoring- types- factoring mechanism- securitization of debt- concept and mechanism.**(15Hrs)**

Books for references:

1. Financial Services - M Y Khan
2. Financial Management – Dr R P Rustagi
3. Financial Service in India – Rajesh Kothari
4. Financial Services – Shashi K Gupta &NishaAgarwal
5. Financial Services and Markets – PunithavathiPandian

Web Links

www.investopedia.com

www.wallstreetmojo.com

www.geektonight.com

www.yourarticlelibrary.com

FINANCIAL MANAGEMENT- IV

Investment Analysis and Portfolio Management

Choice Based Credit System [CBCS]

Subject Code: 214642

Teaching Hours: L: 4+ T:1 = 6 Hours per week, 5 Credits (Total no. of Working Hours – 96)

Course Objectives:

To understand the principles of Financial Investment decisions of an investor with respect to the various avenues of investment and their management strategies.

Course Outcomes

- Learn the basics of investment decisions and financial markets.
- Understand the various investment instruments available in the market.
- In depth analysis of investments through fundamental and technical analysis.
- Decision of allocation and selection of investment assets based on the trade-off between risk and return.
- Comprehend portfolio theory and study various methods of modelling the risk and return.

Unit 1- Investment- Meaning, Alternatives, financial Markets, Portfolio Management Process- Approaches to Investment Decision making, Common errors in investment management- qualities for successful investing**.(20hrs)**

Unit 2-Investment Instruments-Capital Market instruments -shares, debentures, bonds, mutual funds- Money market instruments-Call Money, Treasury bills, Certificate of deposit, Commercial paper, Inter- corporate deposits- derivative instruments-futures, forwards, options and swaps**.(20hrs)**

Unit 3- Analysis of investments- fundamental analysis- Industry analysis-Equity analysis-problems on equity valuation, technical analysis-price chart- Dow theory, efficient market hypothesis-Elliot theory**.(20hrs)**

Unit 4-Risk and Return- meaning-current return and capital return-Risk- Sources of risk- interest rate risk, market risk, business risk, Measuring total return- average return- measuring risk-variance and standard deviation- Expected rate of return and risk**.(20hrs)**

Unit 5- Portfolio theory- diversification and portfolio risk- Portfolio Return and Risk-Measurement of co-variance, Co-efficient of correlation, calculation of Portfolio risk with two and three securities-Markowitz model**.(16hrs)**

Books for reference:

1. Investment analysis and Portfolio Management- Prasanna Chandra

2. Investment management- Puneethavathi Pandian,
3. Security analysis and portfolio management-Sasidharan
4. Security analysis and Portfolio Management- Avadhani V A

Weblink

http://www.investopedia.com

https://www.ig.com/uk

https://corporatefinanceinstitute.com

https://www.topperlearning.com

MARKETING MANAGEMENT-III

(ADVERTISING)

Choice Based Credit System [CBCS]

Subject Code: 214641

Teaching Hours: L: 4+ T:1 = 6 Hours per week, 5 Credits (Total no. of Working Hours – 96)

Course Objective:

Thorough understanding and analysing the various advertising approaches, ability to develop and design effective advertising copy, strategy and execution of an ad-campaign for clients.

Course Outcomes:

- By understanding the various concepts of advertising, students would get a fair idea about framing advertisements.
- Identify and make decisions regarding the most feasible advertising appeal and media mix.
- Acquire copy writing skills and also equip with the ability to choose a particular medium for advertisement.
- Enable students to prepare advertising budget and also discuss the role of the advertising agency and its client relationships.
- To understand the ethical and legal framework of advertising

Unit 1- Advertising: Meaning, Definition, Objectives, Scope, Growth of Modern Advertising, Types of Advertising, Publicity v/s Advertising, AIDA**(23Hrs)**

Unit 2- Advertising tools and Technology: Trademark, Labelling and Package, Point of Purchase (POP), Display and below the line promotion, Advertising media, Types, Media Planning and Scheduling.**(23Hrs)**

Unit 3- Art and Layout of an Advertising: Elements of Advertisement copy, visualisation, Types, Essentials of good advertisement copy, Layout- Balancing in layout, Technical aspect of layout Illustrations, advertisability of a product and Slogan.**(22Hrs)**

Unit 4- Advertising Agency and Budget: Factors influencing the choice of an Advertising agency – Types of agencies- Advertising Budget- Approaches to Advertising Budget.**(15Hrs)**

Unit 5- Ethical and Legal Framework: Advertising ethics, Social responsibility and self-regulation, Need for advertising laws, Types of advertising laws in India, Advertising Standards Council of India, Laws relating to advertising and article 19(1) & 2 of constitution, sections relating to advertising in IPO Code 1868 and Indian Contract Act 1872**.(case Discussions)(13Hrs)**

Books for References:

1. Aaker, Myers &Batra : Advertising Management , Prentice Hall.
2. Aren&Bovee: Contemporary Advertising, Tata McGraw Hill.
3. Chunawala: Theory and Practice of Advertising Management .
4. Dawar S. R: Salesmanship and Advertisement.
5. Keval J. Kumar, Mass Communication in India, Jaico Publishing House; 2004.
6. P. K. Agarwal: Advertising Management.
7. Rathore: Advertising Management.
8. Rayude, C.S. and Rao, S.B. Nageswara - Mass Media Laws and Regulations (HimalayaPublishing House, Mumbai-400004), 3rd Ed. 2005.
9. Rayudu, C.S : Media & Communication Management, Himalaya Publishing House, New Delhi.
10. Russel, Thomas &Verill, Glenn-Otto kleppners, Advertising Procedure; Prentice Hall.

Web Links

www.marketing91.com

www.merriam-webster.com

www.mbaknol.com

MARKETING MANAGEMENT-IV

(Retail and Supply Chain Management)

Choice Based Credit System (CBCS)

Subject Code:214644

Teaching Hours: L: 4+T:1 +P:0=6 hours per week, 5 credits (total no of working hours-96)

Course Objective

To relate supply chain activities which create the value in the organized retail Industry.

Course Outcomes

- An understanding of the functions of retail business and various retail formats and retail channels.
- Develop key driver of retail supply chain and to select a retail store location.
- Assess the role of SCM in the business decision and strategy implementation for a better conduct of a business.
- Apply CRM concept in a practical way by knowing the client expectation through a service-learning approach.
- An understanding of Logistics management and its centers.

Unit 1- Introduction to Retailing: Definition, Characteristics, Evolution of Retailing in India, Emerging Trends in Retailing, Factors Behind the change of Indian Retail Industry, Retail Formats**. (20 hrs)**

Unit 2- Retail Operation: Elements/Components of Retail Store Operation, Store Administration, Store Manager –Responsibilities, Inventory Management, Management of Receipts, Management of Retail Outlet/Store, Store Maintenance, Store Security-Store Planning: Design & Layout, Location Planning and its importance, retailing image mix, Effective Retail Space Management, Floor Space Management. **(25 hrs)**

Unit 3-Customer Relation Management (CRM): Introduction, Benefits of RM, Principles, Strategies, Components, Customer Service in retailing**. (15 hrs)**

Unit 4- Supply Chain Management: Concepts and importance of a Supply Chain (SC), Key issues of Supply Chain Management, SC strategies, Push-based, Pull-based and Push-Pull based supply chain, Demand Forecasting in a Supply Chain, Managing inventory in SC environment: Transportation in SC environment**. (20 hrs)**

Unit 5- Logistics Management- Fulfilment centres- Last Mile Delivery**.(16 hrs)**

Books for Reference

1. Retail supply chain Management-James B Ayers & Mary Ann Odegaard.
2. Understaning Retail-Dr.N.V.R Nathan, Suma M A

3. Retail Management- Barry Berman & Joel R Evans & Mini Mathur
4. Supply Chain Management-N.Chandrashekaran
5. Supply Chain Management-VV Sople

Web links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

HUMAN RESOURCE MANAGEMENT-III

(Performance Appraisal and Compensation Management)

Choice Based Credit System (CBCS)

Subject Code:214640

Teaching Hours: L: 4+T:1 +P:0=6 hours per week, 5 credits (total no of working hours-96)

Course Objective

This course is focused on the general concepts, theories and practices of compensation management with specific emphasis on the design, construction and administration of salary and wage and also the performance appraisal standards, methods which are used for job rating.

Course Outcomes

- To develop an understanding about concepts and theories used in wage and salary administration.
- Learning the process and methods of wage and salary administration and performance management system.
- To give a fundamental understanding of how wage and salary calculation is done.
- To compare and contrast various organizational performance management programs which define attributes of effective performance management systems.
- An understanding of employee safety and government security measures.

Unit 1-Wage and salary Administration--introduction, meaning, objectives, principles, factors influencing wage and salary administration, wage and salary determination process, theories of wages, methods of wage payments, wage policy in India, concept of wages – minimum wage, fair wage, Living wage, Wage Differentials, significance of wage differentials-Payroll/Salary calculation**. (20 hrs)**

Unit 2- Incentive plans, Introduction, meaning, characteristics, benefits of incentive plans, Limitations, Essentials of a good incentive plan, types of wage incentive plans- Halsey plan- merits and demerits, Rowan Plan-merits and demerits, Emerson plan, Taylor's differential piece rate system, Gant's Task and Bonus Plan, types of Group incentive plans- priest man's plan, Scalon plan, Co-partnership plan, Profit sharing- meaning, merits and demerits. Fringe benefits- Definition, objectives**. (26 hrs)**

Unit 3- Performance appraisal- meaning, definition, objectives, features, benefits, limitations, performance appraisal process- Methods of performance appraisal- traditional methods-confidential report, graphic sales method, straight ranking method, Paired comparisons method, grading system, forced distribution method, check list method-critical incident method, free essay method, Group appraisals, Field Interview method. **(15 hrs)**

Unit 4- Performance appraisal methods- modern methods- Assessment centre, Human resource accounting, Behavioural anchored rating scales. Management by objectives, 360-degree performance appraisal, computerized and web-based performance appraisal, suggestions to improve performance appraisals, essentials of an effective appraisal system **(15 hrs)**

Unit 5-Employee Health and Safety- Meaning of Health, Importance, occupational Hazards and Diseases, -Types- protection Against hazards- preventive measures, Curative Measures, Accidents types and Causes, Social Security, Meaning, objectives, Scope, Need for social security Types, Types of social Security-POSH-Gender Diversity **(20 hrs)**

Books for References

1. Performance Appraisal and Management- Kevin R Murphy , Jeanette N Cleveland, madinson E Hanscom
2. Performance Management-T V Rao
3. Performance Management and Appraisals systems-T V Rao
4. Compensation Management-Dipak Kumar Bhattacharyya
5. Compensation Management- R C Sharma and Sulabh Sharma

Web links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

HUMAN RESOURCE MANAGEMENT-IV

(Employee Empowerment and Industrial Relations)

Choice Based Credit System (CBCS)

Subject Code:214643

Teaching Hours: L: 4+T:1 +P:0=6 hours per week, 5 credits (total no of working hours-96)

Course Objective

To acquaint students with the effective tools used for employee empowerment and compliance with the rules of industrial relations.

Course Outcomes:

- Analyse the importance employee involvement, diversity, competencies and employee commitment for an organization.
- Learning the process of solving industrial disputes and maintaining harmony in industries.
- Learn the process the employee counseling, which is required for career growth.
- Determine the use and importance of various acts and their uses in industrial relations.
- An understanding of HRMS.

Unit 1 -Strategic HRM- HRM effectiveness and business success- Michael Porter's theory of competitive strategy- types of strategies-corporate strategies- competitive strategies, functional strategies-strategic management process, Approaches to SHRM- Resource based Approach, Strategic Fit, Universalistic Approach, Configurational Approach, Contingency Approach**. (15 hrs)**

Unit 2- Employee Empowerment-Meaning, Conditions Necessary for Empowerment, Forms of Empowerment-Quality circles, features, Developing quality circles in organizations, problems of Quality circles-Empowered Teams, Workers' Participation in Management-, Definition and Objectives, Forms of Workers' Participation, Evaluation of WPM Scheme**.(20 hrs)**

Unit 3- Industrial relations- concept, objective, Approach Industrial Relations, - causes of Poor Industrial Relations, Steps for Good Industrial Relations, Trade Union- Meaning, Reasons for joining trade unions, problems of Trade Union and Measures to strengthen trade Union movement in India**. (20 hrs)**

Unit 4-Industrial Disputes- Definition, forms of Industrial disputes- primary strikes, secondary strikes, Lock-outs, Gherao, Picketing and Boycott- Causes of Disputes-Settlement of Industrial disputes-Conciliation, Arbitration, Labour court, Industrial Tribunal, National tribunal**. (25 hrs)**

Unit 5-Human Resource management system-Technology to manage e HR-ERP Packages**. (16 hrs)**

Books for reference:

1. Human Resource Management- V S P Rao
2. Human Resource Management -K Ashwathappa
3. Human Resource Management -L M Prasad
4. Human Resource Management -Shashi K. Gupta & Rosy Joshi

5. Human Resource Management -Varshney, S L Guptha

Web links

https://shodhganga.inflibnet.ac.in

https://studymaterials.oureducation.in

https://lecturenotes.in

https://www.researchgate.net

List of Examiners
Department of Business Administration

Sl. No.	Name	Designation	Address for Communication
1	Shyla.S	Assistant Professor & HOD	SBRR Mahajana First Grade College,Mysore
2	Dr.Manjunath.V	Assistant Professor	SBRR Mahajana First Grade College,Mysore
3	Dr.Anita.B.R	Assistant Professor	SBRR Mahajana First Grade College,Mysore
4	Sri Sunil.N	Assistant Professor	SBRR Mahajana First Grade College,Mysore
5	Dr. Nirmala.N	Assistant Professor	SBRR Mahajana First Grade College,Mysore
6	Prof. Vanitha K T	Associate Professor	Maharani's Commerce College for Women, Mysore
7			

8	Dr. Manju.S	Associate Professor	Maharani's Commerce College for Women, Mysore
9	Dr. Sumangala	Associate Professor	Yuvaraja's College, Mysore
10	Smt. Kavitha Katti	Assistant Professor	Government College for women, K R Nagara
11	Dr Kusuma K.N	Associate Professor	Government College for Women,Vijaynagar, Mysore
12	Sri Ravikanth	Assistant Professor	NDRK, Hassan
13	Sri Nandeesha	Assistant Professor	Maharani college for women, Mysore
14	Sri ShyamSundar	Assistant Professor	Government First Grade College, Pandavapura
15	Smt. Zareena	Assistant Professor	MICA College, Mysore
16	Smt. Savitha	Assistant Professor	Government First Grade College, Srirangapatna
17	Sri RamaMurthy	Assistant Professor	Government First Grade College, Byrapura
18	Sri Narendra	Assistant Professor	Sapient college, Mysore
19	Sri Arunesh	Assistant Professor	Government First Grade College, Holenarasipura
20	Smt. Rekha	Assistant Professor	Teresian College, Mysore
21	Smt. Kaveriamma	Assistant Professor	Teresian College, Mysore
22	Smt. HeenaKouser	Assistant Professor	Government First Grade College, Pandavapura
23	Smt. Geetha	Assistant Professor	VidyaVardhaka First Grade College, Mysore
24	Smt. Shylaja	Assistant Professor	NIE College, Mysore
25	Smt. Tulsi	Assistant Professor	Maharani's Commerce College for Women, Mysore
26	Smt. Sowmya	Assistant Professor	Sheshadripuram First Grade College, Mysore.
28			
27	Smt. Archana	Assistant Professor	MICA First Grade College, Mysore.
29	Merwin Pinto	Assistant Professor	Teresian College Mysore

30	Mrs Vani	Assistant Professor	JSS College Kollegal
31	Ilyas Ahmed	Assistant Professor	Government First Grade College Hangodu.
32	Sri.Somanna	Assistant Professor	Kuvempunagar First Grade College,Mysore.
33	Miss.Savitha	Assistant Professor	Government First Grade College, Srirangapatna Taluk, Mandya.
34	Smt.Harshitha	Assistant Professor	MIT First Grade College, Mysore.
35	Dr Lakshmeesha	Assistant Professor	Maharaja FGC, Mysore
36	Girish H J	Assistant Professor	NDRK college,Hassan
37	Mamatha S	Assistant Professor	JSS Women college Kollegal
38	Dr.Asish	Assistant Professor	Amritha College Mysore
39	Dr.Prathiba Jennifer	Assistant Professor	Government First Grade College, Hunsur.
40	Sujatha Kumar	Assistant Professor	Maharaja College Mysore
41	Tejaswini	Assistant Professor	Maharani College, Mysore.
42	Usha	Assistant Professor	GFGC, Kuvempunagar.
43	Naveen K C	Assistant Professor	NDRK, Hassan.
44	Dr.Naveen Kumar M S	Assistant Professor	School of Commerce and Management Studies, Jain Deemed to be university, Bangalore.
45	Kumar	Assistant Professor	Government women's College, Hunsur
46	Sharath	Assistant Professor	D.Banumaiah's College, Mysore
47	Parmesh C	Assistant Professor	Mahadeshwara Government First Grade College, Kollegal.
48	Ramani Naik	Assistant Professor	Government women's college, Hunsur

49	Girsih	Assistant Professor	Government First Grade College, KR Nagar.
50	Suheel	Assistant Professor	Cauvery College, Mysore

Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES

DEPARTMENT OF COMMERCE

UG ☑

PG ☐

NEP Syllabi for III and IV Semester

2022-23

DEPARTMENT OF COMMERCE

Motto:

Simply Better

Vision:

Imparting contemporary education to make the students well versed in the domain of Business and honing the students to mount high with the prevailing corporate scenario.

Mission:

PO 1	**Domain Knowledge-** Inculcation of fundamental concepts, principles and application of the same.

Giving a practical edge to the curriculum by building life skills through service oriented programs and to pursue knowledge through academics, extracurricular activities to develop the student's personality with a strong value base.

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College with Potential for Excellence

BCOM -Programme Outcomes

PO 2	**Problem Analysis-** Identifying and analyzing the problems in the field of business.
PO 3	**Design & Development of Solutions-** Adapting INDAS, Companies act, designing the costing techniques and methods, marketing strategies, business and tax planning along with its approaches.
PO 4	**Research and Investigation-** Research methodology with SPSS, probabilities and testing of hypothesis.
PO 5	**Modern Techniques & Tools**- Technology based education towards revolutionizing the skills.
PO 6	**Domain & Society-** Inculcating positive impact on the society and making accountable by imparting the significance and its applicability.
PO 7	**Environment & Sustainability-** Capable of handling the uncertainties to sustain the current challenges.
PO 8	**Moral & Ethical Values-** Inculcate ethical values in aiming towards Corporate social responsibility.
PO 9	**Individual & Teamwork-** Assimilate the quality of personnel through adoption of scientific management studies and curtail any flaws without conflicts.
PO 10	**Communication-** Stream light the thoughts to reach the goals by creating tactical outreach plans.
PO 11	**Project Management & Finance-** Create opportunities through well planned diversified projects.
PO 12	**Life Long Learning-** Develop an inquisitiveness in continuous and self-motivated approach towards grooming the global leaders.

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College with Potential for Excellence

Department of Commerce

Board of Studies 2022-2023

Sl.No.	Category	Name	Designation	Address for Communication
1	Chairman	Capt. B.R. Nikil	Assistant Professor and HOD	Department of Commerce SBRR Mahajana First Grade College, Jayalakshmipuram, Mysore -12
2	Faculty of the Department	Smt. Rekha. B	Assistant Professor	Department of Commerce SBRR Mahajana First Grade College, Jayalakshmipuram, Mysore -12
		Smt. Vasagi S	Assistant Professor	Department of Commerce SBRR Mahajana First Grade College, Jayalakshmipuram, Mysore -12
		Ms. Vaishali Venkatappa	Assistant Professor	Department of Commerce SBRR Mahajana First Grade College, Jayalakshmipuram, Mysore -12
		Dr. Bhavani M	Associate Professor and Head of the Department	Department of Commerce Mahajana PG Center, Mysore.
3	Two Experts from Other University	Dr. Srinivas K T	Associate Professor & Chairman	Department of Studies in Commerce, Davangere University, Davangere

		Dr. Parameshwara	Associate Professor	Department of Commerce, Mangalore University, Konaje Mangalore.
4	Nominee by the Vice Chancellor	Prof. Nagaraja N	Professor	DoS in Commerce, University of Mysore, Manasagangothri, Mysuru-570006.
5	Alumnus	R. Rajesh	Chartered Accountant	B S Ravikumar & Associates, Mysuru,
6	Industrial Expert	Smt. Nandini R Muttur	Partner	Geartech Solutions, Hebbal Industrial Area, Mysuru

Mahajana Education Society (R)

Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru - 570 012 Karnataka, INDIA

Affiliated to University of Mysore

Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

B. Com Program Structure [NEP] 2022-2023

Credit Pattern for Courses

L: Lecture T: Tutorial P: Practical

SEMESTERIII								
SI. No.	**Course Code**	**Title of the Course**	**Category of Courses**	**Teaching Hours per Week (L : T : P)**	**SEE C3 60**	**CIE C1+C2 20+20 T+SD**	**Total Marks**	**Credits**

1.	223329	Corporate Accounting	DSC 7	4:0:0	60	40	100	4
2.	223330	Business Statistics	DSC 8	4:0:0	60	40	100	4

Course Code: 223329	**Course Title: CorporateAccounting**
Course Credits:4 .(L:T:P): 4:0:0	**Teaching Hours/Week: 04 Hours**

3.	223331	Cost Accounting	DSC 9	4:0:0	60	40	100	4
4.	22OECOM301 22OECOM302	Advertising Skills/ Entrepreneurship Skills (Any 1 to be Opted)	OE 3	3:0:0	60	40	100	3
TOTAL					240	160	400	1

SEMESTERIV

SI. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L + T + P)	SEE C3 60	CIE C1+C2 20+20 T+SD	Total Marks	Credits
1	223429	Advanced Corporate Accounting	DSC 10	4:0:0	60	40	100	4
2	223430	Costing Methods & Techniques	DSC 11	4:0:0	60	40	100	4
3	223431	Business Regulatory Framework	DSC 12	4:0:0	60	40	100	4
4	22FEIS94	Financial Education and Investment Awareness	SEC 1	1:0:1	30	20	50	2
TOTAL					210	140	350	1

EXITOPTIONWITHDIPLOMA -Ability tosolvebroadlydefinedproblems.

III SEMESTER

DISCIPLINESPECIFICCOURSE(DSC) 7

Total Contact Hours: 56 Hours	Formative Assessment Marks: 40
Exam Duration: 2 1/2 Hours	Semester End Examination Marks: 60

Course Objectives: To provide students an understanding of various accounting techniques applied in various vital financial events in corporate business.

CourseOutcomes:

CO1-Knowingthetreatmentofunderwritingofshares.

CO2-Comprehendthecomputationofprofitpriortoincorporation.

CO3-Knowthevaluationofintangibleassets and valuationofshares

CO4-Preparethefinancialstatementsofcompaniesaspercompanies'act.

ModuleNo.1:UnderwritingofShares: 10 Hours

Introduction-MeaningofUnderwriting-SEBIregulationsregardingunderwriting;Underwritingcommission.Underwriter-functions-AdvantagesofUnderwriting,Typesofunderwriting-MarkedandUnmarkedApplications-DeterminationofLiabilityinrespectofunderwritingcontract-whenfullyunderwrittenandpartiallyunderwritten-withandwithoutfirmunderwriting problem.

Module No.2:ProfitPriortoIncorporation: 10 Hours

Introduction-Meaning-calculationofsalesratio-timeratio-weightedratio-treatmentofcapitalandrevenueexpenditure-Ascertainmentofpre-incorporationandpost-incorporationprofitsbypreparingstatementofProfitandLossandBalanceSheetasperscheduleIIIofcompaniesAct,2013.

Module No.3Valuation of Intangible Assets: 10 Hours

Introduction-ValuationofGoodwill-factorsinfluencinggoodwill,circumstancesofvaluationofgoodwill-MethodsofValuationofGoodwill:AverageProfitMethod,CapitalizationofaverageProfitMethod,SuperProfitMethod,CapitalizationofSuperProfitMethod,andAnnuityMethod-Problems.BrandvaluationandIntellectualPropertyRights(IPR).

ModuleNo.4:ValuationofShares: 10 Hours

Introduction-Meaning- NeedforValuation-FactorsAffectingValuation-MethodsofValuation:IntrinsicValueMethod,FairValueofshares– Discounted Cash Flow Method.RightsIssueandValuationofRightsIssue,ValuationofWarrants.

Module 5 :FinancialStatementsofCompanies: 16 Hours

StatutoryProvisionsregardingpreparationoffinancialstatementsofcompaniesasperscheduleIIIofcompaniesact,2013andINDAS-1-TreatmentofSpecialItems-

Taxdeductedatsource-AdvancepaymentofTax-ProvisionforTax -Depreciation-Interestondebentures-Dividends-Rulesregarding paymentofdividends-TransfertoReserves-PreparationofStatementofprofitandlossandBalanceSheet.

SkillDevelopmentActivities:

1. CompilethelistofIndiancompanieswhichhaveissuedsharesthroughIPO/FPOinthecurrentfinancialyear.
2. DetermineUnderwriters'LiabilityincaseofanIPO,withimaginaryfigures .•Presenttheformatof'StatementofProfitandLoss','BalanceSheet'and'StatementofChangesinEquity',withimaginaryfigures
3. Collectfinancialstatementofacompanyandcalculateintrinsicvalueofanequityshare.
4. CollectannualreportofaCompanyandListoutitsassetsandLiabilities.
5. Collectionoflatestfinancialstatements ofacompanyand findouttheintrinsic valueofshares
6. Collecttheannualreportsof companyandcalculatethevalueof goodwill under differentmethods
7. Anyotheractivities,whicharerelevanttothecourse.

ReferenceBooks:

1. J.R.Monga,FundamentalsofCorporateAccounting.MayurPaperBacks,NewDelhi.
2. M.C.Shukla,T.S.Grewal,andS.C.Gupta.AdvancedAccounts.Vol.-II.S.Chand &Co.,NewDelhi.
3. S.N.Maheshwari,andS.K.Maheshwari.CorporateAccounting.VikasPublishing House, NewDelhi.
4. AshokSehgal,FundamentalsofCorporateAccounting. TaxmanPublication,NewDelhi.
5. V.K.GoyalandRuchiGoyal,CorporateAccounting.PHILearning.
6. Jain,S.P.andK.L.Narang.CorporateAccounting.KalyaniPublishers, NewDelhi.
7. BhushanKumarGoyal,Fundamentals

ofCorporateAccounting,International BookHouse
8. P.C.TulsianandBharatTulsian,CorporateAccounting,S.Chand
9. AmitabhaMukherjee,MohammedHanif,CorporateAccounting,M cGrawHillEducation
10. Arulanandam&Raman;CorporateAccounting-II
11. Madegowda J-Advanced corporate accounting, HPH
12. Soundarajan.A&K.Venkataramana,Corporate
13. Accounting,VBH.13.S.P.JainandK.L.Narang-CorporateAccounting
14.S.Bhat-CorporateAccounting.

Note:Latesteditionoftextbooksmaybeused.

Web links:

https://www.svtuition.org/2010/10/underwriting-of-shares-and-debentures.html

https://cleartax.in/s/profit-prior-company-incorporation

Course Articulation Matrix – 223329

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	-	1	-	1	1	1	1	1
CO2	2	1	1	1	-	-	-	1	1	1	1	1
CO3	2	1	1	1	1	-	1	1	-	1	1	1
CO4	2	2	1	1	1	1	-	1	1	1	2	2
WAVG	**2**	**1.25**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1.25**	**1.25**

III SEMESTER

DISCIPLINESPECIFICCOURSE(DSC) 8

Pedagogy: Classroomlectures,Casestudies,TutorialClasses,Groupdiscussion,Seminar&fieldworketc.,

Course Code: 223330	Course Title: BusinessStatistics
Course Credits:4 .(L:T:P): 4:0:0	Teaching Hours/Week: 04 Hours
Total Contact Hours: 56 Hours	Formative Assessment Marks: 40
Exam Duration: 2 1/2 Hours	Semester End Examination Marks: 60

Course Objectives To equip students with statistical tools which have wider applications in business situation analysis and with research skills to analyse and find solutions to various problems facing various business undertakings.

CourseOutcomes:

CO1-Familiarizesstatisticaldataanddescriptivestatisticsfor businessdecision-making.

CO2-Comprehendthemeasuresofvariationandmeasuresofskewness.

CO3-Know theuseofprobabilityanditsdistributionsinbusiness.

CO4-Application ofcorrelationandregressioninbusinessdecisions along with indexnumbers

ModuleNo.1:StatisticalDataandDescriptivestatistics: 10 Hours

NatureandClassificationofdata:Univariate,bivariateandmultivariatedata;Measures ofCentralTendency:Mathematicalaveragesincludingarithmeticmean,Properties andapplications.PositionalAverages-ModeandMedian(includinggraphic determination).

Module No.2:MeasuresofVariation: andSkewness: 12 Hours

MeasuresofVariation:absoluteandrelative.Range,quartiledeviation,meandeviation,standarddeviation,andtheircoefficients,Propertiesof standarddeviation/variance.

Skewness:Meaning,MeasurementusingKarlPearsonandBowley'smeasures; concept ofKurtosis.

ModuleNo. 3: ProbabilityDistributions: 14 Hours

TheoryofProbability.Approachestothecalculationofprobability;Calculationofev

ent
Probabilities.Additionandmultiplicationlawsofprobability(Proofnotrequired);Conditionalprobabilityand Bayes'Theorem(Proofnotrequired)-Expectationandvarianceofarandomvariable-Probabilitydistributions-Binomialdistribution:Probabilitydistributionfunction,Constants,Shape,Fittingofbinomialdistribution-Poissondistribution:Probabilityfunction,(includingPoissonapproximationtobinomialdistribution),Constants,FittingofPoissondistribution-Normaldistribution:Probabilitydistributionfunction,Propertiesofnormalcurve,Simpleproblems.

Module No.4:CorrelationandRegressionAnalysis: 12 Hours

CorrelationAnalysis: MeaningofCorrelation:-typesofcorrelation-Positiveandnegativecorrelation-simple,partial,andmultiplecorrelation.linearandNon-linearcorrelationandScatterdiagram,Pearson'sco-efficientofCorrelation;Correlationand Probableerror;Spearman'sRank Correlationco-efficient.-problems.

RegressionAnalysis:meaninganddefinition-regressionlines,Regressionequationsandestimation;Propertiesofregressioncoefficients;RelationshipbetweenCorrelation andRegressioncoefficients-problems.

Module 5:Index Numbers: 8 Hours

Meaninganduses ofindexnumbers;Constructionofindexnumbers:Fisher'sidealindexnumberwithTimeReversalandFactorReversalTests.Constructionofconsumerpriceindices UsingAggregativeExpenditure methodandFamilyBudgetmethod.

SkillDevelopmentActivities:

1. ApplicationofMSExcelFunctionsinstatisticaldecisionmakingandstudents shouldsubmitoutputofthesame.
2. Collect theagestatisticsof10newmarriedcouplescalculateCorrelation coefficient.
3. Recalltheuseofprobabilitytheoryinbusiness.
4. Identifytheapplicabilityofcorrelationandregressioninbusiness decision-making.
5. Constructconsumerpriceindiceswithimaginaryfigures.

Anyotheractivities,whicharerelevanttothecourse.

TextBooks:

1. Gupta,S.P.,andArchanaAgarwal.Business Statistics,SultanChandandSons,NewDelhi.
2. VohraN.D.,BusinessStatistics,McGraw HillEducation.
3. Gupta,S.C.FundamentalsofStatistics.HimalayaPublishingHouse.
4. Anderson,Sweeney,andWilliams,StatisticsforStudentsofEconomicsand Business,CengageLearning.
5. CBGupta
6. DNElhance Fundamentals of statistics
7. SenChettyandKapoormathematicalstatistics

Note:Latesteditionoftextbooksmaybeused.

Course Code: 223331 **Course Title: Cost Accounting**

Web Links:

https://www.simplilearn.com

https://www.itl.nist.gov

Course Articulation Matrix – 223330

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	1	1	1	1	2	1	1	1
CO2	1	1	1	1	-	1	-	1	1	1	1	-
CO3	2	2	2	1	1	-	1	1	2	1	1	1
CO4	2	2	2	1	-	1	-	1	1	2	2	2
W/AVG	**2**	**1.5**	**1.5**	**1**	**1**	**1**	**1**	**1**	**1.5**	**1.25**	**1.25**	**1.3**

III SEMESTER

DISCIPLINESPECIFICCOURSE(DSC) 9

Course Credits:4 .(L:T:P): 4:0:0	**Teaching Hours/Week: 04 Hours**
Total Contact Hours: 56 Hours	**Formative Assessment Marks: 40**
Exam Duration: **2 1/2 Hours**	**Semester End Examination Marks: 60**

Pedagogy: Classrooms lecture,Casestudies,Tutorialclasses,Groupdiscussion,Seminar&fieldworketc.,

Course Objectives: To make students understand the various costing techniques applied in different industries to ascertain the cost of products and services.

CourseOutcomes:

CO1-Know the conceptsofcostaccounting& MethodsofCosting.

CO2-knowing the Procedureanddocumentationsinvolvedinprocurementof Materials &computethevaluationofInventory.

CO3 - Makeuseofpayrollprocedures&computeidleandovertime.

CO4- Preparation of cost sheet and knowing the methodsofallocation,apportionment,absorptionofoverheads.

ModuleNo.1:IntroductiontoCostAccounting: 12 Hours

Introduction-Meaninganddefinition-Objectives,ImportanceandUsesof CostAccounting,DifferencebetweenCostAccountingandFinancialAccounting;VariousElementsofCostandClassificationofCost;Costobject,Costunit,Costdriver,costcentre;CostreductionandCostcontrol;MethodsandTechniquesof Costing(Meanings Only);UseofITinCostAccounting; Limitations ofCostAccounting;CostSheet:MeaningandCostheadsinaCostSheet,PresentationofCostInformationinCostSheet. ProblemsonCostSheet,TendersandQuotations.

ModuleNo.2:MaterialCost: 12 Hours

Materials:Meaning,ImportanceandTypesofMaterials- DirectandIndirectMaterialMaterialsmaterialcontrol.- InventoryControlTechniqueofinventorycontrol, problemsonlevelsettingandEOQ. Procurement- Procedureforprocurementofmaterialsanddocumentationinvolvedinmaterialsaccounting -MaterialStorage:DutiesofStorekeeper,pricingofmaterialissues,

preparationofStoresLedgerAccount-
FIFO,LIFO,SimpleAveragePriceandWeightedAveragePriceMethods-Problems.

Module No.3:Employee Cost: 10 Hours

Introduction-Employee Cost-typesof laborcost-LaborCostControl-timekeepingandtimebookingandPayrollProcedure-
PreparationofPayroll:IdleTimeCausesandTreatmentofNormalandAbnormalIdletime,OverTimeCausesand Treatment-LaborTurnover-Meaning,ReasonsandEffectsofLaborturnover.Methods ofWagePayment:Timeratesystemandpieceratesystem,andtheIncentiveschemes-Halseyplan,RowanplanandTaylordifferentialpieceratesystem-problems.

Module No.4:Overheads Cost: 12 Hours

Introduction-
MeaningandClassificationofOverheads;AccountingandControlofManufacturingOverheads:EstimationandCollection,CostAllocation,Apportionment,Re-apportionmentandAbsorptionofManufacturingOverheads;ProblemsonPrimaryand SecondaryoverheadsdistributionusingReciprocalServiceMethods(RepeatedDistributionMethodandSimultaneousEquationMethod);AbsorptionofOverheads:Meaning andMethodsofAbsorptionofOverheads;ProblemsonMachineHourRate.

ModuleNo.5:ReconciliationofCostandFinancialAccounts:10Hours

Introduction-
meaningofreconciliation,ReasonsfordifferencesinProfitsunderFinancialandCostAccounts;ProcedureforReconciliation-
AscertainmentofProfitsasperFinancialAccountsand
CostAccountsandReconciliationofProfits ofbothsetsofAccounts-PreparationofReconciliationStatement-Problems.

SkillDevelopmentsActivities:

1. Visit anyManufacturing entitycollectthe method ofinventory valuationadopted &procedure involvedinprocuringinventory.

2. Drawtheformatoffivedocumentsusedformaterialaccounting
3. PreparedummyPayrollwithimaginaryfigures.
4. Visitanylarge-scaleorganization,identifythetechniquesusedforcontrolling administrative,Selling&distributionoverheads.
5. Visitanymanufacturingentityandcollectthecostdateandpreparethecostsheet.

Anyotheractivities,whicharerelevanttothecourse.

TextBooks:

1. CharlesT.Horngren,SrikantM.Datar,MadhavV.Rajan,CostAccounting: A Managerial Emphasis, Pearson Education.
2. JawaharLal,CostAccounting.,McGrawHillEducation
3. MadegowdaJ,CostAccounting, HPH.
4. RajivGoel,Cost Accounting,InternationalBookHouse
5. Jain,S.P.andK.L.Narang.CostAccounting:PrinciplesandMethods.KalyaniPublishers
6. Arora,M.N.CostAccounting-PrinciplesandPractice,VikasPublishingHouse,NewDelhi.
7. Maheshwari, S . N . and S.N. Mittal.Cost Accounting:TheoryandProblems.ShriMahavirBookDepot,NewDelhi.
8. Iyengar,S.P.CostAccounting,SultanChand&Sons
9. MariyappaBCostAccounting,

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	1	-	2	2	2	1	1	1	1
CO2	2	1	1	1	2	2	1	1	1	1	1	1
CO3	1	-	-	-	1	1	1	1	-	1	1	1
CO4	2	1	1	1	2	1	2	1	1	2	2	2
W/AVG	**1.75**	**1**	**1**	**1**	**1.25**	**1.5**	**1.5**	**1.25**	**1**	**1.25**	**1.25**	**1.25**

Web Links:

https://icmai.in
https://www.economicsdiscussion.net

Course Code: 22OECOM301	Course Title: AdvertisingSkills
Course Credits: 3 (L:T:P): 3:0:0	Teaching Hours/Week: 03 Hours
Total Contact Hours: 42 Hours	Formative Assessment Marks: 40
Exam Duration: 2 1/2 Hours	Semester End Examination Marks: 60

Course Articulation Matrix –

223331

III SEMESTER
OPEN ELECTIVE 3

Pedagogy: Classroomslecture,Casestudies,Groupdiscussion &Seminaretc.,

Course Objectives: This course seeks to provide knowledge about the concepts, tools,techniques, and relevance of digital marketing in the present changing scenario.

CourseOutcomes:

CO1-Familiarizewithadvertisingconcepts.

CO2-Identifyeffectivemediachoiceforadvertising.

CO3-Developingadsfordifferentmedia.

CO4-Measuretheadvertisingeffectiveness and analyzetheroleof advertisingagency.

ModuleNo.1:Introduction: 10 Hours
CommunicationProcess;Advertisingasatoolofcommunication;Meaning,natureandimportanceofadvertising;Typesofadvertising;Advertisingobjectives. Audience analysis;Setting ofadvertisingbudget:Determinantsandmajormethods.

ModuleNo.2:MediaDecisions: 7 Hours
Majormediatypes-theircharacteristics,internetasanadvertisingmedia,meritsanddemerits;Factorsinfluencingmediachoice;mediaselection,mediascheduling,AdvertisingthroughtheInternet-mediadevices.

Module No.3:Message Development: 8 Hours

Advertisingappeals,Advertisingcopyandelements,Preparingadsfordifferentmedia

Module No.4: MeasuringAdvertisingEffectiveness: 10 Hours
Evaluatingcommunicationandsaleseffects; Pre-andPost-testingtechniques

Module No.5: Advertising Agency: 7 Hours
a)AdvertisingAgency:Role,typesandselectionofadvertisingagency.
b)Social,ethicalandlegalaspectsofadvertisinginIndia.

SkillDevelopmentActivities:

1. Analyzetheaudiencefeedbackonadvertisementof FMCG.
2. Listoutanytenproducts/servicesadvertisedthroughinternet.
3. Designanytwoadsforprintmedia.
4. ExaminethelegalaspectsofadvertisinginIndiaandsubmitthereport.
5. Any otheractivities, whicharerelevanttothecourse.

Web Links:

https://www.managementstudyguide.com/objectives-importance-of-advertising.html
https://bbamantra.com/media-types-characteristics/

Course Articulation Matrix – 22OECOM301

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	-	1	1	-	2	1	2	-	1
CO2	2	1	1	2	1	1	-	1	1	2	1	1
CO3	2	1	1	1	-	1	1	1	-	1	1	1
CO4	2	2	1	2	1	1	1	1	1	2	1	1
W/AVG	**2**	**1.25**	**1.25**	**1.6**	**1**	**1**	**1**	**1.25**	**1**	**1.75**	**1**	**1**

III SEMESTER

OPEN ELECTIVE 3

Course Code: 22OECOM302	**Course Title: Entrepreneurship Skills**
Course Credits: 3. (L:T:P): 3:0:0	**Teaching Hours/Week: 03 Hours**
Total Contact Hours: 42 Hours	**Formative Assessment Marks: 40**
Exam Duration: 2 1/2 Hours	**Semester End Examination Marks: 60**

Pedagogy: Classroom lecture, Case studies, Group discussion & Seminar etc.,

Course Objectives: To help students acquire entrepreneurial skills which gives wings to the Creative ideas of young minds.

CourseOutcomes:

CO1-Discover their strengths and weaknesses in developing the Entrepreneurial mind-set.

CO2-Identify the different Government Institutions/Schemes available For promoting Entrepreneurs.

CO3-Familiarize Mechanism of Monitoring and maintaining an Enterprises.

CO4-Know the various features for successful/unsuccessful entrepreneurs.

Module No.1: Introduction: 10 Hours

Need of becoming entrepreneur-ways to become a good Entrepreneur-Enabling environment available to become an entrepreneur. Self-discovery, Idea Generation-Idea Evaluation-Feasibility analysis-Finding Team-Preparation of business model.

Module No.2: Promoting Entrepreneur: 8 Hours

Introduction-Different Government institutions/schemes promoting entrepreneurs: Gramin banks, PMMY-MUDRA Loan, DIC, SIDA, SISI, NSIC, and SIDO, etc.,

Module No. 3: Enterprise Set-up: 8 Hours

Introduction-

Ways to setup an enterprise and different aspects involved: legal compliances, marketing aspect, budgeting etc.,

ModuleNo.4: MonitoringandMaintaininganEnterprise: 10 Hours
Introduction-Daytodaymonitoringmechanismformarinatinganenterprise-Different Government Schemessupportingentrepreneurship.

ModuleNo.5: CaseletsDiscussion: 6 Hours
Examples ofsuccessfuland unsuccessfulentrepreneurshipofMUDRALoan,Graminbanks,SISIandNSICetc.,

SkillDevelopmentActivities:

1. Listoutthediscoveryandevaluationofviablebusiness ideasfornewventure creation.
2. Practicecriticaltalentsandtraitsrequiredforentrepreneurssuchas Problem solving,creativity,communication,businessmath,sales.

Web links:

https://blog.augustschell.com/3-different-types-enterprise-monitoring-management
https://www.iilm.edu/libuniwp/caselets/

Course Articulation Matrix –22OECOM302

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	-	1	1	2	2	1	2	1	2
CO2	2	1	2	1	2	2	2	1	2	1	1	2
CO3	1	1	2	2	2	1	2	2	2	2	1	2
CO4	2	2	2	2	2	2	2	1	1	1	1	2
WAVG	1.75	1.5	2	1.6	1.75	1.5	2	1.5	1.5	1.5	1	2

IV SEMESTER

DISCIPLINESPECIFICCOURSE(DSC) 10

Pedagogy: Classroomlectures,Casestudies,Groupdiscussion&Seminaretc

Course Code: 223429	Course Title: Advanced Corporate Accounting
Course Credits:4 .(L:T:P): 4:0:0	Teaching Hours/Week: 04 Hours
Total Contact Hours: 56 Hours	Formative Assessment Marks: 40
Exam Duration: 2 1/2 Hours	Semester End Examination Marks: 60

Course Objectives: To understand the various higher accounting methods and accounting techniques applied in valuing the effect of inflation on financial affairs

CourseOutcomes:

CO1-Knowtheprocedureofredemptionofpreferenceshares.

CO2-ComprehendthedifferentmethodsofMergersandAcquisition ofCompanies

CO3-Know theprocessofinternalreconstruction.

CO4-Preparetheliquidatorsfinalstatementofaccounts and understand therecentdevelopments inaccounting.

ModuleNo.1:RedemptionofPreferenceShares: 10 Hours

Meaning–legalprovisions–treatmentregardingpremiumonredemption–creationofCapitalRedemptionReserveAccount-Freshissueofshares–Arrangingforcashbalanceforthepurposeofredemption–minimumnumberofsharestobeissuedforredemption-issueofbonus shares–preparationofBalance sheet(ScheduleIIItoCompaniesAct 2013)afterredemption.

ModuleNo.2:Mergers andAcquisition ofCompanies: 16 Hours

MeaningofAmalgamationandAcquisition–TypesofAmalgamation–AmalgamationinthenatureofMerger–AmalgamationinthenatureofPurchase-MethodsofCalculationofPurchaseConsideration(IndAS103),NetassetMethod-NetPaymentMethod,AccountingforAmalgamation(Problemsonpoolingofinterestmethodandpurchasemethod)–JournalEntriesandLedgerAccountsintheBooksofTransferorCompanyandJournalEntriesinthebooksofTransfereeCompany–PreparationofBalanceSheetafterMerger. (ScheduleIIItoCompaniesAct2013).

Module No.3:Internal Reconstructionof Companies: 10 Hours

MeaningofCapitalReduction;ObjectivesofCapital Reduction;Provisionsfor ReductionofShareCapitalunderCompaniesAct,2013.FormsofReduction.Accountin gforCapitalReduction.ProblemsonpassingJournalEntries,preparationofCapitalRed uctionAccountandBalancesheetafterreduction(ScheduleIII toCompaniesAct2013).

Module No.4: Liquidation ofCompanies: 12 Hours

MeaningofLiquidation, Process,ModesofWindingup– CompulsoryWindingup,Voluntary WindingupandwindingupsubjecttoSupervisionbyCourt. Orderofpaymentsintheevent ofLiquidation.Liquidator'sStatementofAccount.Liquidator'sremuneration.Problem sonpreparationofLiquidator'sStatementofAccount.

ModuleNo.5:RecentDevelopmentsinAccountingandAccountingstandards: 8 Hours

HumanResourceAccounting– EnvironmentalAccountingDiscloserasperGlobalReportingInitiative(GRI)Repo rtingofvariables–SocialResponsibilityAccounting,IndianAccountingStandards- Meaning-Objectives-SignificanceofAccountingstandardsinIndia- ProcessofsettingAccountingStandardsinIndia-ListofIndianaccountingstandards .(INDAS). ICA vs NFRA

SkillDevelopmentActivities:

1. ListoutlegalprovisionsinrespectofRedemptionofPreference shares.
2. CalculationofPurchaseconsiderationwithimaginaryfigures.
3. Listanyfivecasesofamalgamationinthenatureofmergeror acquisitionofJoint StockCompanies.
4. Listoutlegalprovisionsinrespectofinternalreconstruction.
5. ListoutanyfiveIndianAccountingStandards.

Anyotheractivities,whicharerelevanttothecourse.

TextBooks:

1. Arulanandam&Raman;CorporateAccounting-II,HPH
2. AnilKumar.SRajeshKumar.VandMariyappa.BAdvanced CorporateAccounting,HPH
3. Dr.Venkataraman.R–AdvancedCorporateAccounting

4. S.N.Maheswari,FinancialAccounting,Vikaspublishing
5. SoundarajanA&K.Venkataramana,AdvancedCorporateAccounting ,SHBP.
6. R LGupta,Advanced Accountancy,SultanChand
7. K.KVerma-CorporateAccounting.
8. JainandNarang,CorporateAccounting.
9. Tulsian,AdvancedAccounting,
10. ShuklaandGrewal–AdvancedAccountancy, SultanChand
11. SrinivasPutty,AdvancedCorporateAccounting,HPH.

Course Code: 223430	Course Title: CostingMethodsandTechniques

Note:Latesteditionoftextbooksmaybeused.

Web Links:

https://taxguru.in › company-law
https://www.resurgentindia.com

Course Articulation Matrix – 223429

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	-	-	1	1	1	1	-	-
CO2	2	1	1	1	-	1	1	2	1	1	1	1
CO3	2	2	1	2	1	1	-	1	1	1	1	-
CO4	2	1	1	1	-	1	-	1	1	1	1	1
W/AVG	**2**	**1.25**	**1**	**1.25**	**1**	**1**	**1**	**1.25**	**1**	**1**	**1**	**1**

IV SEMESTER

DISCIPLINESPECIFICCOURSE(DSC) 11

Course Credits:4 .(L:T:P): 4:0:0	**Teaching Hours/Week: 04 Hours**
Total Contact Hours: 56Hours	**Formative Assessment Marks: 40**
Exam Duration: **2 1/2 Hours**	**Semester End Examination Marks: 60**

Pedagogy: Classroom lectures, Case studies, Group discussion & Seminar etc

Course objective: It aims to report, analyze, and lead to the improvement of internal cost controls and efficiency.

CourseOutcomes:

CO1-The methodofcostingapplicableindifferentindustries and determinationof costbyapplyingdifferentmethodsofcosting.
CO2-Prepareflexibleandcashbudgetwithimaginaryfigures
CO3-Analyzetheprocessesinvolvedin standardcosting
CO4-Knowledge ofActivity BasedCostinganditsapplications.

Module No.1: JobandContractCosting: 12 Hours

ContractCosting: Meaning,featuresofcontractcosting,applicationsofcontract costing,similaritiesanddissimilaritiesbetweenjobcostingandcontractcosting,recordingofcontractcosts,meaningoftermsusedincontractcosting;treatmentofprofitoninco mpletecontracts-Problems.

JobCosting: Meaning,prerequisites,jobcostingprocedure,Features,objectives,applications,advantagesanddisadvantagesofJobcosting,Jobcostsheet-simpleproblems.

Module No. 2: ProcessandServiceCosting: 12 Hours

Processcosting: Meaning,featuresandapplicationsofProcessCosting;comparisonbetweenJobCostingandProcessCosting,advantagesanddisadvantagesofprocess costing;treatmentofprocesslossesandgainsincostaccounts;preparationofprocessaccounts.

Servicecosting: Introductiontoservicecosting;ApplicationofServicecosting;Servicecostingv/sproductcosting;Costunitsfordifferentservicesectors;Servicecoststatement;Determinationofcostsfordifferentservicesectors-Transportservices,hospitalsandeducationalinstitutions-problemsonpreparationofservicecoststatementsfor theseservicesectors.

Module No. 3: Activity Based Costing: 10 Hours

Introduction-WeaknessOfConventionalCostingSystem-ConceptOfABC-CharacteristicsOfABC-KaplanAndCooper'sApproach-

CostDriversAndCostPools
-AllocationOfOverheadsUnderABC--StepsInTheImplementationOfABC-
BenefitsFromAdaptationOfABCSystem-
DifficultiesFacedByTheIndustriesInTheSuccessfulImplementationOfABC-
Problems.

Module 4:Marginal Costing: 12 Hours

Meaningand
Definitionofmarginalcost,marginalcosting,featuresofmarginalcosting-
termsusedinmarginalcosting -
P/Vratio,BEP,MarginofSafety,AngleofIncidence.BreakEvenAnalysisassumptions
anduses.BreakEvenChart.(Theory).ProblemsonCVPanalysis.

Module 5: BudgetaryControlandStandardCosting: 10 Hours

BudgetaryControlIntroduction-
Meaning&DefinitionofBudgetandBudgetaryControl-Objectives
ofBudgetaryControl-essentialrequirementsofbudgetarycontrol-
advantagesanddisadvantages ofbudgetary control-
Typesofbudgets-FunctionalBudgets-
Cashbudget,salesbudget,purchasebudgetandproductionbudget.FixedandFlexiblebu
dgets- ProblemsonFlexiblebudgetandCashbudgetonly.
StandardCostingIntroduction-Usesandlimitations,varianceanalysis-
Materialvariances,Labourvariances-problemsonMaterialandLabourvariancesonly.

SkillDevelopment Activities:

1. Namingtheappropriatemethodofcosting
withjustificationforeachofthefollowingIndustries-
PaperMill,Printing,SugarMill,RiceMill,Hospital,OilRefinery,PickleM
anufacturing,KSRTCandHotel.
2. Listout themoderncostingtoolsinaccountingfield.
3. PrepareflexibleBudgetandcashbudgetwithimaginaryfigures
4. Narratethestepsinvolvedinstandardcosting.System.
5. Preparereport,whichexplainstheconditionsthatarenecessaryfor the
successfulimplementationofaJITmanufacturingsystem.
6. ExplainABC.IllustratehowABCcanbeapplied.

Anyotheractivitiesinadditiontotheabove,whicharerelevanttothecourse.

TextBooks:

1. JohnKShankandVijayaGovinda rajan;StrategicCostManagement; Free PressPublication;NewYork
2. SPJainandKLNarang,AdvancedCostAccounting,KalyaniPubli cations,
3. RobertSKaplanandAnthony AAtkinson,AdvancedManagement Accounting,PHI,NewDelhi.
4. ShankandGovind rajan,StrategicCostManagement,SimonandSchuster,36NewYork .
5. LinThomas,CasesandReadingsinStrategicCostManagement, McGraw HillPublications,NewYork.
6. MariyappaBMethodsandTechniquesof Costing.HPH.

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	-	1	1	1	1	1	1	1
CO2	2	1	1	1	-	1	1	1	1	1	2	1
CO3	2	1	2	2	1	1	1	1	1	1	1	1

CO4	2	1	1	1	1	1	-	1	1	1	1	1
W/AVG	**2**	**1**	**1.25**	**1.25**	**1**	**1**	**1**	**1**	**1**	**1**	**1.25**	**1**

Course Code: 223431	**Course Title: BusinessRegulatoryFramework**
Course Credits:4 .(L:T:P): 4:0:0	**Teaching Hours/Week: 04 Hours**
Total Contact Hours: 56 Hours	**Formative Assessment Marks: 40**

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s:

https://www.accountingtools.com
https://www.patriotsoftware.com

Course Articulation Matrix – 223430

IV SEMESTER

DISCIPLINESPECIFICCOURSE(DSC) 12

Exam Duration: 2 1/2 Hours	Semester End Examination Marks: 60

Pedagogy: Classroom lectures, Case studies, Group discussion, Seminar & fieldwork etc

Course Objectives: To equip students with the provisions of Law of Contract and enable them to discuss and restate the same.

Course Outcomes:

CO1-Recognize the laws relating to Contracts and its application in business activities.

CO2-Acquire knowledge on bailment and indemnification of goods in a contractual relationship and role of agents.

CO3-Comprehend the rules for Sale of Goods and rights and duties of a buyer and seller

CO4-Distinguish the partnership laws, its applicability and relevance. Rephrase the cyber law in the present context

Module No. 1: Indian Contract Act, 1872: 12 Hours

Introduction – Definition of Contract, Essentials of Valid Contract, Offer and acceptance, consideration, contractual capacity, free consent. Classification of Contract, Discharge of a contract, Breach of Contract and Remedies to Breach of Contract

Module No. 2: The Sale of Goods Act, 1930: 10 Hours

Introduction - Definition of Contract of Sale, Essentials of Contract of Sale, Conditions and Warranties, Transfer of ownership in goods including sale by a non-owner and exceptions - Performance of contract of sale - Unpaid seller, rights of an unpaid seller against the goods and against the buyer

Module No. 3: Competition and Consumer Laws: 12 Hours

The Competition Act 2002 – Objectives of Competition Act, Features of Competition Act, CAT, Offences and Penalties under the Act, Competition Commission of India.

Consumer Protection Act 2019 – Definitions of the terms – Consumer, Consumer Dispute, Defect, Deficiency, Unfair Trade Practices, and Services, Rights of Consumer under the Act, Consumer Redressal Agencies – District Forum, State Commission and National Commission.

Module No. 4: Economic Laws: 12 Hours

WTOpatent rules -IndianPatentAct,1970-
MeaningandScopeofIntellectualPropertyRights(IPR),Procedureto
getPatentforInventionsandNon-Inventions.

FEMA1999-
ObjectivesofFEMA,SalientFeaturesofFEMA,DefinitionofImportantTerms-
AuthorizedDealer,Currency-ForeignCurrency,ForeignExchange,ForeignSecurity

Module 5: EnvironmentandCyberLaws: 10 Hours

EnvironmentProtectionAct1986-
ObjectivesoftheAct,DefinitionsofImportantTerms
-
Environment,EnvironmentPollutant,EnvironmentPollution,HazardousSubstanceand Occupier,
TypesofPollution,PowersofCentralGovernmenttoprotectEnvironment

SkillDevelopmentActivities:

1. Discussthecaseof"CarlillvsCarbolicSmokeBallCompany"case
2. Discussthecase of"MohoriBibeev/sDharmodasChose".
3. Discussany onecaselawrelatingtominor.
4. Statetheprocedureforgettingpatent for'inventions'and/or'non-inventions'.
5. Listatleast5itemswhichcanbecategorizedas'hazardoussubstance'accordingtoEnvironmentProtectionAct.

inIndia.CyberLaw:Definition,IntroductiontoIndianCyberLaw,CyberspaceandCybersecurity.

Anyotheractivities,whicharerelevanttothecourse.

TextBooks:

1. M.C.Kuchhal,andVivekKuchhal,BusinessLaw,VikasPublishingHouse,NewDelhi.
2. AvtarSingh,BusinessLaw,EasternBookCompany,Lucknow.
3. RavinderKumar,LegalAspectsofBusiness,CengageLearning
4. SNMaheshwariandSKMaheshwari,BusinessLaw,NationalPublishing House,NewDelhi.
5. AggarwalSK,BusinessLaw,GalgotiaPublishersCompany,NewDelhi
6. BhushanKumarGoyalandJainKinneri,BusinessLaws,InternationalBo

okHouse
7. SushmaArora,BusinessLaws,TaxmannPulications.
8. A khiles hwarP athak, Legal Aspect sofBus iness, McGrawHillEducation,6thEd.
9. PCTulsianandBharatTulsian,BusinessLaw,McGrawHillEducation

Course Code: 22FEIS94	Course Title: Financial education and investment awareness

Web links:

https://www.legalserviceindia.com/legal/article-1019-importance-of-cyber-law-in-india.html

https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=0CAMQw7AJahcKEwjA0YrgkPb7AhUAAAAAHQAAAAAQAg&url=https%3A%2F%2Fwww.indiacode.nic.in%2Fhandle%2F123456789%2F2390%3Fsam_handle%3D123456789%2F1362&psig=AOvVaw3KjxWHypwERPhT271Dmm7-&ust=1671002864020408

Course Articulation Matrix –223431

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	1	1	-	2	1	2	1	1
CO2	2	2	1	2	1	1	1	2	1	2	1	1
CO3	2	1	1	1	-	1	1	1	-	1	1	1
CO4	2	2	1	2	1	1	-	2	1	2	1	1
W/AVG	**2**	**1.75**	**1**	**1.5**	**1**	**1**	**1**	**1.75**	**1**	**1.75**	**1**	**1**

IV SEMESTER

Skill Enhancement Course 1

Course Credits:2 .(L:T:P): 1:0:1	**Teaching Hours/Week: 15 Hours of Theory** **30 Hours of Practical**
Total Contact Hours: 45 Hours	**Formative Assessment Marks: 20**
Exam Duration: **1 1/2 Hours**	**Semester End Examination Marks: 30**

Course Objective: Benchmark knowledge according to the requirements of the age and situation, Assimilation, application and retention through case scenarios.

Course Outcomes:

CO1-Acquiring the knowledge ofBasic Concepts and life goals with financial goals

CO2-knowledge according to the requirements of the age and situation

CO3-Create follow up assignments that sustain changed behaviours.

Module 1- Foundations for Finance: 4 Hrs

Introduction to Basic Concepts: Understand the need for financial planning – basic concepts – life goals and financial goals – format of a sample financial plan for a young adult

Economics: Meaning – scope – key concepts influencing decision making both micro & macro

Banking in India: Types of Bank Deposits, Deposit Insurance (PMJDY). Traditional and New Banking Models. Debit and Credit Cards. Digital Payment System – Internet Banking (NEFT, RTGS and IMPS), Mobile Banking, Mobile Wallet, AEPS, UPI.

Orientation to Financial Statements: financial terms and concepts, model for reading financial statements, basic ratios for evaluating companies while investing – Time Value of Money – Concept of Compounding and Discounting

Module 2- Investment Management: 8Hrs

Investment Goals: Basic investment objectives – Investment goals – time frame – assessing risk profile – concept of diversification – risk measurement tools

Investment and Saving Alternatives for a Common Investor: Insurance – Health, Life and Other General Insurance (Vehicle Insurance, Property Insurance, etc), Retirement and Pension Plans – National Pension System, Atal Pension Yojana, PM-SYM Yojana, PMLVMY PMKMDY etc., Stocks, Bonds, Mutual Funds. Investor Protection and Grievance Redressal

Stock Markets: Primary Market and Secondary Market, Stock Exchanges, Stock Exchange Operations – Trading and Settlement, Demat Account, Depository and Depository Participants.

Stock Selection: Fundamental Analysis – Economy Analysis, Industry Analysis and Company Analysis. Technical Analysis – Graphical Patterns, Candle-stick Patterns, Indicators and Oscillators.

StockReturn and Risk: Analysing risk and returns trade offrelationship-investment risk.

Module 3- Mutual Funds and Financial Planning Essentials: 3Hrs

Mutual Funds: Features of Mutual Funds, Mutual Fund History in India, Major Fund Houses in India and Mutual Fund Schemes. Types of Mutual Fund Plans. Net Asset Value.

Criteria for selection of Mutual Funds: Returns, Performance Measures – Sharpe, Treynor, Alpha, Beta and r2

Financial Planning: Sample formats – Integrating all the concepts learnt with a personal financial plan.

Giving and supporting: Family support – charitable giving – crowd sourcing for needs.

Practical's:

Foundations for Finance: 7Hrs

• Spreadsheet Modelling:

• IF Function

• SUM Function

• AVERAGE Function

• INDEX, MATCH and VLOOKUP Function

• RANK Function

• SUMPRODUCT Function

• MAX & MIN Function

• ERRORS in Modeling (#VALUE!, #NAME?, #DIV/0!, #REF!, #NUM!, #NA)

• PRESENT VALUE Functions

• FUTURE VALUE Functions

• ANNUITY Functions

• PERPETUITY Functions

• Statistical Functions in Excel

• Financial Statements in Excel

Investment Management: **17Hrs**

• Administering Risk Tolerance Tool 17 hours NSE Academy Ltd. Confidential Page 4 of 6

• Group Presentations on Investment Alternatives (Advantages, Suitability and Limitations)

• Demonstration of Stock Trading

• Economy Analysis (www.tradingeconomics.com)

• Industry Analysis (www.ibef.org)

• Company Analysis (www.valueresearchonline.com)

• Spreadsheet Modelling for Stock Valuation (Dividend Discount Model, Free Cash Flow and Relative Valuation)

• Demonstration of Technical Analysis and Exercises (NSE – TAME)

• Spreadsheet Modelling for calculating Stock Return, Risk and Beta

Mutual Funds and Financial Planning Essentials: **6Hrs**

• Identification of Fund Houses in India, Schemes and Plans of each Mutual Fund House (www.amfiindia.in , www.valueresearchonline.com)

• Exercises on Calculation of Net Asset Value

• Demonstration of Mutual Fund Fact Sheet

• Exercises on reading performance measures and selection of Mutual Funds

• Preparation of Financial Plan

References

1. RBI Financial Education Handbook

2. NSE Knowledge Hub, AI-powered Learning Experience Platform for BFSI

3. NSE Academy Certification in Financial Markets (NCFM) Modules:

a. Macroeconomics for Financial Markets

b. Financial Markets (Beginners Module)

c. Mutual Funds (Beginners Module)

d. Technical Analysis

Websites:

1. www.sebi.gov.in
2. www.nseindia.com
3. www.amfiindia.com

Course Articulation Matrix – 22FEIS94

Course/Program Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	2	1	1	1	1	2	1	2
CO2	2	1	1	1	1	-	-	1	2	-	1	1
CO3	2	1	1	-	-	1	-	1	1	1	-	2
WAVG	**2**	**1.3**	**1**	**1**	**1.5**	**1**	**1**	**1**	**1.3**	**1.5**	**1**	**1.6**

Evaluation Pattern

C1- Centrally organized internal test	- 20marks
C2- Skill Development activities	- 20marks
C3- Written examination	- 60marks
Total	**- 100marks**

Conditions of evaluation Process of IA Marks shall be as follows:

a) Thefirstcomponent(C1)ofassessmentisfor20%marks.Thisshallbebasedon Internal test. This assessment and score process should be completed aftercompleting50%of syllabus ofthe courses and within 45 working days ofsemester program

b).The second component (C2) of assessment is for 20% marks. This shall be based on Skill Development. Thisassessmentandscoreprocess should be based oncompletion ofremaining 50%of syllabusofthe course of thesemester.

c). Duringthe17th–19thweekofthesemester,asemesterendexaminationshallbeconductedbythecollegefor eachcourse.Thisformsthethirdandfinalcomponentofassessment(C3)and themaximummarksforthefinal component will be60%.

d). In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that thestudent has dropped the test. However, in case of a student who could not take the test on scheduled datedue to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The ProgramCoordinator/Principalinconsultationwiththeconcernedteachershalldecideabo utthegenuinenessofthecase and decide to conduct special test to such candidate on the date fixed by the concerned teacher, butbefore commencement ofthe concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students will be provided with answerscripts and Skill development records, graph sheets etc., required for such tests/assignments and these be sealed/signed by theconcerneddepartment atthe timeofconducting tests/assignment /project work etc.

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B. Com I /II/III/IV Semester (NEP)

Question Paper Pattern

Time: 2 1/2Hours **Max. Marks:60**

PART– A

Answer any FIVE of the following questions. Each question carries 2 marks.

(5x2=10 Marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

PART– B

Answeranyone**TWO**ofthefollowingquestions.Eachquestioncarries**10Marks**.

(2x10 =20 Marks)

8. _____
9. _____
10. _____
11. _____

PART– C

Answeranyone**TWO**ofthefollowingquestions.Eachquestioncarries**15Marks**.

(2x15 =30 Marks)

12. _____
13. _____
14. _____
15. _____

Question Paper Pattern:

Financial Education and Investment Awareness -SEC

1. Internal Assessment – **20 marks**
2. End Semester Exam – **30 marks**

Section A: 4 out of 5 questions (2 marks each) **4 X 2 = 8 Marks**

Section B: 2 out of 3 questions (6 marks each) **2 X 6 = 12 Marks**

Section C: Compulsory: Analysis of One Case or Two case-lets **1 X 10 = 10 Marks**

Evaluation Pattern

C1- Centrally organized internal test	- 10marks
C2- Skill Development activities	- 10marks
C3- Written examination	- 30marks

Total - 50marks

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Department of Commerce
Board of Studies Meeting - Attendance

Date: 08-09-2022

Sl.No.	Name and Address	Designation	Signature
1	**Capt. B.R. NIKIL** Assistant Professor Department of Commerce SBRR Mahajana First Grade College, **(Autonomous)**, Jayalakshmipuram, Mysuru -12	Chairman	BR
2	**Dr. NAGARAJA N** Professor DoS in Commerce, University of Mysore, Manasagangothri, Mysuru-570006.	Member	
3	**Sri. R. RAJESH** Chartered Accountant B S Ravikumar & Associates, Mysuru #73, 2nd Floor, Sri Madhvesha Complex, Nazarbad Main Road, Mysuru-570010.	Member	ONLINE
4	**Dr. SRINIVAS K T** Associate Professor & Chairman Department of Studies in Commerce, Davangere University, Davangere.	Member	ONLINE
5	**Dr. PARAMESHWARA** Associate Professor Department of Commerce, Mangalore University, Konaje Mangalore	Member	ONLINE

BR

Chairperson
BOS[illegible] in Commerce
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

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Department of Commerce
Board of Studies Meeting - Attendance

Date: 08-09-2022

6	**Smt. NANDINI R MUTTUR** Partner Geartech Solutions, Hebbal Industrial Area, Mysuru	Member	ONLINE.
7	**Dr. BHAVANI M** Associate Professor and Head of the Department, SBRR Mahajana First Grade College (Autonomous), PG centre, Mysuru.	Member	Bhavani
8	**Smt. REKHA B** Assistant Professor Department of Commerce SBRR Mahajana First Grade College, **(Autonomous)**, Jayalakshmipuram, Mysuru -12	Member	
9	**Smt. VASAGI S** Assistant Professor Department of Commerce SBRR Mahajana First Grade College, **(Autonomous)**, Jayalakshmipuram, Mysuru -12	Member	
10	**Ms. VAISHALI VENKATAPPA** Assistant Professor Department of Commerce SBRR Mahajana First Grade College, **(Autonomous)**, Jayalakshmipuram, Mysuru -12	Member	

Chairperson
BOS in Commerce
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(Autonomous)
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DEPARTMENT OF COMMERCE

Motto:

Simply Better

Vision:

Imparting contemporary education to make the students well versed in the domain of Commerce and Business and honing the students to mount high with the prevailing corporate scenario.

Mission:

- *Giving a practical edge to the curriculum.*
- *To build life skills through value based education and service oriented programs*
- *To pursue knowledge through academic, co-curricular and extracurricular activities and develop the student's personality with a strong value base.*

Syllabi for V and VI Semester B. Com

2021-22

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Department of Commerce Board of Studies Meeting - III – Proceedings

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The third Board of Studies Meeting was convened on 28th July 2021 in Business Lab at 10:30am. A total of 08 members were present offline and 01 member was present online for the meeting. Following Agenda was taken up for discussion:

1. Approval of B. Com V & VI Semester Syllabus 2021-22
2. Approval of change in hours of Discipline Specific Course (DSC) Income Tax-II
3. Approval of 'Programme Outcomes', 'Course Objectives' and 'Course Outcomes' of all the Courses of B. Com Programme
4. Approval of list of 'Board of Examiners 2021-22'

The Board Members individually took up the above agenda for discussion in detail and the following decisions were made:

1) The Syllabus for V & VI Semester B. Com was approved with the following modifications:

- ***Entrepreneurship Development***: The proposed topic 'Social Entrepreneurship' for Fifth Unit was replaced by the topic 'Self Employment'. Further the topic 'Business Ethics' was put under Sixth Unit.
- ***Business Law***: The existing topics of Unit Three was merged with Unit Two and further it was decided to cover in detail the topic of Indian Contract Act 1982 under First and Second Unit. Also the new topic 'Competition Law' was introduced as Unit Three
- ***Quantitative Decision Tools***: Unit Five 'Index Numbers' was replaced with 'Business Forecasting' and Unit Six 'Testing of Hypothesis' was replaced by the topic 'SPSS'.

- ***Indirect Tax I***: The syllabus was approved as it is
- ***Financial Management I:*** The syllabus was approved as it is
- ***Cost & Management Accounting I***: Unit 2 & Unit 3 'Contract Costing' & 'Process Costing' was merged under Unit 2. The new topic 'Standard Costing' was introduced as Unit 5.
- ***Organisational Behavivour***: The syllabus was approved as it is

- ***Retail Management***: The syllabus was approved as it is
- ***Principles & Practice of Auditing:*** It was decided to teach all the units with specific reference to respective 'Auditing Standards'
- ***Company Law:*** The syllabus was approved as it is
- ***Indirect Tax II:*** The syllabus was approved as it is
- ***Financial Management II:*** Unit 4 & 5 'Venture Capital Financing' & 'Share Holder Value Creation' was replaced by the topics 'Cash Management' & 'Inventory Management' respectively
- ***Cost & Management Accounting II***: Existing Units were rearranged.
- ***International Business:*** Unit 5 'Foreign Exchange Markets' was replaced by the topic 'WTO'
- ***IFRS (IND-AS):*** The existing syllabus was proportionately reduced by retaining important Indian Accounting Standards under all the Units.
- Discipline Specific Elective 'Investment Analysis and Portfolio Management' was split into two electives i.e., 'Investment Analysis' & 'Portfolio Management'.
- Discipline Specific Elective 'Financial Derivatives' & 'Consumer Affairs' were replaced with new electives 'Investment Analysis' & 'Digital Marketing' respectively. Further new syllabus was proposed for the electives 'Investment Analysis' & 'Digital Marketing'.
- Further the Discipline Specific Elective Groups 'D' was merged with Group 'B' & Group 'E' was merged with Groups 'C'.

2) The change in teaching hours of Discipline Specific Course 'Income Tax – II' from 5 hours to 6 hours was approved.

3) The 'Course Objectives' & 'Course Outcomes' of all the courses of all the semesters of the B. Com Programme was approved.

4) The 'Programme Outcomes' of the B. Com Programme was approved.

5) The list of 'Board of Examiners 2021-22' with a total of 54 examiners was approved.

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Department of Commerce

SYLLABUS FOR B. COM. COURSE AS PER CBCS REGULATIONS 2019-2022

FOCUS OF THE PROGRAMME:

The B. Com Programme imparts contemporary education to make the students well versed in the domain of Commerce and Business and horning the students to mount high with the prevailing corporate scenario**.**

The Programme aims to meet the needs of the youth aspiring to build a career in the most Indian vibrant Corporate Sector, Government Institutions and Social Organizations. The programme tries to give practical edge to the curriculum, which is possible through value based education and service oriented programme. The programme intends to groom the entrepreneurial skills of youth as this offer wider and unlimited employment opportunities to them.

ELIGIBILITY FOR TEACHING:

All the papers of B Com programme including Disaster Management, except Environmental Studies, Constitution of India, Languages, shall be taught by Faculty members having M Com qualification with B Com/BBM/BBA basic degree.

TEACHING PEDAGOGY

The programme consists of Lecture and Tutorial Classes. Lecture classes shall be supplemented with tutorial classes. The Tutorial classes may comprise students' seminar, special lectures on the subjects, case study analysis, and group discussion and computer lab for teaching software use in the relevant topics.

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B.Com Course Structure [CBCS] 2019-2022

Credit Pattern for Courses

L: Lecture; T: Tutorial; P: Practical

SEM	COURSE	SUBJECTS	HRS PER WEEK	CREDIT	L:T:P
I	DSC 1	Business Management	06	05	4:1:0

SEM	DSC 2	Financial Accounting I	06	05	4:1:0
	DSC 3	Management of Banking and Insurance Services	05	04	3:1:0
		TOTAL FOR THE I SEMESTER	**17**	**14**	
II SEM	DSC 4	Cost Accounting	06	05	4:1:0
	DSC 5	Financial Accounting II	06	05	4:1:0
	DSC 6	Principles of Marketing	05	04	3:1:0
		TOTAL FOR THE II SEMESTER	**17**	**14**	
III SEM	DSC 7	Corporate Accounting I	06	05	4:1:0
	DSC 8	Income Tax – I	06	05	4:1:0
	SEC 1	Principles and Practice of General Insurance**(Group-A)**	05	04	3:1:0
	AECC	Disaster Management	02	02	2:0:0
		TOTAL FOR THE III SEMESTER	**19**	**16**	
IV SEM	DSC 9	Corporate Accounting II	06	05	4:1:0
	DSC 10	Income Tax – II	06	04	3:1:0
	DSC 11	Quantitative Techniques	06	05	4:1:0
	SEC 2	Logistics and Supply Chain Management **(Group-A)**	05	04	3:1:0
		TOTAL FOR THE IV SEMESTER	**23**	**18**	
V SEM	DSC12	Entrepreneurship Development	05	04	3:1:0
	DSC 13	Business Law	05	04	3:1:0
	SEC 3	Quantitative Decisions and Tools (**Group-A**)	05	04	3:1:0
	DSE 1	Elective-I **(Any Two from Group-B)**	06	05	4:1:0
	DSE 2	Elective-II	06	05	4:1:0
	DSE 3	Elective-III **(Any One from Group-D)**	06	05	4:1:0
		TOTAL FOR THE V SEMESTER	**33**	**27**	
VI SEM	DSC 14	Principles and Practice of Auditing	05	04	3:1:0
	DSC 15	IFRS (IND-AS)	05	04	3:1:0
	SEC 4	Company Law & Secretarial **Practice** (**Group-A**)	05	04	3:1:0
	DSE 4	Elective-I **(Any Two from Group-C)**	06	05	4:1:0
	DSE 5	Elective-II	06	05	4:1:0

	DSE 6	Elective-III	**(Any One from Group-E)**	06	05	4:1:0
		TOTAL FOR THE VI SEMESTER		**33**	**27**	
		GRAND TOTAL FOR THE COURSE			**116**	

Group A- Skill Enhancement Courses (SEC)		
Sl. No	**Course Title**	**Semester**
1	Principles and Practice of General Insurance	III Semester
2	Logistics and Supply Chain Management	IV Semester
3	Quantitative Decision Tools	V Semester
4	Company Law and Secretarial **Practice**	VI Semester

Group B- DISCIPLINE SPECIFIC ELECTIVES (DSE)	
Sl. No.	**5th Semester (Part I)** **Any Two of the following**
1	Indirect Taxes-I
2	Financial Management-I
3	Advanced Cost and Management Accounting-I
Any One of the following (Part II)	
4	Organizational Behavior
5	Investment Analysis
6	Retail Management

GROUP-C- DISCIPLINE SPECIFIC ELECTIVES(DSE)	
Sl. No.	**6th Semester** **Any Two of the following (Part I)**
1	Indirect Taxes-II
2	Financial Management-II
3	Advanced Cost and Management Accounting-II
Any One of the following (Part II)	
4	International Business
5	Portfolio Management

6	Digital Marketing

Instructions:

1. Students shall Elect 2 different subjects from Group B part I and 1 subject from part II in V Semester.
2. Students shall Elect 2 different subjects from Group C part I and 1 subject from part II in VI Semester.
3. Students who opt for Indirect Tax–I, Financial Management-I, and Advanced Cost and Management Accounting-I in 5th semester shall opt for Indirect Tax – II, Financial Management-II and Advanced Cost and Management AccountingII in the 6th semester.
4. DSC-Discipline Specific Course; DSE-Discipline Specific Elective; SEC-Skill Enhancement Course.

Programme Outcomes:

PO1: Impart in-depth knowledge in the domain of commerce and business through subjects such as Accounting, Taxation, Banking, Insurance, Auditing and Business Management.

PO2: Knowledge of different specializations such as Indirect Taxation, Financial Management, International Business, Organizational Behaviour, Investment Analysis, Portfolio Management, Retail Management and Digital Marketing. Which makes students to prevail in the current corporate scenario.

PO3: Give practical edge to the curriculum by techniques like case study analysis, group discussions, presentations, workshops, mock stock, mock banking and industrial visit.

PO4: Build life skills and employable skills through value based courses and certificate courses

PO5: Imparting career enhancement skills by providing training in various competitive exams**.**

V SEMESTER
DISCIPLINE SPECIFIC COURSE (DSC 12)
ENTREPRENEURSHIP DEVELOPMENT
(Course Code: 213514)

(LTP 3:1:0) (Credit: 4) **(Hours Per Week: 05) (Total Hours: 80)**

Course Objectives: To help students acquire entrepreneurial skills this shall give wings to the creative ideas of young minds. This will help harness their entrepreneurial potential to facilitate India achieve economic superpower.

Course Outcomes:

- To understand the concept of Entrepreneur and Entrepreneurship and to lean different traits of Entrepreneurship.
- To understand the importance of EDP and also the role of different EDP Institutions.
- To know the importance of State and Central Government in Entrepreneurial Development in India.
- To learn the different forms of business and steps to be undergone in setting up a Business, with preparation of Business Plan.
- To understand the Recent Trends in Entrepreneurship and also the role of Social Entrepreneurship.
- To Learn Ethics in the Business and its Social Responsibility.

UNIT-1-Introduction: Meaning, Definition of Entrepreneur, Enterprise, Entrepreneurship, steps in the Entrepreneurial Process: Generating Ideas, Opportunity Identification, Business concepts, Resources (Financial, Physical and Human), Implementing and managing the venture, harvesting the venture. Characteristics of successful entrepreneur, Functions, Role of entrepreneur in economic development, Women Entrepreneur, Rural Entrepreneur, Agricultural Entrepreneur-Meaning

and Challenges. **(12 Hours)**

UNIT-2-Entrepreneurship Development Program(EDP): Meaning, Objectives, Importance, Institutions doing EDP in India, DIC, CEDOCK, SSI, NSIC, EDII,

AWAKE, KVIC, RUDSET, Industrial Estate - Meaning and

Importance. **(12 Hours)**

UNIT-3- **Financing of small business in India**: Institutional and Non-Institutional Assistance, SFCs, Banks, SIDBI, NBFC-Meaning and Schemes, Private Equity, Venture Capital, Bills Discounting, Factoring, State and Central Government Subsidies and

Incentives for SSI(existing), Recent Industrial Policy (2011), PM MUDRA YOJANA- Meaning-Objectives-Procedures for obtaining loan under MUDRA. Foreign Direct

Investment. **(14 Hours)UNIT-4-Setting up of New Business**: Forms of Small Business-Small Proprietorship, Partnership, Private Company, Limited Liability Partnership, Cooperative Society-Meaning and Nature, Introduction to the Business Plan, Developing the Business Model for starting a new venture, Project Formulation, Project Report-Meaning-Importance-General format of Project Report, Project AppraisalFinancial-Technical-Marketing, Social Feasibility Study, Obtaining License, Clearance Certificate, Registration Procedure. Real life Start up Stories of India like Oyo, Flipkart etc explaining the importance of how problems are converted into opportunities and practical problems faced by entrepreneurs. Case Study Analysis can be given to each student and a discussion wherein every student's analysis and ideas are

shared. **(16 Hours)**

UNIT-5- Self Employment-Recent Trends in the areas of Self Employment, Event Management-Meaning and areas of business in Event Management (Party Organizing,

Catering, Wedding Plan and Corporate Event Plan) Tourism-Meaning-Tourism

Products, E-Marketing as Self Employment Opportunity. **(13 Hours)**

UNIT-6 -Business Ethics-Meaning, Ethics in Business, Importance, Various Social Responsibility of an Entrepreneur towards Customers, Suppliers, Government and

Society, Real life Example of business models in India and the world wherein Business

Ethics are followed. **(13 Hours)**

Books for Reference:

1. Entrepreneurship And Small Business Management- C B Guptha And S S Khanka
2. Entrepreneurship Development – C B Guptha And Srinivasan
3. Entrepreneurship development –Shankaraiah
4. Entrepreneurship development-S S Khanka
5. Management of small scale business and entrepreneurship- Vasantha Desai.

V SEMESTER
DISCIPLINE SPECIFIC COURSE (DSC 13)
BUSINESS LAWS
(Course Code: 213515)

(LTP 3:1:0) (Credit: 4) **(Hours Per Week: 05) (Total Hours: 80)**

Course Objectives: To enable students gain an understanding of legal and regulatory framework which regulate the functioning of commercial establishments

Course Outcome

- Knowledge of Business Law and the code of conduct practiced.
- Know the conceptual frame work of Business Law.
- Understand the dynamics of Law from Business perspective.
- Understand the Legal framework that regulates Business Law.
- Understand various Provisions of Business Law

UNIT-1- **The Indian Contracts Act** -Sources of Law, Mercantile Law, Agreement, The Indian Contracts Act, 1872: Contract-Definition and Essentials of a Contract, Legal

Rules as To Valid Offer and Acceptance, Termination of an Offer **(15 Hours)**

UNIT-2- **The Indian Contracts Act** -Coercion, Undue Influence, Fraud, Misrepresentation, Mistake, Definition and Features Only, Contractual Capacity-
Minor's Agreement, Lawful Consideration-Definition, Essentials and Exceptions, Lawful Object. Void Agreements, Quasi contracts, Wagering Agreement, Performance

of Contract, Discharge of a Contract, Remedies for Breach of Contract. **(17 Hours)**

UNIT-3-Competition Law - The Competition Act, 2002- Concept of Competition,

Development of Competition Law, overview of MRTP Act 2002, Anticompetitive

Agreements, Abuse of dominant position, combination, regulation of combinations,

Competition Commission of India; Appearance before Commission, Compliance of

Competition Law. Types of Offence and penalty. **(16 Hours)**

UNIT-4-Intellectual Property Act- Meaning and scope of intellectual properties – The Patent Act of 1970 and its amendments as per WTO agreement, back ground, objects, definition, inventions, patentee, true and first inventor, procedure for grant of process and product patents, WTO rules as to patents, rights to patentee – infringement – remedies. The Copyright Act, 1957- Meaning – Its uses and rights. The Trade Marks Act, 1999 - meaning, registration, procedures – infringement – Authorities concerned –

Remedies. **(17 Hours)**

UNIT-5-Information Technology Act 2000-Definition of Information, Digital Signature, Electronic Signature, Legal Recognition of Electronic Records, License to Issue Digital Signature Certificate and acceptance of Digital Signature, E-Contracts:

Meaning & need for Digital Goods, Unfair terms in E-contract. **(15 Hours)**

Books for Reference:

1. Mercantile Law N.D.Kapoor
2. Business Law – P C Tulsian and Bharat Tulsian
3. Mercantile Law P P S Gogna.
4. Mercantile Law Kamal Garg
5. 5.Business law Tulsian

V SEMESTER
SKILL ENHANCEMENT COURSE (SEC 3)
QUANTITATIVE DECISION TOOLS
(Course Code: 213516)

(LTP 3:1:0) (Credit: 4) **(Hours Per Week: 05) (Total Hours: 80)**

Course Objectives: To equip students with statistical tools which have wider applications in business situation analysis and with research skills to analyse and find solutions to various problems facing various business undertakings **Course Outcome**:

- To make students understand usage of statistical data & statistical methods in taking business decisions
- Knowledge about applicability of various statistical measures such as measures of central tendency, correlation & regression for analysis of data
- Understand the process of hypothesis testing and its use in business decision.
- Ability to use SPSS to solve statistical problems

UNIT-1- **Introduction:** Meaning and definition of statistics, functions, advantages, limitations-collection of data-methods of collecting primary data, and sources of

secondary data-classification and tabulation- **(10 Hours)**

UNIT –2- Measure of Central Tendency-Meaning and Definition of AveragesArithmetic mean, Median, Mode [grouping method], Standard Deviation, Quartile

Deviation, **(18 Hours**)

UNIT-3-**Correlation:** Meaning and Definition, types of correlation, Methods of calculating Correlation Co-efficient [Karl pear sons and Spearman's correlation
(15 Hours)

UNIT-4-Regression: Meaning and Definition, distinction between Correlation and Regression, Regression equations and estimations **(13 Hours)**

UNIT-5-. Business forecasting-time series analysis-components-measurement of secular trend by the method of least squares and seasonal trends. **(12 Hours)**

UNIT-6-SPSS –Introduction, uses, creation of variables and entering data. Calculation of Mean, Median and Standard Deviation using SPSS. Calculation of correlation using SPSS; Calculation of Regression using SPSS. Use of SPSS software for time series data for ad hoc analysis. **(12 Hours)**

Books for Reference:

1. Fundamentals of Statistics: D. N. Elhance, Veena Elhance and B. M. Aggarwal
2. Statistical Methods: S. P Gupta.
3. Fundamentals of Statistics: S.C Gupta
4. Practical Statistics: R S N Pillai and Bhagavathi
5. Statistics (Theory, Methods and Application): D.C. Sancheti and V.K. Kapoor
6. Statistics for Management: Richard I. Levin and David S. Rubin
7. Statistics: Dr. B.H. Suresh, Dr. G.H. Mahadevaswamy, Nithya Publications, Mysore
8. Practical Business Statistics: Siegel Andrew F, McGraw Hill Education.
9. Business Statistics: Gupta, S.P., and Archana Agarwal, Sultan Chand and Sons, New Delhi.
10. Fundamentals of Statistics: Gupta, S.C, Himalaya Publishing House.

V SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (GROUP B) (PART I)

INDIRECT TAXES-I

(Course Code: 213517)

(LTP 4:1:0) (Credit: 5) (Hours Per Week: 06) (Total Hours: 96)

Course Objectives: The objective is to equip students with the principles and provisions of Goods and Services Tax (GST), which is, implemented from 2017 under the notion of One Nation, One Tax and One Market and to acquaint students with basic provisions of GST Law and basic working knowledge.

Course Outcome:

- Provide knowledge about GST
- Knowledge of tax related with movement of goods
- Understand the procedure of levy and collection of Tax
- Determination of the Time of Supply
- Determination of the Place of Supply

Unit-1-Introduction to GST: Indirect Tax Structure in India, Pre-GST Indirect Taxation Structure in India, Issues in Indirect Tax, Rationale for Transition to GST,

GST-Meaning, Definition of GST, Types of GST, Features of GST, Benefits of GST,

Problems on Computation of GST, Concept of "cascading effect". **(15 Hours)**

Unit-2-Definitions: Actionable claim, Address of Delivery, Aggregate Turnover, Agriculturist, Associated enterprises, Business, GST Council, Capital Goods, Casual

Taxable Person, Central Tax, Cess, Common Portal, Composition Levy, Composite

Supply, Consideration, Credit note and Debit Note, Deemed Exports, Draw-Back,

Electronic Credit Ledger, Exempt Supplies, Goods, Invoice, Input, Input Service, Input

Service Distributor, Input Tax, Input tax Credit, Intra-State Supply of Goods, Inward Supply, Job Work, Manufacture, Market Value, Mixed Supply, Money, Non-Taxable

Supply, Notification, Output Tax, Outward Supply, Person, Place Of Supply, Principal

Supply, Proper Officer, Recipient, Registered Person, Return, Reverse Charge, Turnover

Service, State Tax, Taxable Supply, Zero Rated Supply **(20 Hours)**

Unit-3- Levy and Collection of Tax: Scope of Supply, Tax Procedure relating to levy of Collection and Exemption from Tax (CGST & SGST) Levy of GST; Liability of Tax Payable Person, Rate and Value of Tax, Meaning and Conditions of Supply, List of transactions without consideration list of neither a supply of goods, nor supply of services; meaning and treatment of mixed supply, meaning and treatment of composite supply, reverse charge mechanism, Composition Levy. **(12 Hours)**

Unit-4-The Integrated Goods and Service Tax Act,2017: Short title, extent and commencement, Definitions, Central Tax, Customs Frontier of India, Export of Goods and Services, Import of goods and Services; Location of Recipient of Service, Location of Supplier of Service, Appointment of Officers, Levy and Collection, Power to grant exemption from tax, Inter-State supply,. Intra-State supply, Supplies in territorial waters.

(16 **Hours)**

Unit-5-Place of supply of goods other than supply of goods imported into or exported from India, Place of supply of goods imported into, or exported from India, Place of supply of services where location of supplier and recipient is in India, Place of supply of services where location of supplier or location of recipient is outside India, Special provision for payment of tax by a supplier of online information and database access or

retrieval services **(16 Hours)**

Unit-6- Time of supply-Introduction, time of supply-forward charge, reverse charge, residuary, special charges-Time of supply of service- forward charge, reverse charge, Vouchers, Residuary, Special charges. Problems on determination of time of supply

(17 **Hours)**

References:

1. Taxman publications
2. Compendium on Goods and service tax-Dr. Manju S
3. www.cbec.gov.in/
4. https://www.gst.gov.in/
5. https://cleartax.in/s/gst-law-goodshttps://cleartax.in/s/gst-law-goods-and-services-taxand-services-tax
6. http://www.gstcouncil.gov.in/

V SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (GROUP B) (PART I)

FINANCIAL MANAGEMENT-I

(Course Code: 213518)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: To enable students understand the basic concepts and tools of finance applied in the corporate financial affairs

Course Outcomes:

- To demonstrate basic understanding of finance function in a business
- Understanding about the importance of determination of Cost of Capital in financial decision
- Demonstrate the concepts of capital structure, capital budgeting and dividend decision
- Apply the leverage and EBIT/EPS Analysis with financial data in business

UNIT-1-Introduction to Financial Management - Meaning, Scope and Objectives of Financial Management- Sources of Finance. **(16 Hours)**

UNIT-2-Cost of Capital – Meaning and Components of Cost of Capital, Importance of Cost of Capital in Financial Decisions, Determination of Specific Cost of Capital - Cost of Debt- Cost of Preference Share Capital-Cost of Equity-Cost of Retained EarningsProblems on Weighted Average Cost of Capital **(18 Hours)**

UNIT-3-Capital Structure-Meaning, Optimum Capital Structure, features of appropriate Capital Structure, Factors influencing Capital Structure, EBIT/EPS Analysis, Theories of Capital Structure - NI Approach-NOI Approach-Traditional

Approach-MM Approach, Determination of Optimal Debt-Equity Mix.

(16 Hours)

UNIT–4-Capital Budgeting-Meaning, Features, Types of Capital Budgeting Decision, Techniques of Capital Budgeting - Payback Period-Average Rate of Return-Discounted

Pay Back Period-Net Present Value-Internal Rate of Return-Profitability Index

(16 Hours)

UNIT-5-Dividend Decisions-Meaning, Dividend Policies, Objectives of Dividend

Policy-Determinants of Dividend policy, Dividend payout ratio, Dividend Theories-

Relevance Theories-Walter's Model-Gordon's Model-Irrelevance Theory-MM Model.

(15 Hours)

UNIT-6- Leverage Analysis-Meaning of Risk, Types of Risk, Meaning of Leverage, Problems on Types of Leverage-Operating Leverage-Financial Leverage-Combined Leverage, Indifference Point, Introduction to Enterprise Risk Management.

(15 Hours)

Books for Reference:

1. Financial Management I.M.Pandey.
2. Financial Management Ravi Kishore
3. Financial Management Dr.V.R.Palanivelu
4. Financial Management Kulkarni
5. Financial Management Tulsian P C
6. Financial Management M.Y. Khan and P.K. Jain

V SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (GROUP B) (PART I)

ADVANCED COST AND MANAGEMENT ACCOUNTING-I

(Course Code: 213519)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: To make students understand the various costing techniques applied in different industries to ascertain the cost of products and services.

Course Outcomes:

- Understand the conceptual framework of Cost Accounting
- Facilitates to know the basic concepts and processes in determination of cost of Products and
  Services
- Imparts the recent developments in Cost Accounting Standards
- Practically apply the method of costing in ascertaining the cost in different sectors
- Enhance students to know the reason for the difference in Cost Sheet and Financial Statement and reconcile them

UNIT-1- Introduction to Costing Methods: Meaning, Importance and Categories, Difference between cost accounting and financial accounting, Cost Accounting Standards- Generally Accepted Cost Accounting Principles (GACAP)- Purpose,

Objective and Applicability. **(16 Hours)**

UNIT-2- **Contract Costing**: Introduction, Contract Account, Profit on incomplete contracts, work in progress, Contractee's Accounts, Escalation Clause. **Process Costing**: Introduction, Distinction between Job Costing, and Process Costing, Process Losses- Normal Loss - Abnormal Loss/gain, Inter-Process Profits, Joint Products and By-Products- Meaning, features, differences, Problems on Process Accounts.

(30 Hours)

UNIT-3-Operating Costing: Introduction, Transport Costing, Standing Charges, Operating/Running Charges, Preparations of Operating Cost Sheet. **(10 Hours)**

UNIT-4- **Reconciliation of Cost and Financial Accounts**: Need for Reconciliation, Reasons for Disagreement, Reconciliation Procedure, Problems on Reconciliation. **(10 Hours)**

UNIT-5- Standard Costing- Meaning, Definition and Features -Variance Analysis,

Importance of Variance Analysis, Problems on Material and Labour Variance

(Excluding Mix and Yield Variance. **(12 Hours)**

UNIT-6- Activity Based Costing(ABC): Definition, Features, Advantages, Differences between ABC and Traditional Costing, Allocation of Overheads, Objectives of ABC, Development of ABC, Implementation of ABC, Problems on Computation of Activity

Based Costing and Traditional Costing **(18 Hours)**

Books for Reference:

1.Cost Accounting: N.K. Prasad 2.Cost Accounting: Nigam &Sharma :

3. Practical Costing: Khanna, Pandey & Ahuja

4. Cost Accounting: M.L. Agarwal
5. Cost Accounting: Jain & Narang
6. Cost Accounting: S.P. Iyengar

Web link: www.icmai.inwww.costmgmt.orgwww.ics.eduwww.usi.edu

V SEMESTER
DISCIPLINE SPECIFIC ELECTIVE (GROUP B) (PART II)
ORGANISATIONAL BEHAVIOUR
(Course Code: 213520)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: To acquaint students with the human behaviour at work, emotions, group behaviour dynamics and motivating them to excel in their job

Course Outcome:

- Equipped with the knowledge of studying human behaviour
- Analyze individual and group behaviour
- Understand the implications of organizational behaviour on the process of management
- Handle any situation effectively in an organisation.
- Evaluate the appropriateness of various leadership styles
- Knowledge of conflict management strategies used in organizations.

UNIT- 1- Organisational Behaviour: Introduction, Meaning, Definition, Management Skills, Historical development of OB, Fundamental Concepts of OB, Fundamental

Principles of OB, Contributing disciplines towards OB, Approaches towards OB,

Challenges and opportunities in OB **(14 Hours)**

UNIT-2- FOUNDATIONS OF INDIVIDUAL BEHAVIOUR:

Ability: Meaning, Dimension of Intellectual abilities, Basic Physical abilities in OB, The role of disabilities in OB

Personality: Meaning, formation, determinants, Stages of personality development, Traits of personality in OB, Personality attributes influencing OB.

Attitude: Meaning, Formation, Components, Relationship between attitude and

behaviour. **(16 Hours)**

UNIT -3- PERCEPTION AND EMOTIONS:

Perception: Process of perception, Factors influencing perception, link between perception and individual decision making.

Emotions: Affect, Mood and Emotion and their significance, Basic emotions, Emotional intelligence, Self-awareness, Self-management, Social awareness, Relationship management. Comparison of performance of business with different employee satisfaction levels.

(16 Hours) UNIT -4- MOTIVATION AND LEADERSHIP:

Motivation: Meaning, Theories of motivation-Needs theory, Two factor theory, Theory X and Y, Application of motivational theories.

Leadership: Meaning, Styles of leadership, Leadership theories, trait theory, behavioural theories, managerial grid, situational Theories-Fiedler's model, SLT,

Transactional and transformation leadership. **(16 Hours)**

UNIT -5-GROUP BEHAVIOUR: Definition, Types of GB, Formation of groups,

Building effective teams.

Conflict: Meaning, Nature, Types, Process of conflict, Conflict resolution.

Power and politics: Basis of power, Effectiveness of power tactics, Effects of politics in organisation.

Formation of Groups and performing assignments. At the end of the assignment,

students shall note the conflicts faced during the assignment and how they were resolved.

(18 Hours)

UNIT- 6- EMERGING CHALLENGES: Emerging Challenges, Managing Diversity, Globalisation, Technology transformation, E-business, Ethics in the organisation, promoting ethical behaviour. Concept of Work – Life Balance in Organisations.

(16 Hours)

Books for Reference:

1. Organisational behaviour, Stephen P Robbins, Timothy A. Judge, NeharikaVohra, 14th Edition, Pearson
2. Organization Behaviour – Ashwathappa, Himalaya Publication House
3. Organisational Behaviour: A modern approach - Arun Kumar and Meenakshi, Vikas Publishing House
4. Organisational Behaviour - Fred Luthans, 12/e, McGraw Hill International
5. Management and Organisational Behaviour - Laurie J Mullins, Pearson education
6. Fundamentals of Organisational Behaviour - Slocum/Hillriegel, Cengene Learning
7. Introduction to Organisational Behaviour – Michael Butler, Jaico Publishing House
8. Robbins, Stephen P. (2004) *Organizational Behavior - Concepts, Controversies, Applications.*
9. Miner, J.B. (2006). *Organizational behavior, Vol. 3: Historical origins, theoretical foundations, and the future*.
10. <https://en.wikipedia.org/w/index.php?title=Organizational_behavior&oldid=992195586>

V SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (GROUP B) (PART II)

INVESTMENT ANALYSIS

(Course Code: 213521)

(LTP 4:1:0) (Credit: 5) (Hours Per Week: 06) (Total Hours: 96) Course Objectives:

This course develops a basic understanding of investment field and investment environment. Also the functionalities of the security market and stock market as an avenue for investments.

Course Outcomes:

- Demonstrate critical thinking and analytical skills in the context of investment theories and practice

- Demonstrate a basic understanding of investments and the nuances of investing
- Examine the relationship between return and risk
- Exhibit the acquaintance of the securities market and its constituents
- Apply knowledge gained to perform analysis of various securities

Unit 1: Investment Environment-Investment-Investment- Objectives of InvestmentInvestment Decision Process- Investments Alternatives – Financial Assets -Equity, Mutual Funds, Debt Commodities and Real Estate

Unit 2: Indian Stock Markets: Financial Markets- Securities Market-Market Participants -Stock Exchanges- Stock Brokers- Clearing House- Depositories-

Depository Participants- FIIs- Domestic Institutional Investors- Individual Investors- Online and offline Trading in Securities- Security Market Indices- Sources of Financial Information.

Unit 3: Analysis of Equity and Debt Instruments: Equity Stock-Dividend Discount Model-Constant Growth Model- Bond Features-Types of Bonds- Estimating Bond Yields- Bond Pricing-Types of Bond Risks.

Unit 4: Investment Analysis: Introduction to Fundamental Analysis-Economic analysis-Industrial Analysis-Company analysis- Technical Analysis-Dow theory- Types of Charts, Technical Trading Rules and Indicators.

Unit 5: Return and Risk Analysis –Determinants of Required Rates of Return-

Expected Rates of Return-Risk-Free Assets- Relationship between Risk and Return- Systematic and Unsystematic Risk-Alternative Measures of Risk-Variance-Standard Deviation-Covariance-Correlation- Beta analysis (Simple Problems in all Concepts)

Unit 6: Investor Protection: Role of SEBI and Stock Exchanges in Investor ProtectionInvestor Grievances and their Redressal System- Insider Trading- Investor Awareness and Activism.

Reference Books

1. Security Analysis and Portfolio Management by Punithavathy Pandian, Vikas Publication
2. Investment Analysis and Portfolio Management by Prasanna Chandra,
3. Security Analysis and Portfolio Management by Shashi K Gupta, Kalyani Publication
4. Investments Analysis and Management by Jones, Wiley India Edition.
5. Investments by ZviBodie, Alex Kane, Alan Marcus and PitabasMohanty, Mc Graw Hill Publication.

V SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (GROUP B) (PART II)

RETAIL MANAGEMENT

(Course Code: 213522)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: To acquaint students with the knowledge of modern retail business format and various dimensions of retail operations

Course Outcomes:

- Learn how to create place, time and possession utilities
- Knowledge of the entities involved and the impact of decisions on a retail business
- Learn the evolution of the retail industry
- Recognize the career opportunities available in the retail businesses
- Study the concept of strategic planning within the retail management decision process

- Identifying the key roles within retail businesses
- Identification of the challenges of working in the retail field

Unit – 1- Introduction to Retailing: Terms and Definition, Concept of retailing, Functions of retailing, Retail formats and types, Retailing Channels, Retail industry in India, Importance of retailing, Changing trends in retailing. **(16 Hours)**

Unit – 2-Understanding the Retail Consumer: Retail consumer behavior, Factors influencing the Retail consumer, Customer decision making process, Types of decision making, Market research for understanding retail consumer. **(16 Hours)**

Unit – 3- Retail Market Segmentation and Strategies: Market Segmentation, Benefits of market segmentation, Kinds of markets, Definition of Retail strategy, Strategy for effective market segmentation, Strategies for penetration to new markets, Growth strategies, Retail value chain **(18 Hours)**

Unit – 4- Retail Location Selection: Importance of Retail locations, Types of retail locations, Factors determining the location decision, Steps involved in choosing a retail location, Measurement of success of location. **(16 Hours)**

Unit – 5- Merchandise Management: Meaning of Merchandising, Factors influencing Merchandising, Functions of Merchandising Manager, Merchandise planning, Merchandise buying, Analyzing Merchandise performance. **(16 Hours)**

Unit – 6- Retail Operations and Retail Pricing: Store administration, Premises management, Inventory Management, Store Management, Receipt Management, Customer service, Retail Pricing, Factors influencing retail prices, Pricing strategies, Controlling costs. **(14 Hours)**

Books for Reference:

1. Retail Management 01 Edition S. C. Bhatia
2. Retail Management: Text and Cases (English, Paperback, Swapna Pradhan
3. Retail Management; Principles and Practices – R. Sudarshan

4. **Retail Management – Functional Principles and Practices** Gibson G. Vedamani,
5. **Retail Management** Suja Nair,
6. **Retail Marketing Management** David Gilbert
7. **Retail Marketing Management** Michael Levy, Barton Weitz and DhruvGrewal

VI SEMESTER
DISCIPLINE SPECIFIC COURSE (DSC 14)
PRINCIPLES AND PRACTICE OF AUDITING
(Course Code: 213624)

(LTP 3:1:0) (Credit: 4) **(Hours Per Week: 05) (Total Hours: 80)**

CourseObjectives: To provide knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards

Course Outcomes:

- Acquaint students about the concepts and principles of Auditing
- Familiarise students with the basic terms used in auditing

- Knowledge about lapses while maintaining the accounts
- Knowledge about preparation of Audit Report
- Understand the Duties and Liabilities of an Auditor

Unit-1-Introduction: Meaning and Definition of Auditing, Nature and importance of auditing, objectives of auditing, advantages, different types of audit, qualities of an

auditor, audit report. **(12 Hours)**

Unit-2- **Audit Strategy, Audit Planning and Audit Programme -** : Audit Strategy, Process and Purpose of Audit Planning, Factors affecting Audit Planning, Audit Flow

Chart, Audit Procedures, Audit Programme advantages, Audit Note Book, Audit Working Papers, Routine Checking & Test Checking. **(15 Hours)**

Unit-3- **Internal Check and Internal Control**: Meaning and Objectives, Differences between Internal Control & Internal Audit, Internal Check for various types of transactions, limitations of internal control.

Vouching: Meaning and importance, vouching of various kinds of Receipts & Payments **(15 Hours)**

Unit-4- **Verification and Valuation of Assets and Liabilities**: Meaning, Difference between Vouching & Verification, problems in valuation of assets, verification and valuation of assets and liabilities-goodwill, Stock in trade, Investments, Patents, Copy rights and trademarks, plant and machinery, capital, creditors, debentures, outstanding

expenses, contingent liabilities. **(13 Hours)**

Unit-5-Audit of Limited Companies: Steps before commencing a Company Audit, Statutory Auditors under the Companies Act 2013 - - Qualifications and disqualifications, Appointment, Rotation, Removal, Resignation, Remuneration, Rights and Duties and Liabilities, Other Important Provisions under the Companies Act, 2013 relating to Audit and Auditors and Rules made thereunder, Auditor's Report-Contents and Types. , Audit Committee & governance in Companies **(13 Hours)**

Unit-6-Special Areas of Audit: Special features of Cost audit, Tax audit and Management audit, Recent Trends in Auditing, Basic considerations of audit in EDP Environment; ICAI Standards on Auditing, Forensic Audit, Energy Audit, Internal Audit, Operational Audit – Brief Knowledge **(12 Hours)**

All the above units have to be taught with specific reference to relevant AuditingStandards.

References:

1. Auditing T R Sharma
2. Practical auditing B N Tandon,
3. Practical auditing- Spicer and Spegler
4. https://cleartax.in/s/duties-of-auditor
5. https://www.accountingedu.org/
6. https://taxguru.in/company-law
7. https://www.soas.ac.uk/
8. Auditing & Assurance with Application Based MCQs & Integrated Case Studies – Pankaj Garg

VI SEMESTER
DISCIPLINE SPECIFIC COURSE (DSC 15)
IFRS (IND –AS)
(Course Code: 213625)

(LTP 3:1:0) (Credit: 4) **(Hours Per Week: 05) (Total Hours: 80)**

Course Objectives: To impart a basic understanding of application of IFRS in the financial reporting practices in the globalized and turbulent business environment.

Course Outcome:

- Indepth understanding about the Convergence of IND AS with IFRS

- Knowledge about the standardised framework for the preparation and presentation of Financial Statements.
- Educate students about the Basic Procedures for handling Advanced Accounting Tools.
- Familiarise students about various Provisions & Procedures their measuring methods & Disclosures of the Assets & Liabilities.

Unit-1-IFRS-Meaning, Need for IFRS, IASB, IASB Current Structure, IFRS Due

Process, Benefits and limitations of IFRS, Introduction to Indian Accounting Standards

(IND-ASs - Converged IFRSs), Accounting Regulations in New Companies Act – 2013,

IFRSs issued by IASB (1-17), List of IND-ASs. **(05 Hours)**

Unit–2-Framework for the Preparation and Presentation of Financial Statements in accordance with Indian Accounting Standards: Meaning of Framework, Purpose and status, Scope, Application, Uses and their information and needs, objectives, Underlying assumptions, Qualitative characteristics, Elements of Financial statements, Recognition and Measurement of the elements of financial statement (Only Theory). Balance sheet, Statement of changes in Equity, Statement of Profit and Loss consolidated financial statements, other comprehensive income as per schedule III of the Companies Act, 2013 – Simple problems on each statement. **(20 Hours)**

Unit–3-Accounting for Assets and Liabilities: Recognition and Measurement criteria for Investment Property (IND-AS 40), Borrowing Cost (IND-AS 23) –– Provisions, Contingent Assets and Contingent Liabilities (IND-AS 37) - Share-based Payment (INDAS 102) (Only Theory). Recognition and Measurement for Property, Plant and

Equipment (IND-AS 16) – Intangible Assets (IND-AS 38) - Inventories (IND-AS 2) Leases (IND-AS 17) – Impairment of Assets (IND-AS 36) - Theory and Simple Problems

only **(20 Hours)**

Unit-4-Accounting for Revenue and Expenses: Income Taxes (IND-AS 12), Employee Benefits (IND-AS 19), Construction Contracts (IND-AS 11), Revenue (IND-AS 18),

Revenue from Contracts with Customers (IND-AS 115). **(10 Hours)Unit-5-ND-AS on Business Combination, Consolidation and Disclosure**: Consolidated Financial Statements (IND-AS 110), Joint Arrangements (IND-AS 111),
Business Combinations (IND-AS 103), Related Party Disclosures (IND-AS 24), Operating Segments (IND-AS 108), First-time adoption of International Financial Reporting Standards (IND-AS 101) – Financial Instruments: Disclosures (IND-AS 107) – Disclosure of interests in Other Entities (IND-AS 112) –Earning Per Share (IND-AS 33) – Interim Financial Reporting (IND-AS 34) – Insurance Contracts (IND-AS 104)–

Theory and Simple Problems only. **(25 Hours)**

Books for Reference:

1. A Quick Guide to Indian Accounting Standards (Ind-AS) by Chethan N. Patel and BhupendraMantri, Taxmann Publication (P.) Ltd.
2. Students' Guide to Ind ASs – Converged IFRSs by Dr. D.S. Rawat, Taxmann Publication (P.) Ltd.
3. IFRS for India, Dr.A.L. Saini, Snow white publications
4. Roadmap to IFRS and Indian Accounting Standards by CA ShibaramaTripathy
5. IFRS concepts and applications by Kamal Garg, Bharath law house private limited 6. IFRS: A quick reference guide by Robert J Kirk, Elsevier Ltd.

Weblinks:

1. https://www.mykeyaccounts.com
2. https://www,cakart.in
3. https://www.efinancemanagement.com
4. https://www.corporatefinanceinstitute.com
5. https://www.mca.gov.in
6. https://taxmann.com

VI SEMESTER B.COM
SKILL ENHANCEMENT COURSE (SEC 4)
COMPANY LAW AND SECRETARIAL PRACTICE
(Course Code: 213626)

(LTP 3:1:0) (Credit: 4) **(Hours Per Week: 05) (Total Hours: 80)**

Course Objectives: To impart students with knowledge of companies Act-2013 and role of company secretary in corporate affairs Course Outcome:

- Learn the dynamics of the Company Law from a Competitive and Economic perspective.
- Knowledge about the Legal Framework that regulates the Companies Act of 2013.
- Understand the new trends set up by the Companies Amended Act of 2013.

Unit-1-**Companies Act**: Introduction, Companies Act 2013, features of Companies Act - 2013, Types of companies- Public companies, Pvt company, Statutory Corporation, One person company, Dormant company, Holding Company, Subsidiary Company, Associate company, Small company, Foreign Company, Body Corporate, Companies limited by guarantee and unlimited companies Limited Liability Partnership; Application of Company Law to banking/insurance sector- Registrar of companies- functions, Ministry of Corporate affairs-functions; introduction to National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT) &

Special Courts; SEBI-functions of SEBI. **(20 Hours)**

Unit-2- **Company Formation**: – Meaning, Position and Functions of Promoter; Incorporation – contents of Memorandum of Association and Articles of Association, Difference between Memorandum of Association and Articles of Association; Documents to be filed – E-filing; Certificate of Incorporation and Choice of the form of the business entity, Procedure for incorporation- of private/public companies, Obtaining certificate of commencement of business, Obtaining certificate of re-registration,

Commencement of new business and certification, **(15 Hours)**

Unit-3- **Issue of Shares: -** Procedure for issue of Shares – Public Issue, Rights Issue and Bonus Shares, Issue of Shares at Par/Premium/Discount; Issue of Shares on Preferential /Private Placement Basis; Prospectus – meaning and contents; Statement in lieu of Prospects and Book Building; Shares with Differential Voting Rights; Allotment, Calls on Shares– Issue of Sweat Equity Shares, Employees Stock Purchase Scheme

(ESPS) & Employees Stock Option Scheme (ESOPs), **(16 Hours)Unit-4-Meetings**: Authority, Accountability, Delegation and Responsibility ; Board Meetings , Convening and Management of Meetings of Board and Committees; Preparation of Notices and Agenda Papers, General Meetings, Convening and Management of Statutory Meeting, Annual and Extra-Ordinary General Meetings, Voting through Electronic Means; Conducting a Poll and Adjournment of a Meeting; Post-Meeting Formalities, Preparation of Minutes and Dissemination of Information and Decisions **(14 Hours)**

Unit-5- **Secretary**: Definition, Who can be company secretary, Appointment, General Legal position, Duties of a Company Secretary, Rights of Company Secretary, Liabilities of Company Secretary, Qualification For Appointment as secretary, Dismissal of the Secretary, Secretary in the Whole time practice, Secretarial Compliance certificate- Specimen form. **(15 Hours)**

Books for Reference:

1. S.Srikanth , Shanti Rekha Rajagopal ,Revathy Blakrishnan, Corporate Laws and Secretarial Practice, Jain Book
2. M C Kuchhal, Secretarial Practice, Vikas Publishing House, New Delhi.
3. Sangeet Kedia, Advanced Company Law And Practice, Pooja Law Publishing Company,

Weblinks

1. https://www.legislative.gov.in
2. https://www.ICSI,edu.
3. htttps://www.shiksha.com
4. htttps://www.slideshare.net

DISCIPLINE SPECIFIC ELECTIVE (GROUP C)

INDIRECT TAXES-II

(Course Code: 213627)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: To enable students gain an in depth understanding of GST Act; to learn the basics customs duty and GST Implications on Customs duty computation

Course Outcome:

1. To make the students understand the concept of Supply along with the rules related to time, place of supply
2. To help the students compute the Goods and Service Tax (GST) payable by a supplier after considering the eligible input tax credit.
3. To help students understand the persons liable for registration and the persons not required to obtain registration under the GST law
4. Assessing value of goods
5. To aware the students regarding the various types of Duties

Unit-1- **Value of Taxable Supply**: Conditions, inclusions, Consideration not wholly in money, Supply between two related persons, Supply through agent, cost based value, Residual valuation, specific supplies, Service of pure agent, Problems on determination

of value of supply. **(20 Hours)**

Unit-2- Input tax credit: Meaning, conditions for taking credit, Input Tax Credit Procedure, ineligible input tax credit, reversal & apportionment of credit, availability of credit in special circumstances, Input tax credit and change in constitution of registered person, Taking input tax credit in respect of inputs and capital goods sent for job work,

Manner of Distribution of Credit by Input Service Distributor (ISD) **(20 Hours)**

Unit-3-**Tax Invoice, Credit and Debit Notes**: Tax invoice, Prohibition of un authorised collection of tax, Amount of tax to be indicated in tax invoice and other documents,

Credit and debit notes. **(12 Hours)**

Unit-4-Registration under GST: Persons liable for registration, Persons not liable for registration compulsory registration, Voluntary registration Procedure for Registration, Rejection of application for registration, cancellation & suspension of Registration.

(12 Hours)

Unit-5-**Returns**: Brief introduction to various GSTRS, Procedure for filing various return. **(16 Hours)**

Unit-6- Customs Act 1962: Meaning, Notified goods, specified goods, Prohibition of importation and exportation under sec 11- types of customs duty- Basic customs duty, Education Cess, Anti dumping duty, Safeguard Duty, IGST, GST Compensation Cess- Computation of Assessable value and applicable duties. Exports – Meaning- zero rated supply, Remission of Duties and Taxes on Export Products **(16 Hours)**

References:

1. www.cbec.gov.in/
2. Systematic Apporach GST- Dr.Ravi.Gupta , Dr.Girish.Ahuja
3. https://www.gst.gov.in/
4. https://cleartax.in/s/gst-law-goodshttps://cleartax.in/s/gst-law-goods-and-services-taxand-services-tax
5. Taxmann publication
6. Compendium on Goods and Service tax

DISCIPLINE SPECIFIC ELECTIVE (GROUP C)

FINANCIAL MANAGEMENT –II

(Course Code: 213628)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: To acquire working capital management skills, and advanced concepts and techniques in corporate financial affairs **Course Outcomes**:

- Understand about the basic concept of Working Capital Management and its estimation
- Analyze the importance of managing Receivables, Inventory & Cash in business
- Understand leasing as a method of financing working capital requirement in business
- Analyze the process of raising Venture Capital Finance and Share Holder Value Creation
- Understand the contemporary issues in International Financial Management

UNIT-1- Working Capital Management- Meaning, Features, Types of Working Capital, Factors influencing Working Capital, Sources of Financing Working Capital, Operating Cycle-Meaning-Component-Types-Problems on Computation of Operating Cycle, Level of Current Assets, Current Assets Financing Policy-Approaches, Estimation of Working Capital Requirements. (**18 Hours)**

Unit- 2-Receivables Management-Meaning and Purpose, Cost of Maintaining

Receivables, Credit Management- Credit Policy Variables-Credit Evaluation, Collection Policy, Factoring. Evaluation of Investment in Accounts Receivable **(16 Hours)**

Unit-3- Inventory Management- Meaning, Objective, Need for Material Requirement Planning; Need for Holding Inventory, Order Quantity-EOQ Model, Monitoring and Control of Inventories-ABC- JIT Techniques **(16 Hours)**

Unit-4- Cash Management-Meaning, Objectives, Need for Cash, Cash Planning, Cash Budget, Cash Management Control-Cash Collection and Disbursement, Preparation of Cash Budget **(15 Hours)**

Unit-5-Working Capital Financing-Leasing, Types of Lease, Rationale for Leasing, Operating Lease, Finance Lease, Leasing as a Financing Decision, Debt Financing, Lease Financing, Debt

Financing v/s Lease Financing, Indifference Point between Debt Financing & Lease Financing **(16 Hours)**

Unit-6- International Financial Management- Foreign Exchange Market, Foreign Exchange Rates- Spot Exchange Rates, Bid-Ask Rate, Forward Exchange Rates, Foreign Exchange Risk Transaction Exposure-Economic Exposure-Translation ExposureHedging of Foreign Exchange Risk, Foreign Currency Option, Money Market Operations- Financing International Operations. **(15 Hours)**

Books for Reference:

1. Financial Management I.M.Pandey.
2. Financial Management Ravi Kishore
3. Financial Management Dr.V.R.Palanivelu
4. Financial Management Kulkarni
5. Financial Management Tulsian P C
6. Financial Management Khan and Jain

DISCIPLINE SPECIFIC ELECTIVE (GROUP C)

ADVANCED COST AND MANAGEMENT ACCOUNTING-II

(Course Code: 213629)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: To familiarize students with an understanding of accounting tools and techniques relevant to management decision making

Course Outcome:

- Acquaint the students with the basics of Management Accounting
- Knowledge on the Short term and Long term decision making techniques
- Enhance students to analyse the financial statements and its importance in the business
- Plan the business through budgetary control
- Use the statistical data shared through Financial statements to take better and accurate decision

UNIT-I-Introduction: Meaning and Definition of Management Accounting, Scope and, Objectives of Management Accounting-Differences between Management

Accounting and Financial Accounting, Management accounting and Cost accounting,

Limitations of Management Accounting. **(16 Hours)**

UNIT-2-Marginal Costing: Definition, Basic Concepts, Assumptions, Marginal Cost

Statement, Contribution, Break Even Analysis, P/V Ratio-Margin of Safety and

Decision Areas. **(18 Hours)**

UNIT-3- Budget and Budgeting Control: Definition, Basic Concepts, Budget Manual, Key factor Classification of Budgets, Problems on Cash Budget, Sales Budget, Flexible

Budget, Zero Based Budget (Theory). **(20 Hours)**

UNIT-4-Cash Flow Statement: Meaning, Definition, Uses and Limitations,

Differences between Funds Flow Statement and Cash Flow Statement, Preparation of

Cash Flow Statement (AS-3)- Indirect Method. **(18 Hours**)

Unit 5-**Analysis of Financial Statements**: Common Size statements, Comparative

Statement, Trend Analysis. **(10 Hours)**

Unit-6- Ratio Analysis: Meaning and Objectives-Types of rations-(A) Profitability Ratios-GP ratio-NP Ratio-Operating ratio- Operating profit ration-Return on capital employed ratio EPS, (B)Turnover Ratios-working capital turnover ratio- Stock Turnover ratio-Fixed assets turnover ratio-Debtors turnover Ratio-Creditors turnover Ratio, (C) Financial ratios-Current Ratio-liquidity ratio-Debt-equity ratio-Proprietary RatioCapital gearing Ration-Advantages and Limitations of Ratios- Construction of Income

Statement & Balance sheet using ratios. **(14 Hours)**

Books for Reference:

1.Cost Accounting: N.K. Prasad 2.Cost Accounting: Nigam &Sharma :

3. Practical Costing: Khanna, Pandey & Ahuja
4. Cost Accounting: M.L. Agarwal
5. Cost Accounting: Jain & Narang
6. Cost Accounting: S.P. Iyengar

Weblink:

1.www.icmai.inwww.imanet.orgwww.icai.orgwww.taxguru.in

VI SEMESTER

(PART II)

DISCIPLINE SPECIFIC ELECTIVE (GROUP C)

INTERNATIONAL BUSINESS

(Course Code: 213630)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objective: To develop an understanding of modes of globalizing the business, and international treaties that regulate functioning of MNCs

Course Outcome:

- Have advanced knowledge of economics
- Knowledge of business administration
- Specialized insight into international business
- Specialized insight into marketing-EX-IM
- Innovation
- Entrepreneurship development
- Maximum utilization of available resources

Unit- 1-Introduction to international business: Forms of business, International business orientations, Differences between domestic and international business, Modes and entry strategies of international business, Arguments for and against the trends in international trade, Introduction to Liberalisation, Privatisation and Globalization, Meaning and importance of LPG, Components of globalization, The emerging global

economy, Drivers of Globalization. **(18 Hours)**

Unit- 2- International Business Environment-Meaning and importance, Forms of Business Environment
Political Environment-political systems, legal systems

Economic Environment- , the determinants of economic development. Tariffs, subsidies, local content requirements, administrative policies, anti dumping policies, political and economic arguments for intervention

Technological Environment- Advancement in the current scenario

Cultural Environment-Cultural aspects, values and norms, social structure, religious and ethical systems, language, education.Implications of cultural differences on business.

Competitive Environment - Development of the world trading system **(20 Hours)**

UNIT-3-Regional Trading Blocs – Meaning and importance, Nature and levels of integration, Reasons for forming trading blocs, Arguments for and against regional integration, European Union, ASEAN, OPEC, NAFTA,SAFTA, SAARC **(16 Hours)**

UNIT-4-WTO-The Uruguay round of negotiations, Genesis and functions**,** GATT,

GATS, TRIPS, TRIMS. **(15 Hours)UNIT -5-**
Multinational Corporations: Meaning and importance, Organisation design and structures, Headquarters and subsidiary relations in multinational corporations.

(15 Hours)

UNIT 6-International Monetary System: Funding facilities and strategies of IMF and

World Bank, Expatriation and Repatriation, Ethical dimensions in International

Business. **(12 Hours)**

Books for Reference:

1. Charles W L Hill. And Arun Kumar Jain. International Business: competing in the global market place, McGraw-Hill.
2. John D. Daniels Lee H Radebaugh, International Business: Environments and Operations Addison Wesley.
3. Justin Paul – International Business – Prentice Hall of India.
4. OdedShenkarYadongLuo: International Business – John Wiley and Co.
5. Wild J. John, Wild L. Keneth and Han C. Y. Jerry, International Business: An integrated approach, Prentice Hall
6. Alan M. Rugman and Richard M. Hodgetts – International Business by Pearson
7. Francis cherrunilam- international business.
8. https://rmit.libguides.com/internationalbusiness
9. **InternationalTrade:TheoryandEvidence**by **James Markusen et al.** - **McGraw-Hill/Irwin** , **1994**
10. **International Trade Theory and Policy** by Steven M. Suranov

VI SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (GROUP C)

PORTFOLIO MANAGEMENTS

(Course Code: 213631)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course objectives:

The course enhances the knowledge of students in various theories of portfolio, construction and performance evaluation of portfolios. Also provides an overview of various avenues for investment and portfolio management

Course Outcomes:

- To evaluate portfolio performance using various measures
- Practice the tools and techniques of individual securities and portfolio analysis
- Acquire the practical knowledge on online trading of different financial securities
- Construct optimal portfolio and evaluate them using models
- To evaluate various portfolio theories and model like Markowitz Sharpe index and CAPM

Unit 1: Portfolio Management: Introduction to Portfolio- Portfolio Management – Types of Portfolio Management-Portfolio Construction- Approaches in Portfolio Construction-Portfolio Strategy-Active and Passive Portfolio Strategies.

Unit 2: Efficient Market Theory: Introduction to Efficient Market Hypothesis- Random Walk Model- Forms of Efficient Market Hypothesis-Weak FormEfficient Market Hypothesis- Semi StrongForm Efficient Market Hypothesis-Strong Form Efficient Market Hypothesis- Empirical Evidences- Efficient Market and Investors.

Unit 3: Markowitz Portfolio Selection Model: Diversification-Markowitz Mode Assumptions-Markowitz Efficient Frontier-Expected Rates of Return of portfolio- Alternative Measures of Risk-Variance of Portfolio- Standard Deviation of Portfolio (Simple Problems Only).

Unit 4: Capital Assets Pricing Model: CAPM Theory- Assumptions of CAPMCalculation CAPM Return- Capital Market Theory-Security Market Line and Capital Market Line.

Unit 5: Evaluation of Portfolio Performance: Sharpe Portfolio Performance Measures-Treynor Portfolio Performance Measures - Jensen Portfolio Performance Measures–Information Ratio Performance Measure-Application of Portfolio Performance Measures.

Unit 6: International Portfolio Investment: Investing Overseas**-**Benefits ofInternational Portfolio Investment-Categories of International Markets-Risks in International Diversification.

Reference Books

1. Security Analysis and Portfolio Management by Punithavathy Pandian, Vikas Publication
2. Investment Analysis and Portfolio Management by Prasanna Chandra,
3. Security Analysis and Portfolio Management by Shashi K Gupta, Kalyani Publication
4. Investments by ZviBodie, Alex Kane, Alan Marcus and PitabasMohanty
5. Security Analysis and Portfolio Management by Donald Fisher and Ronald Jordan
6. Investment Analysis and Portfolio Management by Reilly and Brown, Cengage Learning, India

VI SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (GROUP B)

DIGITAL MARKETING

(Course Code: 213631)

(LTP 4:1:0) (Credit: 5) **(Hours Per Week: 06) (Total Hours: 96)**

Course Objectives: This course seeks to provide knowledge about the concepts, tools, techniques, and relevance of digital marketing in the present changing scenario. It also enables the student to learn the application of digital marketing tools and acquaint about the ethical and legal aspects involved therein.

Course Outcomes:

- Understand the concept of Digital Marketing and its importance in comparison to traditional marketing.
- Equip students with improved Skills and Creativity in digital marketing management
- Explore a Wide Range of Career Options in the digital marketing field.
- Knowledge to be Cost-Efficient and Time-Savvy
- Understand the legal and ethical issues relating to digital marketing.

Unit I- Introduction to Digital Marketing - Concept, scope, and importance of digital marketing. Traditional marketing versus digital marketing. Challenges and opportunities for digital marketing. Digital penetration in the Indian market.

Unit II- Digital Marketing Management - Digital-marketing mix, Segmentation, Targeting, Differentiation, and Positioning: Concept, levels, and strategies in a digital environment; Digital technology and customer-relationship management. Digital consumers and their buying decision process.

Unit III- Digital Marketing Presence- Concept and role of Internet in marketing. Online marketing domains. The P.O.E.S-M framework. Website design and Domain name branding. Search engine optimisation: stages, types of traffic, tactics.

Unit IV- Online advertising- Online advertising, types, formats, requisites of a good online advertisement. Buying models. Online public relation management. Direct marketing: scope and growth. E-mail marketing: types and strategies.

Unit V- Interactive Marketing-Interactive marketing: concept and options. Social media marketing: concept and tools. Online communities and social networks. Blogging: types and role. Video marketing: tools and techniques. Mobile marketing tools. Marketing Payment options.

Unit VI- Ethical and Legal Issues-Ethical issues and legal challenges in digital marketing. Regulatory framework for digital marketing in India.

References

- Chaffey, D, F.E. Chadwick, R. Mayer, and K. Johnston (2015). *Internet Marketing: Strategy, Implementation, and Practice.* Pearson India
- Frost, Raymond D., Alexa Fox, and Judy Strauss (2018). *E- Marketing.* Routledge
- Gupta, Seema (2018). *Digital Marketing.M cGraw* Hill Education (India) Private Ltd.
- Kapoor, Neeru. *E-Marketing,* Pinnacle learning
- Kotler, Philip, HermawanKartajaya, and IwanSetiawan (2017). *Digital Marketing: 4.0 Moving from Traditional to Digital.* Pearson India
- Ryan, Damian and Jones Calvin (2016). *Understanding Digital*

- Gupta, Seema (2018). *Digital Marketing.M cGraw* Hill Education (India) Private Ltd.
- Kapoor, Neeru. *E-Marketing,* Pinnacle learning
- Kotler, Philip, HermawanKartajaya, and IwanSetiawan (2017). *Digital Marketing: 4.0 Moving from Traditional to Digital.* Pearson India

- Ryan, Damian and Jones Calvin (2016). *Understanding Digita*

Department of Computer Application

MOTTO:

Technology for Better Future

VISION:

Technology for all

MISSION:

- To enhance students Analytical and Technical skills.
- To Groom them to handle any Industry related Challenges.
- To make them sustainable in the ever-changing Technology.
- To Increase their efficiency in programming language, coding and Application Development.

The objectives of the BCA Program

1. The primary objective of this program is to provide a foundation of computing principles and business practices for effectively using/managing information systems and enterprise software
2. It helps students analyze the requirements for system development and exposes students to business software and information systems
3. This course provides students with options to specialize in legacy application software, system software or mobile applications
4. To produce outstanding IT professionals who can apply the theoretical knowledgeinto practice in the real world and develop standalone live projects themselves
5. To provide opportunity for the study of modern methods of information processing and its applications.
6. To develop among students the programming techniques and the problem- solving skills through programming
7. To prepare students who wish to go on to further studies in computer science and related subjects.
8. To acquaint students to Work effectively with a range of current, standard, Office Productivity software applications

Program Outcomes:

1. **Domain knowledge:** Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problemsof varying complexity.
2. **Problem Analysis:** Improved reasoning with strong mathematical ability to Identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
3. **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems. Establishing excellent skillsin applying various design strategies for solving complex problems.
4. **Investigation:** Acquiring sufficient knowledge in computer science and Applications and able to think Independently**.**
5. **Modern Tool Usage:** Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the area of Computer Science and making them mobile based application software.
6. **Computer and Society:** An ability to analyze impacts of computing on individuals, organizations, and society.
7. **Environment and sustainability**: Preserving Environment and to define sustainability and identify major sustainability challenges.
8. **Moral and Ethical values:** Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impactsdue to computer-based solutions for problems.
9. **Individual and Team work**: Individual contribution and to achieve a commongoal.
10. **Communication:** Gaining good communication knowledge both in oral and writing.
11. **Project Management and Finance:** Practicing of existing projects and becoming independently launch own project by identifying a gap in solutions and manage finance efficiently.
12. **Lifelong Learning:** Continuous independent learner.

BCA Programme Structure: 2021-22 onwards

First Year

Course	Code	Title	Hours / Week		Credits	Maximum Marks			Exam Duration (Hours)	Total Marks
						IA		Exam		
			L	T/ P	L:T:P	C1	C 2	C3		
	I SEMESTER									
DSC-1	215129	Fundamentals of Computers	3	0	3:0:0	20	20	60	2 ½	150
		Information Technology Lab	0	4	0:0:2	10	15	25	2 ½	
DSC-2	215130	Programming in C	3	0	3:0:0	20	20	60	2 ½	150
		C Programming Lab	0	4	0:0:2	10	15	25	3	
DSC-3	215131	Mathematical Foundation/ Accountancy	3	0	3:0:0	20	20	60	2 ½	100
OE-1	OE210E BCA101	Business Intelligence	3	3	3:0:0	20	20	60	2 ½	100
	II SEMESTER									
DSC-4	215229	Data Structures using C	3	0	3:0:0	20	20	60	2 1/2	150
		Data Structures Lab	0	4	0:0:2	10	15	25	3	
DSC-5	215230	Object Oriented Concepts using JAVA	3	0	3:0:0	20	20	60	2 1/2	150
		JAVA Lab	0	4	0:0:2	10	15	25	3	
DSC-6	215231	Discrete Mathematical Structures	3	0	3:0:0	20	20	60	2 1/2	100

Semester: I

Course Code: 215129	**Course Title: Fundamentals Of Computers Information Technology Lab**
Course Credits: 05	**Hours of Teaching/Week:** 03 Theory: 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 1/2 Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes (COs):

CO1: Imbibe the basics of computers, programming languages and performing tasks on office automation tools.

CO2: Analyze and apply the knowledge of computer hardware and operating system.

CO3: Formulate the practical and conceptual applicability of DBMS concepts and opinions about impact of internet on society while being ethical.

Course Content

Content	Hours
Unit - 1	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Characteristics of Computers, Evolution and History of Computers, Types of Computers, Basic Organization of a Digital Computer; Number Systems – different types, conversion from one number system to another; Computer Codes – BCD, Gray Code, ASCII and Unicode; Boolean Algebra – Boolean Operators with Truth Tables; Types of Software – System Software and Utility Software; Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs – Assembler, Interpreter and Compiler; Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples. Characteristics of computers, Classification of Digital Computer Systems: Microcomputers, Minicomputers, Mainframes, Super computers.	14

Unit-2	
Anatomy of Computer: Introduction, Functions & Components of a Computer, Central Processing Unit, Microprocessor, Storage units, Input and output Devices. How CPU and memory works. Program execution with illustrative examples. Introduction to microcontrollers. **Operating System Fundamentals**: Operating Systems: Introduction, Functions of an operating System, Classification of Operating Systems, System programs, Application programs, Utilities, The Unix Operating System, Basic Unix commands, Microkernel Based Operating System, Booting.	14
Unit-3	
Introduction to Database Management Systems: Database, DBMS, Why Database - File system vs DBMS, Database applications, Database users, Introduction to SQL, Data types, Classification of SQL-DDL with constraints, DML, DCL, TCL **Internet Basics:** Introduction, Features of Internet, Internet application, Services of Internet, Logical and physical addresses, Internet Service Providers, Domain Name System. **Web Basics:** Introduction to web, web browsers, http/https, URL, HTML5, CSS	14

Text Books:

1. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition), BPB Publication
2. David Riley and Kenny Hunt, Computational thinking for modern solver, Chapman & Hall/CRC,

Reference:

1. J. Glenn Brook shear," Computer Science: An Overview", Addision-Wesley, Twelfth Edition,
2. R.G. Dromey, "How to solve it by Computer", PHI,

Part A: Hardware

1. Identification of the peripherals of a computer, components in a CPU and their functions.
2. Assembling and disassembling the system hardware components of personal computer.
3. Basic Computer Hardware Trouble shooting.
4. LAN and WiFi Basics.
5. Operating System Installation – Windows OS, UNIX/LINUX, Dual Booting.
6. Installation and Uninstallation of Software – Office Tools, Utility Software (like Anti-Virus, System Maintenance tools); Application Software - Like Photo/Image Editors, Audio Recorders/Editors, Video Editors …); Freeware, Shareware, Payware and Trial ware; Internet Browsers, Programming IDEs,
7. System Configuration – BIOS Settings, Registry Editor, MS Config, Task Manager, System Maintenance, Third-party System Maintenance Tools (Similar to CCleanerand Jv16 PowerTools …)

Part B: Software

1. Activities using Word Processor Software
2. Activities using Spreadsheets Software
3. Activities using Presentation Software
4. Activities involving Multimedia Editing (Images, Video, Audio …)
5. Tasks involving Internet Browsing
6. Flow charts: Installation and using of flowgarithms software for different arithmetic tasks like sum, average, product, difference, quotient and remainder of given numbers, calculate area of Shapes (Square, Rectangle, Circle and Triangle), arrays and recursion.

Reference:

1. Computational Thinking for the Modern Problem Solver, By Riley DD, Hunt K.A CRC press, 2014
2. Ferragina P, Luccio F. Computational Thinking: First Algorithms, Then Code. Springer

Web References:

http://www.flowgorithm.org/documentation/

Course Articulation Matrix-215129

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	2	2	1	1	2	3	-	3
CO2	2	1	2	1	1	-	1	-	2	1	-	1
CO3	2	1	-	1	1	2	1	1	-	-	1	3
W. A	2.33	1.33	2.5	1.33	1.33	2	1	1	2	2	1	2.33

Course Code: 215130	**Course Title: Programming in C** **C Programming Lab**
Course Credits: 05	**Hours of Teaching/Week:** 03 Theory: 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 1/2 Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes:

CO1: Acquire Knowledge on basis of C Programming, Input output statements Operators and Expressions and Design solution using same.

CO2: Design and Implement solution using Control structures, Array and Strings.

CO3: Develop solution for Computational task using Pointer, Functions, Structure and Union.

Course Content

Content	Hours
Unit - 1	

Introduction to C Programming: Overview of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C. **C Programming Basic Concepts:** C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types; Declaration & initialization of variables; Symbolic constants. **Input and output with C:** Formatted I/O functions - *printf* and *scanf,* control stings and escape sequences, output specifications with *printf* functions; Unformatted I/O functions to read and display single character and a string - *getchar, putchar, gets* and*puts* functions. **C Operators & Expressions:** Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associatively; Evaluation of arithmetic expressions; Type conversion.	14

Unit - 2	
Control Structures: Decision making Statements - S*imple if, if_else*, *nested if_else, else_if ladder, Switch Case*, *goto, break* & *continue* statements; Looping Statements - Entry controlled and exit controlled statements, *while, do-while, for* loops, Nested loops. **Arrays:** One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation. **Strings:** Declaring & Initializing string variables; String handling functions - *strlen, strcmp, strcpy and strcat;* Character handling functions - *toascii, toupper,tolower, isalpha, isnumeric* etc.	14
Unit - 3	
Pointers in C: Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays; Pointer Arithmetic; Advantages and disadvantages of using pointers; **User Defined Functions:** Need for user defined functions; Format of C user defined functions; Components of user defined functions - return type, name, parameter list, function body, return statement and function call; Categories of user defined functions - With and without parameters and return type. **User defined data types:** Structures - Structure Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, comparing structure variables, Array of Structures; Unions - Union definition; difference between Structures and Unions.	14

Text Books:

1. C: The Complete Reference, By Herbert Schildt.
2. M.T Somashekara, D.S Guru and K.S. Manjunatha: Problem solving with C, PHI publication
3. C Programming Language, By Brain W. Kernighan
4. Kernighan & Ritchie: The C Programming Language (PHI)

Reference Books:

1. P. K. Sinha & Priti Sinha: Computer Fundamentals (BPB)
2. E. Balaguruswamy: Programming in ANSI C (TMH)
3. Kamthane: Programming with ANSI and TURBO C (Pearson Education)
4. V. Rajaraman: Programming in C (PHI – EEE)
5. S. Byron Gottfried: Programming with C (TMH)

6. Yashwant Kanitkar: Let us C
7. P.B. Kottur: Programming in C (Sapna Book House)

Programming LabPart A:

1. Program to read radius of a circle and to find area and circumference
1. Program to read three numbers and find the biggest of three
2. Program to demonstrate library functions in math.h
3. Program to check for prime
4. Program to generate n primes
5. Program to read a number, find the sum of the digits, reverse the number and check it for palindrome
6. Program to read numbers from keyboard continuously till the user presses999 and to find the sum of only positive numbers
7. Program to read percentage of marks and to display appropriate message (Demonstration of else-if ladder)
8. Program to find the roots of quadratic equation (demonstration of switch Case statement)
9. Program to read marks scored by n students and find the average of marks (Demonstration of single dimensional array)
10. Program to remove Duplicate Element in a single dimensional Array
11. Program to perform addition and subtraction of Matrices

Part B:

1. Program to find the length of a string without using built in function
2. Program to demonstrate string functions.
3. Program to demonstrate pointers in C
4. Program to check a number for prime by defining isprime( ) function
5. Program to read, display and to find the trace of a square matrix
6. Program to read, display and add two m x n matrices using functions
7. Program to read, display and multiply two m x n matrices using functions

8. Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
9. Program to Reverse a String using Pointer
10. Program to Swap Two Numbers using Pointers
11. Program to demonstrate student structure to read & display records of n students.
12. Program to demonstrate the difference between structure & union.

Note: Student has to execute a minimum of 10 programs in each part to complete theLab course

Course Articulation Matrix-215130

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12
CO1	**3**	**2**	**3**	**1**	**2**	**1**	**2**	**2**	**2**	**-**	**-**	**-**
CO2	**2**	**2**	**3**	**1**	**3**	**2**	**3**	**-**	**2**	**-**	**1**	**1**
CO3	**2**	**2**	**2**	**2**	**2**	**1**	**-**	**1**	**1**	**2**	**1**	**-**
W.A	**2.33**	**2**	**2.66**	**1.33**	**2.33**	**1.33**	**2.5**	**1.5**	**1.66**	**2**	**1**	**1**

Course Code: 215131	**Course Title: Mathematical Foundation**
Course Credits: 03	**Hours of Teaching/Week:** 03
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2 ½ Hours	**Exam Marks:** 60

Course Outcomes:

CO1: Develops basic concepts of Mathematical Reasoning, Analyze and convert statements to expressions and vice versa, solve problems related to connectives, predicates and quantifiers, apply laws of logic.

CO2: Basics of Set theory and Matrices, implement operations on Sets, Matrices and Cramer's Rules, problem solving using Venn diagrams.

CO3: Calculate rank of a Matrix, Eigenvalues, Implement Cayley Hamilton Theorem. Acquire knowledge of derivatives and various applications of differentiation

Content	Hours
Unit - 1	
Mathematical logic: Introduction-statements Connectives-negation, conjunction, disjunction- statement formulas and truth tables- conditional and bi Conditional statements- tautology contradiction. Converse, Inverse, Contra- positive, equivalence of formulas-duality law-Predicates and Quantifiers, Arguments.	14
Unit - 2	
Basic concepts of set theory: Sets, power set- Venn diagram, Cartesian product. **Operations on sets** – Union, Intersection, Disjoint, Difference andComplement. Set Identities. **Matrix algebra:** Introduction-Types of matrices-matrix operations- Arithmetic Operations, transpose of a matrix ,determinant of matrix, inverse of a matrix-Cramer'srule	14
Unit - 3	
Matrix: Finding rank of a matrix - normal form-echelon form cayley Hamiltontheorem-Eigen values **Differential calculus:** Functions and limits - Simple Differentiation of Algebraic Functions – Evaluation of First and Second Order Derivatives –Maxima and Minima	14

Text Books:

P. R. Vittal-Business Mathematics and Statistics, Margham Publications, Chennai.
Discrete and Combinatorial Mathematics Ralph P. Grimaldi, B. V. Ramatta, Pearson, Education, 5 Edition.

Reference Books:

B. S. Vatsa-Discrete Mathematics –New Age International Limited Publishers, NewDelhi

Course Articulation Matrix- 215131

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	-	-	-	-	-	-	-	-	1
CO2	2	2	2	-	-	-	-	-	-	-	-	1
CO3	2	2	2	-	-	-	-	-	-	-	-	1
WA	**2**	**2.3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**

Course Code: 215132	**Course Title: Accountancy**
Course Credits: 03	**Hours of Teaching/Week:** 03
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2 1/2 Hours	**Semester End Exam Marks:** 60

Course Outcomes (COs):

CO1: Acquire Conceptual Knowledge of Basics of Accounting.

CO2: Recording of Financial Transactions and preparation of reports.

CO3: Equip with the knowledge of Accounting process and preparation of financial Accounts.

Content	Hours
Unit - 1	
Introduction: History and Development of Accounting, Meaning, Objectives and functions of Accounting, Book keeping V/s Accounting, Users of accounting data, systems of book keeping and accounting, branches of accounting, advantages and limitations of accounting **Accounting Concepts and Convention:** Meaning, need and classification, accounting standards meaning, need and classification of Indian accounting standards. Accounting principles V/s accounting standard	14
Unit - 2	
Financial Accounting Process: Classification of accounting transactions and accounts, rules of debit and credit as per Double Entry System. Journalization and Ledger posting. **Preparation of Different Subsidiary Books:** Purchase Day book Sales Day Book, Purchase Returns Day Book, Sales Returns Day Book, Cash Book. **Bank Reconciliation Statement**: Meaning, Causes of Difference, Advantages, Preparation of Bank Reconciliation Statements.	14

Unit - 3	
Account Procedure: Honor of the Bill, Dishonor of the Bill, Endorsement, Discounting, Renewal, Bill for collection, Retirement of the Bill, Accommodation Bills, Bill Receivable Book and Payable Book. Preparation of Trial Balance: Rectification of errors and Journal Proper **Preparation of Final Accounts:** Meaning, need and classification, Preparation of Manufacturing, Trading, Profit and loss account and Balance – Sheet of sale-traders and partnership firms	14

Text Books:

S. Ramesh, B.S. Chandrashekar, A Text Book of Accountancy.

V.A. Patil and J.S. Korihalli, Book – keeping and accounting, (R Co. Delhi).

R. S. Singhal, Principles of Accountancy, (Nageen Prakash pvt. L

M. B. Kadkol, Book – Keeping and Accountancy, (Renuka Prakas Vithal,

Sharma:Accounting for Management, Macmillan Mumbai.

Reference Books:

B.S. Raman, Accountancy, (United Publishers, Mangalore).

Tulsian, Accounting and Financial Management – I: Financial Accounting – Person Education**.**

Course Articulation Matrix-215132

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	1	1	1	-	-	-	1	1	1
CO2	2	1	1	1	1	1	-	-	1	1	1	1
CO3	2	1	1	1	1	1	1	1	-	1	-	1
W. A	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Semester: II

Course Code: 215229	**Course Title: Discrete Mathematical Structures**
Course Credits: 03	**Hours of Teaching/Week:** 03
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2 1/2 Hours	**Semester End Exam Marks:** 60

Course Outcomes:

CO1: Develops basic concepts of Mathematical Reasoning, Sequences, Permutations and Combinations. Functions. Analyze and convert statements to expressions and vice versa, solve problems related to connectives, predicates and quantifiers. Apply Rules of inference, acquire proof and its strategies. Implement the Pigeon hole Principle.

CO2: Acquire basics of Mathematical Induction, Generating functions. Apply concepts of Recurrence relations, Linear recurrence, Divide and conquer, recursive algorithms.

CO3: Gains knowledge on basics of Relations, representation and its operations. Basics of Graph theory, its terminologies, Calculates shortest path, Euler path, Hamiltonian path.

Course Content

Content	Hours
Unit - 1	
The Foundations: Logic and proofs: Quantifiers and Nested Quantifiers, Rulesof Inference, Introduction to Proofs, Proof Methods and Strategy. **Basic Structures**: Sets - Functions, Sequences, and Sums: Functions, types of functions ,composition of functions. Sequences and Summations. **Counting**: Basics of counting, Pigeonhole principle, Permutation and Combination, Binomial Coefficient and Combination, Generating Permutationand Combination.	14
Unit - 2	

Advanced Counting Techniques: Applications of Recurrence Relations, Solving Linear Recurrence, Relations, Divide and Conquer Algorithms and Recurrence Relations, Generating functions, Inclusion-Exclusion, Applications of Inclusion-exclusion. **Induction and Recursion**: Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms, Program Corrections.	14
Unit - 3	
Relation: Properties of relation, Composition of relation, Closer operation on relation, Equivalence relation and partition. Operation on relation, Representing relation. **Graphs**: Graphs and Graph models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs, Graph Coloring.	14

Text Book:

1. Discrete Mathematics and Its Applications, Kenneth H. Rosen: Seventh Edition,2012.

References:

2. Discrete Mathematical Structure, Bernard Kolman, Robert C, Busby, Sharon Ross, 2003.
3. Graph Theory with Applications to Engg and Comp. Sci: Narsingh Deo-PHI 1986.
4. Discrete and Combinatorial Mathematics Ralph P. Grimaldi, B. V. Ramatta, Pearson, Education, 5 Edition.
5. Discrete Mathematical Structures, Trembley and Manohar.

Course Articulation Matrix -215232

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	1	-	-	1	-	-	-	-	1
CO2	2	2	2	1	-	-	1	-	-	-	-	1
CO3	3	2	2	1	-	-	1	-	-	-	-	1
WA	**2.3**	**2.3**	**2**	**1**	-	-	**1**	-	-	-	-	**1**

Course Code: 215230	**Course Title:** **Data Structures using C** **Data Structure Lab**
Course Credits: 05	**Hours of Teaching/Week:** 03 Theory : 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 1/2 Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes (CO's):

CO1: Acquire knowledge on different data structures along with their operations. Implement dynamic memory allocation, Recursion and Arrays with illustrations. Design algorithms for specific problems based on performance.

CO2: Implement different searching and sorting techniques effectively. Design and implement stacks and queues.

CO3: Analyze and implement linked lists and binary trees in real world scenarios.

Course Content

Content	Hours
Unit - 1	
Introduction to data structures: Definition; Types of data structures - Primitive & Non-primitive, Linear and Non-linear; Operations on data structures. Dynamic memory allocation: Static & Dynamic memory allocation; Memory allocation and de-allocation functions - *malloc*, *calloc*, *realloc* and *free.* Algorithm Specification, Performance Analysis, Performance Measurement Recursion: Definition; Types of recursions; Recursion Technique Examples - GCD, Binomial coefficient ${}^{n}C_{r}$, Towers of Hanoi; Comparison between iterative and recursive functions. **Arrays:** Basic Concepts – Definition, Declaration, Initialisation, Operations on arrays; Types of arrays; Arrays as abstract data types (ADT); Representation of Linear Arrays in memory.	14

Unit - 2	
Traversing linear arrays; Inserting and deleting elements; Sorting – Selection sort, Bubble sort, Quick sort, Selection sort, Insertion sort; Searching - Sequential Search, Binary search; Iterative and Recursive searching; Multidimensional arrays; Representation of multidimensional arrays; Sparse matrices. **Stacks**: Basic Concepts – Definition and Representation of stacks; Operations on stacks; Applications of stacks; Infix, postfix and prefix notations; Conversion from infix to postfix using stack; Evaluation of postfix expression using stack; Application of stack in function calls. **Queues**: Basic Concepts – Definition and Representation of queues; Types of queues - Simple queues, Circular queues, Double ended queues, Priority queues; Operations on Simple queues.	14
Unit - 3	
Linked list: Basic Concepts – Definition and Representation of linked list, Types of linked lists - Singly linked list, Doubly liked list, Header liked list, Circular linked list; Representation of Linked list in Memory Operations on Singly linked lists – Traversing, Searching, Insertion, Deletion; Memory allocation; Garbage collection **Trees:** Definition; Tree terminologies –node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, edge, path, depth; **Binary tree:** Type of binary trees - strict binary tree, complete binary tree, binary search tree and heap tree; Array representation of binary tree. Traversal of binary tree; preorder, inorder and postorder traversal	14

Text Books

1. Ellis Horowitz and Sartaj Sahni: Fundamentals of Data Structures

References

1. Tanenbaum: Data structures using C (Pearson Education)
2. Kamathane: Introduction to Data structures (Pearson Education)
3. Y. Kanitkar: Data Structures Using C (BPB)
4. Kottur: Data Structure Using C
5. Padma Reddy: Data Structure Using C
6. Sudipa Mukherjee: Data Structures using C – 1000 Problems and Solutions (McGraw Hill Education, 2007))

Programming LabPart A:

1. Program to find GCD using recursive function
2. Program to display Pascal Triangle using binomial function
3. Program to generate n Fibonacci numbers using recursive function.
4. Program to implement Towers of Hanoi.
5. Program to implement dynamic array, find smallest and largest element ofthe array.
6. Program to create two files to store even and odd numbers.
7. Program to create a file to store student records.
8. Program to read the names of cities and arrange them alphabetically.
9. Program to sort the given list using selection sort technique.
10. Program to sort the given list using bubble sort technique.

Part B:

1. Program to sort the given list using insertion sort technique.
2. Program to sort the given list using quick sort technique.
3. Program to sort the given list using merge sort technique.
4. Program to search an element using linear search technique.
5. Program to search an element using recursive binary search technique.
6. Program to implement Stack.
7. Program to convert an infix expression to postfix.
8. Program to implement simple queue.
9. Program to implement linear linked list.
10. Program to display traversal of a tree.

COURSE ARTICULATION MATRIX-215229

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12
CO1	2	2	3	2	2	1	1	1	2	1	2	3
CO2	2	2	3	1	2	1	1	1	2	1	2	3
CO3	2	2	3	1	2	2	1	1	3	1	3	3
W.A	2	2	3	1.33	2	1.33	1	1	2.33	1	2.33	3

Course Code: 215231	**Course Title: Object Oriented concepts using java**
Course Credits: 05	**Hours of Teaching/Week:** 03 Theory : 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 1/2 Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes:

CO1: Acquire Knowledge on basis of introduction of java, objects and classes and design solution using datatypes and loops in java.

CO2: Design and Implement solution using inheritance, polymorphism and multithreading concepts.

CO3: Develop and design the solution on event handling, GUI programming and input output programming

Course Content

Content	Hours
Unit - 1	
Introduction to Java: Basics of Java programming, Data types, Variables, Operators, Control structures including selection, Looping, Java methods, Overloading, Math class, Arrays in java. **Objects and Classes:** Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, String Buffer, File basics and this reference.	14
Unit - 2	
Inheritance and Polymorphism: Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java and UTIL package. **Multithreading in java:** Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.	14

Unit - 3	
Event and GUI programming: Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing, Exceptional handling mechanism. **I/O programming:** Text and Binary I/O, Binary I/O classes, Object I/O, Random Access Files.	14

Text Books

1. Programming with Java, By E Balagurusamy – A Primer, Fourth Edition, Tata McGraw Hill Education Private Limited.
2. Core Java Volume I – Fundamentals, By Cay S. Horstmann, Prentice Hall
3. Object Oriented Programming with Java : Somashekara, M.T., Guru, D.S., Manjunatha, K.S

Reference Books:

1. Java 2 - The Complete Reference – McGraw Hill publication.
2. Java - The Complete Reference, 7th Edition, By Herbert Schildt– McGraw Hill publication.

Practice list

1. Program to print the following triangleof numbers1

   1 2
   1 2 3
   1 2 3 4
   1 2 3 4 5
2. Program to simple java application, to print the message, “Welcome to java”
3. Program to display the month of a year. Months of the year shouldbe held inan array.
4. Program to find the area of rectangle.
5. program to demonstrate a division by zero exception
6. Program to create a user defined exception say Pay Out of Bounds.

Programming Lab

PART A: Java Fundamentals OOPs in Java

1. Program to assign two integer values to X and Y. Using the ‘if’ statement the output of the program should display a message whether X is greater than Y.
2. Program to list the factorial of the numbers 1 to 10. To calculate the factorialvalue, use while loop. (Hint Fact of 4 = 4*3*2*1)
3. Program to add two integers and two float numbers. When no argumentsare supplied, give a default value to calculate the sum. Use function overloading.
4. Program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the super class. MulDiv should have methods to multiply and divide A main function should access the methods and perform the mathematical operations.
5. Program with class variable that is available for all instances of a class. Use static variable declaration. Observe the changes thatoccur in the object’s member variable values.
6. Program
   a. To find the area and circumference of the circle by accepting the radius from the user.
   b. To accept a number and find whether the number is Prime or not
7. Program to create a student class with following attributes;
   Enrollment No: Name, Mark of sub1, Mark of sub2, mark of sub3, Total Marks. Total of the three marks must be calculated only when

the student passes in all three subjects. The pass mark for each

subject is 50. If a candidate fails in any one of the subjects his total mark must be declared as zero. Using this condition write a constructor for this class. Write separate functions for accepting and displaying student details. In the main method create an array of three student objects and display the details.

8. In a college first year class are having the following attributes Name of the class (BCA, BCom, BSc), Name of the staff No of the students in the class, Array of students in the class
9. Define a class called first year with above attributes and define a suitable constructor. Also write a method called best Student () which process a first-year object and return the student with the highest total mark. In the main method define a first-year object and find the best student of this class
10. Program to define a class called employee with the name and date of appointment. Create ten employee objects as an array and sort them as per their date of appointment. ie, print them as per their seniority.
11. Create a package 'student. Fulltime. BCA 'in your current working directory
    a. Create a default class student in the above package with the following attributes: Name, age, sex.
    b. Have methods for storing as well as displaying

PART B: Exception Handling & GUI Programming

1. Program to catch Negative Array Size Exception. This exceptionis causedwhen thearray is initialized to negative values.
2. Program to handle Null Pointer Exception and use the "finally" method todisplay a message to the user.
3. Program which create and displays a message on the window
4. Program to draw several shapes in the created window
5. Program to create an applet and draw grid lines
6. Program which creates a frame with two buttons father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother also appear.
7. Create a frame which displays your personal details with respect to a button click
8. Create a simple applet which reveals the personal information of yours.
9. Program to move different shapes according to the arrow key pressed.
10. Program to create a window when we press M or m the window displays Good Morning, A or a the window displays Good After Noon E or e the window displays Good Evening, N or n the window displays Good Night
11. Demonstrate the various mouse handling events using suitable example.
12. Program to create menu bar and pull-down menus.

Note: Student has to execute a minimum of 10 programs in each part tocompletethe Lab course

COURSE ARTICULATION MATRIX-215231

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12
CO1	2	2	3	1	2	2	1	2	3	1	2	1
CO2	2	2	2	1	2	1	1	1	3	1	2	2
CO3	2	2	3	1	2	1	1	1	2	1	1	1
W.A	2	2	2.66	1	2	1.33	1	1.33	2.66	1	1.66	1.66

Course Code: OE210EBCA101	**Course Title: BUSINESS INTELLIGENCE (Open Elective)**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Theory
Total Contact Hours: 42 Theory	**Formative Assessment Marks:** 40 Theory
Exam Duration: 2 1/2 Hours	**Semester End Exam Marks:** 60 (Theory)

Course Outcomes(CO's):

CO1: Develops basic concepts on Business Intelligence, Business Intelligence systems, databases , data warehouses, data analysis, applications of Data Mining, Data Warehouse and Data Marts and knowing Decision support systems.

CO2: Comprehending the basics of OLTP and OLAP and its applications,types of Digital data,its characteristics and its comparison.

CO3: Knowing the uses of Business analytics and Business Intelligence, and its differences, applications of Business Intelligence and Business Analytics, BI Data Processing techniques,Basics of Enterprise Reporting.

Unit 1: BI definitions, concepts and Data Warehouse: 14 Hrs

Definition: Business Intelligence (BI), Data mining, Data analysis, Understanding Business Intelligence (BI), Types of BI Tools and Software systems, Benefits/uses of Business Intelligence, BI Applications, BI Users, BI Features, Top BI Systems, BI roles and responsibilities(Business Analysts).

Definition of Database, Data Warehouse and Data Marts, Need for data Warehouse, Data Warehouse Architecture, Decision support systems (DSS), Data Warehouse vs. Data Marts, Operational database and Data Warehouse, Data-mining Applications(Credit Card Fraud, UI Optimization, Marketing).

Unit 2: Introduction to OLTP and OLAP: 14 Hrs

OLTP (Online Transaction Processing): Definition, Applications, Advantages, Operational Database, Challenges of an OLTP System, OLAP(Online Analytical Processing): Definition, Applications, Characteristics , Advantages of an OLAP System, Difference between OLTP and OLAP.

Digital data, Forms/Types of digital data, Structured data, Unstructured data, Semi-structured data, Characteristics of Unstructured Data, Manage Unstructured Data, Difference between Semi structured and Structured.

Unit 3: Business analytics, Data Processing & Enterprise reporting: 14 Hrs

Introduction to Business analytics, Transformation of raw data to business benefits through BI, BI Benefit - Visibility into Enterprise Performance, Differences between Business Intelligence and Business Analytics.

BI Data Processing, Processing: RFM analysis, Analytical Processing: Drill-up, Drill-down, Slice and Dice.

Basics of Enterprise Reporting: Reporting perspectives common to all levels of Enterprise, Report Standardization and Presentation practices, Report Delivery Formats, Enterprise Reporting characteristics in OLAP World , Balanced Scorecard , Dashboards, Types of Corporate Dashboards, Benefits of Enterprise Dashboard.

Text Books:

1. R.N.Prasad, Seema Acharya , Fundamentals of Business analytics, First Edition ,

2011, Wiley-India

Reference Books:

1. Gali Shmueli,. Nitin R Patel , peter C . Bruce, " Data mining for Business Intelligence"

Wiley-India, 2011.

2. Ralph Kimball , Margy Ross, "Practical tools for Data Warehosuing and Business

Intelligence" , second Edition Wiley-India 2011.

3. "BUSINESS INTELLIGENCE" Edited By Sartaj Singh ,Printed by EXCEL BOOKS PRIVATE LIMITED A-45, Naraina, Phase-I, New Delhi-110028 for Lovely Professional University, Phagwara

Course Articulation Matrix - OE210EBCA101

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2									1
CO2	1	1	2			1						1
CO3	1	1	2	1	1	1	1	1	1	1	1	1
WA	**1**	**1**	**2**	**0.3**	**0.3**	**0.6**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**1**

Evaluation Pattern

Theory Evaluation Scheme for C1, C2 and C3

	Assessment Criteria	Marks	Total
Continuous assessment-1(c1)	Session test	20	40
Continuous assessment-2(c2)	Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	20	
Continuous assessment-3(c3)	Semester End Exam (SEE)	60	60
		Total	100

Evaluation Scheme for Lab Examination

	Assessment Criteria	Marks	Total
Continuous assessment-1(c1)	Test	10	25
Continuous assessment-2(c2)	Test and record assessment	15 (10 : 05 marks for record)	
Continuous assessment-3(c3)	Semester End Exam (SEE)	25	25
		Total	50

Assessment Criteria-c3		Marks
Program – 1 from Part A	Writing the Program and Execution.	10
Program -2 from Part B	Writing the Program and Execution.	10
Viva Voce based		05
Total		**25**

Question Paper Pattern for DSC

Instructions: Answer both part-A and part-B (Max: 60 Marks)

Part-A

Answer any ten Questions: (10 X 2=20)

1
2
3
.
.
.
12

(4 questions to be given from each unit)

Part-B

(Four questions to be given from each unit with internal split if required)

Answer all the Questions: Max: 40 marks

13. a) **(2*8=16)**

b)

OR

c)

d)

14. a) **(2*6=12)**

b)

OR

c)

d)

15. a) (2*6=12)

b)

OR

c)

d)

Question Paper Pattern for Open Elective

Instructions: Answer both part-A and part-B (Max: 60 Marks)

Duration:2 1/2 Hours

Part-A

Answer any ten Questions: (10 X 2=20)

1
2
3
.
.
.

1
2
(4 questions to be given from each unit)

Part-B

(Two questions to be given from each unit with internal split if required)
Answer any Four Questions: (10 X 4=40)

13.

14.

15.

16.

17.

18

Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES

DEPARTMENT OF COMPUTER APPLICATION

UG ☐

PG ☐

NEP Syllabi for III and IV Semester BCA Programme

2022-23

Department of Computer Application

MOTTO:

Technology for Better Future

VISION:

Technology for all

MISSION:

- To enhance students Analytical and Technical skills.

- To Groom them to handle any Industry related Challenges.

- To make them sustainable in the ever-changing Technology.

- To Increase their efficiency in programming language,

coding and Application Development.

Program Outcomes: BCA (3 Years) Degree

1. **Domain knowledge:** Gaining adequate knowledge on basic principles and applications.
2. **Problem Analysis:** Improved reasoning with strong mathematical ability to Identify, formulate and analyze problems and exhibiting knowledge on data structures and algorithms.
3. **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledgeon statistics and optimization problems. Establishing excellent skills in applying and design strategies for solving complex problems.
4. **Investigation:** Acquiring sufficient knowledge in Computer science and Application and able to think independently.
5. **Modern Tool Usage:** Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the area of Computer Science and equipping with modern tools.
6. **Computer and Society:** Ability to analyze impacts of computing on individuals, organizations and society.
7. **Environment and sustainability**: Understand the impact of the professional solutions in societal and environmental contexts, exhibit the knowledge of and needfor sustainable development.
8. **Moral and Ethical values:** Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impacts.
9. **Individual and Team work**: Individual contribution to achieve a common goal.
10. **Communication:** Communicate effectively using technical terms, able to comprehend, write effective reports, design documentation, make effective presentations, give and receive clear instructions.
11. **Project Management and Finance:** Practicing and managing of existing projects, independent and launch own projects.
12. **Lifelong Learning:** Continuous independent learner.

The objectives of the BCA Program

1. The primary objective of this program is to provide a foundation of computing principles and business practices for effectively using/managing information systems and enterprise software
2. It helps students analyze the requirements for system development and exposes students to business software and information systems
3. This course provides students with options to specialize in legacy application software, system software or mobile applications
4. To produce outstanding IT professionals who can apply the theoretical knowledge into practice in the real world and develop standalone live projects themselves
5. To provide opportunity for the study of modern methods of information processingand its applications.
6. To develop among students the programming techniques and the problem-solvingskills through programming
7. To prepare students who wish to go on to further studies in computer science and related subjects.
8. To acquaint students to Work effectively with a range of current, standard, Office Productivity software applications

Course Structure for II Year

III SEMESTER										
Course	Course Code	Title	Hours / Week		Credits	Maximum Marks			Exam Duration (Hours)	Total Marks
						IA		Exam		
			L	T/ P	L: T:P	C1	C2	C3		
DSC-7	225329	Database Management System	3	0	3:0:2	20	20	60	2 ½	150
		Database Management System Lab	0	4		10	15	25	3	
DSC-8	225330	C# and .net Technologies	3	0	3:0:2	20	20	60	2 ½	150
		C# and .net Technologies Lab	0	4		10	15	25	3	
DSC-9	225331	Computer Networks	3	0	3:0:0	20	20	60	2 ½	100
IV SEMESTER										
DSC-10	225433	Python Programming	3	0	3:0:2	20	20	60	2 ½	150
		Python Programming Lab	0	4		10	15	25	3	
DSC-11	225434	Multimedia Animation	3	0	3:0:2	20	20	60	2 ½	150
		Multimedia Animation Lab	0	4		10	15	25	3	
DSC-12	225435	Operating System Concepts	3	0	3:0:0	20	20	60	2 ½	100

Syllabus for BCA III and IV Semester

Semester: III

Course Code: 225329	**Course Title: Database Management Systems** **Database Management Systems Lab**
Course Credits: 05 (3:0:2)	**Hours of Teaching/Week:** 03 Theory + 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 1/2 Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes (COs):

CO1: Summarize the concepts of database objects enforce integrity constraints on a database make use of ER diagramand types of relationships and roles of structural constraints degree and cardinality ratio.

CO2: Structured Query Language (SQL) for database manipulation Design simple database systems for some application to interact with databases and solve queries on relation algebra.

CO3: Implement normalization algorithms using database design theory for different applications analyze and implement transaction processing, concurrency control and database recovery protocols in databases.

Course Content

Unit	Description	Hours

1	**Database Architecture:** Introduction to Database system applications. Characteristics and Purpose of database approach. People associated with Database system. Data models. Database schema. Database architecture. Data independence. Database languages, interfaces, and classification of DBMS. **E-R Model:** Entity-Relationship modeling: E – R Model Concepts: Entity, Entity types, Entity sets, Attributes, Types of attributes, key attribute, and domain of an attribute. Relationships between the entities. Relationship types, roles and structural constraints, degree and cardinality ratio of a relationship. Weak entity types, E -R diagram.	14

2	**Relational Data Model:** Relational model concepts. Characteristics of relations. Relational model constraints: Domain constrains, key constraints, primary & foreign key constraints, integrity constraints and null values. **Relational Algebra:** Basic Relational Algebra operations. Set theoretical operations on relations. JOIN operations Aggregate Functions and Grouping, Nested Sub Queries-Views.	14

3	**Data Normalization:** Anomalies in relational database design. Decomposition. Functional dependencies – Axioms, minima and maxima cover. Normalization. First normal form, Second normal form, Third normal form. Boyce-Codd normal form. **Query Processing Transaction Management:** Introduction Transaction Processing. Single user & multiuser systems. Need of concurrency control: The lost update problem, Dirty read problem. Transaction states. Desirable properties (ACID properties) of Transactions.	14

Lab Activities

Activity 1:

Database: Student (DDL, DML Statements)

Table: Student

Name	RegNo	Class	Major
Smith	17	1	CS
Brown	8	2	CS

Table: Course

CourseName	CourseNumber	CreditHours	Department
Introduction to Computer Science	CS1310	4	CS
Data Structure	CS3320	4	CS
Discrete Mathematics	MATH2410	3	MATH
Database Management Systems	CS3380	3	CS

Table: Section

Section_Identifier	CourseNumber	Year	Instructor
85	MATH2410	98	King
92	CS1310	98	Andreson
102	CS3320	99	Knuth
112	MATH2410	99	Chang
119	CS1310	99	Andreson
135	CS3380	99	Stone

Table: Grade_Report

RegNo	Section_Identifier	Grade
17	112	B
17	119	C
8	85	A
8	92	A
8	102	B
8	135	A

- Create Tables using create statement
- Insert rows to individual tables using insert statement
- Alter table section add new field section and update the records
- Delete brown‟s grade report

- Drop the table section

Activity 2: (Select clause, Arithmetic Operators)Database: Employee
Create Following **tables** and insert **tuples** with suitable constraints

Table: Employee

Emp_Id	First_Name	Last_Name	Hire_Date	Address	City
1001	George	Smith	11-May-06	83 first street	Paris
1002	Mary	Jones	25-Feb-08	842 Vine Ave	Losantiville
1012	Sam	Tones	12-Sep-05	33 Elm St.	Paris
1015	Peter	Thompson	19-Dec-06	11 Red Road	Paris
1016	Sarath	Sharma	22-Aug-07	440 MG Road	New Delhi
1020	Monika	Gupta	07-Jun-08	9 Bandra	Mumbai

Table : Empsalary

Emp_Id	Salary	Benefits	Designation
1001	10000	3000	Manager
1002	8000	1200	Salesman
1012	20000	5000	Director
1015	6500	1300	Clerk
1016	6000	1000	Clerk
1020	8000	1200	Salesman

Write queries for the following

1. To display FIRSTNAME, LASTNAME, ADDRESS AND CITY of all employees living in PARIS.
2. To display the content of employee table in descending order of FIRSTNAME
3. Select FIRSTNAME and SALARY of salesman
4. To display the FIRSTNAME, LASTNAME, AND TOTAL SALARY of all employees from the table EMPLOYEE and EMPSALARY. Where TOTAL SALARY is calculated as SALARY+BENEFITS
5. List the Names of employees, who are more than 1 year old in the organization
6. Count number of distinct DESINGATION from EMPSALARY
7. List the employees whose names have exactly 6 characters
8. Add new column PHONE_NO to EMPLOYEE and update the records
9. List employee names, who have joined before 15-Jun-08 and after 16-Jun-07
10. Generate Salary slip with Name, Salary, Benefits, HRA-50%, DA-30%, PF-12%, Calculate gross. Order the result in descending order of the gross.

Activity 3: (Logical, Relational Operators)

Database: Library

Create Following **tables** and insert **tuples** with suitable constraints

Table: Books

Book_Id	Book_Name	Author_Name	Publishers	Price	Type	Quantity
C0001	The Klone and I	Lata Kappor	EPP	355	Novel	5
F0001	The Tears	William Hopkins	First Publ	650	Fiction	20
T0001	My First C++	Brain & Brooke	ERP	350	Text	10
T0002	C++ Brainwork‟s	A.W.Rossaine	TDH	350	Text	15
F0002	Thunderbolts	Ana Roberts	First Publ.	750	Fiction	50

Table: Issued

Book_Id	Quantity Issued
T0001	4
C0001	5
F0001	2
T0002	5
F0002	8

Write queries for the following

1. To show Book name, Author name and price of books of **First Publ**. publisher
2. Display Book id, Book name and publisher of books having quantity more than 8 and price less than 500
3. Select Book id, book name, author name of books which is published by other than ERP publishers and price between 300 to 700
4. Generate a Bill with Book_id, Book_name, Publisher, Price, Quantity, 4% of VAT “Total”
5. Display book details with book id‟s C0001, F0001, T0002, F0002 (Hint: use IN operator)
6. Display Book list other than, type Novel and Fiction
7. Display book details with author name starts with letter “A”
8. Display book details with author name starts with letter “T” and ends with “S‟
9. Select Book_Id, Book_Name, Author Name , Quantity Issued where Books.Books_Id = Issued.Book_Id.
10. List the book_name, Author_name and Price. In ascending order of Book_name and then

ondescending order of price.

Activity 4: (Date Functions)

Database: Lab

Create Following **table** and insert **tuples** with suitable constraints

Table: Equipment_Details

No.	ItemName	Costperitem	Quantity	Dateofpurchase	Warranty	Operational
1	Computer	30000	9	21/5/07	2	7
2	Printer	5000	3	21/5/06	4	2
3	Scanner	8000	1	29/8/08	3	1
4	Camera	7000	2	13/6/05	1	2
5	UPS	15000	5	21/5/08	1	4
6	Hub	8000	1	31/10/08	2	1
7	Plotter	25000	2	11/1/09	2	2

(Use date functions and aggregate functions)

1. To select the ItemName purchase after 31/10/07
2. Extend the warranty of each item by 6 months
3. Display ItemName , Dateofpurchase and number of months between purchase date and present date
4. To list the ItemName in ascending order of the date of purchase where quantity is more than 3.
5. To count the number, average of costperitem of items purchased before 1/1/08
6. To display the minimum warranty, maximum warranty period
7. To Display the day of the date , month , year of purchase in characters
8. To round of the warranty period to month and year format.
9. To display the next Sunday from the date "07-JUN-96"
10. To list the ItemName, which are within the warranty period till present date.

Activity 5: (Numeric, character functions)Use Functions for the following

1. Find the mod of 165,16
2. Find Square Root of 5000
3. Truncate the value 128.3285 to 2 and -1 decimal places
4. Round the value 92.7683 to 2 and -1 decimal places
5. Convert the string “Department” to uppercase and lowercase
6. Display your address, convert the first character of each word to uppercase and rest are in lowercase
7. Combine your first name and last name under the title Full name
8. A) Take a string length maximum of 15 display your name to the left. The remaining space should be filled with “ * “
9. Take a string length maximum of 20 display your name to the right. The remaining space should be filled with “#“
10. Find the length of the string “ Mahajana College, Mysore”
11. Display substring “BASE” from “DATABASE”
12. Display the position of the first occurrence of character “o” in Position and Length
13. Replace string Database with Data type
14. Display the ASCII value of “ ” (Space)
15. Display the Character equivalent of 42

Activity 6:

Database: Subject

Create Following **table** and insert **tuples** with suitable constraints

Table - Physics

Regno	Name	Year	Combination
AJ00325	Ashwin	First	PCM
AJ00225	Swaroop	Second	PMCs
AJ00385	Sarika	Third	PME
AJ00388	Hamsa	First	PMCs

Table – Computer Science

Regno	Name	Year	Combination
AJ00225	Swaroop	Second	PMCs
AJ00296	Tajas	Second	BCA
AJ00112	Geetha	First	BCA
AJ00388	Hamsa	First	PMCs

1. Select all students from physics and Computer Science
2. Select student common in physics and Computer Science
3. Display all student details those are studying in second year
4. Display student those who are studying both physics and computer science in secondyear
5. Display the students studying only physics
6. Display the students studying only Computer Science
7. select all student having PMCs combination
8. select all student having BCA combination
9. select all student studying in Third year
10. Rename table Computer Science to CS

References:

1. Fundamentals of Database Systems, Ramez Elamassri, Shankant B. Navathe, 7th Edition,Pearson, 2015
2. An Introduction to Database Systems, Bipin Desai, Galgotia Publications, 2010.
3. Introduction to Database System, C J Date, Pearson, 1999.
4. Database Systems Concepts, Abraham Silberschatz, Henry Korth, S.Sudarshan, 6th Edition,McGraw Hill, 2010.
5. Database Management Systems, Raghu Rama Krishnan and JohannesGehrke, 3rd Edition,McGraw Hill, 2002

Web Links:

1. https://www.classcentral.com/course/swayam-data-base-management-system-9914

2. https://www.mysql.com

3. https://onlinecourses.nptel.ac.in/noc21_cs04/preview

COURSE ARTICULATION MATRIX-225329

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12
CO1	3	2	3	1	2	1	1	1	3	2	2	3
CO2	3	2	3	1	2	1	1	1	2	1	2	3
CO3	3	2	3	1	3	2	1	1	3	1	3	3
W.A	3	2	3	1	2.33	1.33	1	1	2.66	1.33	2.33	3

SBRR Mahajana First Grade College

Course Code: 225330	**Course Title: C# and .Net Technologies** **C# and .Net Technologies Lab**
Course Credits: 05 (3:0:2)	**Hours of Teaching/Week:** 03 Theory + 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 ½ Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes (CO's):

CO1: Acquire Knowledge on web Technologies, client Server Script and implementing programs on c#.

CO2: Applying the concept on VB.Net & IDE and implementing docking & undocking Tools.Designing and developing VB.net Statements.

CO3: Designing on windows Application and implementing on window forms, DataBase Application& Acquiring knowledge on BDO.Net and Implementing on web APP with web forms.

Unit	Description	Hours
1	**Introduction to .Net Technologies:** Introduction to Web Technologies. HTML Basics, Scripts. Sample Programs. Advantages and Disadvantages of Client-side and Server-side Scripts. Overview of Client-side Technologies and Server-side Technologies. **Introduction to C#:**Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Control Structures-Methods, Arrays, Strings, Structures, Enumerations.	14

2	**Introduction to VB.NET**: Introduction VB.NET -IDE – Creating a shortcut to start VB.NET. Maneuverings the Toolbar Auto-hide, Docking and Undocking, Placing and Resizing the Windows, Forms, Properties Window and Solution Explorer. Writing and Event Procedure. Execution Basic Keywords. Data Types. VB.NET statements. Conditional statements: If Else, Select Case, Switch and Choose Loops: Do, For Next, For Each Next, While loop. Arrays.	14
3	**Application Development on .NET:**C#.NET: Building Windows Applications, VB.NET: Windows Forms. Working with Controls, Timer, Picture-box, Group-box, Combo-box, Horizontal and Vertical Scrollbar, Numeric-up-down, Track-bar, and Progress-bar. Subroutines and Functions inVB.NET. Database applications **ADO .NET Connectivity:** Introduction to ADO.NET, ADO vs ADO.NET. Architecture: Data reader, Data adopter, Accessing Data with ADO.NET. Programming Web Applications with Web Forms. ASP .NET applications with ADO.NET	14

Practicals:

1. Develop a C# .NET console application to demonstrate the conditional statements.
2. Develop a C# .NET console application to demonstrate the control statements.
3. Develop an application in C#.NET that demonstrates the windows controls
4. Demonstrate Multithreaded Programming in C#.NET
5. Demonstrate subroutines and functions in C#.NET
6. Develop an application for deploying various built-in functions in VB.NET
7. Develop an MDI application for Employee Pay-roll transactions in VB.NET
8. Construct a console application to demonstrate the OOP Concepts
9. Develop a web application in VB.NET for dynamic Login Processing
10. Develop a Windows application with database connectivityfor core-bankingtransactions.

References:

1. "Programming in C#", E. Balagurusamy, 4th Edition, Tata McGraw-Hill, 2017.
2. "Visual Basic.NET", Shirish Chavan, 3rd Edition, Pearson Education, 2009.
3. "ASP.NET and VB.NET Web Programming", Matt J. Crouch, Edition 2012.
4. "Computing with C# and the .NET Framework", Arthur Gittleman, 2nd Edition, Jones &BartlettPublishers, 2011

Web Links:

2. https://dotnet.microsoft.com/en-us/apps/aspnet
3. https://www.w3schools.com/asp/webpages_intro.asp

COURSE ARTICULATION MATRIX-225330

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12
CO1	2	2	3	1	1	2	1	1	2	1	2	2
CO2	2	2	3	1	2	1	1	1	3	2	3	2
CO3	2	2	3	1	3	1	1	1	3	2	3	2
W.A	2	2	3	1	2	1.33	1	1	2.6	1.66	2.6	2

SBRR Mahajana First Grade College

Course Code: 225331	**Course Title: Computer Networks**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Theory
Total Contact Hours: 42 Theory	**Formative Assessment Marks:** 40 Theory
Exam Duration:2 1/2Hours	**Semester End Exam Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Acquire knowledge of how computer network and physical layer organization with the concept of layered approach.

CO2: Apply the concept of data link and network layer of network model in solving real-time problems.

CO3: Identify and employ the top 3 layer of network model along with the skills in analyzing usability of web.

Unit	Description	Hours
1	**Introduction:** Computer Networks and its applications, Network structure, network architecture, Topologies, LAN, WAN, MAN, The OSI reference model, The TCP/IP reference model. **The Physical Layer:** Transmission Media – Twisted pair, coaxial cable, optical fiber, radio transmission, microwaves and infrared transmission, Switching – message switching, Multiplexing.	14
2	**The Data Link Layer:** Data Link Layer design issues, Error detection – Single parity checking, Checksum, polynomial codes – CRC, Error correction- Hamming code, Elementary data link protocols, sliding window protocols. **The Network Layer:** Network layer design issues, Routing algorithms – Flooding, Distance vector routing, Hierarchical routing, Link state routing, Congestion, control algorithms – Leaky bucket, token bucket algorithm, admission control, Hop by Hop choke packets.	14

3	**The Transport Layer, Presentation Layer and Application Layer:** Elements of Transport service, Elements of Transport, protocols, Internet transport protocols (TCP & UDP), Presentation Layer – Introduction, protocol, Application Layer DNS, Electronic Mailing, and World Wide Web, Introduction to mobile internet.	14

References:

1. Computer Networks, Andrew S. Tanenbaum, 5th Edition, Pearson Education, 2010.
2. Data and Computer Communications, William Stallings, 10th Edition, Pearson Education, 2017.
3. Data Communication and Computer Networks, Brijendra Singh, 3rd Edition, PHI,2012
4. Data Communication & Network, Dr. Prasad, Wiley Dreamtech.

Web links:

1. **https://www.javatpoint.com/computer-network-tutorial**
2. **https://www.cs.vu.nl/~ast/CN5/**

COURSE ARTICULATION MATRIX-225331

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	1	3	2	-	-	2	2	2	3
CO2	-	3	3	2	2	-	-	-	2	3	1	2
CO3	3	2	1	3	3	1	1	1	2	3	-	3
W. A	2.5	2	2	2	2.6	1.5	1	1	2	2.6	1.5	2.6

Semester: IV

Course Code: 225433	**Course Title: Python Programming** **Python Programming Lab**
Course Credits: 05 (3:0:0)	**Hours of Teaching/Week:** 03 Theory + 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 ½ Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes (COs):

CO1: Acquiring knowledge on features and application of python and types of control flow statements of python, defining on exception handling and python functions.

CO2: Identifying, designing and developing strings, lists, tuples and sets.

CO3: Designing and developing GU Interface, Data Analysis and Data Visualization.

Unit	Description	Hours
1	**Introduction** to Features and Applications of Python; Python Versions; Installation of Python; Python Command Line mode and Python IDEs; Simple Python Program. **Python Basics:** Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments; Built-in Functions - Console Input and Console Output, Type Conversions; Python Libraries; Importing Libraries with Examples. Python Control Flow: Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement; range () and exit () functions. **Exception Handling:** Types of Errors; Exceptions; Exception Handling using try, except and finally. **Python Functions:** Types of Functions; Function Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Default Parameters; Command line Arguments; Key Word Arguments; Recursive Functions; Scope and Lifetime of Variables in Functions. **Strings:** Creating and Storing Strings; Accessing Sting Characters; the str()	14

2	function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifiers; Escape Sequences; Raw and Unicode Strings; Python String Methods. **Lists:** Creating Lists; Operations on Lists; Built-in Functions on Lists; Implementation of Stacks and Queues using Lists; Nested Lists. Dictionaries: Creating Dictionaries; Operations on Dictionaries; Built-in Functions on Dictionaries; Dictionary Methods; Populating and Traversing Dictionaries. **Tuples and Sets:** Creating Tuples; Operations on Tuples; Built-in Functions on Tuples; Tuple Methods; Creating Sets; Operations on Sets; Built-in Functions on Sets; Set Methods	14
3	**File Handling:** File Types; Operations on Files – Create, Open, Read,Write, Close Files; File Names and Paths; Format Operator.; Inheritance- Single an **GU Interface:** The tkinter Module; Window and Widgets; Layout Management- pack, grid and place. **Python SQLite:** The SQLite3 module; SQLite Methods- connect, cursor, execute, close; Connect to Database; Create Table; Operations on Tables- Insert, Select, Update. Delete and Drop Records. **Data Analysis:** NumPy- Introduction to NumPy, Array Creation using NumPy, Operations on Arrays; Pandas- Introduction to Pandas, Series and DataFrames. Creating DataFrames from Excel Sheet and .csv file,Dictionary and Tuples. Operations on DataFrames. **Data Visualisation:** Introduction to Data Visualisation; Matplotlib Library; Different Types of Charts using Pyplot- Line chart, Bar chart and Histogram and Pie chart.	14

Programs for Practical Component:

Part-A

1. Check if a number belongs to the Fibonacci Sequence
2. Solve Quadratic Equations
3. Find the sum of n natural numbers
4. Display Multiplication Tables
5. Check if a given number is a Prime Number or not
6. Implement a sequential search
7. Create a calculator program
8. Explore string functions
9. Implement Selection Sort
10. Implement Stack and Queue
11. Read and write into a file

Part-B

1. Demonstrate usage of basic regular expression
2. Demonstrate use of advanced regular expressions for data validation.
3. Demonstrate use of List
4. Demonstrate use of Dictionaries
5. Create SQLite Database and Perform Operations on Tables
6. Create a GUI using Tkinter module
7. Demonstrate Exceptions in Python
8. Drawing Line chart and Bar chart using Matplotlib
9. Drawing Histogram and Pie chart using Matplotlib
10. Create Array using NumPy and Perform Operations on Array
11. Create DataFramefrom Excel sheet using Pandas and Perform Operations onDataFrames

References:

1. Think Python How to Think Like a Computer Scientist, Allen Downey et al., 2nd Edition, Green Tea Press. Freely available online @ https://www.greenteapress.com/thinkpython/thinkCSpy.pdf, 2015.
2. Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.
3. Python Data Analytics: Data Analysis and Science Using Pandas, matplotlib, and the Python Programming Language, Fabio Nelli, Apress®, 2015
4. Advance Core Python Programming, MeenuKohli, BPB Publications, 2021.
5. Core PYTHON Applications Programming, Wesley J. Chun, 3rd Edition, Prentice Hall,2012.
6. Automate the Boring Stuff, Al Sweigart, No Starch Press, Inc, 2015.
7. Data Structures and Program Design Using Python, D Malhotra et al., Mercury Learning and Information LLC, 2021.

Web References:

http://www.ibiblio.org/g2swap/byteofpython/read/
https://docs.python.org/3/tutorial/index.html

Course Articulation Matrix-225433

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12
CO1	2	1	-	-	1	-	1	-	-	1	1	1
CO2	2	3	1	1	1	-	1	-	1	1	2	1
CO3	2	2	3	1	3	2	2	2	2	1	3	2
W.A	2	2	2	1	1.66	2	2	2	1.5	1	2	2

Course Code: : 225434	**Course Title: Multimedia Animation** **Multimedia Animation Lab**
Course Credits: 05 (3:0:2)	**Hours of Teaching/Week:** 03 Theory + 4 Lab
Total Contact Hours: 42 Theory 56 Lab	**Formative Assessment Marks:** 40 Theory 25 Practical
Exam Duration: 2 Hours 3 Hours	**Semester End Exam Marks:** 60 (Theory) 25 (Lab)

Course Outcomes (COs):

CO1: Participate in the planning and implementation of animation projects, develop and execute believable animation sequences.

CO2: Create animation sequences that employ basic cinematography principles and skills to create, develop and execute animation sequences.

CO3: Apply performance theory to the creation of animation also Produce layouts and backgrounds with Attention to composition, perspective and color .

Unit	Description	Hours
1	Web Design: Origins and evolution of HTML, Basic syntax, Basic text markup, Images, Lists, Tables, Forms, Frame, Overview and features of HTML5. CSS: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The and tags; Overviewand features of CSS3. JavaScript: Object orientation and JavaScript;General syntactic characteristics; Primitives, operations, and expressions;Screen output and keyboard input. Introduction to Animation: Definition, The Start and End States, Interpolation, Animations in HTML.	14
2	CSS Animations, Creating a Simple Animation, CSS Animation Property, Keyframes, Declaring Multiple Animations, Wrap-up. CSS Transitions, Adding a Transition, Transitions in Detail, The Longhand Properties, Longhand Properties vs. Shorthand Properties, Working with Multiple Transitions. HTML5 – SVG: Viewing SVG Files, Embedding SVG in HTML5, HTML5 − SVG Circle, HTML5 − SVG Rectangle, HTML5 − SVG Line, HTML5 − SVG Ellipse, HTML5 − SVG Polygon, HTML5 − SVG Polyline, HTML5 − SVG Gradients, HTML5 − SVG Star.	14

3	HTML5 – CANVAS: The Rendering Context, Browser Support, HTML5 Canvas Examples, Canvas - Drawing Rectangles, Canvas - Drawing Paths, Canvas - Drawing Lines, Canvas - Drawing Bezier Curves, Canvas - Drawing Quadratic Curves, Canvas - Using Images, Canvas - Create Gradients, HTML5 - Styles and Colors, Canvas - Text and Fonts, Canvas - Patternand Shadow, Canvas - Save and Restore States, Canvas - Translation, Canvas - Rotation, Canvas - Scaling, Canvas - Transforms, HTML5	14

List of Lab programs

Part-A

1. Write an HTML program to create and display navigations menus using list tags and anchor tag.
2. Write an HTML program to display Multi-media data (text, images, audios, videos, gifs, etc) on a webpage.
3. Write an HTML program to create student Registrations form on submitting the form checkwhether fields are empty or not using JavaScript. If any fields are empty display an error message
4. Write an HTML program to create bio-data (CV or Resume) and to change the following CSS properties
    - Font
    - Text
    - Background
5. Write an HTML program to create div and apply the following CSS properties on created div
    - Margin
    - Padding
    - Border
    - Box shadow
6. Write an HTML program to create a box and using CSS transform and transition properties move the box to the center of the web page on loading web-page
7. Write an HTML program to create a circle and create an animation of bouncing of the circle for10 sec
8. Write an HTML program to create page loading animations

Part-B

1. Write an HTML program to draw line, polyline and rectangle and fill rectangle with red color using svg tag.
2. Write an HTML program to draw star and multiple circle and with different color using svg tag Write an HTML program to create logo with linear gradient properties using svg tag.
3. Write an HTML program to draw Square and Rectangle using canvas tag and JavaScript
4. Write an HTML program to draw bezier curve using canvas tag and JavaScript
5. Write an HTML Program to import an external image into a canvas and then to draw on that image
6. Write an HTML program to draw a rectangle box using canvas and to change background color to red, scale of the rectangle to 2 on move-over (hover)properties.
7. Write an html program to draw a circle using canvas and to apply the rotations animations onloading the page

References:

2. The Complete Reference HTML and CSS, 5th Edition, Thomas A Powell, 2017
3. Animation in HTML, CSS, and JavaScript, Kirupa Chinnathambi, Createspace Independent Pub, 2013.

Web Links:

1. https://www.w3.org/Style/CSS/current-work#CSS3
2. http://bedford-computing.co.uk/learning/cascading-style-sheets-css/

Course Articulation Matrix-225434

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	1	2	1	1	1	2	2	1	2
CO2	2	2	1	1	3	-	1	1	2	1	2	2
CO3	2	2	2	2	2	2	1	1	2	-	2	2
W.A	2.33	2	2	1.33	2.33	1.5	1	1	2	1.5	1.6	2

Course Code: 225435	**Course Title: Operating System Concepts**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Theory
Total Contact Hours: 42 Theory	**Formative Assessment Marks:** 40 Theory
Exam Duration: 2 ½ Hours	**Semester End Exam Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Acquiring knowledge on basics of operating system their types and functioning. Optimize system performance using CPU scheduling and process management concepts.

CO2: Apply the concept of deadlock and storage management technologies.

CO3: Analyze and design the solution for the problems based on virtual memory.

Unit	Description	Hours
1	**Introduction to Operating System:** Definition, History and Examples of Operating System; Computer System organization; Types of Operating Systems; Functions of Operating System; Systems Calls; Operating System Structure. **Process Management:** Process Concept- Process Definition, Process State, Process Control Block, Threads; Process scheduling- Multiprogramming, Scheduling Queues, CPU Scheduling, Context Switch; Operations on Processes- Creation and Termination of Processes; Inter process communication (IPC)- Definition and Need for Inter process Communication; IPC Implementation Methods- Shared Memory and Message Passing; **CPU Scheduling**: Basic concepts; Scheduling Criteria; Scheduling Algorithms; Multiple-processor scheduling; Thread scheduling; Multiprocessor Scheduling; Real-Time CPU Scheduling.	14
2	**Multithreaded Programming**: Introduction to Threads; Types of Threads; Multithreading- Definition, Advantages; Multithreading Models; Thread Libraries; Threading Issues. **Process Synchronization:** Introduction; Race Condition; Critical Section Problem and Peterson‟s Solution; Synchronization Hardware, Semaphores; Classic Problems of Synchronization- Readers and Writers Problem, Dining Philosophers Problem; Monitors. **Deadlocks:** System Model; Deadlocks Characterization; Methods for Handling Deadlocks; Deadlock Prevention; Deadlock Avoidance;Deadlock Detection; and Recovery from Deadlock.	14

3	**Memory Management:** Logical and Physical Address Space; Swapping; Contiguous Allocation; Paging; Segmentation; Segmentation with Paging. **Virtual Memory:** Introduction to Virtual Memory; Demand Paging; Page Replacement; Page Replacement Algorithms; Allocation of frames, Thrashing. **File System:** File Concepts- Attributes, Operations and Types of Files; File System; File Access methods; Directory Structure; Protection; File System Implementation- File System Structure, Allocation Methods, Free Space Management, Mobile Operating Systems.	14

References:

1. Operating System Concepts, Silberschatz" et al., 10th Edition, Wiley, 2018.
2. Operating System Concepts - Engineering Handbook, Ghosh PK, 2019.
3. Understanding Operating Systems, McHoes A et al., 7th Edition, Cengage Learning,2014.
4. Operating Systems - Internals and Design Principles, William Stallings, 9th Edition,Pearson.
5. Operating Systems – A Concept Based Approach, Dhamdhere, 3rd Edition, McGrawHillEducation India.
6. Modern Operating Systems, Andrew S Tanenbaum, 4th Edition, Pearson.z

Web Links:

1. https://www.operating-system.org/betriebssystem/_english/os-links.htm
2. https://nptel.ac.in/courses/106106144

COURSE ARTICULATION MATRIX-225435

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	2	2	1	1	1	1	1	1	2
CO2	2	2	2	2	1	1	1	1	1	2	2	2
CO3	2	2	2	1	2	1	1	1	2	1	2	2
W. A	2	1.66	2	1.66	1.66	1	1	1	1.33	1.33	1.66	2

Evaluation Pattern

Theory Evaluation Scheme for C1, C2 and C3

	Assessment Criteria	Marks	Total
Continuous assessment-1(c1)	Session test	20	40
Continuous assessment-2(c2)	Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	20	
Continuous assessment-3(c3)	Semester End Exam (SEE)	60	60
		Total	100

Evaluation Scheme for Lab Examination

	Assessment Criteria	Marks	Total
Continuous assessment-1(c1)	Test	10	25
Continuous assessment-2(c2)	Test and record assessment	15 (10 + 05 marks for record)	
Continuous assessment-3(c3)	Semester End Exam (SEE)	25	25
		Total	50

Assessment Criteria-c3		Marks
Program – 1 from Part A	Writing the Program and Execution.	10
Program -2 from Part B	Writing the Program and Execution.	10
Viva Voce based		05
Total		**25**

Question Paper Pattern for DSC

Instructions: Answer both part-A and part-B (Max: 60 Marks)

Part-A

Answer any ten Questions: (10 X 2=20)1
2
3
.
.
.

1
2
(4 questions to be given from each unit)

Part-B

(Four questions to be given from each unit with internal split if required)
Answer all the Questions: Max: 40 marks

13. a) **(2*8=16)**

b)

OR

c)
d)

14. a) **(2*6=12)**

b)

OR

c)
d)

15. a) (2*6=12)
b)

OR

c)
d)

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012

Karnataka, INDIAAffiliated to University of

Mysore

Re-accredited by NAAC with 'A' Grade, College with Potential for Excellence

Department of Computer

ApplicationMOTTO/ VISION:

Technology for Better Future

MISSION:

- To enhance students Analytical and Technical skills.

- To Groom them to handle any Industry related Challenges.

- To make them sustainable in the ever-changing Technology.

- To Increase their efficiency in programming

language, coding andApplication Development.

Syllabi for V and VI Semester

BCA Programme

Choice Based Credit System - 2021-2022

Semester	Course	Title	Paper code	Hours / Week		Credits	Maximum Marks			Exam Dur.	Total Marks
							IA		Exam		
				L	T/ P	L+T+P	C1	C2	C3		
V Semester	DSE 1	CLOUD COMPUTING AND BIG DATA ANALYTICS	215514	4	2	4+2+0	10	10	80	3 Hrs	100
	DSE 2	DIGITAL IMAGE PROCESSING	215515	3	0	3+0+0	10	10	80	3 Hrs	200
		DIGITAL IMAGE PROCESSING LAB		0	3	0+0+3	10	10	80	4 Hrs	
	DSE 3	NUMERICAL ANALYSIS AND STATISTICS	215516	3	0	3+0+3	10	10	80	3 Hrs	200
		NUMERICAL ANALYSIS AND STATISTICS LAB		0	3	0+0+3	10	10	80	4 Hrs	
	DSE 4	SOFTWARE ENGINEERING	215517	4	2	4+2+0	10	10	80	3 Hrs	100
	SEC 1	DESKTOP PUBLISHING	215518	1	0	1+0+0	05	05	40	2 Hrs	50
		DESKTOP PUBLISHING LAB		0	1	0+0+1	05	05	40	3 Hrs	50
	SEC 2	MACHINE LEARNING	215519	1	0	1+0+0	05	05	40	2 Hrs	50
		MACHINE LEARNING LAB		0	1	0+0+1	05	05	40	3 Hrs	50
VI Semester	DSE 1	PROJECT WORK (COMPULSORY)	215624	0	6	0+0+6	20	20	140	4 Hrs	200

	DSE 2	PYTHON PROGRAMMING	215625	3	0	3+0+0	10	10	80	3 Hrs	150
		PYTHON PROGRAMMING LAB		0	3	0+0+3	05	05	40	4 Hrs	
	DSE 3	WEB TECHNOLOGY	215626	3	0	3+0+0	10	10	80	3 Hrs	200
		WEB TECHNOLOGY LAB		0	3	0+0+3	05	05	40	4 Hrs	
VI SEM	DSE 4	NETWORK SECURITY	215627	4	2	4+2+0	10	10	80	3 Hrs	100
	SEC 3	.NET PROGRAMMING	215628	1	0	1+0+0	05	05	40	2 Hrs	100
		.NET PROGRAMMING LAB		0	1	0+0+1	05	05	40	3 Hrs	
	SEC 4	ANDROID PROGRAMMING	215629	1	0	1+0+0	05	05	40	2 Hrs	100
		ANDROID PROGRAMMING LAB		0	1	0+0+1	05	05	40	3 Hrs	

Note: Students should choose any three DSE courses in V semester and any two DSE inVI sem.

DSE-1: Cloud Computing and Big Data Analytics (LTP::4:2:0) 6 Credits

Total Hours : 72

Objectives :

- To learn how to use Cloud Services.
- To learn Data Acquisition, types and

Analytics.Outcomes:

- To use Cloud services.
- Students Analyze various cloud programming models and apply them to solve problemson the cloud.
- Learn different data Analytics and classification.

UNIT – I 24 Hours

Introduction: Essentials, Benefits and need for Cloud Computing - Business and IT Perspective - Cloud and Virtualization - Cloud Services Requirements - Cloud and Dynamic Infrastructure - Cloud Computing Characteristics Cloud Adoption. Cloud Models: Cloud Characteristics - Measured Service - Security in a Public Cloud Public versus Private Clouds. Cloud Infrastructure Self Service. Cloud as a Service: Gamut of Cloud Solutions - Principal Technologies - Cloud Strategy Cloud Design and Implementation using SOA - Conceptual Cloud Model - Cloud Service Defined.

Cloud computing architecture: Introduction, Cloud reference model : Architecture, IaaS,PaaS, and SaaS.

Types of Clouds: Public, Private, Hybrid and Community clouds, Economics of the cloud, Open challenges.

Cloud Solutions: Cloud Ecosystem - Cloud Business Process Management - Cloud Service Management - Cloud Stack - Computing on Demand (CoD) – Cloud sourcing.

UNIT II 24 Hours

Introduction to big data acquisition, collection and transmission: Big data framework - fundamental concepts of Big Data management and analytics - Current challenges and trends in Big Data Acquisition. Big data collection- Strategies- Types of Data Sources- Structured Vs Unstructured data- ELT vs ETL - storage infrastructure requirements - Collection methods- Log files- Sensors- Methods for acquiring network data (Libcap-based and zero-copy packet capture technology) -Specialized network monitoring software (Wireshark, Smartsniff and Winnetcap) - Mobile equipment's, Transmission methods- Issues.

Analysis Process Model, Analytical Model Requirements.

UNIT III 24 Hours

Data Exploration, Data Pre-processing and analytics: Data pre-processing overview- Sampling- Missing Values -Outlier Detection and Treatment - Standardizing Data- Categorization - Weights of Evidence Coding -Variable Selection and Segmentation. DATA ANALYTICS: Predictive Analytics (Regression, Decision Tree, Neural Networks) -

Descriptive Analytics (Association Rules, Sequence Rules), Social Network Analytics (Social Network Learning Relational Neighbour Classification).

Text Books:

1. Cloud Computing – Insight into New Era Infrastructure, Dr. Kumar Saurabh, Wiley India.
2. Cloud Computing: Implementation, Management, and Security, John W. Rittinghouse and James F.Ransome, CRC Press, 2010.
3. Cloud Computing:Principles and Paradigms, Rajkumar Buyya, James Broberg, Wiley 2011.

Reference Books:

1. Cloud Computing for Dummies, Judith Hurwiz, Wiley Publishing, 2009.
2. The Cloud at your service, Rosenberg and Matheos, Manning Publications, 2010.
3. Hadoop: The Definitive Guide, Tom White, Yahoo Press, 2012.
4. Analytics in a Big Data World: The Essential Guide to Data Science and its Applications, Bart Baesens, John Wiley & Sons, 2014.

Web references:

1. Cloud Computing Tutorial - Tutorialspoint.
2. Cloud Computing Tutorial for Beginners | Cloud Computing Explained | Cloud Computing | Simplilearn - Bing video
3. How to Use Cloud Computing - Bing video
4. Big Data Analytics Tutorial - Tutorialspoint.

BCA V Semester

DSE2 - Digital Image Processing (LTP:: 3:0:3) **6 credits**

Total Hours : 50

OBJECTIVES

- This course gives an exposure to Image Processing techniques and its implementationthrough various methods.

OUTCOMES

Unit I **16 hours**

Digital image fundamentals:

Light and Electromagnetic spectrum, Components of Image processing system, Image formation and digitization concepts, Neighbours of pixel adjacency connectivity, regions and boundaries, Distance measures, Applications.

Unit II **18 hours**

Image Enhancements:

Colour fundamentals, Colour models, Colour transformation, Smoothing and Sharpening, Colour segmentation.

Image Enhancements**:** In spatial domain: Basic gray level transformations, Histogram processing, Using arithmetic/Logic operations, smoothing spatial filters, Sharpening spatial filters.

In Frequency domain: Introduction to the Fourier transform and frequency domain concepts, smoothing frequency-domain filters, Sharpening frequency domain filters.

Unit III **16 hours**

Image compression and image segmentation

Image compression: Introduction, Image compression model, Error-free compression,Lossy compression.

Image segmentation: Detection of discontinuities, Edge linking and boundary detection, thresholding.

Text Books:

1. Principles of digital image processing, by Burger, Wilhelm, Burge, MarkJ.
2. Fundamentals of Digital Image Processing, by Anil KJain.

Reference Book:

1. Fundamentals of Digital Image Processing, by Annadurai, R.Shanmugalakshmi.

2.Fundamentals of Digital Image Processing by Rafael C Gonzalez.

Web references:

1. http://www.imageprocessingplace.com
2. http://www.wikipedia.com
3. https://www.tutorialspoint.com
4. https://www.geeksforgeeks.org
5. https://www.javatpoint.com
6. https://www.w3school.com

DSE2 - Digital Image Processing Lab Exercises

PART A

1. Write a program to load an image and display the properties of the image.
2. Write a program to load a color image and display R, G & B image channels
3. Write a program to demonstrate the all different neighbors of pixels.
4. Write a program to demonstrate the all different Distance measures.
5. Write a program to demonstrate use of the arithmetic operations on an image.
6. Write a program to demonstrate use of logic operations on an Image.
7. Write a program to obtain a histogram of a gray scale image.
8. Write a program to perform histogram equalization on an Image.

PART B

1. Demonstrate the min and max filters and perform smoothening on an image.
2. Demonstrate the mean and median filter and perform smoothing on an image.
3. Write a program to perform sharpening on an image using First order derivative.
4. Write a program to perform sharpening on an image using second order derivative.
5. Write a program to demonstrate color transformation on an image using tonalCorrection.
6. Write a program to demonstrate the steps of Canny's edge detection algorithm onan image.
7. Write a program to demonstrate the steps of Sobel's edge detection algorithm onimage.

DSE3: Numerical and Statistical Analysis (LTP::3:0:3) 6

Objectives:

- To make them understand numerical techniques and to solve complex problemsNumerically.

Outcomes:

- Students will be able to solve and Implement complex numerical Problems.

Credits

Total

Hours 48

UNIT-1 **18 Hours**

Computer Arithmetic: Floating point representation of numbers, arithmetic operations with Normalization, consequences of normalized floating point representation of numbers, Errors in numbers.
Finding the roots of an equation: Iterative method: Introduction, Beginning an iterative method, Bisection method, Newton Raphson method, Secant method, Comparison of Iterative methods, Order of Convergence of Newton Raphson Method and Secant Method.

UNIT-2 18 Hours

Solving simultaneous linear equations: Introduction, Gauss Elimination method, pivoting, illconditioned equations, Gauss-Seidel iterative method. Comparison of direct and iterative methods.

Interpolation: Introduction, Lagrange interpolation, Difference Tables- Newton-Gregory Forward and Backward interpolation, Truncation error in interpolation and Regression-Linear regression.
Ordinary differential equations: Euler's method, Taylor series method, Range Kutta II andIV order methods. **Numerical Integration:** Simpson's 1/3 and 3/8 rule, Trapezoidal rule.

UNIT-3 12 Hours

Statistical methods: Introduction, definitions, classifications, frequency distribution, mean - arithmetic mean for grouped and ungrouped data, continuous frequency distribution (step deviation method), Geometric mean for grouped and ungrouped data.
Standard deviation - meaning standard deviation for actual mean method, assumed

mean method and step deviation method using discrete series and continuous series. Coefficient of variation – meaning and problems.
Median – meaning, calculations of median for ungrouped, discrete series, continuous series.
Mode - meaning calculations of mode for discrete series and continuous series.

Text Books:

1. Computer Oriented Numerical Methods by Rajaraman. V.
2. Fundamentals of Mathematical Statistics by Gupta and Kapoor (Sultan Chand).
3. Probability and Statistics for engineers and scientists by Ronald E. Walpole and Raymond H Mayers.

Reference Books:

1 Mathematical Statistics by John Freund (Prentice Hall India Pvt. Ltd.).
2 Numerical Methods by Jain M.K., S.R.K. Iyengar and R.K. Jain.
3 Numerical methods by K Krishnamurthy and Sen.

Web references:

1. Numerical analysis - Wikipedia
2. Free Online Course: Numerical methods from Swayam | Class Central
3. Numerical Analysis online course video lectures by UC Berkeley (freevideolectures.com)

Numerical and Statistics Analysis Lab Exercises

PART-A

1. Program to find the roots of linear and transcendental equations.
2. Program to solve the given differential equations.
3. Program to solve numerical integration.

PART- B

1. Program to solve the simultaneous equation.
2. Program to compute mean, median and standard deviation of n elements using lineararray for ungrouped data.
3. Program to compute mode of n elements using linear array for ungrouped data.
4. Program to generate frequency distribution table.

BCA V Semester

DSE4 : Software Engineering (LTP::4:2:0) **6 Credits**

Total Hours :72

Objectives:

- To understand Software Engineering Concepts, Software process models,Requirements and Software Development.

Outcomes:

- Students will be able to use the concepts to develop the Software Projects.

UNIT I: SOFTWARE PROCESS: 24 Hours

Introduction –Types of software, Characteristics, software process models- (water fall, incremental, spiral, prototyping) - system engineering – computer-based system – verification
– validation – life cycle process – development process –system engineering hierarchy.

UNIT II: SOFTWARE REQUIREMENTS 24 Hours

Role of Metrics and Measurement, Problem Analysis, Requirement Specification, Validation, Metrics, Monitoring and Control. Software prototyping – prototyping in the software process
– rapid prototyping techniques – user interface prototyping -S/W document. Analysis and modelling – data, functional and behavioural models – structured analysis and data dictionary.

UNIT III: DESIGN , CODING and PROJECT MANAGEMENT 24 Hours

System Design, Problem partitioning, Abstraction, Top-down and bottom-up design, Structured Approach, Functional /s Object-Oriented Approach, Design specification & verification, metrics.

Coding: Top-down & Bottom-up, Structured Programming, Information Hiding, Programming Style, Internal Documentation, Verification, Metrics, monitoring &control.

Software Project Management, Cost Estimation, Project Scheduling, Staffing. Software Configuration Management, Quality Assurance.

Measures and measurements – S/W complexity measure – size measure – data and logic structure measure – information flow measure. Software cost estimation COCOMO

model, Delphi method- Software maintenance.

Text Books:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition.
2. Ian Sommerville, Software engineering, Pearson education Asia.

Reference Books:

1. PankajJalote- An Integrated Approach to Software Engineering, Springer Verlag.
2. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi.

Web references:

1. Software Engineering Tutorial - Tutorialspoint
2. (18) Software Engineering Basics - YouTube

V Sem BCA

SEC1: Desk Top Publishing (DTP) LTP:(1:0:1) **2 Credits**

Total Hours: 16

Objective :

- To familiarise with the Layout design and produce typographic-quality text andimages comparable to traditional typography and printing.

Outcomes:

- Students will be able to use the Coreldraw and Pagemaker tools in Performingdesign

Unit 1: PageMaker 8 Hours

Page layout basics, understanding tools & workspace and Shortcuts.
Creating: labels, News Paper, Pamphlets, Bill books, viz. cards, greetings cards,Kankotri, advertisements, etc.
Books & booklets, column style documents.

Unit 1: CorelDRAW 8 Hours

Understanding Tools & Workspace, Drawing Shapes & Graphics, Logos &amp andArtistic Text.
Multicolor Designs: Viz. Cards & Greetings Cards, Book Covers, Brochures, Advertisements, Banner, Web Graphics.

Text Books:

1. Learning PageMaker 7:Ramesh Bangia,Khanna Publishing
2. Training Guide Pagemaker 7:Satish Jain ,Bpb Publications

Reference Books:

1. CorelDraw 9 for Windows:Phyllis Davis ,Peachpit Press
2. Mastering CorelDraw 9: Vishwaprakash Dikshit Batuk,Bpb Publications

Web references:

1. Desktop publishing - Wikipedia
2. Pagemaker 7.0 tutorial - complete course - Offline – Apps on .
3. Desktop Publishing - Popular DTP Software - Tutorialspoint.

V semester BCA

SEC2: Machine Learning (L:T:P::1:0:1) **2 Credits**

Total Hours : 16

Objectives:

- Understand how a machine learns from data to improve the performance of a given task, the comprehensive overview of supervised, Unsupervised and Reinforcement machine learning, explore different performance evaluation metrics used in Machine Learning and gain familiarity with deep Neural Network Architecture.

Outcomes:

Unit-I 8 Hours

Concept of Machine Learning, Applications and Key elements of Machine Learning, Supervised vs. Unsupervised Learning, Reinforcement learning. Introduction to Supervised Learning, Classification vs Regression, Prediction using Linear Regression, Classification using Logistic Regression, The Naive Bayes Classifier.

Unit-II 8 Hours

Introduction to Unsupervised Learning: K means clustering. Performance evaluation: Confusion matrix, Accuracy, Precision, Recall, F1 score. Neural Networks: Introduction, Model Representation, Multilayer Perceptrons, Backpropagation Algorithm.

Text Books:

1. Machine Learning: a Probabilistic Perspective by Kevin Patrick Murphy, MIT Press, March 2014.
2. Ethem Alpaydin (2014). Introduction to Machine Learning, Third Edition, MIT Press. The textbook website is https://www.cmpe.boun.edu.tr/~ethem/i2ml3e/.

Reference Books:

1. Tom M. Mitchell, "Machine Learning", First Edition by Tata McGraw-Hill Education, 2013.

2. Understanding Machine Learning: From Theory to Algorithms by Shai Shalev-Shwartz and Shai Ben-David Published 2014 by Cambridge University Press.

Web References:

1. http://nptel.ac.in
2. https://www.w3schools.com/python/python_ml_getting_started.asp

Machine Learning Lab Exercises

1. Write a program to demonstrate csv data handling using pandas, matplotlib.
2. Write a program to demonstrate linear regression using Housing data set to predict theprice of the house.
3. Write a program to demonstrate logistic regression using appropriate data sets.
4. Write a program to implement the naïve Bayesian classifier for Iris data set. Computethe accuracy of the classifier, considering few test data sets.
5. Implement a classification problem for checking whether an email is spam or not.
6. Cluster the Heart Disease Data Set using k means algorithm.
7. Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.
8. Write a program that calculates performance evaluation metrics for a classificationproblem.

Note: For practical Labs for Machine Learning, students may use software like MABLAB/Octave or Python. The datasets for the exercise can be downloaded from online repositories like UCI Machine Learning Repository (http://archive.ics.uci.edu/ml/).

DSE1: Python Programming(L:T:P::3:0:3) **6 Credits**

Total Hours : 48

Course Objectives:

- To introduce Python syntax and programming, OOP fundamentals with respect to Python programming, application oriented programming paradigm and supports available in Python.

Course Outcomes:

- On successful completion of this the student will be able to do:
  Create Python programs to solve simple real world problem, analyze and understand the difference between other OOP languages like C++ and JAVA, gainexperience using the Python programming and IDE environment, analyze and apply Exception handling, Package framework, Database connectivity and GUI

UNIT-I 14 Hours

Data, Expressions and Statements: Python interpreter an interactive mode; values and types: int, float, boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; Indentation, function definition and use, flow of execution, parameters and arguments; CONTROL FLOW: Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-else-if); Iteration: state, while, for, break, continue, pass.

UNIT-II 14 Hours

FUNCTIONS: Fruitful functions, return values, parameters, local and global scope, function composition, recursion; STRINGS: string slices, immutability, string functions and methods, string module; Lists as arrays. LISTS, TUPLES, DICTIONARIES: Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing – list comprehension.

UNIT-III 20 Hours

Object Oriented Programming in Python: Classes, 'self-variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding. Error and EXCEPTIONS: Difference between an error and Exception, Handling Exception, Try except block,

Raising Exceptions, User defined exceptions; FILE HANDLING: Opening and Closing files, Reading and Writing files; MODULES: Creating modules, import statement, from Import statement, name spacing.

DATABASE PROGRAMMING: Connecting to a database, Creating Tables, INSERT, UPDATE, DELETE and READ operations, Transaction Control, Disconnecting from a database; PYTHON PACKAGES: Simple programs using the built-in functions of packages matplotlib, numpy, pandas etc. GUI PROGRAMMING: Tkinter introduction, Tkinter and PythonProgramming, Tk Widgets, Tkinter examples.

Text Books

1. Core Python Programming – R. Nageshwara Rao, Dreamtech Publications, First Edn

2. ReemaThareja, “Python Programming using problem solving approach”, Oxford university press, 2017.

3. Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd.

4. Wesley J Chun, “Core Python Applications Programming”, 3rd Edition, Pearson Education India, 2015.

Reference :

1. Mark Lutz, “Programming Python”, 4th Edition, O’Reilly Media, 2011.
2. Python Programming: A Modern Approach, VamsiKurama, Pearson
3. Charles R. Severance, “Python for Everybody: Exploring Data Using Python 3”, 1st Edition, CreateSpace Independent Publishing Platform, 2016.
4. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist”, 2nd Edition, GreenTeaPress, 2015.

Web references:

1.https://nptel.ac.in/courses/106/106/106106182/
2.python.org.
3. https://www.w3schools.com › python

VI Sem BCA

Python Lab Excercises

Part-A

1. Programs to demonstrate of list operations, tuples and dictionaries in python.
2. Programs to demonstrate working with 2 dimensional array (Eg: Matrix addition, andmultiplications)
3. Programs to illustrate the use of conditional statements.
4. Programs to illustrate the use of looping statements.
5. Program to construct the following pattern, using a nested for loop

```
        *
      * *
    * * *
  * * * *
* * * * *
* * * * * *
```

6. Programs to illustrate the use of built in and user defined function.
7. Programs to demonstrate string operations like create, concatenate, case conversion and accessing sub-string from a given string.

Part-B

1. Programs to demonstrate the OOPS concept: constructor, inheritance, polymorphism,data hiding.
2. Program to demonstrate exception handling.
3. Program to implement file read and write operations.
4. Program to define a module to find Fibonacci Numbers and import the module to another program.
5. Program using python database API to read, insert, update and delete data.
6. Demonstrate the use of Tkinter framework. (GUI program to read students marks in 5 subjects that calculates the total marks, percentage and result status as Fail, Pass, Distinction)

BCA VI Semester

DSE-3 : Web Technologies and Applications (L:T:P :: 3:0:3) **6 Credits**

Total Hours : 50

Objectives:

- To introduce Web Technology Concepts which are essential for creating webapplications, different components of Web App, real-time application oriented programming and supports available in Web Technology.

Outcomes:

- students will be able to use HTML and CSS syntax and semantics to build web pages understand the concepts of Construct , visually format tables and forms

UNIT I : HTML and CSS 18 Hours

Introduction to WWW, Internet, Client-Server Model, DNS,URL, HTTP, Web vs Desktop Applications. Introduction to HTML, What is HTML and Where did it come from?, HTML Syntax, Structure of HTML Documents, Quick Tour of HTML Basic Elements, HTML5 Semantic Structure Elements, HTML Media, Graphics, Frames. Introducing Tables, Styling Tables, Introducing Forms, Form Control Elements. HTML vs XHTML.

CSS: Introduction to CSS, What is CSS, Benefits, CSS Syntax, Location of Styles, **Selectors-** Element, Id, Class, Attribute, Pseudo Element and Class, Contextual Selectors.

The Cascade: How Styles Interact (Conflict Resolution)-Inheritance, Specificity. The Box Model, CSS Text Styling, Span and Div tags. Advanced CSS: Normal Flow- inline and block elements. Positioning Elements, Floating Elements.

UNIT II : JavaScript Client Side Scripting 18 Hours

What is JavaScript and What can it do?, Uses, **Where does JavaScript Go?-**Inline, External, Embedded JS. **Syntax** - Variables, Comparison and Logical Operators, Conditionals, Loops, Functions, Errors Using Try and Catch. **Pattern Matching Using Regular Expressions.** Screen Output and Key board input. **JavaScript Objects:** Constructors, Properties, Objects Included in JavaScript. **The Document**

Object Model (DOM) - Nodes, Document Object, Element Node Object, Modifying a DOM Element. **JavaScript Events** - Inline Event Handler Approach and Listener Approach, Event Object, Event Types, Ex: Reacting to Mouse Click. Forms.

UNIT III : Introduction to Server side Development with PHP 14 Hours

What is Server-Side Development, client side vs. server side scripting languages. Server Side Technologies, Introduction to PHP, Origins and uses of PHP, Overview of PHP, Quick Tour of PHP, Program Control, Functions, Arrays, Superglobals, Regular expression and pattern matching. PHP Forms. **Working with databases :** The Role of Databases in Web Development Accessing MySQL in PHP .

Introduction and Advantages (Features) of: XML, AJAX, JQuery , JSON, and Web Services.

Text Books:

1. Randy Connolly, Ricardo Hoar, "Fundamentals of Web Development", 1stEdition, Pearson Education India. (ISBN:978-9332575271)
2. Robert W. Sebesta: Programming the World Wide Web, Pearson education.

Reference Books:

1. Internet & World Wide Web How to Program, Harvey M. Deitel and Paul J. Deitel, Pearson
2. Robin Nixon, "Learning PHP, MySQL &JavaScript with jQuery, CSS andHTML5", 4thEdition, O'Reilly Publications, 2015. (ISBN:978-9352130153)
3. Luke Welling, Laura Thomson, "PHP and MySQL Web Development", 5th Edition, Pearson Education, 2016. (ISBN:978-9332582736)
4. Nicholas C Zakas, "Professional JavaScript for Web Developers", 3rd Edition, Wrox/Wiley India, 2012. (ISBN:978-8126535088)
5. C# complete reference by Herbert Scildt.

BCA VI Semester

Web Technologies and Applications Lab Excercises

Part A

1. Develop and demonstrate HTML page containing basic text formatting tags, hyper link, images, different types of list, insert audio & video files.
2. Develop and demonstrate HTML page containing a college time table using table tag and its properties such as rowspan, colspan etc.
3. Develop and demonstrate a HTML page that illustrates the use of external level,document level and inline level CSS style specification.
4. Develop and demonstrate HTML pages that illustrate the concept of frames.
5. Create and demonstrate an HTML Form that contains different elements in it.(Simple Application Form)
6. Develop and demonstrate a HTML page that includes JavaScript script for any program.
7. Develop and demonstrate a HTML page that includes JavaScript script for any problem [Eg: take n as input and display A table of numbers from 1 to n and their squares]
8. Program to change background color after 5 sec of page load using JS.
9. Develop and demonstrate a PHP program to demonstrate the usage of sortingfunction of array object [sort() , asort() and rsort()].

Part B

1. Create a form having number of elements (Textboxes, Radio buttons, Checkboxes, and so on). Write JavaScript code to count the number of elementsin a form .
2. Create a form consists of a two Multiple choice lists and one single choice list.
3. Develop and demonstrate a HTML page containing JavaScript function to illustrate the function and loop concept.
4. Develop and demonstrate HTML page containing JavaScript function to implement mouse over and mouse out events.
5. Develop and demonstrate Regular Expression in JavaScript and HTML.
   [Eg: Create a HTML file that collects the register number of student (the valid format is: Three upper case characters, followed by two digits followed by two upper case characters and followed by three digits Ex: UOM19BC111) from the

user. Use JavaScript that validate the content of the document. Suitable messages should be display in the alert if errors are detected in the input data.]

6. Develop and demonstrate calculator to perform Arithmetic operations inHTML and JavaScript.
7. **PHP Demo :** Develop and demonstrate a HTML-PHP document to display a welcome message and Date functionalities (the current day of the week, month, and day of the month).
8. **PHP Superglobals:** Write a simple Programs to demonstrate Superglobals $_GET and $_POST functions in PHP
9. **PHP with Database Connection :** Develop and demonstrate a PHP program to connect to MySQL and perform Create Table, Insert, Select, Update and Delete Operations.
10. **End to End Program - Database, Client and Server:** Develop and demonstrate a PHP program to collect name, course and age information entered by the user and save the input into a table created using MySQL and todisplay the current contents of this table. **(For Demonstration purpose).**

VI Sem BCA

DSE4: NETWORK SECURITY (LTP:4:2:0) **6 Credits**

Total Hours : 54 hours

Objectives :

- This paper introduces the importance of security in a network, It makes an effort to familiarize the types of threat to the information and the Algorithms and methods that provide the security for the data addressing various issues that come up on course. Anattempt is also made to stress the Importance of numbers and mathematical concepts toprovide the security for the data.

Outcomes:

- Students will get basic knowledge of Network security, Various Symmetric key ciphers,Importance of numbers in providing security and Various Hashing algorithms.

Unit – I **18 Hours**

Introduction: Security Goals, Cryptographic Attacks, Services and Mechanism,Techniques. Approaches to information security implementation; The Security System Development Life Cycle; Information Security Terminology. Planning for Security: Introduction; Information Security Policy, Standards, and Practices; The Information Security Blue Print.

Unit – II 18 Hours

Traditional Symmetric-Key Ciphers: Introduction, Substitution Ciphers, Transpositional Ciphers, Stream and Block Ciphers. Data Encryption Standard (DES): Introduction, DESStructure, DES Analysis, Security of DES, Multiple DES, Examples of Block Ciphersinfluenced by DES. Advanced Encryption Standard: Introduction, Transformations, Key Expansion, The AES Ciphers, Examples, Analysis of AES.

Unit- III 18 Hours

Encipherment using Modern Symmetric-Key Ciphers: Use of Modern Block Ciphers,Use of Stream Ciphers, Other Issues. Mathematics of Asymmetric-Key Cryptography:Primes, Primality Testing, Factorization, Chinese Remainder Theorem, Quadratic Congruence, Exponentiation and Logarithm. Asymmetric Key Cryptography:

Introduction, RSA Cryptosystem, Rabin Cryptosystem, Elgamal Cryptosystem, Elliptic Curve Cryptosystems.

Cryptography Hash Functions: Introduction, Description of MD Hash Family, Whirlpool, SHA-512. Digital Signature: Comparison, Process, Services, Attacks on Digital Signature, Digital Signature Schemes, Variations and Applications. Key Management:Symmetric-KeyDistribution, Kerberos, Symmetric-Key Agreement, Public-Key Distribution, Hijacking.
Security at the Application Layer: PGP and S/MIME: Email, PGP, S/MIME.

Text Book:

1. Behrouz A. Forouzan, Debdeep Mukhopadhyay: Cryptography and Network Security,2nd Edition, Special Indian Edition, Tata McGraw-Hill, 2011.

Reference Books:

1. Michael E. Whitman and Herbert J. Mattord: Principles of Information Security, 2nd Edition, Thomson, Cengage Delmar Learning India Pvt., 2012.

2. William Stallings: Network Security Essentials: Applications and Standards, 4th Edition, Pearson Education, 2012.

Web Reference:

1. https://www.youtube.com/watch?v=RkPs8Jl9TKk&list=PLXDX4vxbgW0B8G_t0aZubJM8HmxBf5suO
2. https://www.youtube.com/watch?v=F_iQFtiRbME
3. https://www.youtube.com/watch?v=uNzaMrcuTM0
4. https://www.youtube.com/watch?v=2aHkqB2-46k
5. https://www.youtube.com/watch?v=8TET_mmwJaM
6. https://www.youtube.com/watch?v=vZ7YQ67Cbtc
7. https://www.youtube.com/watch?v=63qhOteZ5h4
8. https://www.youtube.com/watch?v=zIFehsBHB8o
9. https://www.youtube.com/watch?v=2Z3toEiY5lI
10. https://www.youtube.com/watch?v=tLkHk__-M6Q
11. https://www.youtube.com/watch?v=VtHSyoJkDXw

12. https://www.youtube.com/watch?v=s22eJ1eVLTU

13. https://www.youtube.com/watch?v=wlu9hc4KoEQ

VI Sem BCA

SEC3 : .NET Programming (LTP::1:0:1) **2 Credits**

Total Hours : 16

Objective :

- Make students to work on cross-platform, open source developer platform forbuilding many different types of Applications.

Outcomes :

- It allows Students to work and with multiple languages using Dotnet Framework.

UNIT-I 8 Hours

Introduction: Overview of OOP, Introduction to C # - Characteristics, application, Difference between c,c++ and c#, The .NET strategy, the origins of the .NET technology, the .NET framework, benefits of the .NET approach, C# and .NET, c# program structure, command line argument, math function, Literals, variables and data , constant variables, scope of variables, boxing and unboxing, Operators in C#, expression, Decision making and looping statements in c# Arrays - variable size arrays, the system, array class, array list class, String handling.

Inheritance and polymorphism: classical inheritance, containment inheritance, defining a subclass, visibility control, defining subclass constructors, multilevel inheritance, hierarchicalinheritance, overriding methods, hiding methods, abstract classes, abstract methods.

UNIT-II 8 Hours

Interfaces: Multiple Inheritance: defining an interface, extending an interface, implementing interface, interface & inheritance, explicit interface implementation, abstract class and interface. Operator overloading: over loadable operators, defining Operator overloading, overloading unary operators, overloading binary operators, overloading Comparison operators.

Delegates and Events: Delegate, delegate declaration, delegate methods, delegates instantiation, delegate invocation, using delegates, multicast delegates, events.

Text Books:

1.A Primer Third Edition : Programming in C# By E-Balagurusamy
2. Profession c# - By Karli Watson, Simon Robinson, Christian Nagel, Wiley India Pvt Ltd.

3. C# Unleashed – By Joseph Mayo, Techmedia, First Edition .

Reference Books:

1. Programming C# - By Jesse Liberty, Shroff Publishers, 4TH Edition 4. Programming InC# - By Barbara Doyle, Cengage \ Delmar Learning India Pvt.
2. C# - Complete reference, by Herbert schiltz.
3. C# - Black book.

Web references:

1. .NET documentation | Microsoft Docs
2. .NET Core - Adding References to Library - Tutorialspoint
3. Learn ADO.Net Tutorial - javatpoint

ASP.NET LAB Exercises

PART A

1) program to display three images in a line. Use required event handling techquies:
2) program to displays a button and change the color using mouse over event.
3) Program to demonstrate the controls:
4) program that binds the properties with the values:

PART B

1) Create a control that displays the names of some flowers in two columns. And performevents .
2) Program to demonstrate user controls
3) program to develop a simple application.

VI Sem BCA

SEC4 : Android Programming (LTP: 1: 0: 1) **Credits : 02**

Total Hours : 16

Objectives:

- To learn Android concepts and tools

Outcomes:

- Students will be able to use the tools and develop simple Android applications

UNIT I — 8 Hours

Introduction of Android: Android computing platform, History of android, android software stack, Android Studio with Android SDK, Developing end user application using android SDK, JDK java packages, Structure of android application.

Setting up the development environment, Installing android development tools (ADT), Fundamental components, Android virtual devices(Emulators),Running on real device and Application life cycle.

UNIT II — 8 Hours

User Interface Development in Android, Developing UI using XML with Java code, Android's common controls,understanding adapters, adapter views, list view, grid view, spinner control, gallery control, styles and themes, Understanding layout managers, linear layout manager, table layout manager, relative layout manager, frame layout manager, grid layout manager.

Understanding android resources , String resources, Layout resources, Defining own resource IDs , string arrays, Colour resources, dimension resources, image resources, Android menus , creating menus, working withmenu groups, responding to menu items, icon menu, sub menu.

Android services: fragments in android, structure of fragment, fragment life cycle, Intents, Linking Activities using intents, Fragments, Calling Built inapplications using intents, Displaying Notifications.

Content providers, Sharing Data in Android, Using a Content Provider, Creating Your Own Content Providers. Basic operations using SQLITE database.

Text Book:

1. Wei-MengLee,"Beginning Android 4 Application Development",Wrox publications, 2012

Reference Books:

1. The Android Developer's Cookbook: Building Applications with the
2. Android SDK James Steele, Nelson to Addison Wesley Publications 2010 First Edition.
2. Professional Android Application Development. Reto Meier, Wrox publications, 2009, Second Edition

Web references:

1. Best practices in Android Coding | Perfomatix | Product ..
2. ustwo/android-coding-standards - GitHub
3. A guide to Android app development for complete beginners ...

Android Programming Lab Exercise

PART-A

1. Develop Android App to Demonstrate login Credentials.
2. Develop Android App to Demonstrate Image, Spinner and Alert Dialog.
3. Develop Android App to Demonstrate time Picker and AutoCompleteTextView.
4. Develop a simple calculator android app.

PAR T-B

1. Develop a student Registration app for a course offered by the college.
2. Create a simple search app to find student roll number, when a student input theirname and mobile number.
3. Create a simple Restaurant billing system.
4. Create an android app for the college to collect teacher feedback from thestudent.

DSE1- Project

Work Credits:

0:0:6 (6 credits)

Project Guidelines and Scheme of Examination for VI Sem BCA Project work

- C1-20, C2-20 and C3 – 160 (Total:200 Marks)
- C1 assessment will be continuous assessment.
- C2 assessment will be based on project demonstration.
- C3 marks distribution.

1.Documentation – 40 Marks
2. Presentation and Project demonstration – 80 Marks
3.Viva – 40 Marks

- Examination for C3 will be conducted with one internal and one external examiner.
- Practical Examination will be conducted with maximum number of 05 projects in a batch.
- Each project can be taken by a maximum of 3 students.

Project guidelines preamble:

- Project work has been made a Compulsory for BCA course to give students hands-on exposure to Software development activities.
- The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices. As such, during the development of the project students shall involve themselves in all the stages of the software development life cycle (SDLC) like requirements analysis, systems design, software development/coding, testing, Implementation/maintenance and documentation, with an overall emphasis on the development of reliable software systems.
- Since, the project work spans over the entire final semester, the students shall

beadvised to take up projects for solving problems of software industry or any research organization or the real-life problems suggested by the faculty in-chargeof BCA project work in the Institutions.

- Topic chosen of work must be nontrivial, analytical and application-oriented.

- It must involve substantial original work and/or development effort based on thetheme. Solved, off-the- shelf and pirated work is not entertained.
- Any attempt of plagiarism or use of unfair means will result in rejection of thework.
- All activities of the Project Development must be time-bound and the equalparticipation of the team members expected throughout the Development process.

Question Paper Pattern for (DSE) Theory paper

Max Marks: 80 **Exam Duration: 3 Hours**

Instruction: Answer part A and Part B.

PART – A (Four questions from each unit to be given)

Answer any TEN Questions **2*10=20 Marks**

1

2

3

.

.

11

12

PART – B(Three Question from each unit should be given.)

Answer any Two Questions from Each Main.

13 a. **20 Marks**

b.

c.

14. a. **20 Marks**

b.

c.

15. a. **20 Marks**

b.

c.

SCHEME OF VALUATION FOR PRACTICAL EXAMINATION (DSE)

C1 and C2 are internal tests to be conducted during 8th and 16th week of the semester respectively.C3 is the semester-end examination that is conducted for 4 Hours.

The student has to compulsorily submit the practical record during C1 and C2. For C3, the record has tobe certified by the Head of the Department.

- The student is evaluated for 10 marks in C1 and10 marks in C2 respectively.
- The student is evaluated for 80 marks in C3 as per the following scheme:

There will be two questions. A candidate has to write programs for both the questions and execute boththe programs.

Program Writing	:	2 *15=30 Marks
Execution	:	2*15= 30 Marks (Both programs must be executed)
Viva	:	10 Marks
Record	:	10 Marks
Total	**:**	**80 Marks**

Practical Examination should be conducted with one internal and one external Examiner.

EVALUATION PATTERN (SEC)

THEORY

Internal Assessment

Theory - C1 + C2 = 05+ 05 = 10

Practicals - C1 + C2 = 05+ 05 = 10

Practical Examination = 40

Theory Examination = 40

Total **=100**

Note: SEC Examination is conducted for 100 Marks and is then reduced to 50 Marks

Question Paper Pattern for (SEC)
Theory paper

Max Marks: 40 **Exam Duration : 2 Hours**

PART A (4 questions from each unit to be given)

Answer any 5 Out of 8 Questions **5*2=10 Marks**

1.

2.

3.

4.

5.

6.

7.

8.

PART B (2 questions should be given from each unit with internal split if required)

Answer any 3 questions: **3*10=30 Marks**

9.

10.

11.

12.

Scheme of valuation for (SEC) Practical

C1 and C2 are internal tests to be conducted during 8th and 16th week of the semester respectively. C3 is the semester-end examination that is conducted for 3 Hours of duration.

The student has to compulsorily submit the practical record during C1 and C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 05 marks InC1 and 05 marks in C2 respectively.
- The student is evaluated for 40 marks in C3 as per the following scheme:

There will be two questions one from Part-A and one from Part-B. A candidate has to write programs for both the questions and execute one program of examiner's choice.

Program writing	:	2 *10=20 Marks
Execution	:	1*10= 10 Marks
Viva	:	05 Marks
Record	:	05 Marks
Total	**:**	**40 Marks**

Note: Practical Examination should be conducted with two internals

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DEPARTMENT OF COMPUTER SCIENCE

Motto

Technology for Transformation

Vision

Information Technology for Better Future

Mission

Imparting Quality and Ethical Based Education all the way through Technology

Equipping the students for a Demanding Career

Empowering the students with Professional Touch to become Successful Entrepreneurs

ProgramOutcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis – Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3: DesignandDevelopmentofSolutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

Objectives: Computer Science

1. To provide foundation of computingprinciplesforusing information systems& enterprise software effectively.
2. Helpstudentsin analyzingtherequirementsforsystemprogramming, learn modern methods of information processing and its applications.
3. Providestudentswithan optiontospecializeinvariousdomains of computers.
4. To produce outstanding computer scientists, who can apply the theoreticalknowledge in solving real-time problems and in developing standalone live projects.
5. To build entrepreneurs by developing among students the programming techniques, software developing skills and problem-solvingskills.
6. To prepare students who wish to pursue further studies and career in computer scienceandrelated subjects.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Smt. Shruthy Poonacha Assistant Professor & HoD	Department of Computer Science SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	shruthypoonacha.fgc@mahajana.edu.in 9886367273
2		Smt. Radhika Rani Assistant Professor	Department of Computer Science SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	radhikarani.fgc@mahajana.edu.in 9538737927
3	Member	Smt. Rachana C R Associate Professor	Department of Computer Science SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	rachanacr@gmail.com 8095645644
4		Sri. Manjunath K S Assistant Professor	Department of BCA SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	manjunathks.fgc@mahajana.edu.in 9900852285
5	Nominee by the Vice Chancellor	Smt. Hamsaveni L Assosiate Professor	DoS in Computer Science Manasagangotri, University of Mysore, Mysuru – 570006	hamsa1367@gmail.com 9448665767

6	Two Experts from Other University	Sri. Anil Kumar R J Assistant Professor	Department of Computer Science Government Boy's College (Autonomous), Mandya– 571401	anilkumar.rj@gmail.com 9886267773
7		Smt. Vanishree K S Assistant Professor	Department of Computer Science Government First Grade College, Bapuji Nagar, Shivamogga - 577201	vanishree.kss@gmail.com 9448113005
8	One Person from Industry/ Corporate Sector/Allied Area	Dr. Dinesh R Principal Engineer	Samsung Electro Mechanics, WTC, Brigade Gateway Campus, Malleshwaram, Bengaluru - 560055	dr.dineshr@gmail.com 9986678100
9	Alumnus	Sri. Santhosh Kumar Lead Software Engineer	Fidelity Investments Manyatha Tech Park, Hebbal Outer Ring Road, Nagwara, Bengaluru - 560045	santhoshkavempu@gmail.com 9986979735

Course Structure(NEP)

Discipline Specific Courses (DSC),Open Elective (OE) and Skill Enhancement Course (SEC)

I Year

Course Code, Type and Title		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L: T:P	C1	C2	C3		
Computer Science – I Sem									
212149	**DSC(1)** - Computer Fundamentals andProgramming in C	**4**	**0**	**4:0:2 (6 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$ Hours**	**150**
	DSC(1) Lab - C Programming Lab	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(1)	Office Automation **21OECMS101** C Programming Concepts **21OECMS102** **(Any 1 to be opted)**	**3**	**0**	**3:0:0 (3 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$Hours**	**100**
Computer Science – II Sem									
212249	**DSC(2)** - Data Structures using C	**4**	**0**	**4:0:2 (6 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$Hours**	**150**
	DSC(2) Lab - Data Structures Lab	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(2)	Web Designing **21OECMS201** e-Commerce **21OECMS202** **(Any 1 to be opted)**	**3**	**0**	**3:0:0 (3 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$Hours**	**100**

Computer Science – I/II Sem									
SEC(1)	Digital Fluency **21DFLF94**	**1**	**2**	**1:0:1** **(2 Credits)**	**10**	**15**	**25**	**1 Hour**	**50**

DSC(1) Syllabus for B.Sc. Computer Science (Basic and Honors)

Semester I

Course Code:212149	**Course Title:** **DSC(1) -**Computer Fundamentals and Programming in C (Theory) **DSC(1) Lab** -C Programming Lab (Practical)
Course Credits (L:T:P): 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Acquire knowledge on computers and exhibit the potential of designing an algorithmic solution to a problem.

CO 2: Design and develop C programs using various Datatypes, Input Output Statements, Operators andExpressions.

CO 3: Contrivance C programs using Control Structures, 1D Array, 2D Array and String Functions.

CO 4: Develop and implement C Programs using concepts like Pointers, User Defined Functions, Recursion and User Defined Datatypes.

Course Content

Content	Hours
UNIT - 1	
FundamentalsofComputers: IntroductiontoComputers-ComputerDefinition,Characteristicsof a Computer, Applications of a Computer, Generations of Computers, Types of Computers, BasicOrganization of aDigitalComputer;NumberSystems–DifferentTypes,ConversionFromOneNumberSystemToAnother; Computer Codes – ASCII; Boolean Algebra – AND, OR and NOT with Truth Tables; Types of Software – System Software and Utility Software; ComputerLanguages - Machine Level, Assembly Level & High Level Languages; Translators–Assembler, Interpreter and Compiler; Steps in Problem Solving, Planning a Computer Program – Algorithm (Features, Writing an Algorithm, Performance) and FlowchartwithExamples. Skill Based/ Participative/Experimental Learning – Case Study on Problem Solving Steps & Algorithms.	**14**
UNIT – 2	
Introduction to and Basic Concepts in C Programming: Features of C; Structure of a CProgramwithExamples, CompilationprocessinC;C Character Set; C tokens - Keywords, Identifiers, Constants andVariables;Datatypes;Declaration & InitializationofVariables.	**14**

Input and Output Statements: Formatted I/O Functions - printf() and scanf(), Control Strings and EscapeSequences, Output Specifications with printf(); Unformatted I/O Functions - getchar(), putchar(), gets() and puts().

C Operators & Expressions: Arithmetic Operators; Relational Operators; Logical Operators; Assignment Operators; Increment & Decrement Operators; Bitwise Operators; Conditional Operator; Special Operators; Operator Precedence and Associativity; Type Conversion.

Skill Based/ Participative/Experimental Learning – Group Assignment.

UNIT - 3

Control Structures: Decision Making Statements - simple if, if else, nested if else, else if ladder, switch; break & continue statements; Looping Statements - Entry and Exit Controlled Statements: while, do-while, for and nested loops.

Arrays: One-Dimensional Array - Declaration, Initialization, Memory Representation and Row & Column Major Addressing; Two-Dimensional Array - Declaration, Initialization and Memory Representation.

14

Strings: Declaring & Initializing String Variables; String Handling Functions - strlen, strcmp, strcpy, strcat, strncpy, strncmp and strncat; Character handling functions - toascii, toupper, tolower, isalpha, isnumeric.

Skill Based/ Participative/Experimental Learning – Activity to understand various Control Structures.

UNIT - 4

Pointers in C: Understanding Pointers - Declaring and Initializing Pointers, Accessing Address and Value of Variables Using Pointers; Pointers and Arrays; Pointer Arithmetic; Advantages and Disadvantages of Using Pointers.

User Defined Functions: Need; Format; Components - Return Type, Name, Parameter List, Function Body, Return Statement and Function Call; Categories - With and Without Parameters and Return Type; Recursion; Difference between Iterative and Recursive Functions.

14

User Defined Data Types: Structures - Definition, Advantages, Declaring Structure Variables, Accessing and Initializing Structure Members, Array and Structures.

Unions - Definition; Difference Between Structures and Unions.

Skill Based/ Participative/Experimental Learning – Quiz.

Text Books:

1. Computer Fundamentals: Anita Goel, Pearson Publication.
2. Problem Solving with C: MT Somashekara, DS Guru and KS Manjunatha, PHI Publication.
3. C in Depth: S K Srivastava and Deepali Srivastava, BPB Publications.

References:

1. Computer Fundamentals: Pradeep K Sinha and Priti Sinha,6th Edition, BPB Publication.

2. Programming in C: V Rajaraman, PHI Publication.
3. Programming in C: Ashok N. Kamthane, Pearson Publication.
4. https://www.w3schools.com/c/c_intro.php
5. https://www.tutorialspoint.com/cprogramming/index.htm
6. https://www.youtube.com/watch?v=KJgsSFOSQv0
7. https://www.youtube.com/watch?v=eEo_aacpwCw

C Programming Lab

PartA

Write a C Program to:

1. Read and print different Datatypes.
2. Demonstrate Assignment, Arithmetic and Increment & Decrement Operator.
3. Demonstrate if-else statement.
4. Demonstrate else-if ladder.
5. Demonstrate switch statement.
6. Demonstrate do-while loop.
7. Demonstrate while loop.
8. Demonstrate for loop.
9. Implement SingleDimensionalArray.
10. Implement Two Dimensional Array.

Part B

Write a C Program to:

1. Findthelengthofastringwithoutusingbuilt infunction.
2. Demonstrate various string built-in functions.
3. Demonstratethe use of pointers.
4. Implement a function without parameters and return type.
5. Implement a function with parameters and without return type.
6. Implement a function without parameters and with return type
7. Implement a function with parameters and return type.
8. Demonstrate the difference between Call by Value and Call by Reference.
9. Demonstrate recursion.
10. Demonstratethedifferencebetween Structureand Union.

Note: StudenthastoexecuteallProgramsineachparttocompletetheLabCourse.

Course Articulation Matrix - 212149

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	2	-	1	1	1	1	1	1	1	2
CO 2	2	2	2	-	2	-	-	-	2	2	-	2
CO 3	2	2	1	1	2	1	-	1	2	2	-	2
CO 4	2	2	1	-	2	1	-	1	1	1	-	2
Weighted Average	**2**	**2**	**1.5**	**1**	**1.75**	**1**	**1**	**1**	**1.5**	**1.5**	**1**	**2**

OE(1) Computer Science Syllabus for All Programs(Except Science)

Semester I

Course Code:21OECMS101	**Course Title:OE(1)** - Office Automation
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Acquire knowledge on computers& office automation tools and exhibit the potential to use a word processor for creating various types of documents.

CO 2: Analyze and use spreadsheets for performing computational tasks.

CO 3: Customize and create a presentation on adesiredtopic.

Course Content

UNIT - 1 **14 HOURS**

Introduction, Block diagram of a computer, Input and output devices, memory and storage devices, Types of software, Introduction to operating system – functions, types of operating system andexamples.

Introduction to word processing – creating and saving a document, formatting a document – Line spacing, paragraph, Fonts, inserting symbols, header and footer, shape, Tables, Find and replace, Mail merge, saving a document in different formats.

UNIT - 2 **14 HOURS**

Introduction to spread sheet – entering different types of data like text, numbers, date, functions and formulae, different categories of functions, chart - creating and formatting a chart, filter, working with single and multiple work books, cell referencing, printing and previewing a document.

UNIT - 3 **14 HOURS**

Introduction to presentation tools - creating and viewing a presentation, applying design template, formatting options, inserting different objects in a presentation, customize a presentation, adding audio to a presentation, Slide animation, preview Slide transitions Slide show options, adding effect to presentation.

Text Books:

1. Computer Fundamentals and Office Automation: Dr. R Deepalakshmi, Charulatha Publications.
2. Office Automation: Dr. P Rizwan Ahmed, Margham Publications.

References:

1. Computer Basics with Office Automation: Archana Kumar, Dreamtech Press, 1st Edition.
2. The Handbook of Office Automation: Ralph Tomas Reilly, iUniverse Publication, 1st Edition.
3. https://www.youtube.com/watch?v=eEo_aacpwCw
4. https://www.youtube.com/watch?v=EeiLMV81Ujw
5. https://www.youtube.com/watch?v=Vl0H-qTclOg
6. https://www.youtube.com/watch?v=XF34-Wu6qWU

Course Articulation Matrix – 21OECMS101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	2	2	-	3	-	-	1	1	1	-	2
CO 2	2	2	1	-	3	-	-	-	1	1	1	2
CO 3	3	2	3	-	3	2	1	2	1	2	1	2
Weighted Average	**2**	**2**	**2**	**-**	**3**	**2**	**1**	**1.5**	**1**	**1.33**	**1**	**2**

Course Code:21OECMS102	**Course Title:OE(1) -**C Programming Concepts
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Acquire knowledge on computers and elementary concepts of C programming.

CO 2: DevelopC programs with input output statements, operators, expressions and control structure.

CO 3: Implement simple C programs with array, strings and pointers.

Course Content

UNIT - 1

14 HOURS

Fundamentals of Computers: Introduction to Computers -Hardware, software System software, Application software, Utility software, Operating System; Computer Languages - Machine Level, Assembly Level & High-Level Languages, Translator Programs – Assembler, Interpreter and Compiler; Planning a Computer Program – Algorithm and Flowchart with Examples.

Introduction to C Programming: Over View of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C.

C Programming Basic Concepts: C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types; Declaration & initialization of variables; Symbolic constants.

UNIT - 2

14 HOURS

Input and output with C: Formatted I/O functions - printf and scanf, control stings and escape sequences, output specifications with printf functions; Unformatted I/O functions to read and display single character and a string - getchar, putchar, gets and puts functions

C Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associatively; Evaluation of arithmetic expressions; Type conversion.

Control Structures: Decision making Statements - Simple if, if_else, nested if_else, else_if ladder, Switch-case, goto, break & continue statements; Looping Statements - Entry controlled and Exit controlled statements, while, do-while, for loops, Nested loops.

UNIT - 3

14 HOURS

Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation.

Strings: Declaring & Initializing string variables; String handling functions - strlen, strcmp, strcpy and strcat; Character handling functions - toascii, toupper, tolower, isalpha, isnumeric etc.

Basics of Pointers in C: Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers; Pointer Arithmetic; Advantages and disadvantages of using pointers.

Text Books

1. Computer Fundamentals: Anita Goel, Pearson Publication.
2.Problem Solving with C: M T Somashekara, D S Guru and K S Manjunatha, PHI Publication.
3. C in Depth: S K Srivastava and Deepali Srivastava, BPB Publications.

References

1. Computer Fundamentals: Pradeep K Sinha and Priti Sinha, 6th Edition, BPB Publication.
2. Programming in C: V Rajaraman, PHI Publication.
3. Programming in C: Ashok N. Kamthane, Pearson Publication.
4. https://www.youtube.com/watch?v=r5nXIzK3DoE
5. https://www.youtube.com/watch?v=fdSPUKSe_Xk
6. https://www.youtube.com/watch?v=8PopR3x-VMY

Course Articulation Matrix – 21OECMS102

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	-	-	1	1	1	1	-	1	1	2
CO 2	2	2	1	-	1	-	-	-	-	-	-	2
CO 3	1	2	1	-	1	-	-	-	1	-	-	2
Weighted Average	**1.66**	**1.66**	**1**	**-**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**

DSC(2) Syllabus for B.Sc. Computer Science (Basic and Honors)

Semester II

Course Code:212249	**Course Title:** **DSC(2) -**Data Structure using C (Theory) **DSC(2) Lab -**Data Structures Lab (Practical)
Course Credits(L:T:P): 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Relate Data Structures with real life scenarios, design algorithms using array data structure and identify & implement effective searching-sorting algorithm for various applications.

CO 2: Analyze and apply the concept of stack and queues while solving real-time problems.

CO 3: Acquire knowledge on memory allocation & de-allocation methods and apply knowledge of linked list on various applications.

CO 4: Analyze and implement the concept of Binary Trees in real-world scenarios.

Course Content:

Content	Hours
UNIT - 1	
Introduction To Data Structures: Definition; Types - Primitive & Non-Primitive, LinearandNon-Linear;OperationsonDataStructures, Abstract Data Type (ADT).	
Arrays: Various Types and their Memory Representation; 1D Array Operations - Traversing Linear Arrays; Sorting – Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Quick Sort; Searching – Sequential Search, Binary Search; Sparse Matrices – Definition, Advantage.	**14**
Skill Based/ Participative/Experimental Learning – Activity to understand the various types of Data Structures.	
UNIT - 2	
Stacks: Basic Concepts – Definition, Representation, Operations; Infix and Postfix Notations; Applications of Stack - Conversion from Infix to Postfix, Evaluation of Postfix Expression.	
Queues: Basic Concepts – Definition, Representation, Types of Queues – Simple Queue, Circular Queue, Double Ended Queue, Priority Queue; Operations on Simple Queue.	**14**
Skill Based/ Participative/Experimental Learning – Class Level Seminar on Stack and Queue.	

UNIT - 3

Dynamic Memory Allocation: Memory Allocation and De-Allocation Functions – malloc(), calloc(), realloc() and free(); Garbage Collection.

Linked List: Basic Concepts – Definition, Types of Linked Lists - Singly Linked List, Doubly Linked List, Circular Linked List; Representation of Linked List in Memory; Operations on Singly Linked Lists – Insertion, Deletion. **13**

Skill Based/ Participative/Experimental Learning – Quiz.

UNIT - 4

Trees: Definition; Tree Terminologies – edge, node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, path, depth, height.

Binary Tree: Type of Binary Trees - Strict Binary Tree, Complete Binary Tree, Binary Search Tree; Array and Linked List Representation of Binary Tree; Traversal of Binary Tree - Preorder, Inorder and Postorder Traversal, Reconstruction of a Binary Tree when Inorder and Postorder/Preorder are given. **15**

Skill Based/ Participative/Experimental Learning – Group Assignment/Case Study on Tree Data Structure.

Text Books:

1.FundamentalsofDataStructures: Ellis Horowitz, SartajSahani, Computer Science Press.

2.Data Structures through C in Depth: S K Srivastava and Deepali Srivastava, BPB Publications

References:

1. DataStructuresusingC: Aaron M Tanenbaum, Yedidyah Langsam, Moshe J Augenstein,PearsonPublications.
2. Introduction to DataStructures in C: Ashok N Kamathane,PearsonPublications.
3. Data Structures using C – 1000 Problems and Solutions: Sudipta Mukherjee, Tata McGrawHill Publications.
4. https://www.aminotes.com/2017/10/data-structures-study-materials.html
5. https://www.tutorialspoint.com/data_structures_algorithms/index.htm
6. https://www.youtube.com/c/SimplyCoding
7. https://www.youtube.com/watch?v=dM-LYxHnKcU

Data Structures Lab

PartA:

Write a C Program to:

1. Demonstrate an Array Data Structure.
2. Search an element using Linear Search Technique.
3. Search an element using Binary Search Technique.
4. SortthegivenlistusingBubbleSortTechnique.
5. SortthegivenlistusingSelectionSortTechnique.
6. Sort the given list using Insertion Sort Technique.
7. Sort the given list using Merge Sort Technique.
8. Sort the given list using Quick Sort Technique.

Part B:

Write a C Program to:

1. Demonstrate Stack Operations.
2. ImplementTowerofHanoi.
3. Convert an Infix Expression to Postfix Expression.
4. DemonstrateOperations of a Simple Queue.
5. DemonstrateOperations of a Circular Queue.
6. Demonstratethe use of a Dynamic Array.
7. DemonstrateOperations of a Linear Linked List.
8. Display Traversal of a Tree.

Note: StudenthastoexecuteallProgramsineachparttocompletetheLabCourse.

Course Articulation Matrix - 212249

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	-	2	1	-	-	2	2	-	2
CO 2	3	3	2	-	2	2	-	1	2	2	-	1
CO 3	2	2	1	-	2	1	-	-	1	2	-	1
CO 4	1	3	2	1	2	2	1	1	2	2	1	2
Weighted Average	**2**	**2.5**	**1.5**	**1**	**2**	**1.5**	**1**	**1**	**1.75**	**2**	**1**	**1.5**

OE(2) Computer Science Syllabus for All Programs(Except Science)

Semester II

Course Code:21OECMS201	**Course Title:OE(2) -**Web Designing
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Acquire basic knowledge on internet, HTML and XHTML Programming.

CO 2: Analyze a web page and identify its elements & attributes.

CO 3: Create webpages using CSS and java script (client-side programming).

Course Content

UNIT - 1

14 HOURS

Fundamentals: Internet, WWW, Web Browsers and Web Servers, URLs, MIME, HTTP, Security, the Web Programmers Toolbox. Web Development Introduction, Introduction to HTMLandXHTML, Basic syntax, Standard Structure of the Program, Basic Formatting Tags, Color Coding, HTML/XHTML-Grouping Using Div Span, HTML-Lists, HTML Image Mapping, Hyperlink, HTML-Table, Forms, Frames.

UNIT - 2

14 HOURS

Introduction to CSS, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, <Span> and <Div> tags.

The Basics of JavaScript: Overview of JavaScript, Object orientation and JavaScript, Syntactic characteristics, Primitives, operations, and expressions, Screen output and keyboard input, Control statements, Arrays, Functions in JavaScript.

UNIT - 3

14 HOURS

The JavaScript Execution Environment, Button elements, Text box and Password elements, Dynamic documents with JavaScript: Introduction, Positioning Elements, Moving Elements, Element visibility, Changing Colors and Fonts, Dynamic content, Locating the Mouse cursor, reacting to a Mouse click, Slow movement of elements, Dragging and Dropping elements.

Text Books:

1. Programming the World Wide Web: Robert W Sebesta, 4th Edition, Pearson Education, 2008.
2. HTML, CSS & JavaScript Web Publishing: Laura Lemay, Rafe Colburn and Jennifer Kyrnin, BPB Publications.

References:

1. Internet & World Wide Web How to Program: M Deitel, P J Deitel, A B Goldberg, 4th Edition, Pearson Education, 2004.

2. Web Programming Building Internet Applications: Chris Bates, 3rd Edition, Wiley India, 2007.

3. https://www.geeksforgeeks.org/design-a-web-page-using-html-and-css/

4. https://blog.hubspot.com/marketing/web-design-html-css-javascript

Course Articulation Matrix –21OECMS201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	1	-	1	1	1	1	1	1	-	2
CO 2	2	1	1	-	1	-	-	-	1	1	-	2
CO 3	1	1	1	-	1	-	-	-	1	1	-	2
Weighted Average	**1.66**	**1**	**1**	**-**	**1**	**1**	**1**	**1**	**1**	**1**	**-**	**2**

Course Code:21OECMS202	**Course Title:OE(2) -**e-Commerce
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Acquire knowledge on e-commerce and its various modes.

CO 2: Classify and analyze real-time problems based on various types of e-commerce.

CO 3: Interpretthe knowledge on e-commerce infrastructure and impact of internet & technology on e-commerce, e-business and e-payments.

Course Content

UNIT - 1
14 HOURS

Introduction to e-commerce, the difference between e-commerce and e-business, Technological building blocks underlying e-commerce: the Internet, Web, and Mobile Platform, Major Trends in e-commerce, Unique Features of e-commerce Technology.

Modes of electronic commerce: Overview, Electronic data interchange (EDI), e-commerce with www/Internet. Payments and Security: Electronic cash and Electronic payment Schemes: Internet monetary payment and Security requirements, payment and purchase order process, Online electronic cash.

UNIT - 2
14 HOURS

PES of e-commerce: Business-to-Consumer (B2C) , Business-to-Business (B2B) , Consumer-to-Consumer (C2C), Mobile e-commerce (M-commerce), Social e-commerce, Local e-commerce.

Consumer-oriented e-commerce: Introduction, Traditional retailing and e-retailing, benefits of e-retailing, Key success factors, Models of e-retailing, features of e-retailing, developing a consumer-oriented e-commerce system, The PASS model.

UNIT - 3
14 HOURS

e-Commerce Infrastructure: The Internet, Technology Background , Internet – Key Technology concepts, TCP/IP, IP addresses, Domain names, DNS and URLs, Client Server Computing, Cloud computing model, Mobile platform.

Internet and Web: Hypertext, HTML, XML, Web servers and clients, Web browsers, Communication tools – Email, messaging apps.

Text Books:

1. E-Commerce 2020-2021: Laudon, Kenneth C and Carol Guercio Traver, Pearson Publications, 2020.

References:

1. Frontiers of Electronic Commerce: Ravi Kalakota, Andrew B, Addison Wesley Publications, 1996.

2. https://www.gasckovilpatti.com/studymaterial/commerce/II%20MCOM%20E%20COMMERCE%20pKCM33.pdf
3. http://www.simplynotes.in/e-notes/mbabba/electronic-commerce/
4. https://onlinecourses.swayam2.ac.in/cec19_cm01/preview

Course Articulation Matrix –21OECMS202

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	-	-	1	2	-	2	1	1	1	2
CO 2	2	1	1	-	-	2	-	2	1	2	1	2
CO 3	1	1	-	-	1	1	1	2	-	1	-	2
Weighted Average	**1.66**	**1**	**1**	**-**	**1**	**1.66**	**1**	**2**	**1**	**1.33**	**1**	**2**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the principal. The principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance(the marks is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

•The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

  Part-A Program(C1): 10 marks

  Part-B Program(C2): 10 marks + Record: 05 marks = 15 marks

- The student is evaluated for 25 marks in C3 as per the following scheme:

Assessment Criteria		Marks
Program - 1 from Part A Program - 2 from Part B	Writing the Program	10
Execution and Formatting (Any one program: Decided by the External Examiner)		10
Viva Voce		05
TOTAL		**25**

DSC Computer Science Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** $2\frac{1}{2}$ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part - A and Part – B.
- Part – A: Should consist of 12 Questions (3 Questions from each Unit).
- Part – B: Should consist of 4 Main Questions (1 from Each Unit) with 2 Sub Questions where internal split is permitted.

PART – A

Answer any EIGHT Questions. Each Question carries 2 Marks. 8Q X 2M = 16 Marks

1. a.
   b
   c.
   .
   .
   k.
   l.

PART – B

Answer ALL the Questions. Each Main carries 11 Marks. 4Q X 11M = 44 Marks

2. a.

b.

OR

c.

d.

3. a.

b.

OR

c.

d.

4. a.

b.

OR

c.

d.

5. a.

b.

OR

c.

d.

OE Computer Science Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** $2\frac{1}{2}$ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part – A and Part – B.
- Part – A: Should consist of 12 Sub Questions (4 Questions from each Unit).
- Part – B: Should consist of 3 Main Questions (1 from Each Unit) with 2 Sub Questions where internal split is permitted.

PART – A

Answer any NINE Questions. Each Question carries 2 Marks. 9Q X 2M = 18 Marks

1. a.
   b
   c.
   .
   .
   k.
   l.

PART – B

Answer ALL the Questions. Each Main Carries 14 Marks. 3Q X 14M = 42 Marks

2. a.

b.

OR

c.

d.

3. a.

b.

OR

c.

d.

4. a.

b.

OR

c.

d.

SKILL ENHANCEMENT COURSE (SEC) for All Programs

NOTE: ThisCourse will be handled by the Department of Computer Science for BBA,BCom., BSc. (All Combinations) and BA (All Combinations).

Course Code:21DFLF94	**Course Title:SEC(1)**- Digital Fluency
Course Credits (L:T:P): 02 (1:0:1)	**Hours of Teaching/Week:** 1 Hour (Theory) 2 Hours (Practical)
Total Contact Hours: 14 Hours (Theory) 28 Hours (Practical)	**Formative Assessment Marks:**25
Exam Duration: 1 Hour (Theory)	**Semester End Examination Marks:**25

Course Outcomes (COs):

CO 1: Acquire knowledge on key concepts of Artificial Intelligence (AI), Big Data Analytics (BDA), Internet of Things (IoT), Cloud Computing and Cyber Security.

CO 2: Identify the applications of Artificial Intelligence (AI), Big Data Analytics (BDA), Internet of Things (IoT), Cloud Computing and Cyber Security.

CO 3: Develop holistically by learning essential skills such as Effective Communication, Creative ProblemSolving, Innovative/Critical Design Thinking and Teamwork.

Course Content: In concurrence with Digital 101 on Nasscom 101 environment

Sl.no	Content	Details of topic	Duration
1.	Registration	Future Skills Course Registration Process	
2.	Module 1: Emerging Technologies	Overview of Emerging Technologies: i. Artificial Intelligence, Machine Learning, Deep Learning, ii. Database Management for Data Science, Big Data Analytics, iii. Internet of Things (IoT) and Industrial Internet of Things (IIoT) iv. Cloud computing and its service models v. Cyber Security and Types of cyber attack	05 Theory hours and 10 practical hours
3.	Module 2: Applications of Emerging Technologies	Applications of emerging technologies: i. Artificial Intelligence ii. Big Data Analytics iii. Internet of Things iv. Cloud Computing v. Cyber Security	05 Theory hours and 10 practical hours
4.	Module 3: Building Essential Skills Beyond Technology	Importance of the following: i. Effective Communication Skills ii. Creative Problem Solving & Critical Thinking iii. Collaboration and Teamwork Skills iv. Innovation & Design Thinking v. Use of tools in enhancing skills	05 Theory hours and 10 practical hours

Reference: The learning resources made available for the course titled "Digital 101" on Future Skills Prime Platform of NASSCOM.

Pedagogy:

Flipped classroom pedagogy is recommended for the delivery of this course. For Every Class:

1. Before coming to the class students are expected to go through the content (both video and other resources) on the related topic and give the quiz (related to that topic) on Future Skills Prime Platform of NASSCOM.
2. Class room and practical activities are designed around the topic of the session towards Developing Better Understanding, Clearing Misconceptions and Discussions of Higher Order Thinking Skills like Application, Analysis, Evaluation and Design.

Course Articulation Matrix – 21DFLF94

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	1	-	-	2	1	1	1	1	-	-	2
CO 2	1	1	-	-	2	2	2	1	1	1	-	2
CO 3	3	3	2	1	1	3	1	3	3	3	1	2
Weighted Average	**1.66**	**1.66**	**2**	**1**	**1.66**	**2**	**1.33**	**1.66**	**1.66**	**1.33**	**1**	**2**

ASSESSMENT PATTERN FOR DIGITAL FLUENCY (SEC)

Assessment Criteria	Marks
C1: Test	10
C2(A): Practical Sessions: All activities from Module 1, Module 2 and Module 3 need to be completed by the students	05
C2(B): Final Assessment Test with 30 questions (30 min) on Future Skills Prime Platform. Students get maximum two attempts to obtain the certificate from NASSCOM-AICTE.	10
TOTAL	**25**

EVALUATION PATTERN FOR DIGITAL FLUENCY (SEC)

Assessment	Marks
C1	10 Marks (Theory C1-Test)
C2	15 Marks (10 Marks for NASCOM Certificate + 5 Marks for Assignments)
C3	25 Marks (Final Exam)
Total	50 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 30% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 50%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the principal. The principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	10	-	10
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	15	15
Total	10	15	25

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Digital Fluency(SEC)

Theory Question Paper Pattern (All Programs)

Max. Marks: 25 Marks **Exam Duration:** 1 Hour

Instructions: Paper Setting

- The Question Paper consists of 3 Main Questions.
- Question 1: Should consist of 5 Questions (Multiple Choice Questions).
- Question 2: Should consist of 3 Questions (1 from Each Unit) where internal split is permitted.
- Question 3: Should consist of 3 Questions (1 from Each Unit) where internal split is permitted.

1. Answer all FIVE Questions. Each Question carries 1 Mark. 5Q X 1M = 5 Marks

a.

b.

c.

d.

e.

2. Answer any TWO Questions. Each Question carries 5 Marks. 2Q X 5M = 10 Marks

a.

b.

c.

3. Answer any ONE Question. Question carries 10 Marks. 1Q X 10M = 10 Marks

a.

b.

c.

BoS (COMPUTER SCIENCE) - PROCEEDINGS

Academic Year: 2021-22

Name: BoSMeeting

Date: 17.11.2021

Time: 11 AM

Place: SBRR Mahajana First Grade College (A), Mysuru.

Total Number of Members: 06

AGENDA:

1. Discuss and Approve I and II Semester (NEP) DSC, OE and SEC Syllabus for this year.
2. Discuss and Approve the Evaluation Pattern (Theory & Practical), Assessment Pattern, Semester End Examination – Question Paper Pattern for above mentioned papers.
3. Examiner's List to be Approved.

PROCEEDINGS:

All the members were welcomed by Smt. Shruthy Poonacha, Chairperson (BoS) & Head, Department of Computer Science, SBRR Mahajana First Grade College (A), Mysuru.

6 Members were present Online.

The following was Discussed and Approved:

1. I and II Semester (NEP) DSC, OE and SEC Syllabus for this year. (OBE Implemented)
2. The Evaluation Pattern (Theory & Practical), Assessment Pattern, Semester End Examination – Question Paper Pattern for above mentioned papers.
3. Participative Learning/Experimental Learning/Skill Based Learning Methods added to each paper.
4. The Examiner's List.
5. The suggestions and corrections pointed by the BoS members for I and II Semester were noted and incorporated.

The meeting ended with a Vote of Thanks by Smt. Radhika Rani, Member (BoS) &Assistant Professor, Department of Computer Science, SBRR Mahajana First Grade College (A), Mysuru.

List of Examiners 2021-22

(Above 3 Years of Experience)

Sl. No.	Name	Designation	Address for Communication
1	Smt. Shruthy Poonacha	Assistant Professor	SBRR Mahajana First Grade College, Mysuru
2	Sri. Manjunath K S	Assistant Professor	
3	Sri. Radhesh A	Assistant Professor	
4	Sri. Lenard P	Assistant Professor	
5	Sri. Rudresh R	Assistant Professor	
6	Smt. Radhika Rani	Assistant Professor	
7	Smt. Ranjani M S	Assistant Professor	
8	Smt. Priyanka M	Assistant Professor	Amrita Vishwa Vidyapeetham, Mysuru
9	Smt. Gayatri	Assistant Professor	Bharathi College, K M Doddi
10	Smt. Reena Sebastian	Assistant Professor	Christ First Grade College, Mysuru
11	Smt. Hemalatha B N	Assistant Professor	De Paul Degree College
12	Sri.Ravishankar	Assistant Professor	Field Marshal College,Madikeri
13	Dr. Kouser	Assistant Professor	Gfgc, Gundlupet
14	Smt. Lavanya P G	Assistant Professor	Govt. Boys College (Autonomous), Mandya
15	Sri. Anil Kumar R J	Assistant Professor	
16	Sri. Prem Singh	Assistant Professor	
17	Sri. Lohith	Assistant Professor	Govt. First Grade College, T Narasipura
18	Smt.Vanishree K S	Assistant Professor	Govt.First Grade College, Shivamogga.
19	Smt. Geetha D	Assistant Professor	Govt.First Grade College, Pandavpura

20	Smt. Savitha K V	Assistant Professor	Hindusthan First Grade College,Mysuru
21	Smt. Sukshma R V	Assistant Professor	Hindusthan First Grade College,Mysuru
22	Smt. Meera C	Assistant Professor	JSS College of Arts, Commerce & Science (Autonomous), B N Road, Mysuru.
23	Smt. Nagalambike B	Assistant Professor	
24	Sri. Nandish M	Assistant Professor	
25	Sri. Mallesha R	Assistant Professor	
26	Sri. Vinay R U	Assistant Professor	
27	Sri. Chethan M	Assistant Professor	
28	Sri. Madhusudhana M	Assistant Professor	
29	Sri. Shilpa R V	Assistant Professor	
30	Smt. Jayashree H	Assistant Professor	
31	Sri. Madhu D C	Assistant Professor	
32	Smt. Rajani	Assistant Professor	
33	Smt. Shubha	Assistant Professor	JSS College, Chamarajanagar
34	Smt. Deepali	Assistant Professor	JSS College, Nanjangud
35	Sri. Vidya Shankar	Assistant Professor	JSS College, Ooty Road, Mysuru
36	Sri. Pradeep H G	Assistant Professor	JSS College, Saraswathipuram Road, Mysore
37	Smt. Jayalaxmi A K	Assistant Professor	
38	Smt. Preethi H U	Assistant Professor	
39	Smt. Rashmi B S	Assistant Professor	Karnataka State Open University, Mysuru.
40	Dr. Sheela T	Assistant Professor	Kuvempunagar Govt. First Grade College, Mysuru
41	Sri. Gopala Krishna T	Assistant Professor	

42	Sri. Balakrishna M	Assistant Professor	Maharani's Science College, Mysore
43	Smt. Nagalakshmi H S	Assistant Professor	
44	Sri. Prakash Raje Urs	Assistant Professor	Maharani's Science College, Mysore
45	Smt. Sree Pavithra C K	Assistant Professor	
46	Smt. Tennarsi	Assistant Professor	
47	Smt.Usha	Assistant Professor	
48	Smt. Vasanthi	Assistant Professor	MIT First Grade College, Mysuru
49	Sri. Murali Manohar	Assistant Professor	
50	Smt. Vidyalakshmi	Assistant Professor	NIE First Grade College, Mysuru
51	Smt. Priya Urs	Assistant Professor	
52	Sri. Jayaram N	Assistant Professor	
53	Smt. Swapna	Assistant Professor	
54	Sri. Kashif Hussain	Assistant Professor	Sapient College of Commerce & Management, Mysuru.
55	Smt. Jyothilakshmi	Assistant Professor	SDM College, Mysuru
56	Smt. Rajitha V	Assistant Professor	
57	Smt. Sukrutha K S	Assistant Professor	
58	Smt. Ramya	Assistant Professor	
59	Smt. Nayana	Assistant Professor	
60	Dr. Jagadish Krishna	Assistant Professor	Sharada Vilas College, Mysuru
61	Smt. Laxmi Krishna	Assistant Professor	
62	Sri. Vinay M	Assistant Professor	Sheshadripuram Degree College, Mysuru.
63	Sri. TejaswiS	Assistant Professor	
64	Sri. Raghavendra	Assistant Professor	St. Joseph's First Grade College,

			Mysuru
65	Smt. Gloria	Assistant Professor	St. Philomena's College, Mysore (Autonomous), Mysuru
66	Smt. Reena Mol V U	Assistant Professor	
67	Smt. Archana A	Assistant Professor	St. Philomena's College, Mysore (Autonomous), Mysuru
68	Smt. SyedaMasarath	Assistant Professor	
69	Smt. Sandra Agnes	Assistant Professor	
70	Smt. Devika	Assistant Professor	Teresian College, Mysuru
71	Sri. Chandraiah T	Assistant Professor	Yuvaraja's College, Mysore
72	Smt. Annapurna H	Assistant Professor	
73	Smt. Mamatha D M	Assistant Professor	

APPROVED BY THE FOLLOWING BoS MEMBERS

DEPARTMENT OF COMPUTER SCIENCE

Motto

Technology for Transformation

Vision

Information Technology for Better Future

Mission

Imparting Quality and Ethical Based Education all the way through Technology

Equipping the students for a Demanding Career

Empowering the students with Professional Touch to become Successful Entrepreneurs

ProgramOutcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis – Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3: DesignandDevelopmentofSolutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

Objectives: Computer Science

7. To provide foundation of computingprinciplesforusing information systems& enterprise software effectively.
8. Helpstudentsin analyzingtherequirementsforsystemprogramming, learn modern methods of information processing and its applications.
9. Providestudentswithan optiontospecializeinvariousdomains of computers.
10. To produce outstanding computer scientists, who can apply the theoreticalknowledge in solving real-time problems and in developing standalone live projects.
11. To build entrepreneurs by developing among students the programming techniques, software developing skills and problem-solvingskills.
12. To prepare students who wish to pursue further studies and career in computer scienceandrelated subjects.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Smt. Shruthy Poonacha Assistant Professor & HoD	Department of Computer Science SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	shruthypoonacha.fgc@mahajana.edu.in 9886367273
2	Member	Smt. Radhika Rani Assistant Professor	Department of Computer Science SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	radhikarani.fgc@mahajana.edu.in 9538737927
3		Smt. Rachana C R Associate Professor	Department of Computer Science SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	rachanacr@gmail.com 8095645644
4	Nominee by the Vice Chancellor	Smt. Hamsaveni L Assosiate Professor	DoS in Computer Science Manasagangotri, University of Mysore, Mysuru – 570006	hamsa1367@gmail.com 9448665767
5	Two Experts from Other University	Dr. Suresh K Assistant Professor	Department of Computer Science Christ University, Hosur Road, Bengaluru - 560029	suresh.kalaimani@gmail.com 9003310571
6		Dr. Lavanya P G Assistant Professor	Department of Computer Science Government Boy's College (A), Mandya –571401	lavanyapggcm@gmail.com 9448006546

7	One Person from Industry/ Corporate Sector/Allied Area	Sri. Santhosh Kumar Lead Software Engineer	Fidelity Investments Manyatha Tech Park, Hebbal Outer Ring Road, Nagwara, Bengaluru - 560045	santhoshkavempu@gmail.com 9986979735
8	Alumnus	Sri. Mahendra J M Senior Associate	Morgan Stanley Advantage Services Oberoi Commerz II, Mohan Gokhale Road, We Work, Oberoi Garden City, Goregoan (East), Mumbai - 400063	jmmahendra.08@gmail.com 9066849377

Course Structure(NEP)

Discipline Specific Courses (DSC),Open Elective (OE) and Skill Enhancement Course (SEC)

II Year

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
Computer Science – III Sem									
222349	**DSC(3) -** Object Oriented Programming in Java	**4**	**0**	**4:0:2 (6 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$ Hours**	**150**
	DSC(3) Lab - Java Programming Lab	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(3)	Python Programming Concepts **22OECMS301**	**3**	**0**	**3:0:0 (3 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$ Hours**	**100**
Computer Science – IV Sem									
222449	**DSC(4) -** Database Management Systems	**4**	**0**	**4:0:2 (6 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$ Hours**	**150**
	DSC(4) Lab - DBMS Lab	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(4)	Fundamentals of Multimedia **22OECMS401**	**3**	**0**	**3:0:0 (3 Credits)**	**20**	**20**	**60**	**$2\frac{1}{2}$ Hours**	**100**
Computer Science – III/IV Sem									
SEC(2)	Artificial Intelligence **22AINS94**	**1**	**2**	**1:0:1 (2 Credits)**	**10**	**15**	**25**	**1 Hour**	**50**

DSC(3) Syllabus for B.Sc. Computer Science (Basic and Honors)

Semester III

Course Code:222349	**Course Title:** **DSC(3)** -Object Oriented Programming in Java (Theory) **DSC(3) Lab** - Java Programming Lab (Practical)
Course Credits (L:T:P): 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Apply knowledge of object-oriented programmingconcepts like class, objects, methods, constructors and the relationship among them required for solving a specific problem using Java.

CO 2: Design and develop efficient java applications using inheritance,dynamic binding, polymorphism (method overloading and overriding)and packages.

CO 3: Design and develop GUI applicationsand handleeventsusing java.

CO 4: Apply knowledge gained on I/O streams, implement the concept ofmultithreading and handle exceptions in an effective manner.

Course Content

Content	Hours
UNIT – 1	
Introduction to OOP and Java: Basic OOPs Concepts; Basics of Java Programming – Introduction, History, Applications, Editions, Features; Datatypes; Variables; Operators; Control Structures.	
Objects and Classes: Basics of Objects and Classes;Java Methods;Visibility Modifiers;Constructors; 'this' Reference;Finalizer;Inbuilt Classes like String, Character, Math, String Buffer, File, Arrays.	**15**
Skill Based/ Participative/Experimental Learning – Activity to Understand OOP Concepts.	
UNIT – 2	
Inheritance, Polymorphism and Packages: Inheritance – Introduction, Types, Super and Sub Class, Casting Objects;Object Class; Abstract Class; Interface;Dynamic Binding;Instance of Operator; Polymorphism – Introduction,Overloading,Overriding; Package in Java – Introduction, 'util' Package.	**14**
Skill Based/ Participative/Experimental Learning – Quiz.	

UNIT – 3

Event and GUI Programming: Event Handling in Java – Classification of Events, Delegation Event Model, Event Classes, Listener Interface; GUI - Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, Components: Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box; Applet and its Life Cycle. **14**

Skill Based/ Participative/Experimental Learning– Design an Applet based solutions for a real-time problem.

UNIT – 4

I/O Programming, Multithreading and Exception Handling:I/O Streams – Byte, Character; Random Access Files; Multithreading -Life Cycle of a Thread, Thread Class and Methods, Runnable Interface, Thread Synchronization;Generic Programming;Exception Handling-Introduction,Exception Handling with 'try catch finally'. **13**

Skill Based/ Participative/Experimental Learning– Group Assignment.

Text Books:

1. Object Oriented Programming with Java: Somashekara MT, DS Guru, Manjunatha KS, 1st Edition, PHI Learning2017.
2. Programming with Java - A Primer: E Balagurusamy ,4th Edition, Tata McGraw Hill Publication.

References:

1. Core Java Volume I – Fundamentals: Cay S Horstmann, Prentice Hall.
2. Java 2 - The Complete Reference, Herbert Schildt, 5th Edition, Tata McGraw Hill Publication, 2017.
3. Java - The Complete Reference, Herbert Schildt, 7th Edition, Tata McGraw Hill Publication, 2017.
4. https://www.youtube.com/watch?v=eIrMbAQSU34
5. https://www.youtube.com/watch?v=GLT1DokhDTQ
6. https://www.w3schools.com/java/
7. https://www.javatpoint.com/java-tutorial

PART A: FUNDAMENTALS OF OOPs IN JAVA

Write a Java Program to:

1. Demonstrate if statement.
2. Demonstrate switch statement.
3. Demonstrate looping statement.
4. Implementuser input operation.
5. Demonstrate the use of constructors.
6. Implementinheritance.
7. Implementmethod overloading.
8. Implementthe concept of overriding.
9. Demonstrate the use of interface.
10. Illustrate some options of'util' package.

PART B: EXCEPTION HANDLING & GUI PROGRAMMING

Create a Java Applet and:

1. Draw several shapes on thewindow.
2. Display information about yourself.
3. Draw grid lines.
4. Illustrate the use of textbox, check box and radio buttons.
5. Demonstrate the use of a frame with button operation.
6. Display movement of an object according to the arrow key pressed.
7. Demonstrate some mouse handling events.

Write a Java Program to:

8. Demonstrate Multithreading.
9. Catch an Array related Exception.
10. Handle exception using "try catch finally" method.

Note: Student has to execute a minimum of 8 programs in each part to complete the Lab course.

Course Articulation Matrix - 222349

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	-	3	-	-	-	1	1	-	1
CO 2	1	2	2	-	3	1	1	1	1	1	-	2
CO 3	2	3	2	1	3	-	-	1	2	2	1	2
CO 4	1	2	2	-	3	-	-	-	1	-	-	2
Weighted Average	**1.5**	**2.25**	**1.75**	**1**	**3**	**1**	**1**	**1**	**1.25**	**1**	**1**	**1.75**

OE(3) Computer Science Syllabus for All Programs(Except Science)

Semester III

Course Code:22OECMS301	**Course Title:OE(3)**- Python Programming Concept
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Acquire basic knowledge on computers and python programming.

CO 2: Develop python programs with input output statements, various datatypes and control structure.

CO 3: Implement simple python programs with function and strings.

Course Content

UNIT – 1 FUNDAMENTALSOFCOMPUTERS
14 HOURS

Introduction to Computers - Definition, Characteristics, Generations, Types, Basic Organization of a Digital Computer;Number Systems – Different Types, Conversion From One Number System To Another; ComputerCode – ASCII; Boolean Algebra – Boolean Operators withTruthTables;TypesofSoftware;ComputerLanguages-MachineLevel,AssemblyLevel&HighLevelLanguages;Translators – Assembler,InterpreterandCompiler;PlanningaComputerProgram-Algorithm,Flowchartwith Examples.

Python Basics: - Introduction to Features and Applications of Python; Python Versions;Installation of Python;Python Command Line Mode and Python IDEs; Simple PythonProgram.Identifiers;Keywords;StatementsandExpressions;Variables;Operators;Precedence and Association.

UNIT – 2 DATA TYPES AND CONTROL STRUCTURE
14 HOURS

Data Types; Indentation; Comments; Built-in Functions - Console Input and Console Output,TypeConversions;PythonLibraries;ImportingLibrarieswithExamples;Illustrative Programs.

Python Control Flow: Types of Control Flow; Control Flow Statements - if, else, elif, whileloop, break statement, for loop statement; range() and exit() functions; Illustrative Programs.

UNIT – 3 FUNCTIONS AND STRINGS
14 HOURS

PythonFunctions: TypesofFunctions;FunctionDefinition - Syntax,FunctionCalling,PassingParameters/Arguments,returnstatement;DefaultParameters;CommandlineArguments; KeyWord Arguments;Illustrative Programs.

Strings: CreatingandStoringStrings;AccessingStringCharacters;str()function;Operations on Strings - Concatenation, Comparison, Slicing and Joining, Traversing; FormatSpecifiers;EscapeSequences;RawandUnicodeStrings;PythonStringMethods;Illustrative Programs.

Textbooks:

1. Programming with Python: Neeraj Kushwaha, Evincepub Publishing.

2. Python Programming for Beginners: Thomas J. Stephenson,Amplitudo Ltd Publication.

References:

1. Computer Fundamentals: Pradeep K Sinha and Priti Sinha, 6th Edition, BPB Publication.
2. Think Python - How to Think Like a Computer Scientist: Allen Downey et al., 2nd Edition, Green Tea Press, 2015.
3. IntroductiontoPythonProgramming:GowrishankarSetal.,CRCPress,2019.
4. https://www.greenteapress.com/thinkpython/thinkCSpy.pdf
5. http://scipy-lectures.org/intro/language/python_language.html
6. https://docs.python.org/3/tutorial/index.html

Course Articulation Matrix – 22OECMS301

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	-	2	1	1	1	1	1	1	2
CO 2	2	1	2	-	1	-	-	-	1	-	-	2
CO 3	1	1	2	-	1	-	-	-	1	-	-	2
Weighted Average	**1.66**	**1.33**	**1.66**	**-**	**1.33**	**1**	**1**	**1**	**1**	**1**	**1**	**2**

DSC(4) Syllabus for B.Sc. Computer Science (Basic and Honors)

Semester IV

Course Code:222449	**Course Title:** **DSC(4)**- Database Management System (Theory) **DSC(4) Lab** - DBMS Lab (Practical)
Course Credits (L:T:P): 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Acquire knowledge on database, E-R diagram & its components.Identify entities & relationships anddevelop anE-R diagram for a given real-world problem.

CO 2: Implement simple queries using relational data model and relational algebra.

CO 3: Optimize solutions using the conceptof Functional Dependencies &Normalization and acquire knowledge on how to effectively organize and store data.

CO 4: Formulate queries in SQL for database manipulation and Signify the importance of transaction processing & concurrency control techniques.

Course Content

Content	**Hours**
UNIT – 1	
Database Architecture: Introduction to Database System Applications. Characteristics and Purpose of Database Approach, People associated with Database System, Data Models, Database Schema, Database Architecture, Data Independence, Database Languages, Interfaces and Classification of DBMS.	
E-R Model: Basic Concepts: Entity, Entity Types, Entity Sets, Attributes, Types of Attributes, Key Attribute and Domain of an Attribute. Relationships between the Entities, Relationship Types, Roles and Structural Constraints, Degree and Cardinality Ratio of a Relationship, Weak Entity Types, E-R Diagram.	**15**
Skill Based/ Participative/Experimental Learning – Industrial/Campus Visit.	
UNIT – 2	
Relational Data Model: Basic Concepts, Characteristics of Relations, Relational Model Constraints: Domain Constrains, Key Constraints, Primary & Foreign Key Constraints, Integrity Constraints and Null Values.	**13**

Relational Algebra: Basic Relational Algebra Operations, Set Theoretical Operations on Relations, JOIN Operations, Aggregate Functions and Grouping, Nested Sub Queries-Views.

Skill Based/ Participative/Experimental Learning – Activity to understand various keys and basic relational algebra functions.

UNIT – 3

Data Normalization: Anomalies in Relational Database Design, Decomposition, Functional Dependencies - Axioms, Minima and Maxima Covers, Normalization, First Normal Form, Second Normal Form, Third Normal Form, Boyce-Codd Normal Form.

Data Storage: Introduction, Data Storage Tools, Smartphone Storage, Introduction to Cloud Storage. **14**

Skill Based/ Participative/Experimental Learning – Group Assignment.

UNIT – 4

Query Processing Transaction Management: Introduction, Transaction Processing, Single User &Multiuser Systems, Transactions: Read & Write Operations, Need of Concurrency Control: The Lost Update Problem, Dirty Read Problem, Types of Failures, Transaction States, Desirable Properties(ACID properties) of Transactions. **14**

Skill Based/ Participative/Experimental Learning – Quiz.

Text Books:

1. Fundamentals of Database Systems: Ramez Elamassri, Shankant B Navathe, 7thEdition,Pearson, 2015.
2. An Introduction to Database Systems: Bipin Desai, Galgotia Publications, 2010.

References:

1. Introduction to Database System: C J Date, Pearson, 1999.
2. Database Systems Concepts: Abraham Silberschatz, Henry Korth, SSudarshan, 6th Edition, Tata McGraw Hill, 2010.
3. Database Management Systems: Raghu Rama Krishnan and Johannes Gehrke, 3rdEdition, Tata McGraw Hill, 2002.
4. https://www.javatpoint.com/dbms-tutorial
5. https://www.tutorialspoint.com/dbms/index.htm
6. https://www.geeksforgeeks.org/introduction-of-dbms-database-management-system-set-1/

Activity1:

Database:Student(DDL,DMLStatements)

Table:Student

Name	Reg.No	Class	Major
Santhosh	17	1	CS
Bharath	8	2	CS

Table:Course

CourseName	CourseNumber	CreditHours	Department
Fundamentals ofComputerScience	CS1310	4	CS
DataStructures	CS3320	4	CS
DiscreteMathematics	MATH2410	3	MATH
DatabaseManagementSystem	CS3380	3	CS

Table:Section

SectionIdentifier	CourseNumber	Year	Instructor
85	MATH2410	98	Komal
92	CS1310	98	Anita
102	CS3320	99	Kusum
112	MATH2410	99	Chandu
119	CS1310	99	Anita
135	CS3380	99	Smita

Table:Grade_Report

Reg.No	Section_Identifier	Grade
17	112	B
17	119	C
8	85	A
8	92	A
8	102	B
8	135	A

- CreateTablesusingCreateStatement.
- InsertRowstoIndividualTablesusing InsertStatement.
- AlterTableSectionAddNewField Sectionand UpdatetheRecords,

- DeleteBharath'sGradeReport.
- DroptheTableSection.

Activity 2: (Select Clause, Arithmetic Operators)

Database: Employee

CreateFollowing**tables**andInsert**tuples**withSuitableConstraints

Table:EMPLOYEE

EMPID	FIRSTANAME	LASTNAME	Hire_Date	ADDRESS	CITY
1001	Guru	Singh	11-May-20	83K D Road	Mysuru
1002	Mary	Jones	25-Feb-22	842Vani Villas Road	Lonavla
1012	Samantha	Tata	12-Sep-19	33Irwin Road	Mysuru
1015	Pavan	Timmaiah	19-Dec-20	11RailwayRoad	Mysuru
1016	Sharath	Sharma	22-Aug-21	440MG Road	NewDelhi
1020	Monika	Gupta	07-Jun-22	9Bandra	Mumbai

Table:EMPSALARY

EMPID	SALARY	BENEFITS	DESIGNATION
1001	10000	3000	Manager
1002	8000	1200	Salesperson
1012	20000	5000	Director
1015	6500	1300	Clerk
1016	6000	1000	Clerk
1020	8000	1200	Salesperson

Writequeriesforthefollowing

1. TodisplayFIRSTNAME,LASTNAME,ADDRESSandCITYofallemployeeslivinginMYSURU.
2. Todisplaythecontent ofemployeetableindescendingorderofFIRSTNAME
3. SelectFIRSTNAME andSALARYofsalesperson
4. Todisplay the FIRSTNAME, LASTNAME and TOTAL SALARY of all employees from thetableEMPLOYEEandEMPSALARY.WhereTOTALSALARYiscalculatedasSALARY+BENEFITS
5. ListtheNamesofemployees,whoaremorethan1yearoldintheorganization
6. CountnumberofdistinctDESINGATIONfromEMPSALARY
7. Listtheemployeeswhosenameshaveexactly6 characters
8. Add newcolumnPHONE_NOtoEMPLOYEEandupdatetherecords

9. Listemployeenames,who havejoinedbefore15-Jun-22andafter16-Jun-21
10. Generate Salary slip with Name, Salary, Benefits, HRA-50%, DA-30%, PF-12%, Calculate gross.Ordertheresultindescendingorderofthegross.

Activity3:(Logical,RelationalOperators)

Database:Library

CreateFollowing**tables**andinsert**tuples**withsuitableconstraints

Table:Books

Book_ Id	Book_name	Author_Name	Publishers	Price	Type	Qty
C0001	TheC Book	S K Srivastava	BPB	355	Reference	5
F0001	TheJava Book	Balaguruswamy	TMGH	650	Syllabus	20
T0001	MyFirstC++	Tenzine	BPB	350	Text	10
T0002	C++Brainwork‟s	AWRossaine	Pearson	350	Text	15
F0002	Python	AnaRoberts	TMGH	750	Syllabus	50

Table:Issued

Book_Id	Quantity_Issued
T0001	4
C0001	5
F0001	2
T0002	5
F0002	8

Writequeriesforthefollowing

1. ToshowBook name,Author nameandpriceofbooksof**TMGH** publisher.
2. DisplayBookid,Booknameandpublisherofbooks havingquantitymorethan8andpriceless than500.
3. SelectBookid,bookname,authornameofbookswhichispublishedbyotherthanBPBpublishers andpricebetween300to700.
4. GenerateaBillwithBook_id, Book_name,Publisher,Price,Quantity,4%ofVAT“Total”.
5. Displaybookdetailswithbookid’sC0001,F0001,T0002,F0002(Hint:use INoperator).
6. DisplayBooklist otherthan, typeReference andSyllabus.
7. Displaybookdetailswithauthornamestartswithletter‘A’.

8. Displaybookdetailswithauthornamestartswithletter‘T’andendswith‘E’.

9. SelectBook_Id,Book_Name,AuthorName,QuantityIssuedwhereBooks.Books_Id=Issued.Book_Id.

10. Listthebook_name,Author_name,Price
    inascendingorderofBook_nameandthenondescendingorderofprice.

Activity4:

(DateFunctions)Database:

Lab

CreateFollowing**table**andinsert**tuples**withsuitableconstraints

Table:Equipment_Details

No.	ItemName	Costperitem	Qty	Dateofpurchase	Warranty	Operational
1	Computer	30000	9	21/5/20	2	7
2	Printer	5000	3	21/5/19	4	2
3	Scanner	8000	1	29/8/21	3	1
4	Camera	7000	2	13/6/18	1	2
5	UPS	15000	5	21/5/21	1	4
6	Hub	8000	1	31/10/21	2	1
7	Plotter	25000	2	11/1/22	2	2

(Usedatefunctionsandaggregatefunctions)

1. ToselecttheItemNamepurchaseafter31/10/20
2. Extendthe warrantyofeach itemby6months.
3. DisplayItemName,Dateofpurchaseandnumber ofmonths betweenpurchase dateandpresentdate.
4. TolisttheItemNameinascendingorderofthedateofpurchasewherequantityis morethan3.
5. Tocountthenumber,averageofcostperitemofitemspurchasedbefore1/1/21.
6. Todisplaytheminimumwarranty,maximumwarrantyperiod.
7. ToDisplaythe dayofthedate,month,yearofpurchaseincharacters.
8. Toroundofthewarrantyperiodtomonthandyearformat.
9. Todisplay thenextSundayfromthedate‘07-JUN-96’.
10. Tolistthe ItemName,whicharewithinthewarrantyperiodtillpresentdate.

Activity5:(Numeric,CharacterFunctions)

UseFunctionsforthe following

1. Find themodof165,16.
2. FindSquareRootof5000.
3. Truncatethevalue128.3285to2and-1decimalplaces.
4. Roundthevalue92.7683to2and-1decimalplaces.
5. Convertthestring‘Department’touppercaseandlowercase.
6. Displayyouraddressconvertthefirstcharacterofeachwordtouppercaseandrestareinlowercase.
7. Combine yourfirstnameand lastnameunderthetitleFullname.
8. A)Takea stringlengthmaximumof15displaysyournametotheleft.The remainingspaceshouldbefilledwith‘*’.
9. Takeastring lengthmaximumof20displaysyournametotheright.Theremainingspaceshouldbefilledwith‘#’.
10. Findthelengthofthestring‘SBRR Mahajana FGC,Mysore.
11. Displaysubstring‘BASE’from‘DATABASE’.
12. Displaythepositionofthefirstoccurrenceofcharacter‘o’inPositionandLength.
13. ReplacestringDatabasewithDatatype.
14. DisplaytheASCIIvalueof‘‘(Space).
15. DisplaytheCharacterequivalent of42.

Activity 6:Database:subject

CreateFollowing**table**andinsert**tuples**withsuitableconstraints

Table-Physics

RegNo	Name	Year	Combination
AJ00325	Ashwin	First	PCM
AJ00225	Swaroop	Second	PMCs
AJ00385	Sarika	Third	PME
AJ00388	Hamsa	First	PMCs

Table–ComputerScience

RegNo	Name	Year	Combination
AJ00225	Swaroop	Second	PMCs
AJ00296	Tejas	Second	BCA
AJ00112	Geetha	First	BCA
AJ00388	Hamsa	First	PMCs

1. SelectallstudentsfromphysicsandComputerScience.
2. Selectstudent commoninphysicsandComputerScience.
3. Displayallstudentdetailsthosearestudying insecondyear.
4. Displaystudentthosewho arestudyingbothphysicsandcomputerscienceinsecondyear.
5. Displaythe studentsstudyingonlyphysics.
6. DisplaythestudentsstudyingonlyComputerScience.
7. select allstudenthavingPMCscombination.
8. select allstudent havingBCAcombination.
9. selectallstudent studyinginThirdyear.
10. RenametableComputerSciencetoCS.

Activity7:(views)

Database:RailwayReservationSystem

CreateFollowing**table**andinsert **tuples**withsuitableconstraints

Table:TrainDetails

Train_No	Train_Name	Start_Place	Destination
RJD16	RajdhaniExpress	Bangalore	Mumbai
UDE04	UdhyanExpress	Chennai	Hyderabad
KKE55	KarnatakaExpress	Bangalore	Chennai
CSE3	ShivajiExpress	Coimbatore	Bangalore
JNS8	Janashatabdi	Bangalore	Salem

Table:Availability

Train_No	Class	Start_Place	Destination	No_of_Seats
RJD16	SleeperClass	Bangalore	Mumbai	15
UDE04	FirstClass	Chennai	Hyderabad	22
KKE55	FirstClassAC	Bangalore	Chennai	15
CSE3	SecondClass	Coimbatore	Bangalore	8
JNS8	SleeperClass	Bangalore	Salem	18

1. Create view **sleeper** to display train no, start place, destination which have sleeper class andperformthefollowing:
   a. insertnewrecord.
   b. updatedestination=’Manglore’wheretrainno=’RJD16’.
   c. deletearecordwhichhavetrainno=’KKE55’.
2. Createview**details**todisplaytrainno,trainname,class.
3. Createview**total_seats**todisplaytrainnumber,startplace,usecount functiontono ofseats,groupbystartplaceandperformthefollowing:
   a. insertnewrecord.
   b. updatestartplace=’Hubli’wheretrainno=’JNS8’.
   c. delete lastrowoftheview.
4. Renameviewsleepertoclass.
5. Deleteviewdetails.

Activity8:(groupby,havingclause)

Database: Banksystem

CreateFollowing**table**andinsert**tuples**withsuitableconstraints

Table:Account

Account_No	Cust_Name	Brach_ID
AE0012856	Reena	SB002
AE1185698	Akhil	SB001
AE1203996	Daniel	SB004
AE1225889	Roy	SB002
AE8532166	Sowparniika	SB004
AE8552266	Anil	SB003
AE1003996	Sathwik	SB004
AE1100996	Swarna	SB002

Table: Branch

Branch_ID	Branch_Name	Branch_city
SB001	Malleshwaram	Bangalore
SB002	MG Road	Bangalore
SB003	MG Road	Mysore
SB004	Jainagar	Mysore

Table: Depositor

Account_No	Branch_ID	Balance
AE0012856	SB002	12000
AE1203996	SB004	58900
AE8532166	SB003	40000
AE1225889	SB002	150000

Table: Loan

Account_No	Branch_ID	Balance
AE1185698	SB001	102000
AE8552266	SB003	40000
AE1203996	SB004	15000
AE1100996	SB002	100000

1. DisplayTotalNumberofaccountspresentineachbranch.
2. DisplayTotalLoanamountineachbranch.
3. DisplayTotaldeposited amountineachbranchbydescendingorder.
4. Displaymax,minloanamount presentineachcity.
5. Displayaverageamountdeposited ineachbranch,eachcity.
6. Displaymaximumofloanamountineachbranchwherebalanceis morethan25000.
7. DisplayTotalNumberofaccountspresentineach city.
8. Displayallcustomerdetailsin ascendingorderofBranch_ID.
9. UpdateBalanceto26000whereAccount_No=AE1003996.
10. DisplayCustomer Nameswith theirbranchName.

Course Articulation Matrix - 222449

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	1	1	1	1	1	1	1	1	2
CO 2	2	2	2	-	3	1	-	1	1	1	-	2
CO 3	2	2	1	-	1	1	-	-	2	1	-	2
CO 4	2	2	2	-	1	1	-	1	1	1	-	2
Weighted Average	**2.25**	**2.25**	**1.75**	**1**	**1.5**	**1**	**1**	**1**	**1.25**	**1**	**1**	**2**

OE(4) Computer Science Syllabus for All Programs(Except Science)

Semester IV

Course Code:22OECMS401	**Course Title:OE(4)-** Fundamentals of Multimedia
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Acquire knowledge on multimedia and related terminologies.

CO 2: Acquaint with various input output technologies used and technological issues faced in multimedia.

CO 3: Interpretand apply the concept of security systems in multimedia.

Course Content

UNIT - 1 INTRODUCTIONTOMULTIMEDIA 14 HOURS

Concepts of Multimedia, Multimedia applications, Advantage of Digital Multimedia, MultimediasystemArchitecture,ObjectsofMultimedia.IntroductiontoCompressionandDecompressionTechniquesanditstypes.Fileformatstandards-RTF,TIFF,RIFF,MIDI,JPEG,AVI,TWAINArchitecture.

UNIT - 2 MULTIMEDIA I/O TECHNOLOGIES 14 HOURS

Key Technology Issues, Pen Input, Video and Image Display Systems, Print Output Technologies,ImageScanners,DigitalVoiceandAudio,VideoImagesandAnimation,FullMotionVideo.

UNIT - 3 SECUREDMULTIMEDIA AND AUTHENTICATION 14 HOURS

SecuredMultimedia,DigitalRightsManagementSystems,andTechnicalTrends-Multimediaencryption - Digital Watermarking – Security Attacks. Multimedia Authentication - Pattern, SpeakerandBehavior Recognition– SpeakerRecognition - FaceRecognition.

Text Books:

1. A Textbook of Multimedia: Vishnu Priya Singh, 2nd Revised Edition, Asian Computech Book.
2. Introduction to Multimedia: Prof. Satish Jain, Shashi Singh and M Geetha, BPB

Publications.

References:

1. MultimediaSecurity-SteganographyandDigitalWatermarkingtechniquesforProtectionof IntellectualProperty: Chun-ShienLu, Springer Inc, 2007.
2. MultimediaSystems: AndleighP K andThakrarK,AddisonWesleyLongman,1999.
3. MultimediaCommunications: FredHalsall,AddisonWesley,2000.
4. https://www.tutorialspoint.com/multimedia/index.htm
5. https://www.youtube.com/watch?v=Syeu_l3sAJE
6. https://www.techtarget.com/searchsecurity/definition/authentication

Course Articulation Matrix –22OECMS401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	1	-	1	1	1	1	1	1	-	2
CO 2	1	1	1	-	1	-	-	-	1	1	-	2
CO 3	1	2	1	-	1	1	1	3	1	1	1	2
Weighted Average	**1.33**	**1.33**	**1**	**-**	**1**	**1**	**1**	**2**	**1**	**1**	**1**	**2**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the principal. The principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such

tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance(the marksis 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

•The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

• The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

Part-A Program(C1): 10 marks

Part-B Program(C2): 10 marks + Record: 05 marks = 15 marks

• The student is evaluated for 25 marks in C3 as per the following scheme:

Assessment Criteria		Marks
Program - 1 from Part A Program - 2 from Part B	Writing the Program	10
Execution and Formatting (Any one program: Decided by the External Examiner)		10
Viva Voce		05
TOTAL		**25**

DSC Computer Science Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** $2\frac{1}{2}$ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part - A and Part – B.
- Part – A: Should consist of 12 Questions (3 Questions from each Unit).
- Part – B: Should consist of 4 Main Questions (1 from Each Unit) with 2 Sub Questions where internal split is permitted.

PART – A

Answer any EIGHT Questions. Each Question carries 2 Marks. 8Q X 2M = 16 Marks

2. a.
   b
   c.
   .
   .
   k.
   l.

PART – B

Answer ALL the Questions. Each Main carries 11 Marks. 4Q X 11M = 44 Marks

2. a.

b.

OR

c.

d.

3. a.

b.

OR

c.

d.

4. a.

b.

OR

c.

d.

5. a.

b.

OR

c.

d.

OEComputer Science Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** $2\frac{1}{2}$ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part – A and Part – B.
- Part – A: Should consist of 12 Sub Questions (4 Questions from each Unit).
- Part – B: Should consist of 3 Main Questions (1 from Each Unit) with 2 Sub Questions where internal split is permitted.

PART – A

Answer any NINE Questions. Each Question carries 2 Marks. 9Q X 2M = 18 Marks

2. a.
   b
   c.
   .
   .
   k.
   l.

PART – B

Answer ALL the Questions. Each Main Carries 14 Marks. 3Q X 14M = 42 Marks

2. a.

b.

OR

c.

d.

3. a.

b.

OR

c.

d.

4. a.

b.

OR

c.

d.

SKILL ENHANCEMENT COURSE (SEC) for All Programs

NOTE: ThisCourse will be handled by the Department of Computer Science for BBA,BCom., BSc. (All Combinations) and BA (All Combinations).

Course Code:22AINS94	**Course Title:SEC(2)** - Artificial Intelligence
Course Credits (L:T:P):02 (1:0:1)	**Hours of Teaching/Week:** 1 Hour (Theory) 2 Hours (Practical)
Total Contact Hours: 13 Hours (Theory) 26 Hours (Practical)	**Formative Assessment Marks:**20
Exam Duration: 1 Hour (Theory)	**Semester End Examination Marks:**30

Course Outcomes (COs):

CO 1: Analyze and apply knowledge gained on Azure AI, Azure ML, computer vision in Azure and natural language processing.

CO 2: Analyze and apply knowledge gained on Power BI data analytics.

CourseContent

UNIT–1: Azure AI Fundamentals (AI-900 Pathway: 5 Courses and 2 Reading Material)	
i. Introduction to AI on Azure. ii. Use Visual Tools to Create Machine Learning Models with Azure Machine Learning. iii. Explore Computer Vision in Microsoft Azure. iv. Explore Natural Language Processing. v. Explore Conversational AI. **Reading Materials:** i. Tune Model Hyperparameters – Azure Machine Learning. **ii.** Neural Network Regression: Module Reference – Azure Machine Learning.	**05 Hours**
UNIT–2: Data Analyst Associate (DA-100 Pathway: 5 Courses and 2 Reading Material)	
i. Getting started with Microsoft Data Analytics. ii. Prepare Data for Analysis. iii. Model Data in Power BI. iv. Visual Data in Power BI. v. Data Analysis in Power BI. vi. Manage Workspaces and Datasets in Power BI. **Reading Materials:** i. Key Influencers Visualizations Tutorial – Power BI. ii. Smart Narratives Tutorial – Power BI (Microsoft Docs).	**08 Hours**

Reference:

1. The Learning Resource made available for the Course titled “Azure AI Fundamentals

(AI-900) and Data Analyst Associate (DA-100)" on Future Skills Prime Platform of NASSCOM.

Laboratory

Part - A: Azure AI Fundamentals Practical	
i. Prepare the Data. ii. Model the Data. iii. Visualize the Data. iv. Analyze the Data. v. Deploy and Maintain Deliverables.	**13 Hours**
Part - B: Data Analyst Associate Practical	
i. Describe AI Workloads and Considerations. ii. Describe Fundamental Principles of Machine Learning on Azure. iii. Describe Features of Computer Vision Workloads on Azure. iv. Describe Features of NLP Workloads on Azure.	**13 Hours**

Pedagogy:

Flipped classroom pedagogy is recommended for the delivery of this course.

For every class:

1. All the faculty who takes this class should go for a Faculty Development Program on these before starting the session.

2. Faculty needs to introduce this course to the students then students need to start learning from Future Skills PRIME platform.

3. Faculty also needs to explain the course outcomes and needs of the course and why it is needed for the students.

4. Then students need to start learning online after registering on the platform.

5. Classroom activities are designed around the topic of the session towards developing better understanding, clearing doubts and discussions of high order thinking skills like application, analysis, evaluation, and design.

6. Every theory class ends with announcement of exercise for practical activity of the week.

Exercises:

Practical Exercises	Weightage in Marks
After every chapter student needs to complete exercises based on the learning in Azure Environment.	No Weightage (But student needs to complete it to move to next chapter).

Course Articulation Matrix – 22AINS94

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	1	-	-	1	2	1	1	-	-	1	2
CO 2	2	1	1	-	3	2	2	1	1	2	1	2
Weighted Average	**1.5**	**1**	**1**	**-**	**2**	**2**	**1.5**	**1**	**1**	**2**	**1**	**2**

ASSESSMENT PATTERN FOR ARTIFICIAL INTELLIGENCE (SEC)

Assessment Criteria	Weightage in Marks
Summative Assessment: After Completion of both the Courses, the Student can Optionally give Assessment for each of the Courses on Future Skills Prime Platform. Student will have 2 attempts and those who score at least 50% marks per course will get certificate from NASSCOM-MeitY.	This Assessment may be given 50% weight in Computing the Final Grade of the Student.

EVALUATION PATTERN FOR ARTIFICIAL INTELLIGENCE (SEC)

Assessment	Marks
C1	10 Marks (Any Assessment Method)
C2	10 Marks (Any Assessment Method)
C3	30 Marks (Semester End Examination)
Total	50 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the principal. The principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such

tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Test/Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	10	-	10
Test/Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	10	10
Total	10	10	20

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Artificial Intelligence (SEC)

Theory Question Paper Pattern (All Programs)

Max. Marks: 30 Marks **Exam**
Duration: 1 Hour

Instructions: Paper Setting

- The Question Paper consists of 3 Main Questions.
- Question 1: Should consist of 10 Questions (Multiple Choice Questions).
- Question 2: Should consist of 2 Questions(1 from Each Unit) where internal choice andinternal split is permitted.
- Question 3: Should consist of 2 Questions (1 from Each Unit) where internal split is permitted.

1. Answer all TENQuestions. Each Question carries 1 Mark. 10Q X 1M = 10 Marks

a.

b.

.

.

.

j.

2. Answer the TWO Questions. Each Question carries 5 Marks. 2Q X 5M = 10 Marks

a.

b.

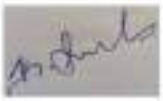
3. Answer any ONE Question. Question carries 10 Marks. 1Q X 10M = 10 Marks

a.

b.

APPROVED BY THE FOLLOWING BoS MEMBERS

(1) Smt. Hamsaveni L



(2) Dr. Suresh K

(3) Dr. Lavanya P G

(4) Smt. Rachana C R

(5) Sri. Santhosh Kumar

(6) Sri. Mahendra J M

(7) Smt. Shruthy Poonacha

(8) Smt. Radhika Rani

BoS (COMPUTER SCIENCE) - PROCEEDINGS

Academic Year: 2022-23

Name: BoS Meeting

Date: 17.09.2022

Time: 11:30 AM

Place: SBRR Mahajana First Grade College (A), Mysuru.

Total Number of Members: 08

AGENDA:

4. Discuss and Approve III and IV Semester (NEP) DSC, OE and SEC Syllabus for this year.
5. Discuss and Approve the Evaluation Pattern (Theory & Practical), Assessment Pattern, Semester End Examination – Question Paper Pattern for above mentioned papers.
6. Discuss and Approve Value Added Courses offered by the Department.
7. Examiner's List to be Approved.

PROCEEDINGS:

All the members were welcomed by Smt. Radhika Rani, Member (BoS) & Assistant Professor, Department of Computer Science, SBRR Mahajana First Grade College (A), Mysuru.

All members were present in the meeting - 4 Members were present Online and 4 were present Offline.

The following was Discussed and Approved:

6. III and IV Semester (NEP) DSC, SEC, OE Syllabus for this year. (OBE Implemented)
7. The Evaluation Pattern (Theory & Practical), Assessment Pattern, Semester End Examination – Question Paper Pattern for above mentioned papers.
8. Participative Learning/Experimental Learning/Skill Based Learning Methods added to each paper.
9. The 2 Value Added Courses offered by the Department:

i. Hardware & Networking.
ii. Animation and Graphic Designing Concepts.

10. The Examiner's List.
11. The suggestions and corrections pointed by the BoS members for III and IV Semester were noted and incorporated.

The meeting ended with a Vote of Thanks by Smt. Shruthy Poonacha, Chairperson (BoS) & Head, Department of Computer Science, SBRR Mahajana First Garde College (A), Mysuru.

List of Examiners 2022-23

(Above 3 Years of Experience)

Sl. No.	Name of the Evaluator	Address for Communication
1	Smt. Shruthy Poonacha	SBRR Mahajana First Grade College (A), Mysuru.
2	Smt. Radhika Rani	
3	Smt. Ranjini S	
4	Dr. Manohar N	Amrita Vishwa Vidyapeetham (Mysuru Campus), Mysuru.
5	Sri. Akshay S	
6	Smt. Priyanka M	
7	Smt. Shobha A N	AVK College for Women, Hassan.
8	Smt. Shylaja H N	
9	Smt. Sowjanya J	
10	Smt. Sowmya J	
11	Smt. Sushma H M	
12	Smt. Tejaswini M	
13	Sri. Hareesha C	BGS First Grade College, Mysuru.
14	Sri. ChinnaSwamy	Bharathi College, Bharathinagara (K M Doddi), Mandya District.
15	Smt. Gayathri K	
16	Smt. Vidya Bheemaiah	BharathMatha FGC, Koppa, Periyapattana.
17	Smt. Reena Sebastin	Christ College, Srirampura, Mysuru.
18	Smt. Hemalatha B N	De Paul College, Belagola, Mandya.

19	Smt. Chithra V S	De Paul College, Mysuru.
20	Sri. Ravishankar	Field Marshal College, Madikeri.
21	Sri. Bharath G G	GHSC, Hassan.
22	Sri. Aravinda G	Gopalswamy College of Professional Studies (MIT), Mysuru.
23	Dr. Chandrajit	
24	Sri. Kiran	
25	Smt. Vasanthi	
26	Smt. Vasanthi	
27	Dr. Lavanya P G	Government Boy's College (Autonomous), Mandya
28	Sri. Anil Kumar R J	
29	Sri. Prem Singh	
30	Sri. Manjunath D	Government First Grade College, Kuvempunagar, Mysuru.
31	Sri. Rakesh K	
32	Dr.Linganna N	
33	Sri. Gopala Krishna Murthy H R	
34	Smt. Vanishree K S	Government First Grade College, Shivamogga.
35	Smt. Navya D	Govt. College for Women, Hassan.
36	Dr.Nagendranath Giri	
37	Dr. Ganesh Babu V	Govt. College for Women, Maddur.
38	Sri. Praveen S	
39	Smt. H J Preethi	Govt. FGC , T Narasipura.

40	Smt. M Nandini	
41	Sri. Rakshith K R	Govt. FGC for Women, Holenarasipura.
42	Smt. Sowmya P N	Govt. FGC, Bilikere.
43	Sri. Santhosha M	Govt. FGC, Gundalpet.
44	Dr.Kouser	
45	Smt. Rohitha K.C	Govt. FGC, Hunsur.
46	Smt. Nagalakshmi H S	
47	Sri. Manjunath T	Govt. FGC, K R Nagar.
48	Smt. Kusuma K	Govt. FGC, Kollegal.
49	Smt. Pavithra Raju	
50	Sri. Mahaboob Ali M Kunnur	Govt. FGC, Nanjangudu.
51	Sri. Vinay R U	
52	Smt. Shilpa P	Govt. FGC, Padavalahippe.
53	Smt. Chaithra M C	Govt. FGC, Pandavapura.
54	Sri. Ravikumar D A	
55	Smt. Rekha B J	
56	Smt. Geetha C B	
57	Smt. Thenarasi V	Govt. FGC, Siddhartha Nagar, Mysuru.
58	Smt. Shruthi	Govt. First Grade College, Gundlupet.
59	Smt. Abhilasha	Govt. Science College, Hassan.
60	Smt. Monica S V	
61	Smt. Shruthi G G	

62	Smt. Anjum Banu	
63	Smt. Seema N	
64	Smt. Kumuda K C	Govt. Women College, K R Pet.
65	Sri. Chethan	Hindustan College, Mysuru.
66	Sri. Lakshmikanth	
67	Smt. Savitha K V	
68	Smt. Sukshma	
69	Sri. Pradeep H G	JSS College (Autonomous), Saraswathipuram Road, Mysuru.
70	Smt. Jayalaxmi A K	
71	Smt. Preethi H U	
72	Smt. Kanaka B M	
73	Dr. Rajesh K M	JSS College for Women, Chamarajanagar.
74	Sri. Mahender	
75	Sri. Nandeesh P	
76	Smt. Rashmi M S	
77	Smt. Razina Praveen	
78	Smt. Shubha L N	
79	Smt. Swetha Nandhini	
80	Sri. Vinay Kumar V P	
81	Sri. Vidya Shankar	JSS College of Arts, Commerce & Science (Autonomous), B N Road, Mysuru.
82	Smt. Meera C	
83	Smt. Nagalambike B	

84	Sri. Nandish M	
85	Sri. Mallesha R	
86	Sri. Vinay R U	
87	Sri. Chethan M	
88	Sri. Madhusudhana M	
89	Sri. Shilpa R V	
90	Smt. Jayashree H	
91	Sri. Madhu D C	
92	Smt. Rajani	
93	Sri. Sathish Kumar M	JSS College of Arts, Commerce and Science, Nanjangudu.
94	Smt. Deepali M S	
95	Dr. Poornima Y	Maharaja's College, Mysuru.
96	Sri. Ravindra V	
97	Smt. Usha K	Maharani's Science College for Women (A), Mysuru.
98	Dr. Manjunath K S	
99	Dr. Sheela T	
100	Dr.Siddaraju K	
101	Sri. Balakrishna M	
102	Sri. Prakash Raje Urs	
103	Sri. Santhosh Kumar B N	
104	Smt. Sripavithra C K	
105	Smt. Nirmala M S	

106	Smt. Pushpalatha M	
107	Smt. Hemavathi	
108	Smt. Noor Sara	
109	Smt. Vedavathi	
110	Sri. Prathap	
111	Sri. Lohith	Marimallappa College, Mysuru
112	Sri. Karthik P	
113	Sri. Lohith	

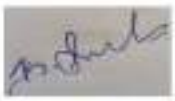
114	Smt. Jyothilaksmi Kava	MMD and SDM MahilaMahaVidyalaya, Krishnamurthypuram, Mysuru.
115	Smt. Nayana M P	
116	Smt. Rajitha V	
117	Smt. Ramya S K	
118	Smt. Shwetha M	
119	Smt. Sukrutha K S	
120	Sri. Kiran Kumar	NDRK College, Hassan.
121	Sri. Lokesh	
122	Sri. Jayaram N	NIE College of Science, Mysuru.
123	Smt. Priya M R	
124	Sri. Rajesh M	
125	Smt. Sapana Koushik	
126	Smt. Vidya M V	
127	Smt. Vidya Lakshmi N V	
128	Smt. Manu M S	PES College, Mandya.
129	Sri. Lenard P	Sapient First Grade College, Mysuru.
130	Dr. Jagadeesh Krishna	Sharadavilas College, Mysuru.
131	Smt. Kavya R	
132	Smt. Kavya R	
133	Sri. Rudhresh Y R	Sheshadripuram Degree College ,Musuru.
134	Smt. Shalini M K	
135	Smt. Tejaswi	

136	Sri. Arun	
137	Sri. Vinay M	
138	Sri. Suhas Bharadwaj	
139	Sri. Mruthulac Sojan	
140	Smt. Gunavathi	Sri Adichunchanagiri College of Arts and Commerce, Nagamangala.
141	Smt. Josmi Joseph	Sri DDUrs College, Hunsur.
142	Smt. Anjum Taj	St. Joseph's College, Hunsur.
143	Smt. Poornima K	
144	Smt. Avanthi	St. Joseph's College, Satagalli, Mysuru.
145	Smt. Gloria Priyadarshini	St. Philomena's College, Mysuru. (Autonomous), Mysuru.
146	Smt. Reena Mol V U	
147	Smt. Archana A	
148	Smt. Syeda Masarath	
149	Smt. Sandra Agnes	
150	Smt. Harinakshi	
151	Smt. Devika M N	Teresian College, Mysuru.
152	Smt. Princy Joy	
153	Smt. Shewetha Kumary	Vidhyashram First Grade College, Mysuru.
154	Sri. Hemanth Kumar	Vidyavikas College, Mysuru.
155	Sri. Chandraiah T	Yuvaraja's College, (Autonomous) , Mysuru.
156	Smt. Annapurna H	

157	Smt. Mamatha D M	

APPROVED BY THE FOLLOWING BoS MEMBERS

(1) Smt. Hamsaveni L



(2) Dr. Suresh K

(3) Dr. Lavanya P G

(4) Smt. Rachana C R

(5) Sri. Santhosh Kumar

(6) Sri. Mahendra J M

(7) Smt. Shruthy Poonacha

(8) Smt. Radhika Rani

Mahajana Education Society (R.)
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SBRR MAHAJANA FIRST GRADE COLLEGE
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Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
Jayalakshmipuram, Mysuru – 570 012

DEPARTMENT OF COMPUTER SCIENCE

Motto

Technology for Transformation

Vision

Information Technology for Better Future

Mission

Imparting Quality and Ethical Based Education all the way through Technology

Equipping the students for a Demanding Career

Empowering the students with Professional Touch to become Successful Entrepreneurs

Syllabi for V and VI Semester B.Sc. Computer Science

CBCS - 2021-22

B.Sc. Programme in Computer Science
Semester with Choice Based Credit System (CBCS)

Discipline Specific Electives (DSE) & Skill Enhancement Course (SEC)

Year	Semester	Course	Title	Hours / Week	Credits	Maximum Marks			Exam Duration	Total Marks
						IA		Exam		
					L: T:P	C1	C2	C3		
	Computer Science – V									
III Year	V Semester	DSE (5A)	System Software and Operating Systems	3	3:0:3	10	10	80	3 Hours	100
			Operating Systems Lab & ASP.Net Lab	6		10	10	80	4 Hours	100
		DSE (5B)	Cloud Computing	3	3:0:3	10	10	80	3 Hours	100
			Cloud Computing Lab & ASP.Net Lab	6		10	10	80	4 Hours	100
		SEC (5C)	Computer Maintenance& Office Automation Tools	1	1:0:1	05	05	40	2 Hours	50
			Computer Maintenance &Office Automation	2		05	05	40	3 Hours	50

			Lab							

	Computer Science – VI									
	VI Semester	DSE (6A)	Data Communication and Computer Networks	3	3:0:3	10	10	80	3 Hours	100
			Networks Lab & Web Designing Lab	6		10	10	80	4 Hours	100
		DSE (6B)	Computer Graphics and Animation	3	3:0:3	10	10	80	3 Hours	100
			Graphics Lab & Web Designing Lab	6		10	10	80	4 Hours	100
		SEC (6C)	Python Programming	1	1:0:1	05	05	40	2 Hours	50
			Python Programming Lab	2		05	05	40	3 Hours	50

Note: Student should opt any one DSE Paper in V Semester and any one in VI Semester.

SYSTEM SOFTWARE AND OPERATING SYSTEMS

V Semester DSE – 5A (L:T:P ::3:0:3) 6 Credits

(Course Duration:16 Weeks with 3 Hours of Instruction per Week and 6 Hours of Practicals per Week)

Subject Code: 212516 **Teaching Hours:48**
Theory Exam: 80 Marks
Theory IA: 20 Marks **Exam Duration**
Practical Exam: 80 Marks Theory - 3Hours
Practical IA: 20 Marks Practicals – 4Hours

Course Objective

- To make students understand the design concepts of various system software
- To understand the basic components of a computer operating system and the interactions among the various components.

Course/Learning Outcome

A student should be able to

- Understand the fundamentals of various components of System Software
- Describe the functions of a contemporary operating system with respect to convenience, efficiency, and the ability to evolve
- Explain the objectives and functions of modern operating systems

SYSTEM SOFTWARE

UNIT-1: Machine Architecture, Assembler and Loaders 16 Hours

Introduction - System software, Hypothetical Machine and its architecture, Assemblers- Introduction, General design procedure, data structure, Format of Databases, Algorithm for pass 1 and pass 2.

Loaders-General Loading schemes, compile and go loader scheme, general loader, Absolute loader (Algorithm and Flow chart), Relocating loader, Direct linking loader, overlays, Dynamic loading, Introduction to Macros.

Compilers – Functions, Phases and compilers(in Brief) - Lexical analysis, interpretation, Syntax analysis, Optimization, storage assignment, code generation, assembly and output, Lexical and syntax analysis.

OPERATING SYSTEMS

UNIT-2: Fundamentals of Operating Systems and Memory Management 16 Hours

Definition of Operating System, Need, Types- Batch Systems, Multiprogramming, Time Sharing, Real time, Unix Operating System - Introduction

Operating System functions / services, System Calls, System Programs

Process Concept: meaning of process, process state, process control block, Threads

Introduction to Memory Management, functions of memory management, Contiguous Technique, partitioned memory – single partition, multiple partition , Fragmentation

Memory management technique – Paging, Segmentation, Demand paging,Page Replacement algorithms – FIFO, LRU, Optional page replacement.

UNIT-3: Process Management & Deadlocks 16 Hours

Process scheduling – scheduling queues, schedulers, context switch.

Scheduling criteria, Scheduling algorithms: First-Come-First-Served (FCFS), Shortest Job First (SJF), Priority Scheduling, Round Robin. Real time scheduling with pre-emption and non-preemption.

Deadlocks: Definition with example, System model, Deadlock characterization – Necessary Conditions Resource Allocation Graph, Dead lock prevention, Avoidance and detection, Recovery from dead lock.

Text Book

1. System programming – John. J. Donovan.
2. System Software – Leland L. Beck, Third edition, Addison Wesley 1997.
3. Operating System Concepts, Abraham Silberschatz and Peter Baer Galvin, Fifth edition, Addison - Wesley 1989.
4. Operating System Concepts & Design, Milan Milonkovic, II Edition, McGraw Hill 1992.
5. Operating Systems, Stallings, Pearson Edition.
6. Operating System Concepts, Tanenbaum, Pearson Education.

Reference Web Link

http://gcc.gnu.org/onlinedocs/gcc-2.95.3/cpp_1.html

https://codex.cs.yale.edu › avi › os-book › bib-dir

https://www.cse.iitb.ac.in › ~mythili › os

https://courses.cs.washington.edu/courses/cse451/16au/readings/ritchieunix.pdf

https://www.operating-system.org/betriebssystem/_english/bs-msdos.htm

https://www.classcentral.com/course/swayam-introduction-to-operating-systems-6559

https://www.classcentral.com/course/swayam-operating-system-fundamentals-14217

(L:T:P :: 0:0:3)

PART - A

OPERATING SYSTEM LAB

1. Demonstrate Various Types of Linux Commands

2. Write a shell script to implement various if statements

3. Write a shell script to demonstrate Command Line Arguments

4. Write a shell script to implement Looping Statement

5. Write a shell script to demonstrate Operators

6. Write a shell script to demonstrate a Sorting Technique

7. Assume a file with the given information

First Name	Middle Name	Age

Write a shell script to

a. Sort the first name in alphabetical order

b. Sort the age in terms of ascending order

c. Sort the age in terms of descending order

d. Sort the middle name in alphabetical order

8. Write a C program to implement FCFS Scheduling Algorithm

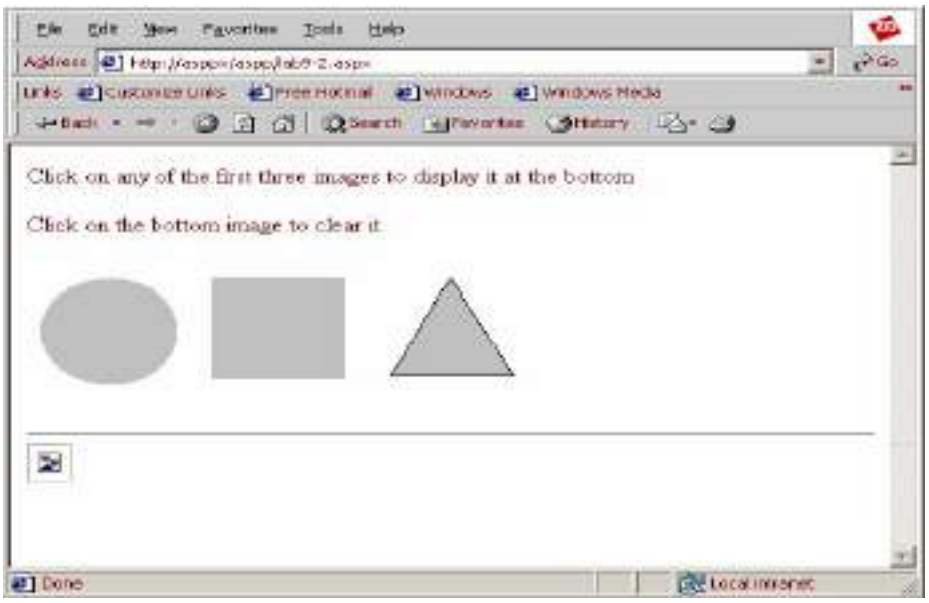
9. Write a C Program to implement Round Robin Scheduling Algorithm

10. Write a C Program to implement FIFO Page Replacement Technique

PART – B

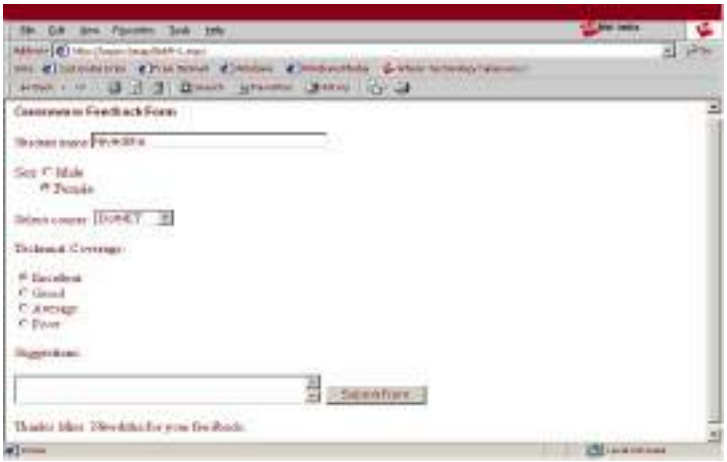
ASP.NET LAB CYCLE

1) Write a program to display three images in a line. When any one of the images is clicked, it must be displayed below. On clicking the displayed image, it must be cleared. The screen must look as in the figure given below:



2) Write a program that displays a button in green color and it should change into yellow when the mouse moves over it.

3) Write a program to display the following feedback form.
The different options for the list box must be ASP-XML, DotNET, JavaPro and Unix,C,C++. When the Submit Form button is clicked after entering the data, a message as seen in the last line of the above figure must be displayed.



4) Write a program containing the following controls:

- A List Box
- A Button
- An Image
- A Label

The list box is used to list items available in a store. When the user clicks on an item in the list box, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the control.

5) Write a program that binds the properties **ID**, **Name**, **Price** and **Qty** of a page to the following values:
   ID: 10
   Name: Wheat
   Price: 14.25
   Qty: 1000
6) Create a RadioButtonList that displays the names of some flowers in two columns. Bind a label to the RadioButtonList so that when the user selects an option from the list and clicks on a button, the label displays the flower selected by the user.

Reference Web Link

https://www.classcentral.com/course/linkedin-learning-learning-asp-net-30407

https://www.classcentral.com/course/treehouse-aspnet-mvc-basics-45550

CLOUD COMPUTING

V Semester DSE – 5B (L:T:P:: 3:0:3) 6 Credits

(Course Duration:16 Weeks with 3 Hours of Instruction per Week and 6 Hours of Practicals per Week)

Subject Code: 212526 Teaching Hours:48
Theory Exam: 80 Marks
Theory IA: 20 Marks Exam Duration
Practical Exam: 80 Marks Theory - 3Hours
Practical IA: 20 Marks Practicals – 4Hours

Course Objective

This course gives student an insight about recent trends in computing, basic understanding of cloud computing, architecture, service models, privacy and security in cloud.

Course/Learning Outcome

Students will

- Understand the basics of cloud computing and analyze the architecture of cloud
- Analyze the trade-offs between deploying applications in the cloud and over the local infrastructure.
- Understand the various cloud computing platforms
- Analyze the performance, scalability and availability of cloud technologies

UNIT-1 **16 Hours**

Overview of Computing Paradigm, Recent trends in Computing - Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing. Evolution of cloud computing. Introduction of Cloud Computing: What is Cloud Computing? How it works? Types of Cloud, Goals & Challenges. From collaborative to the Cloud – A short history Client – Server Computing, Peer-to-Peer Computing, Distributed Computing, Collaborative Computing, Cloud Computing, Functioning of Cloud Computing, Cloud

Architecture, Cloud Storage, Cloud Services, Industrial Applications. Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing.

UNIT-2 **16 Hours**

Cloud Computing Architecture, Cloud computing stack - Comparison with traditional computing architecture (client/server), Services provided at various levels, How Cloud Computing Works, Role of Networks in Cloud computing, protocols used, Role of Web services. Service Models (XaaS) - Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). Deployment Models - Public cloud, Private cloud, Hybrid cloud and Community cloud.

UNIT-3 **16 Hours**

Cloud Service Administration - Service Level Agreements and Monitoring-Support Services- Accounting Services, Resource Management- IT Security- Performance Management- Provisioning- Service Management, Untangling Software Dependencies. Accessing the Cloud- Introduction-Objectives, Platforms- Web Application Framework- Web Hosting Services- Proprietary Methods, Web Applications- APIs in Cloud Computing, Browsers for Cloud Computing- Internet Explorer- Mozilla Firefox- Safari- Chrome.

Text Book

1. Cloud Computing Bible - Barrie Sosinsky, Wiley-India, 2010
2. Cloud Computing: Principles and Paradigms - Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wiley, 2011
3. Cloud Computing for Dummies – JudithHurwitz, RBloor, M. Kanfman, F. Halper, Wiley India Edition, First Edition

Books for Reference

1. Cloud Computing: APractical Approach - Anthony T.Velte, Toby J. Velte, Robert Elsenpeter,
   Tata McGraw- Hill, New Delhi – 2010
2. Cloud Security: A Comprehensive Guide to Secure Cloud Computing - Ronald L. Krutz, Russell Dean Vines, Wiley-India, 2010

Reference Web Link

NPTEL Online Course: https://onlinecourses.nptel.ac.in/noc21_cs14/preview

MOOC: https://www.edx.org/micromasters/cloud-computing

(L:T:P:: 0:0:3)

PART – A

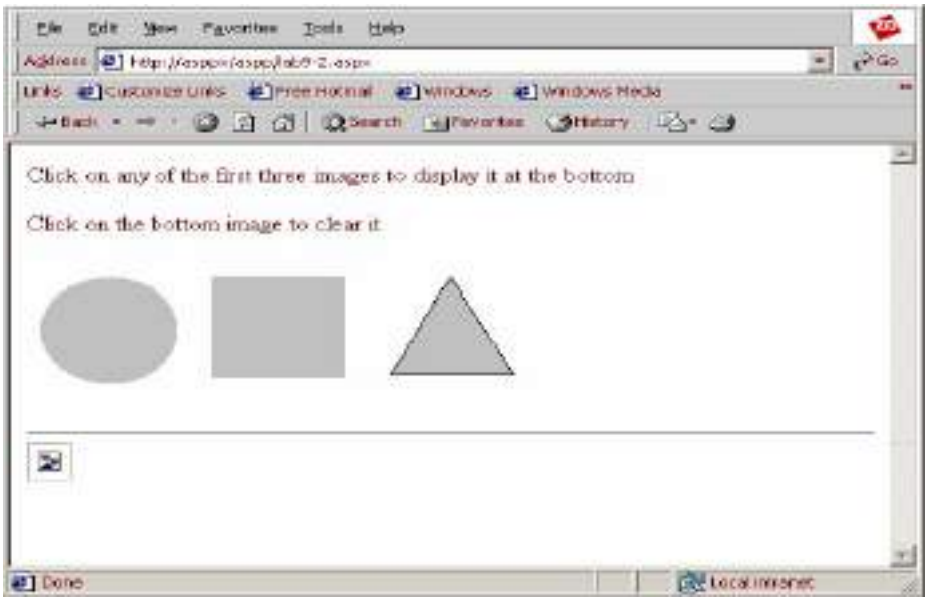
CLOUD COMPUTING LAB

1. Install VirtualBox/VMware Workstation with different flavors of Linux or Windows OS
2. Install a C Compiler in the Virtual Machine created using VirtualBox and execute Simple Programs
3. Install Google App Engine. Create “Hello World App”and other simple web applications using Python/Java
4. Install Hadoop Single Node Cluster and run simple applications like Word Count.

PART – B

ASP.NET LAB CYCLE

1) Write a program to display three images in a line. When any one of the images is clicked, it must be displayed below. On clicking the displayed image it must be cleared. The screen must look as in the figure given below:



2) Write a program that displays a button in green color and it should change into yellow when the mouse moves over it.

3) Write a program to display the following feedback form.

The different options for the list box must be ASP-XML, DotNET, JavaPro and Unix, C, C++. When the Submit Form button is clicked after entering the data, a message as seen in the last line of the above figure must be displayed.

4) Write a program containing the following controls:
   - A List Box
   - A Button
   - An Image
   - A Label

   The list box is used to list items available in a store. When the user clicks on an item in the list box, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the control.

5) Write a program that binds the properties **ID**, **Name**, **Price** and **Qty** of a page to the following values:

   ID: 10
   Name: Wheat
   Price: 14.25
   Qty: 1000

6) Create a RadioButtonList that displays the names of some flowers in two columns. Bind a label to the RadioButtonList so that when the user selects an option from the list and clicks on a button, the label displays the flower selected by the user.

Reference Web Link

https://www.classcentral.com/course/linkedin-learning-learning-asp-net-30407

https://www.classcentral.com/course/treehouse-aspnet-mvc-basics-45550

(Skill Enhancement Course – SEC)

COMPUTER MAINTENANCE&OFFICE AUTOMATION TOOLS

V Semester SEC-5C (L:T:P :: 1:0:1) 2 Credits

(Course Duration:16 Weeks with 1Hour of Instruction per Week and 2 Hours of Practicals per Week)

Subject Code:212556
Theory Exam: 40 Marks
Theory IA: 10 Marks
Practical Exam: 40 Marks
Practical IA: 10 Marks

Teaching Hours: 16

Exam Duration
Theory - 2 Hours
Practicals - 3 Hours

Course Objectives

This course covers the handling of whole field of Word Processing, Spreadsheets and Presentation along with, the basics of how to maintain and Solve Issues of a Computer. It enables people with lower skill level to perform higher skill level tasks.

Course/Learning Outcomes

Students will be able to

- Efficiently use Word Processors, Spreadsheets and Presentation Software
- Install Operating System on a PC/Laptop
- Solve issues related to Computer and Software Shutdowns
- Troubleshoot basic Network Issues
- Troubleshoot issues related to Externally Connected Devices like Printer/Scanner

UNIT-1 **16 Hours**

Introduction to Computer Maintenance: Operating System –Definition, Role & Functions, Troubleshooting; Concept of Windows, Icons & Menus – create, find, copy move, delete,

rename; File Extension; Networking – introduction, types of networking, Troubleshooting; Definition of NIC, Bridges, Gateway, Routers; Malicious Software – introduction, types.

Word Processing, Spreadsheet and Presentations

Word Processing –Document Option - create, open, close, save, print, export, exit; Page Formatting - margins, orientation, size, layout settings, page background, header & footer, columns with its formatting options; Paragraph Formatting – indents & spacing, alignments, text flow, borders, background. Editing Options - cut, copy, paste, paste special, find & replace. Character/Text Formatting – font styles, typeface, font size, font effects (color, effects, underline, overline, relief, strike through), font position (subscript, normal, superscript), font direction/rotation/scaling, font spacing, background. Bullets and Numbering; Text Case options; Wrap option; Arrange Elements/Components; Group option; Enable/Disable option of a Toolbar Elements. Insert - page break, paragraph break, line break, fields, special character, watermark, frame options, table with its formatting options, formula, shapes/graphics, chart, image, sound, video; Text Artwork; Tools – spell check, mail merge, macros.

Spreadsheet – Document Option - create, open, close, save, print, export, digital signature, exit; Format Options of - page, sheet, cell, row, column, conditional formatting, merge and split options, alignment, arrange, group, flip, graphic; Editing Options - cut, copy, paste, paste special, find &replace. Character/Text Formatting – font styles, typeface, font size, font effects, font position (subscript, normal, superscript), font direction/rotation/scaling, font spacing, background, font case, font; Wrap option; Insert –cell, row, column, sheet, row break, column break, special character, formula/function, chart, image, sound, video.

Presentation - Document Option - create, open, close, save, print, export, digital signature, exit; Editing Options - cut, copy, paste, paste special, find & replace; Slide view options; Insert – slides, fields, special character, hyperlink, animated image,table with its formatting options, formula, chart, image, sound, video; Format options of – character/text, paragraph, page, bullets and numbering, font case, graphic, image, slide design, slide layout; Slide Transition; Custom Animation; Slide Show – with and without timing option.

Text Book

1. Microsoft Office 2019 Step by Step – Joan Lambert and Curtis Frye, Microsoft Press
2. A Conceptual Guide to OpenOffice.org 3 - R. Gabriel Gurley, Create Space Independent Publishing Platform
3. Operating System Concepts - by Abraham Silberschatz, Greg Gagne, and Peter Baer Galvin Publisher: Wiley
4. Data Communications and Networking - Behrouz A. Forouzan, McGraw Hill Education
5. Computer Fundamentals – Anita Goel, Pearson Publications

Books for Reference

1. Microsoft Office Bible - John Walkenbach,Herb Tyson,FaitheWempen, Cary N.Prague,Michael R. Groh,Peter G.Aitkenand Lisa A.Bucki, Wiley India Pvt. Ltd.
2. Operating System – Tenanbaum, Prentice Hall
3. Computer Fundamentals - P. K. Sinha, BPB Publications
4. Computer Networking- J.F. Kurose, K.W. Ross, Pearson Publications
5. Fundamentals of Computers - V.Rajaraman, Prentice- Hall of India

Reference Web Link

https://onlinecourses.swayam2.ac.in/cec19_cs06/preview

https://nptel.ac.in/courses/106/105/106105214/

https://onlinecourses.swayam2.ac.in/cec20_cs05/preview

https://mooc.office365-training.com/en/

(L:T:P :: 0:0:1)

COMPUTER MAINTENANCE&OFFICE AUTOMATION LAB

PART-A

1. Procedure to install an Operating System to a PC/Laptop
2. Procedure to troubleshoot computer power related problems
3. Procedure to trouble shoot basic networking problems
4. Procedure to troubleshoot issues related to externally connected devices like Printer/Scanner

PART – B

5. Create a text document, type a page full of information about any topic of your choice and perform the following:
    - Use various Font Styles, Font Faces, Font Color, Font Size, Font Background Color, Font Effects, Overline & Underline Options, Subscript, Superscript, Type Case.
    - For the paragraph - Use different alignment options, indent and spacing options, bullets and numbering.
    - Page Setup – Size as A4, Margins 1cm on all sides, choose a Page Layout of your choice, add Header and Footer to the Page, apply Page Border, add Page Number.
    - Find and replace a word
6. Create a text document with your Class Time Table and make sure to use the following:
    - Text Formatting Options
    - Text Direction/Flow
    - Cell Color
    - Borders
    - Merge and Split Option
    - Inserting an image with a border to it
    - Page Color
    - Text fields – Date, Time and Formula
7. Create a text document and make scenery using various Shapes and Graphic options. Also, write its title using Text-Artwork option.
8. Create a spreadsheet with your Class Time Table and make sure to use the following:
    - Text Formatting Options
    - Text Direction/Flow
    - Borders
    - Merge and Split Option
    - Cell Format – Date and Time

9. On a spreadsheet create Marks Card details of 10 students with marks of 5 subjects each and do the following:
    - Use appropriate formula to calculate Sum and Average of marks
    - Display the result of a student using if-condition
    - Use Conditional Formatting for differentiating result
    - Using appropriate functions and display the Total Count of students; Average, Maximum and Minimum marks scored in each Subject and Over All, Count of each type of result, Pass Percentage of the Class.
    - Based on the Total Marks Scored, display a Formatted Chart of your choice
10. Make a presentation on a topic of your choice having minimum of 10 slides with the following option:
    - Various Slide Layouts
    - Background Theme/ Slide Design
    - Text Formatting Options
    - Add Image, Shapes, Chart, Table
    - Slide Number
    - Audio & Video
    - Various Slide Transitions
    - Custom Animation on Text and Other Objects like Shape, Image etc.

DATA COMMUNICATIONS AND COMPUTER NETWORKS

VI Semester B.Sc.DSE – 6A (L:T:P::3:0:3) 6 Credits

(Course Duration:16 Weeks with 3 Hours of Instruction per Week and 6 Hours of Practicals per Week)

Subject Code: 212636 **Teaching Hours:48**
Theory Exam: 80 Marks
Theory IA: 20 MarksExam Duration
Practical Exam: 80 Marks Theory - 3Hours
Practical IA: 20 Marks Practicals – 4Hours

Course Objective

The course objectives include learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems.

Course/Learning Outcome

- Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.
- Student should be able to, implement and maintain a typical computer network (LAN).
- Familiarize the student with layered communication architectures (OSI and TCP/IP).
- Familiarize the student with switching networks, Error detection and correction codes.
- Familiarize network traffic management

UNIT – 1 **16 Hours**

Data Communication, Component and Basic Concepts –

- Introduction, Characteristics – Delivery, Accuracy, Timeliness and Jitter
- Components – Message, Sender, Receiver, Transmission medium and protocol

Topology – Mesh, Star, Tree, Bus, Ring and Hybrid Topologies

Transmission modes – Simplex, Half Duplex, Full Duplex,

Categories of networks – LAN, MAN, WAN

Guided Media – Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable

Unguided Media – Radio Wave Transmission Systems, Microwave Transmission Systems, Infrared Transmission Systems and Satellite Communication System (Brief).

Signals

- Introduction – Analog and Digital data, Analog and Digital signals
- Periodic Analog Signals – Pulse Amplitude, Period, Frequency and Phase
- Digital Signals – Bit rate, Bit length, Transmission of digital signals

Analog Signaling- concepts of ASK, FSK, PSK

UNIT – 2 **16 Hours**

The OSI Model – Functions of all the Seven Layers, TCP/IP Suite

Networking Devices – Functions and Applications of Hub, Switches, Bridges, Repeaters

Internetworking Devices – Functions and Applications of Routers and Gateways

IP Addressing – Dynamic IP Addressing, Static IP Addressing, Types of IP Addresses

LAN Topology – Ethernet (IEEE 802.3), Token Bus (IEEE 802.4), Token Ring (IEEE 802.5)

Protocols – Overview only- TCP, UDP, IP, IPV4, IPV6, SMTP, SNMP, HTTP, FTP, DNS, ICMP IGMP, ARP, RARP

UNIT – 3 **16 Hours**

Packet Switching Networks – Concept-Packet Network Topology, Datagrams and Virtual Circuits, Connectionless Packet Switching, Virtual Circuit Packet Switching.

Routing Concepts – Routing Tables, Dijkstra's Shortest Path Routing Algorithm,

Congestion Control Algorithms - Leaky Bucket Algorithm.

Error Detection

- Types of error – Single bit error, Multiple bit error and Burst error
- Detection – Redundancy,Checksum.
- Error correction – Single bit error correction, Hamming code

Introduction to data security (private key, public key)

Text Book

Introduction to Data Communications and Networking by Behrouz Forouzan.

Books for Reference

1. Computer Networks by Andrew S Tanenbaum
2. Networking Essentials – Third Edition – Jeffrey S. Beasley, Piyasat Nilkaew

Reference Web Link

https://www.classcentral.com/course/swayam-introduction-to-computer-networks-internet-protocols-20246

https://www.classcentral.com/course/youtube-computer-networks-complete-playlist-46807

https://www.classcentral.com/course/comnetworks-824

pinoybix.org › 2017/07 › mcq-in-introduction-to-dataco...

(L:T:P :: 0:0:3)

PART –A

COMPUTER NETWORKS LAB

1. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.

2. Study of Network Devices in Detail.

3. Study of network IP.

4. Connect the computers in Local Area Network.

5. Implementation of RSA Algorithm.

6. Implementation of Dijkstra's Shortest Path Algorithm.

PART –B

WEB DESIGNING LAB

1.Create a form having number of elements (text boxes,radio buttons,check boxes and so on). Write JavaScript code to count the number of elements in a form.

2. Design a table using row span and cols pan attributes

3.Create two WebPages, first page consisting of student details using Forms and second page consisting of educational information. Link both the pages(Use image, ordered and unordered lists)

4.Create web page to demonstrate frames

5.Write a JavaScript to check whether the textboxes in a form has been left blank, popup an alert indicating which text box has been left empty.

6.Develop a html form which accepts any mathematical expression using JavaScript and displays the result.

7.Write a JavaScript code block using arrays and generate the current date in words, this should include the day, month and year.

8.Create a form to accept student information and write JavaScript code to declare the result.

9.Create a webpage which switches between the two images as the mouse pointer moves over the images.

10.Design a web page for restaurant transaction.

Reference Web Link

https://www.classcentral.com/course/udemy-web-designing-course-beginner-to-advanced-l-25208

https://www.classcentral.com/course/udemy-build-beautiful-html5-website-24255

https://www.classcentral.com/course/udemy-javascript-essentials-mini-course-27892

COMPUTER GRAPHICS

VI Semester B.Sc.DSE – 6B (L:T:P::3:0:3) 6 Credits

(Course Duration:16 Weeks with 3 Hours of Instruction per Week and 6 Hours of Practicals per Week)

Subject Code: 212646 **Teaching Hours: 48**
Theory Exam: 80 Marks
Theory IA: 20 Marks **Exam Duration**
Practical Exam: 80 Marks Theory - 3Hours
Practical IA: 20 Marks Practicals – 4 Hours

Course Objective

The main objective of this paper is to introduce to the students the concepts of computer graphics and animation. It starts with an overview of interactive computer graphics, two-dimensional system and mapping, then it presents the most important drawing algorithm, two-dimensional transformation; Clipping, filling and an introduction to 3-D graphics and multimedia skills with making an animation video.

Course/Learning Outcome

Students will

- Have knowledge and understanding of the structure of an interactive computer graphics system
- Have knowledge and understanding of geometrical transformations and 2D viewing and clipping.
- Have knowledge and understanding of techniques for representing 3D geometrical

UNIT-1 **16 Hours**

Introduction – applications of computer graphics, operations of computer graphics, graphics software packages.

Graphical input – output devices- graphical input devices, graphical output devices, raster scan video principles- raster scan monitors, color raster scan systems, plasma panel display, LCD panels, hard copy raster devices. Random scan devices- monitor tube displays, plotters.

Scan conversion – scan conversion methods, polynomial method for line, polynomial method for circle, DDA algorithm for line, circle, Bresenham's

algorithm for drawing line and circle. Midpoint methods for drawing line and circle, problems of scan conversion.

Scan conversion for solids- solid areas or polygons, inside-outside test – odd even method.

Solid area filling algorithms- boundary fill algorithm, scan line fill algorithm, scan line seed fill algorithm.

UNIT-2 **16 Hours**

2D geometrical transformations – basic transformations- translation, rotation, scaling, homogeneous co-ordinate system – transformations in homogeneous notation, inverse of basic transformations, scaling about a reference point, rotation about an arbitrary point.

Other transformations – reflection about any arbitrary line, shearing,

2D viewing and clipping- windows and viewports, viewing transformation, clipping of lines in 2D- Cohen - Sutherland clipping algorithm, midpoint subdivision method, polygon clipping

Projection& 3D Transformations – introduction, parallel projection- orthographic projection, axonometric projection, oblique projection, perspective projection – standard perspective projection, vanishing points. 3D Transformation - Introduction

UNIT-3 **16 Hours**

Multimedia: Definition, CD-ROM and the multimedia highway, Uses of Multimedia

Introduction to making multimedia – The stages of Project, the hardware & software requirements to make good multimedia, Multimedia skills.

Multimedia building blocks: SOUND: MIDI, Digital audio, audio file formats. Images: still images, color and file formats.

Animation: principles of animation, making animation. VIDEO: using video, how video works, and video standards.

Text Book

1. Computer Graphics, Multimedia and Animation by Malay K Pakhira

2. Computer Graphics, Donald Hearn, M. Pauline Baker, Prentice-Hall

3. Computer Graphics, Roy A. Plastock, Gordon Kalley, Schaum‘s Outlines, McGraw Hill

4. Tay Vaughan “Multimedia – making it work”, TMH publication.

Books for Reference

Procedural Elements for Computer Graphics, David F. Rogers, McGraw Hill, 1995

Interactive Computer Graphics, Addison-Wesley, 2000 3- Mason Woo et al

Reference Web Link

https://onlinecourses.nptel.ac.in/noc21_cs97/preview

https://tutorialslink.com/Articles/2-D-geometric-transformations/1339

https://www.javatpoint.com/computer-graphics-scan-conversion-definition

https://www.slideshare.net/azira96/chapter-7-making-multimedia

(L:T:P :: 0:0:3)

PART-A

COMPUTER GRAPHICS LAB

1. Program to draw a rectangle, lines as its diagonals and a circle.
2. Program to display BAR graph.
3. Program to display rotating WHEEL.
4. Program to display movement of Fish.
5. Program to rotate a circle between two ends of a line.
6. Program to implement Bresenham's Line drawing algorithm.
7. Program to implement Cohen-Sutherland Line clipping algorithm.
8. Program to show the text animation on the screen.

PART –B

WEB DESIGNING LAB

1.Create a form having number of elements (text boxes,radio buttons,check boxes and so on). Write JavaScript code to count the number of elements in a form.

2.Design a table using row span and cols pan attributes

3.Create two WebPages, first page consisting of student details using Forms and second page consisting of educational information. Link both the pages(Use image, ordered and unordered lists)

4.Create web page to demonstrate frames

5.Write a JavaScript to check whether the textboxes in a form has been left blank, popup an alert indicating which text box has been left empty.

6.Develop a html form which accepts any mathematical expression using JavaScript and displays the result.

7.Write a JavaScript code block using arrays and generate the current date in words, this should include the day, month and year.

8.Create a form to accept student information and write JavaScript code to declare the result.

9.Create a webpage which switches between the two images as the mouse pointer moves over the images.

10.Design a web page for restaurant transaction.

Reference Web Links

https://www.classcentral.com/course/udemy-web-designing-course-beginner-to-advanced-l-25208

https://www.classcentral.com/course/udemy-build-beautiful-html5-website-24255

https://www.classcentral.com/course/udemy-javascript-essentials-mini-course-27892

(SKILL ENHANCEMENT COURSE – SEC)

PYTHON PROGRAMMING

VISemester SEC-6C (L: T: P :: 1:0:1) 2 Credits

(Course duration:16 Weeks with 1Hour of Instruction per Week and 2 Hours of Practicals per Week)

Subject Code: 212656 **Teaching Hours:16**
Theory Exam: 40 Marks
Theory IA: 10 Marks **Exam Duration**
Practical Exam: 40 Marks Theory - 2 Hours
Practical IA: 10 Marks Practicals - 3 Hours

Course Objective

- To Learn and Understand Python Programming Basics and Paradigm
- To apply the Problem Solving Skills using Python

.

Course/Learning Outcome

Student will be able to

- Design and Implement a Python Program to Solve a Basic Real World Problem
- Experience the Python Program Development Environment
- Easily Learn and Understand Advance/Specialized Python Programming on their own

UNIT I **16 Hours**

Introduction and Basic Concepts: Introduction to Python, Features, Python Interpreter and Interactive mode, Various Datatypes in Python, Type Casting, Comments, Variables, State Variable, Expressions, Statements, Operators. Boolean Data – Assignment and Use. Strings – Operators, Indexing, Slicing, Immutability, Inbuilt Methods and Functions. Numeric Datatypes – Operators, Precedence of Arithmetic Operators, Inbuilt Methods and Functions. Lists – Operations, Parameters, Indexing, Slicing, Inbuilt Methods and Functions, Mutability,

Aliasing, Cloning. Tuples – Operations, Inbuilt Methods and Functions, Advanced List Processing (Comprehension). Dictionary – Operations, Inbuilt Methods and Functions. Sets – Introduction and Operation. Binary Datatype – Introduction and Types.

Flow Control Statements And Functions: Conditional Branching/Selection Statements– Simple if, if-else, if-elif-else, nested if, Dictionary mapping (Alternate for Switch in Python). Ternary Operator. Iterative/Looping Statements and its Controls – while, for, nested loops, Implementation of Loop with Numeric Data and Lists. Range, Break, Continue. Functions – Introduction, Types and Uses, Creating and Calling a Function, Argument/Parameters – Introduction and Types, Return Statement, List as an Argument, Tuple as a Return Value, Pass Statement, Recursion, Implementation of User Defined Functions using Numeric and Text Data.

Text Book

1. Core Python Programming – R. Nageshwara Rao, Dreamtech Publications, First Edn

2. Python Programming: Using Problem Solving Approach – Oxford Publications, First Edn

Books for Reference

1. Python Crash Course: A Hands-On, Project-Based Introduction to Programming (2nd Edition) by Eric Matthes

2. Head-First Python: A Brain-Friendly Guide (2nd Edition) byPaul Barry

3. Grokking Algorithms: An illustrated guide for programmers and other curious people (1st Edition) by Aditya Bhargava

Reference Web Link

https://wiki.python.org/moin/BeginnersGuide/Programmershttps://www.w3schools.com/python/

https://www.tutorialspoint.com/python/index.htm

https://www.programiz.com/python-programming

https://static.realpython.com/python-basics-sample-chapters.pdf

https://www.youtube.com/watch?v=_uQrJ0TkZlc

https://www.youtube.com/watch?v=gfDE2a7MKjA

(L:T:P :: 0:0:1)

PYTHON PROGRAMMING LAB

PART - A

1. Write a Python Program to Perform Arithmetic Operations on Various Types of Numeric Data.
2. Write a Python Program to Demonstrate any 10 String Inbuilt Methods.
3. Write a Python Program to implement all 3 Types of if Statements.
4. Write a Python Program to Demonstrate Looping Statement.
5. Write a Python Program to Illustrate Basic ATM Transactions.

PART - B

6. Create an Array and a List. Write a Python Program to perform the following options:
   a. Add/Append Element in Array and List
   b. Remove/Delete Elementin Array and List
   c. Count the Number of Elements in an Array
   d. Reverse the Order of the Elements in Array and List
   e. check forDuplicate Elements in an Array and Print the Result.
   f. Sort the Elements in an Array
7. Write a Python Program to Illustrate a tuple.
8. Write a Python Program to Demonstrate the Working of a set
9. Write a Python Program to Implement the following operations of a Dictionary
   a) Add/Insert an Item
   b) Remove/Delete an Item
   c) Update an Existing Item in the Dictionary
   d) Access/Get an Item
10. Write a Python Program using User Defined Menu-Driven Functions to Convert km to Miles and Miles to km.

Books for Reference

1. Python Crash Course: A Hands-On, Project-Based Introduction to Programming (2nd Edition) by Eric Matthes
2. Head-First Python: A Brain-Friendly Guide (2nd Edition) byPaul Barry
3. Grokking Algorithms: An illustrated guide for programmers and other curious people (1st Edition) by Aditya Bhargava

Reference Web Link

https://www.w3schools.com/python/

https://www.tutorialspoint.com/python/index.htm

https://www.programiz.com/python-programming

https://static.realpython.com/python-basics-sample-chapters.pdf

https://www.youtube.com/watch?v=_uQrJ0TkZlc

https://www.youtube.com/watch?v=gfDE2a7MKjA

https://wiki.python.org/moin/BeginnersGuide/Programmers

QUESTION PAPER PATTERN (DSE)

THEORY

Max Marks: 80 **Exam Duration:3 Hours**

PART - A

Answer any TEN Questions **2*10=20 Marks**

1,2,3…….12 (Four Questions from Each Unit)

PART – B

Answer any Two Questions from Each Main **20 Marks**

13 a.

b.

c.

(Questions should be from Unit - 1 and can have subdivisions.)

14. a. **20 Marks**

b.

c.

(Questions should be from Unit - 2 and can have subdivisions.)

15. a. **20 Marks**

b.

c.

(Questions should be from Unit - 3 and can have subdivisions.)

SCHEME OF VALUATION FOR PRACTICAL EXAMINATION (DSE)

C1andC2areinternalteststobeconductedduring8th and16th weekof thesemesterrespectively.C3 is the semester-end examination that is conducted for 4 Hours.

The student has to compulsorily submit the practical record during C1 andC2. For C3,therecordhasto be certified by theHead ofthe Department.

- Thestudent isevaluatedfor10marksinC1and10 marks inC2 respectively.
- Thestudentisevaluatedfor80marksinC3asperthefollowingscheme:

There will be two questions. A candidate has to prepare procedures for both the questions and execute both the programs.

Procedure Development	:	2 *15=30 Marks
Implementation	:	2*15= 30 Marks
Viva	:	10 Marks
Record	:	10 Marks
Total	**:**	**80 Marks**

EVALUATION PATTERN (SEC)

Internal Assessment

Theory - C1 + C2 = 05+ 05 =10

Practicals - C1 + C2 = 05+ 05 =10

Practical Examination= 40

Total =50

SCHEME OF VALUATION FOR PRACTICAL EXAMINATION (SEC)

C1andC2areinternalteststobeconductedduring8th and16th weekofthesemesterrespectively.C3 is the semester-end examination that is conducted for 3 Hours.

The student has to compulsorily submit the practical record during C1 andC2. For C3,therecordhasto be certified by theHead ofthe Department.

- Thestudent isevaluatedfor05 marksinC1and05 marks in C2 respectively.
- Thestudentisevaluatedfor40marksinC3asperthefollowingscheme:

There will be two questions one from Part-A and one from Part-B. A candidate has to prepare procedures for both the questions and execute one program of examiner's choice.

Procedure Development	:	2 *10=20 Marks
Implementation	:	1*10= 10 Marks
Viva	:	05 Marks
Record	:	05 Marks
Total	**:**	**40 Marks**

Note:Practical Examination should be conducted with two Internal Examiners.

Additional List of Examiners 2021

Sl. No.	Name	Designation	Phone No.	Address for Communication
1.	Smt.Geetha D	Asst. Professor	8147153209	Govt.First Grade College,Pandavpura
2.	Smt.Reena Mol V U	Asst. Professor	8660083765	St.Philomena'sCollege,Mysuru
3.	Smt.Archana A	Asst. Professor	9108372164	St.Philomena'sCollege,Mysuru
4.	Smt.SyedaMasarath	Asst. Professor	9113023036	St.Philomena'sCollege,Mysuru
5.	Smt.Sandra Agnes	Asst. Professor	7892424466	St.Philomena'sCollege,Mysuru
6.	Smt.Hemalatha B N	Asst. Professor	8970045690	De Paul Degree College
7.	Smt.Savitha K V	Asst. Professor	9986683891	Hindusthan First Grade College,Mysuru
8.	Smt.Sukshma R V	Asst. Professor	8095078302	Hindusthan First Grade College,Mysuru
9.	Sri.TejaswiS	Asst. Professor	9686667159	Seshadripuram degree college
10.	Dr. Kouser	Asst. Professor	7975177122	Gfgc, Gundlupet
11.	Usha	Asst. Professor	8310002538	Maharani's Science College,Mysuru
12.	Mrs. Mruthulasojan	Asst. Professor	9342010599	Seshadripuram degree college
13.	Hemavathi M	Asst. Professor	8792524749	Maharani's Science College,Mysuru

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DEPARTMENT OF COMPUTER SCIENCE

BOS MEETING(CBCS)

Date: 24-07-2021

AGENDA

1. III Year B.Sc. Computer Science (CBCS) Syllabus to be approved.

2. Scheme of Examination and Evaluation pattern for both theory and practicals to be discussed.

3. Approval of the Additional Examiners.

PROCEEDINGS

The BOS meeting was held on 24th July,2021 in the department of Computer Science. At the beginning all the members were welcomed by the Chairperson&Head of the Department, Smt. Shruthy Poonacha.

1. III year B.Sc.(V Sem &VI Sem) Computer Science Syllabus, discussed and approved and the Suggestions were implemented.

2. Scheme of Examination and Evaluation Pattern of Theory and Practicals of DSE & SEC, discussedand approved.

3. Additional Examiners for examinations were approved.

Those examiners approved in the BCA board are eligible for the evaluation work in the B.Sc. board also.

4. Word of gratitude to all the members was rendered by Ms.Radhika Rani.Asst.Prof., Department of Computer Science

Signature

1.

(Smt. Shruthy Poonacha)

2.

(Dr. Hamsaveni L.)

3.

(Smt. Vanishree K S)

4.

(Sri. Anil Kumar R J)

5.

(Dr. Dinesh R)

6.

(Sri. Manjunath K S)

7.

(Sri. Santhosh Kumar)

8.

(Smt. Radhika Rani)

9.

ABSENT

(Smt. Rachana C.P.)

Mahajana Education Society (R.)
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BOARD OF STUDIES (BoS)

DEPARTMENT OF CRIMINOLOGY AND FORENSIC SCIENCE

UG ☑

PG ☐

NEP Syllabi for I and II Semester B.A

Criminology and Forensic Science

2021-22

Department of Criminology and Forensic Science

Motto:

Become great and vanquish all enemies

Vision:

To develop youth that are imbibed with moral, ethical, social, & constitutional values.
To also equip students with scientific concepts to vindicate law & combat crime.

Mission:

To impart knowledge based on the scientific principles so as to enable youth to understand crime in all its manifestations;
Device ways and means of controlling crime; and
Reformation and rehabilitation of the offenders by application of the knowledge derived from cognate branches of the study, for the benefit of the society.

ProgramOutcomes (POs) for Bachelor of Arts

PO1 **Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.

PO2 **Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.

PO3 **Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.

PO4 **Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.

PO5 **Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.

PO6 **Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.

PO7 **Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.

PO8 **Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.

PO9 **Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.

PO10 **Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.

PO11 **Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.

PO12 **Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

Objectives: Criminology and Forensic science

1. Crime is one of the major social problems. It has posed a threat to social organization. To maintain peace, harmony and social order scientific approach to this problem is need of the hour. The problem of crime can be effectively tackled with the help of different agencies of Criminal Justice like Police, Prison, Law, Court and various other agencies. The study pertaining to different agencies of Criminal Justice is scientifically studied at the graduation level in Forensic Science and Criminology.

2. The students are exposed in this course on various aspects of Crime, Criminality, Reformation and Rehabilitation of Criminal, Victim of Crime, Victim Compensation, Victim Assistance and Restorative Justice to the parties concerned Victim of Crime, Criminal Law, Forensic Science, Forensic Medicine and Toxicology and other branches.

3. Objectives of the study of this science are to make the students to understand the process of making laws, breaking of the laws, societal reaction to breaking of the laws and modern crimes. To understand the application of science in the identification and analysis of physical clues found at the Crime Scene, Criminal and Victims.

4. To prepare the students to pursue their career in the State and Central Forensic Science Institutes, Law enforcement agencies and Judiciary. To pursue their career in Social Security and Voluntary Organizations and prevent the occurrence of Crime.

5. It is a professional course with emphasis on development of necessary skills for a Criminological profession in police, forensic science, private security management, private detective work, corrections, and Juvenile Institutions.

List of BoS Members

Sl. No	Category	Name & Designation	Address for Communication	E-Mail & Mobile No.
1	Chairperson	Miss. Megha Krishna Nilajkar Assistant Professor & HoD	Dept of Criminology & forensic science SBRR Mahajana First Grade College (Autonomous), Mysuru.	Meghanilajkar96@gmail.com Mob: 9686403414
2	Member	Dr. Saritha D'souza Reader & Head	Dept of Criminology & forensic science School of Social Work, Roshni Nilaya, Valencia, Mangaluru	sarithavd@sswroshni.in Mob.91-9481014906
		Prof. Basavaraj D Masthi Associate Professor &	Dept of Criminology & forensic science C. M. Managuli First	bdmasti@gmail.com

	Two	Head	Grade College, Sindagi	Mob.91-9449644221
3	Experts from other University			
		Shashidhar. E. S	Dept. of Forensic Science School Of Science.	
		Assistant Professor	Jain (Deemed to be) University	es.shashidhar@jainuniversity.ac.in Mob. 91-9845673982
		Dr. G.B. Aravind	Dept. of Forensic Medicine,	
4	University Nominee	Associate Professor	JSS Academy of Higher Education &Research, Mysore.	profaravind@gmail.com Mob.9886089317
5	One person from industrial Expert	Dr. Krishnaraju K. K. Deputy Director	Regional Forensic Science Laboratory, Mysore	Mob.91- 9448500080
6	Alumnus	Francis Devasahayam. B Assistant Professor	Department of Criminology and Forensic science St. Philomena's college, Mysuru	francis91b@gmail.com Mob:9035304313

Course Structure (NEP 2020)

Discipline Specific Course (DSC) and Open Elective (OE)

I Year

Course type, code and Title		Hours/week		Credits	Maximum Marks	Exam Duration	Total Marks
		L	T / P	L: T: P			
Criminology & Forensic science - I Sem							
DSC(1)	211172	Fundaments of Criminology.		4:0:2 (6 credits)		2 ½ hours	150
DSC(1)-Lab		**Lab Practical on-** Fundaments of Criminology.				3 hours	

O E	21OECRI101	**1.**Police Organization In India.	3:0:0 (3 credits)		2 ½ hours	1 00
	21OECRI102	**2.**Elements of Forensic Science.				
	Anyone to be opted					

Criminology & Forensic science - II Sem

DSC(2)	211272	Criminalistics.	4:0:2 (6 credits)	
DSC(2)-Lab		**Lab Practical on-** Criminalistics.		
OE	21OECRI201 21OECRI202	**1.**Social Problems and Crime. **2.**Finger Print	3:0:0 (3 credits)	

Science.			
Anyone to be opted			

DSC (1) Syllabus for B.A Criminology and Forensic Science (Basic and Honors)

Semester I

Course Code :211172

Course Title :

DSC (1)Fundaments of Criminology(Theory)

DSC (1)**Lab-**Fundaments of Criminology

Course Credits :06 (4:0:2)

Hours of Teaching/ Week : 04 (Theory)

04 (Practical)

Total Contact Hours :56 Hours (Theory)

56 Hours (Practical)

Formative Assessment Mark :40 (Theory)

25(Practical)

Exam Duration : 2 ½ Hours (Theory)

3 Hours (Practical)

Semester End Examination Marks :

60 (Theory)

25 (Practical)

CourseOutcomes(CO's):

CO1: Recognize the meaning, applicability, and fundamental ideas of criminology; comprehend the numerous theories and methods used in the study and practise of the field.

CO2: Identifying the importance of crime and its various forms, including how criminals are classified as white collar, organised, habitual, professional, etc.

CO3: To research the various criminology schools and comprehend criminal behaviour

CO4: Analysis of various crime prevention kinds and concepts, such as police tactics and environmental design,to familiar with the structure and roles of the NCRB, SCRB, and DCRB.

Content of TheoryCourse -	Hours
Unit–1Introduction to Criminology	**14**

Chapter-1HistoricalPerspective ● Historicalperspectives of Criminology ● Nature,origin and scopeofCriminology ● Deviance,social context of deviance, delinquency ● Criminology andits relations with other social sciences– Criminology's interdisciplinarynature. **Chapter-2Concept ofCrimes** ● Crime–Etymology. ● Meaning,Definitions and Characteristics. ● Difference between Crime, Sin, ViceandTort. ● Classification ofCrimes.	
Unit–2Explanations of Crime	**14**
Chapter-3 ExplanationofCrime by Different Schools ● Schools of Criminology:Meaningand itsImportance inExplanation ofCrime ● Pre-Scientific schools:Demonological and FreeWill Thoughts. **Chapter-4Classical School** ● Classical school, Proponentand theircontribution ● Neo-classical school ● Positive School-Biological positivism, profounder(Lombroso, Hooton, Glueck)contribution ● Cartographicschool,profoundercontribution	

Unit–3ContemporaryexplanationofCrime andCriminal Behaviour	14
Chapter-5 Sociology ofCrime ● Sociological Explanation ● Differentialassociation,Differential OpportunityandMulti-FactorApproach **Chapter-6CriminalProfiling** ● Historicalperspective and development ● Makingofa profile ● Investigative leads **Chapter-7OtherFormsofCrimes & Types Criminals** ● Organizedcrime, WhiteCollarCrime,Cybercrime andEnvironmentalcrime ● Habitualoffenders, Professional criminalsandRecidivists ● Violent andaggressive offenders, sexual offenders	
Unit–4Prevention ofCrimeand Crime Statistics	**14**
Chapter-8Concept ofCrimePrevention ● Definitionofconcepts:Primary,secondary and tertiarycrimeprevention ● Preventionofvarioustypesof crime andMethods: Punitivemethods, defense methods, intervention method– ● CrimePreventionThroughEnvironmentalDesign(CPTED)–Crimepreventionbypolice–Crime PreventionOrganizations. **Chapter-9Crime Statistics and CurrentTrend** ● Crime statistics:MeaningandItsImportance ● National Crime RecordBureau: ReportingcrimeandRecordingcrime ● Crime/victim surveys:International crimecomparisons,Changingcrime patternsand Unreported crime.	

Text Books:

1. Conklin,J. E. (2001). Criminology. NewYork:Macmillan PublishingCompany.Edelston, C. D.,&Wicks, R.I.(1977). An introduction to criminal justice.New York: Gregg Division,McGraw-Hill.
2. H

agan,F.(2017).Introduction to Criminology(9thed.).LosAngeles: SAGE.
HarryE.,Friday,P.,Roebuck,J.,&Edward,S.(1981).Crimeandpunishment:AnintroductiontoCriminology. NewYork:Free Press Hughes, G. (2002). Crime preventionand community safety:New directions.London:Sage.

3. Jeffery,C.R.(1977).Crimepreventionthroughenvironmentaldesign.BeverlyHills,CA:SagePublications .
4. Lab, S. (2013).Crime prevention(8th ed.). Elsevier.
5. Siegel,L.(2017).Criminology:Theories,Patternsandtypologies(13thed.).Sydney:CengageLearning.
6. Sutherland, E. H.,&Cressey,D. R.(2010)-Principlesof Criminology. Philadelphia 10thEdition,PA:Lippincott.
7. Void , G., & Bernard,T.J.(1986).Theoretical Criminology. New York: Oxford UniversityPress.
8. Ram Ahuja (2000) Criminology, Rawat Publications
9. ParanjapeN.V(2015)Criminology,PenologyandVictimologySixteenthedition,CentralLawPublications
10. Tim Newburn Criminology.
11. Adler, Multer ,Laifurrn Criminology

Journals:

CriminologyISSN:1745-9125InternationalCriminology,springer.Asian Journal of Criminology, springer.

Digital References:

1. https://onlinelibrary.wiley.com/journal/17459125
2. https://www.longdom.org/scholarly/criminology--journals-articles-ppts-list-3079.html
3. https://scholarlycommons.law.northwestern.edu/jclc/
4. http://www.inquiriesjournal.com/topics/16/criminology-and-criminal-justice
5. https://psycnet.apa.org/record/1958-04359-000
6. https://journals.sagepub.com/doi/abs/10.1177/1362480607075851
7. http://ecite.utas.edu.au/130268
8. https://eprints.qut.edu.au/198603/
9. https://www.jstor.org/stable/1140864
10. https://www.jstor.org/stable/23638473

Content of Lab Practical CoursesDSC-1:

Credits:02 Marks: 25+25=50

List of Experiments to beconducted

1. Analysis of news items ofcriminological importance from the dailynewspapers
2. Collection of crimenewsclippings
3. Studyofcrimecaseselucidatingthe criminal behavior ofthe accused.
4. Analysis ofcriminal cases to find out which of thetheoryof criminologyexplains it.
5. Studyofcriminalcaseswherethe media hasactedas a pressuregroup.
6. Classification and types of cyber-crimes.
7. Crime statisticsanalysis-a crimeagainstpersonand property
8. StudyofGraphicalRepresentation of CrimeStatistics
9. Kim'sGame:Observation,Retention,Memory,andInterpretation.
10. Infographic representation of Crime Statistics From Secondary.

Course Articulation Matrix - 211172

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	1	-	1	1	1	1	2	2	1	1

CO2	2	2	1	1	1	2	2	1	2	2	1	2
CO3	2	2	2	3	1	1	1	2	1	2	2	2
CO4	1	3	3	3	3	2	2	2	3	3	3	2
Weighted Average	1.75	2.25	1.75	2.33	1.5	1.5	1.5	1.5	2	2.25	1.75	1.75

OE (1) Syllabus for All Programs (Except B A)

Semester I

Course Code:21OECRI101

Course Title :

OE (1)Police Organization in India (Theory)

Course Credits :03 (3:0:0)

Hours of Teaching/ Week : 03 (Theory)

Total Contact Hours :42Hours (Theory)

Formative Assessment Mark :40 (Theory)

Exam Duration : 2 ½ Hours (Theory)

Semester End Examination Marks :

60 (Theory)

Course outcomes (CO's):

CO1: Recognize the idea behind and goals of the Indian Police Organization, as well as how it has evolved through time to meet societal demands.

CO2: Acquire understanding about the organization, structure, and functions of the police as well as their historical evolution.

CO3: Illustrate the various Police Units at the State and the Center& Learn about the various Auxiliary Units and how they operate.

Content of Theory Course	Hours
Unit-I:Introduction to Police Organization	**14**

Chapter-1 Police Organization: Concept and BriefHistoricalBackground **Chapter-2**CentralPoliceOrganizationandInstitutes:OrganizationalBasisandtypes LineUnits:AssamRifles,CentralReservePoliceForce,BorderSecurityForce,IndoTibetanBorderPolice,CentralIndustrialSecurityForceandSeemaSurakshaBal. StaffUnits:BPR&D&NCRB. Mixed Units: CBI, RAWandNarcotic Control Bureau– NCB. **Chapter-3**RelationshipbetweenPoliceandLocalGovernment:Magistracy,Executive MagistratesandOtherDepartments (Forest, Excise,Prison, Healthetc.) **Chapter-4**Police Administration: Enforcinglawofthe land, Maintaining Lawand Order, othercitizenservices,etc.	
Unit-II:StatePolice andSpecial Units	**14**
Chapter-5 GeneralOrganizationalstructure, StateCrime RecordBureau, StateFinger Print Bureau, StateForensic ScienceLaboratoryandIntelligenceDepartment/Special branch. **Chapter-6**Typesof Policestation and theirFunction: Civil, Trafficand Womenpolice stations, cyber-crime policestations.	
Chapter-7 Vigilance Units: ACB,Lokayukta andotherinstitutionalvigilance(KPTCL, KSRTC, BMTF, BDA, Revenue TaskForce)	
Unit-III:Auxiliary Units andOtherOrganizations	**14**
Chapter-8 Homeguards,SpecialPolice Officers,Students Police Cadets and CivilDefense **Chapter-9**Karnataka State andDistrictLegal Authorityand theirfunctions **Chapter-10**Statewomencommission,StateSC/STandMinorityCommissions,State HumanRightsCommissions.	

Text Books:

1. Banerjee,D, 2005, Central Police Organization,PartI&PartII,AlliedPublishers. Pvt.Ltd.,
2. Doval Ajit andLalBR, 2010, ManasPolice SecurityYearBook 2010-2011,ManasPublications.
3. EarleHoward H. 1970, PoliceCommunityrelations, Charles C. Thomas Publisher.
4. Ghosh Gautam, 2007 Police Accountabilityat theCuttingEdgeLevel,APH PublishingCorporation.
5. GuharoyJT, 1999, Policingin the21st CenturyIndianInstitute of PublicAdministration.
6. Gupta,Anandswarup, 2007, Crime andPolice inIndia,SahityaBhavan,Agra.
7. James, Vadckumchery, 1998, Crime, Police andCorrection, APH PublishingC., New Delhi.
8. JusticeMallimath Committeeon CriminalJustice Reforms,UniversalLawPub, 2003.
9. K. Padmanabaiah Committeeon Police Reforms,2001.
10. Ramanjam,T, 1992, Prevention andDetection ofCrime, MadrasBookAgency.
11. MisraK.K., 1987, PoliceAdministration in AncientIndia,K.K.Publications.
12. Mayhill,ParnelaD, 1998 Police– Communityrelations&administrationof justice, PrenticeHallEnglewoodCliffs.
13. Ramanjam,T, 1992, PreventionandDetection ofCrime, MadrasBookAgency.
14. SinghSoibamIbocha, 2007 CommunityPolicing,Akansha PublishingHouse, New Delhi
15. SrivastavaAparna, 1999,Role ofPolice in ChangingSociety, APH PublishingHouse.
16. Karnataka Police Manual, Vol-i, ii and iii.

Journals:

Indian PoliceJournal publishedbyBureau of PoliceResearchandDevelopmentNewDelhi.

CrimeinIndiapublishedbyNational Crime RecordBureau. MHAGovernment ofIndia New Delhi

Course Articulation Matrix –21OECRI101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12

CO1	2	1	3	2	3	2	2	3	2	2	2	3
CO2	2	3	3	2	2	2	1	3	2	3	2	1
CO3	2	2	2	3	1	2	2	2	2	2	3	2
Weighted Average	2	2	2.66	2.33	2	2	1.66	2.66	2	2.33	2.33	2

OE (1) Syllabus for All Programs (Except B A)

Semester I

Course Code: 21OECRI102

Course Title :

OE(1)Elements of Forensic science(Theory)

Course Credits :03(3:0:0)

Hours of Teaching/ Week : 03 (Theory)

Total Contact Hours :42 Hours (Theory)

Formative Assessment Mark :40 (Theory)

Exam Duration : 2 ½ Hours (Theory)

Semester End Examination Marks :

60 (Theory)

Course outcomes (CO's):

CO1: Recognize the meaning, characteristics, applications, and historical background of forensic science.

CO2: Acquire basic knowledge on fundamental components, several branches, and guiding concepts of forensic science.

CO3: What are the central and state forensic science laboratories' responsibilities and significance &describe the functions of the DTI, BPRD, and National Crime Record Bureau.

Content of TheoryCourse	Hours
Unit-I:FundamentalConcepts of Forensic Science	**14**
Chapter-1 Definitions, Nature,Scopeandrole of forensic science. **Chapter-2**Historical development and contribution of pioneers **Chapter-3**Principles offorensicscience	
Unit-II: Branches ofForensicScience	**14**
Chapter-4 Branches ofForensicScience**Chapter-5**Traditional and Contemporary**Chapter-6**Frye Caseand Daubert	
Unit-III:Forensic Science Laboratories and Training institutes	**14**

Chapter-7 Hierarchical set up of CentralForensicScienceLaboratories, StateForensicScienceLaboratories and Directorate ofForensicScience. **Chapter-8**GovernmentExaminers ofQuestionedDocumentsandFingerprintBureaus. **Chapter-9**NationalCrimeRecordsBureau,Police&DetectiveTrainingInstitutes, **Chapter-10**Bureau of Police Research&Development,	

Text Books:

1. B.B. Nanda and R.K. Tiwari,ForensicScience in India: A Vision for the TwentyFirstCentury,SelectPublishers, New Delhi(2001).
2. M.K. Bhasin and S. Nath,Roleof Forensic Sciencein the NewMillennium,University of Delhi, Delhi(2002).
3. S.H. James andJ.J. Nordby, ForensicScience:AnIntroduction to Scientific and InvestigativeTechniques, 2nd Edition, CRC Press, Boca Raton (2005).
4. W.G.Eckert and R.K.Wright in Introduction to ForensicSciences, 2nd Edition,W.G. Eckert(ED.),CRC Press, Boca Raton (1997).
5. R. Safferstein,Criminalistics, 8th Edition, Prentice Hall, NewJersey(2004).

Journals:

Journal of ForensicResearchISSN: 2157-7145
Journal of ForensicSciences&CriminalInvestigation,ISSN: 2476-1311.

Course Articulation Matrix-21OECRI102

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	1	2	3	3	2	2	1	2	1	3	2
CO2	2	3	3	3	3	2	2	1	2	1	2	2
CO3	2	3	2	3	3	2	1	1	3	2	2	2
Weighted Average	2.3	2.3	2.3	3	3	2	1.6	1	2.3	1.3	2.3	2

DSC (2) Syllabus for B.A Criminology and Forensic Science (Basic and Honors)

Semester II:

Course Code :211272	**Course Title** : DSC (2)Criminalistics (Theory) DSC (2)**Lab**-Criminalistics
Course Credits :06 (4:0:2)	**Hours of Teaching/ Week :** 04 (Theory) 04 (Practical)
Total Contact Hours :56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Mark** :40 (Theory) 25(Practical)
Exam Duration : 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks :** 60 (Theory) 25 (Practical)

CourseOutcomes(COs):

CO1: Interpreting meaning, range, and fundamental ideas of criminalistics; demonstrate the many instruments and methods used in the application of the subject.

CO2: Acquire basic knowledge on the importance of evidence and the various categories that physical evidence falls under, such as blood, fibre, paint, firearms, fingerprints, etc.

CO3: Examine the forensic records, the instruments and methods used, the kinds of forgeries, the different kinds of handwriting and its characteristics, etc.

CO4: Elaborating the fundamental concepts and steps in crime scene reconstruction, outline the range and significance of medical evidence, including oral and documentary evidence & the significance of medical-legal autopsies, the kinds of wounds they reveal, etc.

Content of TheoryCourse	Hours
Unit I:Introduction– Criminalistics	14
Chapter-1 Criminalistics:Meaning, ConceptualdefinitionsandScope **Chapter-2**Basicprinciples;Forensic tools andtechniques **Chapter-3**Applicationin CriminalInvestigation.	
Unit II: PhysicalEvidence	14
Chapter-4 PhysicalEvidence:Significanceofevidenceand Lockard‟sprinciple **Chapter-5**Typesofevidence – Classification of physicalclues,evidence:Biological,Chemical andPhysical. **Chapter-6**Collection ofevidence – Preservation of evidence,chainofcustody,blood, fiber,paint,firearms,tyremarks, fingerprints, footprints, bite marks.	
Unit III: Forensic Documents	14
Chapter-7 Forensic DocumentExamination:IntroductionandTypes of documents **Chapter-8**Tools and techniques for examinationandidentification **Chapter-9**Typesofforgeries,characteristicsanddetection **Chapter-10**Typesofhandwritingand its characteristics.	
Unit IV Crime Scene Management(CSM)	14
Chapter-11 Natureand importanceof CSM. **Chapter-12**Basicprinciples and stages involved. **Chapter-13**Examination ofwitness and statement of suspect. **Chapter-14**Mobile forensic units, Dogsquadand otherscientificaids.	

Text Books:

1. Dekal,V.(2014).Exampreparatorymanualforundergraduates:Forensicmedicine&toxicology(theory&practical). NewDelhi:JaypeeBrothersMedical.
2. Gardner,R.,&Bevel,T.(2009).Practicalcrimesceneanalysisandreconstruction.BocaRaton,FL: CRC Press.
3. Lewis,J.(2014).Forensicdocumentexamination.NewYork:AcademicPress.Nageshkumar,G.(2007).Practical forensicmedicine.NewDelhi:Jaypee Brothers
4. Nanda,B.,&Tewari,R.(2001).ForensicscienceinIndia:Avisionforthetwenty-firstcentury.NewDelhi:SelectPublishers.
5. Subrahmanyam,B.(2001).Modi"smedicaljurisprudence&toxicology.NewDelhi:ButterworthIndia.
6. Turvey,B.,&Crowder,S. (2017).Forensicinvestigations– an introduction.
7. Academic Press.
8. Young, T.,&Ortmeier,P. (2010). Crime scene investigation. Pearson.

Journals:

Indian journal of criminologyandcriminalistics,ISSN: 0970-4345InternationaljournalofForensicandLegal Medicine,ISSN: 1752-928XJournal of ForensicPathology,ISSN: 2684-1312

DigitalReference

1. https://books.google.co.in/books?hl=en&lr=&id=zIRQOssWbaoC&oi=fnd&pg=PA1&dq=forensic+science+research+articles&ots=wJ-Zt0UQ2U&sig=v7wufZJrViWiMCo3YwG8d0sguCc
2. https://link.springer.com/article/10.1007%2Fs10657-005-4196-6#citeas
3. https://www.ojp.gov/ncjrs/virtual-library/abstracts/forensic-science-handbook-volume-2
4. https://books.google.co.in/books?hl=en&lr=&id=cuTnMnlvZMC&oi=fnd&pg=PP1&dq=forensic+science+research+articles&ots=dGYy_obgyD&sig=pRc8BvVP4AOrw5E7vfCfwhoWFR8
5. https://books.google.co.in/books?hl=en&lr=&id=wK9c4KttXj0C&oi=fnd&pg=PP1&dq=forensic+science+research+articles&ots=b3wV8PRtsy&sig=t1DV5xrKLcUCPwYOBSkxYQW8_JI

Semester-II

Contentof Lab Practical CourseDSC 2;

Credits:02 Marks: 25+25=50

List ofExperimentstobe conducted

1. Identification,locationandpreservationofphysicalevidenceincrimesincluding,butnotrestrictedtohomicide,suicide,robbery&dacoity,and HBT (Burglary).

2. Sceneofcrime– documentation, searchingsketching(roughand neat),photography andVideography, reconstruction.

3. Searchingmethodsofcrimescene-Outdoorsceneofcrime,Indoorsceneofcrime,Mobilesceneofcrime

4. Questioneddocuments:Collection of standards for comparison,characteristics of handwriting.

5. Questioneddocuments:Comparison of typewrittenandprinted documents.

6. Identification offorgeries, collection of standardsfordetection.

7. Handling, Packing &Forwarding of Biological, Physical & Chemical evidence.

Course Articulation Matrix- 211272

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	2	3	3	2	1	2	2	1	2	3
CO2	2	2	2	3	3	3	2	2	2	2	2	2
CO3	2	3	3	3	3	3	2	2	2	2	3	3
CO4	3	3	3	3	3	2	3	2	3	3	3	3
Weighted Average	2.25	2.5	2.5	3	4	2.5	2	2	2.25	2	2.5	2.75

OE(2) Syllabus for All Programs (Except B A)

Semester II:

Course Code: 21OECRI201

Course Title :

OE(2)Social Problems & Crime (Theory)

Course Credits :03 (3:0:0)

Hours of Teaching/ Week : 03 (Theory

Total Contact Hours :42 Hours (Theory)

Formative Assessment Mark :40 (Theory)

Exam Duration : 2 ½ Hours (Theory)

Semester End Examination Marks :

60 (Theory)

Course Outcomes (COs):

CO1: Recognize the various societal issues India faces, as well as the factors that contribute to crime, criminality, and social unrest.

CO2: Describe the many crimes, concerns, and legislation that are relevant to women and children.

CO3: Considering alcoholism and drug abuse associates to communal disturbance and criminality&discuss the consequences of corruption and terrorism on society and the relevant legislation.

Content of Theory Course	Hours
Unit-I:Introduction to SocialProblems	**14**
Chapter-1 Social problem and crime:concept,types and stages in the developmentof social problems. **Chapter-2**Theoreticalapproaches to social problems, socialdisorganization,culturallag,valueconflict and personal deviation **Chapter-3**Causes of social problems leadingto crime	
Unit-II:Women and ChildRelatedSocialProblems and Crimes	**14**
Chapter-4 Child abuse and childlabour: Meaning, Causes and effectsof childAbuse **Chapter-5**Special Acts-Prohibition of Child Marriage Act 2006, Child labour(Prohibition &Regulation) Act 1986,ImmoralTraffic(Prevention)Act 1956 andProtection of Childrenfrom Sexual OffencesAct, 2012 **Chapter-6**WomenRelatedIssues,CrimesandLaws:Prostitution,DomesticViolence,DowryHarassment,SexualHarassmentofWomenatWorkplace,Indecentrepresentationofwomen,etc..,andrelatedlaws,SatiSystemandHonourkilling.	

Unit-III:Other SocialProblems	14
Chapter-7 Alcoholism:Meaning,definitions of alcoholism causes,consequencesandsocietal costs ofalcoholism.	
Chapter-8 Drug Addiction:Natureand impact ofdrug addiction– Role of familyandpeergroup,NarcoticDrugs and PsychotropicSubstance Act. 1985 **Chapter-9**Untouchability,Corruptionand Terrorism: Meaning,Types, Causes, andRelatedLaws	

Text Books:

1. Ram,Ahuja,1992.SocialProblemsinIndia,RawatPublications,NewDelhi.
2. Turner, JonathanH., 1987;The Structure of Sociological Theory, Fourth Edition, RawatPublications,Jaipur.
3. Henry,Kenneth, 1978,SocialProblems:InstitutionalandInterpersonalPerspectives, Scott,FopresmanandCompany,Illinois,London.
4. Kothari,Rajani, 1988,TransformationandSurvival,AjantaPublications,Delhi.
5. Lerner,Daniel,1964,ThePassingofTraditionalSociety,TheFreePress,London.
6. Polanyi,Karl, 1957,TheGreatTransformation: ThePoliticalandEconomic OriginofourTime,BeaconPress,Boston.
7. Merton, RobertK.& Nisbet,Robert,1976,Contemporary SocialProblems, HercourtBraceJovanovich,InternationalEditing,NewYork,Chicago.
8. Singh, Yogendra, 1988, Modernisation o f Indian Tradition, Reprint, RawatPublication,Jaipur.
9. Bhattacharya, Rinki. Ed. 2004. Behind Closed Doors: Domestic Violence inIndia. NewDelhi:Sage.
10. Uberoi,Patricia.Ed. 1993.Family,KinshipandMarriageinIndia.Delhi,Oxford UniversityPress.
11. Uberoi,Patricia. 2006. Freedom and Destiny: Gender, Family, and Popular Culture inIndia. Delhi:OxfordUniversityPress.

Journals:

EuropeanJournalonCriminalPolicyandResearch, Springer

TheInternational JournalforCrime,JusticeandSocialDemocracyISSN2202-8005

DigitalReference:

- https://www.taylorfrancis.com/books/mono/10.4324/9780203791578/framing-victim-nancy-berns
- https://psycnet.apa.org/record/1973-31083-001
- https://academic.oup.com/socpro/article/18/3/298/1691981?login=true
- https://www.jstor.org/stable/798932
- https://academic.oup.com/socpro/article-abstract/16/4/409/2925015

Pedagogy: Lecture,Assignments,InteractiveSessions,ICT,Group Discussion

Course Articulation Matrix-21OECRI201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	2	2	2	1	2	2	3	2	3	3
CO2	2	3	3	3	2	2	2	2	3	2	3	3
CO3	2	2	3	3	2	3	3	2	3	2	3	3
Weighted Average	2	2.6	2.6	2.6	2	2	2.3	2	3	2	3	3

OE (2) Syllabus for All Programs (Except B A)

Semester II:

Course Code: 21OECRI202

Course Title :

OE (2)Fingerprint Science (Theory)

Course Credits :03(3:0:0)

Hours of Teaching/ Week : 03(Theory)

Total Contact Hours :42 Hours (Theory)

Formative Assessment Mark :40 (Theory)

Exam Duration : 2 ½ Hours (Theory)

Semester End Examination Marks :

60 (Theory)

CourseOutcomes (CO'S):

CO1: Recognize the significance, meaning, and historical context of fingerprints.

CO2: Analyzing the biological processes involved in the production of fingerprints, as well as the main types.

CO3: Learn how latent fingerprints form and how valuable they are in legal proceedings, describe the imprints and their significance in a judicial inquiry.

Content of Theory Course	Hours
Unit-I:Basics ofFingerprinting	**14**
Chapter-1 Fingerprint:Meaning,Concept and historybackground, with specialreference toIndia. **Chapter-2**Biological basis of fingerprints, Formation of ridgesand Fundamentalprinciples of fingerprinting. **Chapter-3**Typesoffingerprints,Fingerprint patterns andFingerprintcharacters/minutiae. **Chapter-4**Methods ofRecordingof Plain and rolled fingerprints. **Chapter-5**Classificationof fingerprintrecord.	
Unit-II:Development ofFingerprints	**14**

Chapter-6 Type of Chanceprints at acrime sceneand their development.**Chapter-7**Latentfingerprints‟detectionbyphysicalandchemicaltechniques.**Chapter-8**Preservationof developedfingerprints. **Chapter-9**Digitalimagingfor fingerprintenhancement.	
Unit-III:Other Impressions and Prints	**14**
Chapter-10 Footprints: MeaningandImportance. **Chapter-11**Castingof foot prints andElectrostatic liftingof latentfoot prints. **Chapter-12**Palm prints and theirhistoricalimportance.	

Text Books:

1. B.S.Nabar.,ForensicScienceinCrimeInvestigation,3rdEdn.,AsiaLawHouse,Hyderabad
2. Barry,A.J.Fisher;TechniquesofCrimeSceneInvestigation,7thEd,CRCPress,NY,2003.
3. Bennett, W.W. &Karen, M.Hass,Criminal Investigative, 6th Ed. Worsworth ThompsonLeaming,2001.
4. ForensicScience,AnIntroductiontoCriminalistics. ByPeterR.DeForest,R.E.Gaensslen and HenryC.Lee.
5. ForensicScienceinCriminalInvestigationandTrials,BySharma.B.R.
6. SaffersteinR."Criminalistics:-AnIntroductiontoForensicScience".
7. WertheimK,MaceoA(2002)Thecriticalstageoffrictionridgeandpatternformation.JforIdent
8. WilderHH,WentworthBPersonalidentification.Boston:GorhamPress1918.
9. DrorIE,CharltonP,PeronAE(2006)Contextualinformationrendersexpertsvulnerableto makingerroneousidentifications.ForensicScienceInternational
10. SnadyLZ(2005)Fingerprintevidence.LLaw&Policy
11. VokeyJR,TangenJM,ColeSA(2009)On thepreliminarypsychophysicsoffingerprintidentification.QuartJExpPsycho
12. SennDR,StimsonPG(2010)ForensicDentistry.NewYork:CRCPress.

Journals:

TheJournalofForensicSciences(JFS)ISSN:1556-4029

DigitalReference:

http://www.fbi.gov/hg/cjisd/ident.pdf

Pedagogy: Lecture,Assignments,InteractiveSessions,ICT,Group Discussion

Course Articulation Matrix-21OECRI202

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12

CO1	3	2	3	2	3	2	1	2	3	1	2	3
CO2	3	3	3	3	3	2	1	2	3	2	3	3
CO3	3	3	3	3	3	2	2	3	3	3	3	3
Weighted Average	3	2.6	3	2.6	3	2	1.3	2.3	3	2	2.6	3

Continuous Formative Evaluation/Internal Assessment(DSC &OE)

Total marks for each course shall be based on continuous assessments and semester end Examination. The patterns is 40:60 for IA and Semester End theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	Theory	**Practical**
Total Marks	100 Marks	50 Marks
Continuous Assessment-1(C1)	20 Marks	10 Marks
Continuous Assessment-2(C2)	20 Marks	15 Marks

Semester End Examination (C3) 60 Marks 25 Marks

Evaluation Process of IA Marks Shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment,

seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the courses and within 45 working days of semester program

b). The second component (C2) of assessment is for 20% marks. This shall be based on test,

assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc.

This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c).During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d). In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/ assignment /project work etc.

The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course Shall be as under:

	C1Marks	C2 Marks	Total Marks
Session Test	10 Marks	10 Marks	20 Marks
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	10 Marks	10 Marks	20 Marks
Total	20 Marks	20 Marks	40 Marks

For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the ratio is 25 (10 + 15):25).

Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s)

and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

There shall be no minimum in respect of internal assessment marks.

Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations-I&II Semester

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3

is the semester-end examination conducted for 3hours. The student will be evaluated on the basis of

Procedure development and its execution. The student has to compulsorily submit the practical record forEvaluation during C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

Part-A Practical Exercises (C1): 10 marks

Part-B Practical Exercises (C2): 10 marks + Record: 05 marks = 15 marks

- The student is evaluated for 25 marks in C3 as per the following scheme:

Assessment Criteria	**Marks**
Any Three Questions Decided by the External Examiner	10+10+05
Total	25

DSC Theory Question Paper Pattern

For I & II Semester

Max Marks: 60 Times:2 ½ Hours

Instruction: Papersetting

- The Question Paper is divided into 3 parts: Part-A, Part-B and Part-C
- Part-A, Part-B, Part-C With Internal Choice.(Short, Medium and Long answer question)
- Part-A Each Question Carries 2 Marks and student has to answer 5 out of 7questions.
- Part-B Each Question Carries 5 Marks and student has to answer 4 out of 8 questions.
- Part-C Each Question Carries 10 Marks and student has to answer 3 out of 5 questions.

Part-A

I I. Answers any FIVE questions of the following in about 50 words 5x2=10

a.
b.
c.
d.
e.
f.
g.

Part- B

II. Answer any FOUR questions of the following in about 300 words 4x5=20

2.
3.
4.
5.
6.
7.
8.
9.

Part-C

III. Answer any THREE questions of the following in about 500 words 3x10=30

10.
11.
12.
13.
14.

OETheory Question Paper Pattern

For I & II Semester

Max Marks: 60 Times:2 ½ Hours

Instruction:Paper Setting

- The Question Paper is divided into 3 parts: Part-A, Part-B and Part-C
- Part-A, Part-B, Part-C With Internal Choice.(Short, Medium and Long answer question)
- Part-A Each Question Carries 2 Marks and student has to answer 5 out of 7questions.
- Part-B Each Question Carries 5 Marks and student has to answer 4 out of 8 questions.
- Part-C Each Question Carries 10 Marks and student has to answer 3 out of 5 questions.

Part-A

I I. Answers any FIVE questions of the following in about 50 words 5x2=10

a.
b.
c.
d.
e.
f.
g.

Part- B

II.Answer any FOUR questions of the following in about 300 words 4x5=20

2.
3.
4.
5.
6.
7.
8.
9.

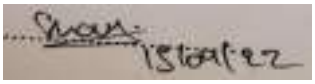
Part-C

III. Answer any THREE questions of the following in about 500 words 3x10=30

10.
11.
12.
13.
14.

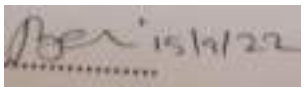
Department of Criminology and Forensic Science, BoS Meeting – 15.09.2022

1. **Megha Krishna Nilajkar**



2. **Shashidhar.E**

3. **Dr.G.B.Aravind**



4. **Prof.Basavaraj D Masthi**

ABSENT

5. **Dr.Sarita D'ssouza**

ABSENT

6. **Dr. Krishnarajuk.k**

7. **Francis Devasahayam.B**

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BOARD OF STUDIES (BoS)

DEPARTMENT OF CRIMINOLOGY AND FORENSIC SCIENCE

UG ☑

PG ☐

NEP Syllabi for III and IV Semester B.A

Criminology and Forensic Science

2022-23

Department of Criminology and Forensic Science

Motto:

Become great and vanquish all enemies

Vision:

To develop youth that are imbibed with moral, ethical, social, & constitutional values.
To also equip students with scientific concepts to vindicate law & combat crime.

Mission:

To impart knowledge based on the scientific principles so as to enable youth to understand crime in all its manifestations;
Device ways and means of controlling crime; and
Reformation and rehabilitation of the offenders by application of the knowledge derived from cognate branches of the study, for the benefit of the society.

Program Outcomes (POs) for Bachelor of Arts

PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.
PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

Objectives: Criminology and Forensic Science

1. Crime is one of the major social problems. It has posed a threat to social organization. To maintain peace, harmony and social order scientific approach to this problem is need of the hour. The problem of crime can be effectively tackled with the help of different agencies of Criminal Justice like Police, Prison, Law, Court and various other agencies. The study pertaining to different agencies of Criminal Justice is scientifically studied at the graduation level in Forensic Science and Criminology.

2. The students are exposed in this course on various aspects of Crime, Criminality, Reformation and Rehabilitation of Criminal, Victim of Crime, Victim Compensation, Victim Assistance and Restorative Justice to the parties concerned Victim of Crime, Criminal Law, Forensic Science, Forensic Medicine and Toxicology and other branches.

3. Objectives of the study of this science are to make the students to understand the process of making laws, breaking of the laws, societal reaction to breaking of the laws and modern crimes. To understand the application of science in the identification and analysis of physical clues found at the Crime Scene, Criminal and Victims.

4. To prepare the students to pursue their career in the State and Central Forensic Science Institutes, Law enforcement agencies and Judiciary. To pursue their career in Social Security and Voluntary Organizations and prevent the occurrence of Crime.

5. It is a professional course with emphasis on development of necessary skills for a Criminological profession in police, forensic science, private security management, private detective work, corrections, and Juvenile Institutions.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	E-Mail & Mobile No.
1	Chairperson	Miss. Megha Krishna Nilajkar Assistant Professor & HoD	Dept of Criminology & forensic science SBRR Mahajana First Grade College (Autonomous), Mysuru.	Meghanilajkar96@gmail.com Mob: 9686403414
2	Member	Dr. Saritha D'souza Reader & Head	Dept of Criminology & forensic science School of Social Work, Roshni Nilaya, Valencia, Mangaluru	sarithavd@sswroshni.in Mob.91-9481014906
3	Two Experts from other University	Prof. Basavaraj D Masthi Associate Professor & Head	Dept of Criminology & forensic science C. M. Managuli First Grade College, Sindagi	bdmasti@gmail.com Mob.91-9449644221
		Shashidhar. E. S Assistant Professor	Dept. of Forensic Science School Of Science. Jain (Deemed to be) University	es.shashidhar@jainuniversity.ac.in Mob. 91-9845673982
4	University Nominee	Dr. G.B. Aravind Associate Professor	Dept. of Forensic Medicine, JSS Academy of Higher Education &Research, Mysore.	profaravind@gmail.com Mob.9886089317

5	One person from industrial Expert	Dr. Krishnaraju K. K. Deputy Director	Regional Forensic Science Laboratory, Mysore	Mob. 91- 9448500080
6	Alumnus	Francis Devasahayam. B Assistant Professor	Department of Criminology and Forensic science St. Philomena's college, Mysuru	francis91b@gmail.com Mob:9035304313

Course Structure (NEP 2020)

Discipline Specific Course (DSC) and Open Elective (OE)

II Year

Course type, code and Title			Hours/week		Credits	Maximum Marks			Exam Duration	Total Marks
					L: T: P					
Criminology & Forensic science - III Sem										
DSC(	221372	Police science and criminal Investigation			4:0:2 (6 credits)				2½ hours	
		Lab Practical on- Police							3 ho	

3) DSC(3)-Lab		science and criminal Investigation							urs	
	221373	Law of Prints and Impression			4:0:2 (6 credits)				2½ hours	
		Lab Practical on- Law of Prints and Impression							3 hours	
	Anyone to be opted									
OE (3)	22OECRI301	**1.** Gender and Crime			3:0:0 (3 credits)				2½ hours	
	22OECRI302	**2.** Crime scene Investigation								
	Anyone to be opted									

Criminology & Forensic science - IV Sem										
DSC(4) DSC(4)-Lab	221472	Correctional Administration			4:0:2 (6 credits)					
		Lab Practical on- Correctional Administration								
	221473	Forensic Psychology and Criminal Profiling			4:0:2 (6 credits)					
		Lab Practical on- Forensic Psychology and Criminal Profiling								
	Anyone to be opted									

OE (4)	22OECRI401	**1.** Child Protection Laws			3:0:0 (3 credits)					
	22OECRI402	**2.** Cyber Crimes and Cyber Law								
	Anyone to be opted									

DSC (3) Syllabus for B.A Criminology and Forensic Science (Basic and Honors)

Course Code : 221372	**Course Title** : DSC (3) Police Science and Criminal Investigation (Theory) DSC (3**) Lab**-Police Science and Criminal Investigation
Course Credits :06 (4:0:2)	**Hours of Teaching/ Week :** 04 (Theory) 04 (Practical)
Total Contact Hours : 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Mark** :40 (Theory) 25(Practical)
Exam Duration : 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks :** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Recognize the idea behind police science, its role in preventing crime, conducting investigations, and preserving a stable social order.

CO2: Gain expertise of maintaining law and order, enforcing national laws, and managing the police administration.

CO3: Being aware of the many difficulties that police officers encounter on a daily basis.

CO4: Learn about the many sorts of crime scenes, investigations, and the legal processes that surround them.

Content of Theory course	Hours
Unit – 1 Introduction to Police Science	**14**
Chapter-1 Police administration in India • Role of Police in Independent India, Constitutional provisions regarding policing in India • Police Organization of state Chapter-2 Policing in present scenario. • Introduction to various styles of Policing • Ethics in Policing • Technology and policing • Short comings of policing • Police recruitment, training and Police Reforms	
Unit – 2 Powers, Duties and challenges of Police	**14**
Chapter-3 Powers and duties • Executive powers and duties of police officers in the investigation • Police accountability in India: Courts, Executive Magistrates ,State Government, Citizens/ Community, Programmes for redressing Public grievances, Police Complaints Authorities Chapter-4 Challenges in policing • Internal and external challenges in policing • Police Image, Police Corruption, Police and Human Rights • Technological short comings and policing	
Unit – 3 Criminal Investigation	**14**
Chapter-5 Basics of Investigation • Objectives of Criminal Investigation • Characteristics and role of Investigating officer Chapter-6 Legal procedures in Investigation • Investigation procedures in traditional, contemporary and special crimes • Registration of FIR, charge sheet, recording of statements, arrest, confession, summons and warrants Execution	
Unit -4 Crime scene Investigation	**14**
Chapter -7 Crime scene Management • Responsibilities of First responding officer. • Crime scene – Types, search methods, and Documentation. Chapter-8 Physical Clues • Types of physical clues and various crime scenes • Procedures in locating, handling, collecting, packing and forwarding of physical clues; Chain of Custody	

Text Books:

1. Encyclopedia of Police in India. Gosh & Rustumji
2. Police &Political Order in India, P.D.Sharma
3. Indian Police Today, Shankar Sen
4. Inside India Police, Joginder Singh
5. Sharma B.R, 2007, Forensic Science in Criminal Investigation and Trials Universal Law Pub. Co. Pvt. Ltd.
6. Douglas Cruise (2002) The Business of Private Investigations, Texas: Thomas Investigative Publications.
7. Ramanujam T, 1992, Prevention and Detection of Crime, Madras Book Agency
8. Nehad Ashraf, (1992), Police and Policing in India, Common Wealth Publishers, New Delhi

JOURNAL REFERENCES:

1. International journal of police science and management, SAGE
2. The Indian Police Journal
3. The Journal criminal Law, Criminology and Police Science, JSTOR ISSN-15476154

DIGITAL REFERENCES:

1. https://www.ojp.gov/pdffiles1/nij/228922.pdf
   https://www.researchgate.net/publication/340874515_Police_science_as_an_emerging_scientific_discipline.

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Content of Lab Practical Course DSC-3:

Credits: 02 Marks: 25+25=50

List of Experiments to be conducted

1. Procedure and process of filing complaint to the Police Station
2. Scene of Crime Documentation: rough sketch, final sketch, photography and videography
3. Crime Scene Investigation Methods (Murder, Burglary, Traffic Accident etc)
4. Methods of Searching the Scene of Crime.
5. Reconstruction of Scene of Crime and report writing
6. Handling, packing and forwarding of physical clues to experts (Fingerprints on articles, Blood stains on articles, hair and fibre samples, Bullets & Cartridge Cases)

Course Articulation Matrix - 221472

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	2	3	3	2	1	3	3	2	3	3
CO2	2	2	3	3	3	2	1	3	3	2	3	3
CO3	3	3	3	3	3	3	1	3	3	3	3	3
CO4	3	3	3	3	3	3	1	3	3	3	3	3
Weighted Average	2.5	2.5	2.75	3	3	2.5	1	3	3	2.5	3	3

DSC (3) Syllabus for B.A Criminology and Forensic Science (Basic and Honors)

Course Code : 221373	**Course Title** : DSC (3)Law of Prints and Impression (Theory) DSC (3)**Lab**-Law of Prints and Impression
Course Credits :06 (4:0:2)	**Hours of Teaching/ Week :** 04 (Theory) 04 (Practical)
Total Contact Hours : 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Mark** :40 (Theory) 25(Practical)
Exam Duration : 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks :** 60 (Theory) 25 (Practical)

Course Outcomes (CO's):

CO1: Recognize the numerous print and impression kinds, which are crucial for inspection, suspect identification, and their forensic significance in court.
CO2: Specify the fingerprint type, identification, pattern categorization, and ridge features.
CO3: Using physical and chemical techniques to comprehend the various sorts of chance prints and how they arise.
CO4: Learn about additional impressions and prints, such as footprints, tyre marks, and lip prints, and their significance.

Content of Theory course	Hours
Unit – 1 Introduction to Fingerprints	**14**
Chapter-1Fingerprints: Meaning and importance • Historical development. • Principles of Dactyloscopy. • Organization of State and • Central Fingerprint Bureaus. Chapter-2 Identification and Classification of Patterns • Recording of fingerprints. • Identification of patterns and ridge characteristics. • Henry's Primary and Secondary Classification.	
Unit – 2 Introduction to Chance prints	**14**
Chapter-3Chance prints: Meaning & Types. • Visible prints • Plastic Prints • Latent Prints Chapter-4 Development of Chance Prints • Powder, Liquid & Gaseous Method • Recent Developments – Lifting & Preservation.	
Unit – 3 Introduction to Footprints	**14**
Chapter-5 Footprints: Meaning and importance. • Types of footprints. • Methods of recording and lifting. • Gait pattern. Chapter-6 Collection of Footprints • Photography • Tracing • Lifting • Casting	
Unit -4 Other Impressions	**14**

Chapter -7 Tyre Impressions: Meaning and importance in crime investigation. • Methods of recording and lifting. • Skid marks and its importance • Length of the skid marks and measurement of vehicle speed Chapter-8 Lip prints • Nature, • location, • collection and examination of lip prints.	

Text Books:

1. J.E. Cowger, Friction Ridge Skin, CRC Press, Boca Raton (1983).
2. D.A. Ashbaugh, Quantitative-Qualitative Friction Ridge Analysis, CRC Press, Boca Raton (2000).
3. C. Champod, C. Lennard, P. Margot an M. Stoilovic, Fingerprints and other Ridge Skin Impressions, CRC Press, Boca Raton (2004).
4. Lee and Gaensleen's, Advances in Fingerprint Technology, 3rd Edition, R.S.Ramotowski (Ed.), CRC Press, Boca Raton (2013).
5. Nabar, B.S. 2007, Forensic Science in Crime Investigation, 3rd Edition, Asia Law House, Hyderabad.
6. Sharma B.R, 2007, Forensic Science in Criminal Investigation and Trials Universal Law Pub. Co. Pvt. Ltd.
7. Ramanujam T, 1992, Prevention and Detection of Crime, Madras Book Agency

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Content of Lab Practical Course DSC-3:

Credits: 02 Marks: 25+25=50

List of Experiments to be conducted

1. To record plain and rolled fingerprints.
2. To identify different fingerprint patterns and identify core and delta.
3. To carry out ridge tracing and ridge counting.
4. To investigate physical and chemical methods of fingerprint detection.
5. To use different light sources for enhancing developed fingerprints.
6. To prepare cast and lifting of foot prints.
7. To tracing of surface footprints.

Course Articulation Matrix: 221373

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	1	1	3	3	1	1	2	3	1	1	2
CO2	3	3	3	3	3	2	1	2	3	2	2	2
CO3	3	3	3	3	3	2	2	2	3	2	2	2
CO4	3	3	3	3	3	2	2	2	3	2	2	3
Weighted Average	3	2.5	2.5	3	3	1.75	1.5	2	3	1.75	1.75	2.25

OE (3) Syllabus for All Programs (Except B A)

Course Code: 22OECRI301	**Course Title** : OE 3**:**Gender and Crime (Theory)
Course Credits :03 (3:0:0)	**Hours of Teaching/ Week :** 03 (Theory)
Total Contact Hours : 42 Hours (Theory)	**Formative Assessment Mark** :40 (Theory)
Exam Duration : 2 ½ Hours (Theory)	**Semester End Examination Marks :** 60 (Theory)

Course Outcomes (CO's):

CO1: Recognize the significance, character, and extent of crime and gender equality.

CO2: Elucidate the difficulties in explaining how gender affects crime from a criminological Perspective

CO3: Being aware of the numerous trends in gender-related crime and how to prevent it & outline the different gender-related crimes committed against minors.

Content of Theory course	Hours
Unit – 1 Gender Equality	**14**
Chapter-1 Gender awareness in Criminology • Gender and crime: Meaning, nature and scope • Gender awareness in Criminology Chapter-2 Gender gap in crime • Gender equality: Meaning, definition • Gender equality and Crime • Cognitive capacities and crime	
Unit – 2 Gender specific crimes and Criminological studies	**14**

Chapter-3 Criminological theories of gender and crime Chapter-4 Gender in Criminal Justice System • Crimes and Cultural Views • Legal system • Police practice • Court trials Chapter-5 Patterns of Crime • Meaning, definition and nature • Gendered pathways to offending Chapter-6 Women and Crime, Men and Crimes • Female patterns of offending • Rising female criminality • Male patterns of offending	
Unit -3 Crimes against gender specific children	**14**
Chapter-7 Crimes against children • Meaning, Definition, Nature and Scope • Harmful cycle of gender-based violence on children • Causes and impacts of gender-based violence against children Chapter-8 Types of Crimes against Children • Infanticides and feticides • Child trafficking • Child pornography • Labour and street offences, etc • Various procedural rules for protection of children	

Text Books:

1.Fitz-Gibbon, K. &Walklate, S. (2018). Gender, Crime and Criminal Justice, Routledge, ISBN: 9781138656376
2.Mukharjee, S. K. &Scutt, J. A. (1981). Women and Crime, Routledge, ISBN: 9781138186569
3.Silvestri, M. & Crowther-Dowey, C. (2008). Gender and Crime (A Key Approach to Criminology), SAGE Publications
4.Britton, D. M. (2011). The Gender of Crime, Rowman & Littlefield
5.Evans, K & Jamieson, J. (2008). Gender and Crime: A Reader, Open University Press

JOURNAL REFERENCES:

1. Child mal treatment-SAGE
2. International journal on child mal treatment-Springer
3. Women and Criminal Justice – Taylor and Francis
4. Feminist Criminology-SAGE
5. Violence and Gender

DIGITAL REFERENCES:

1. Gender-Based Violence: A Global Threat | Save the Children
2. https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=53771&printable=1
3. (PDF) Gender and Crime: Toward a Gendered Theory of Female Offending (researchgate.net)
4. https://ijcst.journals.yorku.ca/index.php/ijcst/article/download/39737/35977
5. Gender and Theories of Delinquency - Oxford Handbooks

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Course Articulation Matrix-22OECRI301

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	2	-	-	2	1	1	1	1	2	2
CO2	2	2	3	2	2	3	1	2	2	2	2	2

CO3	3	3	3	2	3	3	2	2	2	2	3	2
Weighted Average	2.3	2.3	2.6	2	2.5	2.6	1.3	1.6	1.6	1.6	2.3	2

OE (3) Syllabus for All Programs (Except B A)

Course Code: 22OECRI302	**Course Title** : OE 3 :Crime Scene Investigation (Theory)
Course Credits :03 (3:0:0)	**Hours of Teaching/ Week :** 03 (Theory)
Total Contact Hours : 42 Hours (Theory)	**Formative Assessment Mark** :40 (Theory)
Exam Duration : 2 ½ Hours (Theory)	**Semester End Examination Marks :** 60 (Theory)

Course Outcome (CO's):

CO1: Be familiar with the techniques for securing, searching, and recording crime scenes.

CO2: Able to perform the skill of gathering, protecting, and packing various kinds of physical and trace evidence at crime scenes.

CO3: Explain the significance of chain of custody in legal terms , recognize the methods and equipment used in the analysis of various types of evidence found at crime scenes.

Content of Theory course	Hours
Unit – 1 Crime Scene Preliminaries	**14**

Chapter-1 Crime Scene and its importance. • Meaning and Types of crime scenes • indoor and outdoor Mobile • primary secondary and tertiary. Chapter-2 Securing and isolating the crime scene. • Crime scene search methods. • Safety measures at crime scenes. • Legal considerations at crime scenes.	
Unit – 2 Crime Scene Documentation	**14**
Chapter-3Crime Scene Documentation and its importance • Types of documentation of crime scenes • Photography. • Videography, • Sketching and • Recording notes. Chapter-4 Duties of first responders at crime scenes. • Coordination between police personnel and forensic scientists at crime scenes. • The evaluation of 5Ws (who?, what?, when?, where?, why?) and 1H (how?).	
Unit -3Crime Scene Evidence Management.	**14**
Chapter-5Classification of crime scene evidence • Locard principle and Importance. • Physical evidence and • Trace evidence. Chapter- 6 Collection, labelling, sealing of evidence. • Hazardous evidence. • Preservation of evidence.	

Text Books:

1.M. Byrd, Crime Scene Evidence: A Guide to the Recovery and Collection of Physical Evidence, CRC Press, Boca Raton (2001).
2.T.J. Gardener and T.M. Anderson, Criminal Evidence, 4th Ed., Wadsworth, Belmont (2001).
3.S.H. James and J.J. Nordby, Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton (2005).
4.W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Course Articulation Matrix-22OECRI302

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	2	3	3	2	1	2	3	1	3	2
CO2	3	3	3	3	3	2	2	2	3	2	3	3
CO3	3	3	3	3	3	2	2	2	3	2	3	3
Weighted Average	2.6	3	2.6	3	3	2	1.6	2	3	1.6	3	2.6

DSC (4) Syllabus for B.A Criminology and Forensic Science (Basic and Honors)

Course Code : 221472	**Course Title** : DSC(4):Correctional Administration (Theory) DSC (4): **Lab**-Correctional Administration
Course Credits :06 (4:0:2)	**Hours of Teaching/ Week :** 04 (Theory) 04 (Practical)
Total Contact Hours : 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Mark** :40 (Theory) 25(Practical)
Exam Duration : 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks :** 60 (Theory) 25 (Practical)

Outcomes (CO's):

CO1: The importance, nature, and application of criminology and the criminal justice system.
CO2: Outline the ideas and different forms of punishments used in India and other countries in the past and now.
CO3: Explaining the jail as a correctional facility, its varieties the laws that govern it.
CO4: Being aware of the principles underlying alternatives to institutional care for prisoners.

Content of Theory course	Hours
Unit – 1 Introduction to Correctional Administration	**14**
Chapter-1 Penology and correctional administration • Penology – Definition, nature and scope • Correction – Definition, nature and scope • Types of punishment. • Similarities and Differences between punishment and correction Chapter-2 Theories of Punishment • Deterrence theory • Retributive theory • Preventive theory • Reformative theory	
Unit – 2 Prison system	**14**

Chapter-3 Prison and prison organization • Historical development of prison system. • Objectives of Imprisonment • Types of prisons and correctional institutions in India. • Modernization of Prisons in India; Reformation & Rehabilitation approach in Prisons. Chapter-4 Prison reforms in India • History and evolution of prison legislations in India. • Recommendation of different committees on reformation system. • Prison act and prison manual	
Unit – 3 Institutionalized treatment	**14**
Chapter-5 Corrections through Institutionalized treatment • Meaning and purpose • Types of institutions: Adult, women and children • Facilities provided in institutions. • Remission, temporary release and premature release Chapter-6 Legal provisions of prisoners • Legal Rights of prisoners • Constitutional provisions of prisoners • Nelson Mandela rules for the treatment of prisoners	
Unit -4 Non Institutionalized treatment for prisoners	**14**
Chapter -7 Community based corrections • Probation: Concept, history and scope • Parole: Concept, history and scope • After care services • Restitution and fine Chapter-8 Miscellaneous • Standard minimum rules for non custodial measures(Tokyo rules) • Role of NGOs in reformation and rehabilitation	

Text Books:

1. Edelston, C.D. & Wicks, R.I. (1977), An Introduction to Criminal Justice, McGraw Hill.
2. Krishna Mohan Mathur, (1994), Indian Police, Role and Challenges, Gyan Publishing House, New Delhi.
3. Bhattacharya S.K., (1986). Probation system in India, Manas Publications, New Delhi.
4. Brodie, S.R., (1976). Effectiveness of sentencing, Home office, London.
5. Paranjepe, N.V., (2002). Criminology and Penology, Central Law Publications, Allahabad.

JOURNAL REFERENCES

1. The Prison Journal-SAGE
2. International Journal of Prisoner Health
3. Journal Of Correctional Health Care

DIGITAL REFERENCES

1. http://kamarajcollege.ac.in/Department/Criminology/II%20Year/003%20Core%205%20-%20Penology%20&%20Correctional%20Administration%20-%20III%20Sem.pdf.
2. https://www.scribd.com/document/408782187/Notes-on-Correctional-Administration-2017.
3. https://www.academia.edu/34249101/Notes_on_Correctional_Administration.
4. https://bprd.nic.in/WriteReadData/userfiles/file/5261991522-Part%20I.pdf.

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Content of Lab Practical Course DSC-4:

Credits: 02 Marks: 25+25=50

List of Field Based Practical's to be conducted

1. To visit and study the overview of Prison as a correctional institution
2. To visit and study the reformatory measures, training and rehabilitation process.
3. To visit and study various facilities provided in Prison
4. To visit and study the non-institutional treatment programmes
5. To visit and study the functions and powers of JJB and CWC
6. To visit and study the functions and powers of Probation
7. To visit and study the aftercare services and other NGOs working toward reformation, rehabilitation and resocialization of inmates.

Course Articulation Matrix - 221472

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	2	2	3	1	2	2	1	1	2
CO2	3	2	3	3	3	3	2	2	3	2	2	2
CO3	3	3	3	3	3	3	2	2	3	3	2	3
CO4	3	3	3	3	3	3	2	3	3	3	2	3
Weighted Average	3	2.5	2.75	2.75	2.75	3	1.75	2.25	2.75	2.25	1.75	2.5

DSC (4) Syllabus for B.A Criminology and Forensic Science (Basic and Honors)

Course Code : 221473	**Course Title** : DSC (4) Forensic Psychology and Criminal Profiling (Theory) DSC (4) **Lab**-Forensic Psychology and Criminal Profiling
Course Credits :06 (4:0:2)	**Hours of Teaching/ Week :** 04 (Theory) 04 (Practical)
Total Contact Hours : 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Mark** :40 (Theory) 25(Practical)
Exam Duration : 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks :** 60 (Theory) 25 (Practical)

Course Outcomes (CO's):

CO1: Have a basic understanding of forensic psychology, including its applications and legal ramifications.
CO2: Exemplify the role of psychological testing and criminal profiling in predicting criminal behaviour.
CO3: Providing an explanation of the methods and tools needed to spot falsehood.
CO4: Comprehending the evaluation of complex forensic methods including Polygraphy, narco-analysis, and brain electrical oscillation patterns.

Content of Theory course	Hours
Unit – 1 Introduction to Forensic Psychology	**14**

Chapter-1 Definition and fundamental concepts of forensic psychology and forensic psychiatry. • Psychology and law. • Ethical issues in forensic psychology • Assessment of mental competency. • Mental disorders and forensic psychology. Chapter-2 Psychology of evidence • Eyewitness testimony, • Confession evidence. • Criminal profiling. • Psychology in the courtroom, with special reference to Section 84 IPC.	
Unit – 2 Psychology and Criminal Behavior	**14**
Chapter-3Psychopathology and personality disorder. • Psychological assessment and its importance. • Serial murderers. • Psychology of terrorism. Chapter-4Biological factors and crime • Social learning theories, • Psycho-social factors, • Abuse. Chapter-5 Juvenile delinquency and Child Abuse • Theories of offending (social cognition, moral reasoning) • Child abuse (physical, sexual, emotional), • Juvenile sex offenders,	
Unit – 3 Introduction to Personality Disorder	**14**
Chapter-6 Personality: Meaning and its importance in life. • Personality Development • Personality disorders • Types and its impact on life. Chapter-7 Therapy interfering behaviors • Various types of therapies to correct the behaviour • Cognitive Behaviour Therapy (CBT) to Family-focused therapy	
Unit -4 Detection of Deception	**14**

Chapter -8Tools for detection of deception – • Interviews, • Non-verbal detection, • Statement analysis, • Voice stress analyzer, • Hypnosis. Chapter-9 Polygraphy Test • Operational and question formulation techniques, ethical and legal aspects, the guilty knowledge test. • Narco analysis and brain electrical oscillation signatures – principle and theory, ethical and legal issues. • Role of psychologist in metal related cases and legal framework	

Text Books:

1.A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence in Civil and Criminal Cases, 4th Edition, The Foundation Press, Inc., New York (1995).
2.R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).
3.J.C. DeLadurantey and D.R. Sullivan, Criminal Investigation Standards, Harper & Row, New York (1980).
4.J. Niehaus, Investigative Forensic Hypnosis, CRC Press, Boca Raton (1999).
5.E. Elaad in Encyclopedia of Forensic Science, Volume 2, J.A. Siegel, P.J. Saukko and G.C. Knupfer (Eds.), Academic Press, London (2000).
6.David V. Canter Forensic Psychology For Dummies (2012)
7.Ilaria Cabula, Frank Paul E Criminology and Criminal Profiling for beginners: (crime scene forensics, serial killers and sects): 1 (Criminology, Criminal Profiling, Serial Killers) (2020)

DIGITAL REFERENCES:

https://www.infobooks.org/free-pdf-books/psychology/criminal-psychology/

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Semester-IV
Content of Lab Practical Course DSC-4:

Credits: 02 Marks: 25+25=50

List of Experiments to be conducted

1. To cite a crime case where legal procedures pertaining to psychic behavior had to be invoked.
2. To prepare a report on relationship between mental disorders and forensic psychology.
3. To review a crime case involving serial murders.
4. Comment on the psychological traits of the accused.
5. To cite a criminal case in which narco-analysis was used as a means to detect deception.
6. To cite a criminal case in which polygraph test was used as a means to detect deception.
7. To cite a crime case involving a juvenile and argue for and against lowering the age for categorizing an individual as juvenile.

Course Articulation Matrix - 221473

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	2	3	2	2	2	1	1	1	1	2
CO2	2	3	3	3	2	2	2	1	2	1	2	2
CO3	3	3	3	3	2	2	2	2	2	2	2	3
CO4	3	3	3	3	3	3	2	2	2	2	2	3
Weighted Average	2.5	2.75	2.75	3	2.25	2.25	2	1.5	1.75	1.5	1.75	2.5

OE (4) Syllabus for All Programs (Except B A)

Course Code: 22OECRI401	**Course Title** : OE(4):Child Protection Laws (Theory)
Course Credits :03 (3:0:0)	**Hours of Teaching/ Week :** 03 (Theory)
Total Contact Hours : 42 Hours (Theory)	**Formative Assessment Mark** :40 (Theory)
Exam Duration : 2 ½ Hours (Theory)	**Semester End Examination Marks :** 60 (Theory)

Course Outcomes (CO's):

CO1: Acknowledging the legal and constitutional concept of a kid, as well as the issues and difficulties related to their developmental stage.

CO2: Explicate the importance of child protection and the role that various social institutions play in it.

CO3: Being aware of the authority and duties of the Child Welfare Committees and Juvenile Justice Board, which are listed under the former .

CO4: Define the rules and regulations that apply to crimes against children.

Content of Theory course	Hours
Unit – 1 Introduction to Child, their Protection and Laws	**14**
Chapter-1 Child: Meaning and Definition • Legal and constitutional definitions of child • Developmental stages of childhood • Theories in child development Chapter-2 Factors determining Well Being and Development Of Children • Adult-child relationships • Protection, care and support • Factors affecting development and well-being of children Chapter-3 Child Protection • Meaning, definition, nature and scope • Role of family, school, society, NGOS and government in child protection. Chapter-4 Legislations, Policies and Programmes • Constitutional provisions for children • UNCRC, other relevant conventions and • National policies in child protection	
Unit – 2 Juvenile Justice System	**14**
Chapter-5 Juvenile Justice act • Salient features of JJ act • Procedures while dealing with children in conflict with law • Procedures while dealing with children in need care and protection Chapter-6 Commissions for Protection Of Child Rights Act 2005 • Role, functions and powers of national commission and state commissions in protection of child rights • Salient features of integrated child protection scheme	
Unit -3 Crimes against children	**14**

Chapter -7 Crimes against children • Crimes against children in family, schools and public places • Child labour ad street offences • Child trafficking, prostitution and pornography etc Chapter-8 Special Laws for Crimes Against Children • Prohibition of child marriage act • Protection of children from sexual offences • Child labour (prohibition and prevention) act • United Nations Standard Minimum Rules for Juvenile Justice (Beijing rules)	

Text Books:

1. Chaudhary, N. (2004) Listening to Culture: Constructing Reality from Everyday Talk, New Delhi: Sage.
2. Bakshi, I. (1999) Understanding Children and their Problems, Mumbai: Vakils, Feffer and Simons Ltd. Empson, J. M.,
3. Nabuzoka D. (2003) A typical Child Development in Context, New York: Palgrave Macmillan Butler, I. and Roberts, G. (2004) Social Work with Children and Families: Getting into Practice, Second Edition, London: Jessica Kingsley Publishers.
4. Holt, J. (1974) Escape from Childhood, Bhopal: Eklavya - Institute for Educational Research and Innovative Action with permission from Hold Associates, Boston
5. Chandru, K., Geetha, R. &Thanikachalam, C. (1998) Child Law in India, Chennai: Indian Council for Child Welfare.
6. Verhellen, E. (2006) Convention on the Rights of the Child, London: Garant Publishers.
7. Joachim, T. (2004) Promoting Rights Based Approaches: Experiences and Ideas from Asia and the Pacific, Sweden: Save the Children

JOURNAL REFERENCES:

1. Child abuse and neglect-Elsevier
2. Child welfare journal-CWLA
3. Child mal treatment-SAGE
4. International journal on child mal treatment-Springer

DIGITAL REFERENCES:

1. https://legalstudymaterial.com/child-protection-law-policy/
2. https://www.unicef.org/media/63086/file/UNICEF-Teaching-and-learning-about-child- rights.pdf
3. https://www.routledge.com/Childrens-Rights-and-the-Law-An-Introduction/Barnett/p/book/9781138321250
4. https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=53771&printable=1

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Course Articulation Matrix - 22OECRI401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12

CO1	2	2	2	1	2	1	1	2	2	1	1	2
CO2	3	2	2	2	2	2	1	2	2	2	1	2
CO3	3	3	3	2	3	2	1	2	2	2	1	3
Weighted Average	2.6	2.3	2.3	1.6	2.3	1.6	1	2	2	1.6	1	2.3

OE (4) Syllabus for All Programs (Except B A)

Course Code: 22OECRI402	**Course Title** : OE(4) :Cybercrimes and Cyber law (Theory)
Course Credits :03 (3:0:0)	**Hours of Teaching/ Week :** 04 (Theory)
Total Contact Hours : 42 Hours (Theory)	**Formative Assessment Mark** :40 (Theory)
Exam Duration : 2 ½ Hours (Theory)	**Semester End Examination Marks :** 60 (Theory)

Course Outcomes (CO's):

CO1: Have a basic understanding of what computers, networking, and operating systems mean and how they work.

CO2: Identify the many types of cybercrimes and the role that cyber security plays in their detection.

CO3: Know how to detect and examine digital evidence using the many sorts of cyber forensic tools & describe the laws that govern cybercrimes and provide information on how to prevent and detect them.

Content of Theory course	Hours
Unit – 1 Introduction to Computer and networking	**14**

Chapter-1 Fundamentals of Computers and operating system • Computers & Networking – Basics of computers, its Definitions and classification • Operating systems- Operating system and Function, Batch, Interactive, Time-sharing and Real-Time systems, CPU Scheduling – Scheduling concept, algorithms and Performance criteria, memory management. File sharing, File System Implementation. Overview of Linux Operating System. Chapter-2 Basics of Networking • Network Components - Server, client, routers, Shared Printers and other peripherals, Network Interface Card. • Network Devices – hubs, Switches, routers, repeaters. OSI model and TCP/IP model. Basic HTTP, World Wide Web, Web Browsers, Web Servers, Domain Names, URL and DNS. • IP addressing – types and classes. Types of Networks – LAN,	
Unit – 2 Cyber-crime, cyber security& Cyber Forensics	**14**
Chapter-3 Cyber Crime • Cyber crime- meaning, definition and its classification • Cybercrimes against Individuals – E-mail spoofing and online frauds, Phishing and its forms, Spamming, Cyber-defamation, Cyber stalking, Cyber Bullying and harassment, Computer Sabotage, Pornography, Password Sniffing. etc • Cyber Crimes against Women and Children. • Cybercrime against organization – Unauthorized access of computer, Password Sniffing, Denial-of-service (DOS) attack, Backdoors and Malwares and its types, E-mail Bombing, Salami Attack, Software Piracy, Industrial Espionage, Intruder attacks.	
Chapter-4 Cyber Security • Risk evaluation – Identification ofThreats, Vulnerabilities and Risk. • Risk Management, Risk Assessment and Analysis. • Information Classification, Policies, Standards, Procedure and Guidelines. • Security Frameworks, Layers of Security. • Authorization and Access Controls- Models, Methods and Types of Access Control. Chapter-5 Digital Forensics: Meaning, Importance and Tools • Types of Computer Forensics Tools and its needs • Computer Forensics Software Tools. • UNIX/Linux Forensics Tools, Other GUI Forensics Tools,	
Unit -3 IT Act and other Laws for Cyber-crime	**14**

Chapter-6 IT Act 2000 • Objectives, Applicability, Non-applicability, Definitions, Amendments and Limitations. • Various cyber-crimes under Sections 43 (a) to (j), 43A, 65, 66, 66A to 66F, 67, 67A, 67B, 70, 70A, 70B, 80 etc. along with respective penalties, punishment and fines, Penal Provisions. Chapter-7 Indian Evidence Act • Classification – civil, criminal cases. Essential elements of criminal law • Cross examination and re-examination of witnesses. □ Sections 32, 45, 46, 47, 57, 58, 60, 73, 135, 136, 137, 138, 141. Section 293 in the code of criminal procedure. Secondary Evidence	

Text Books:

1. John P. Hayes; "Computer Architecture and Organization", McGraw-Hill, 1988.
2. V. Rajaraman and Niharika Adabala; "Fundamentals of Computers", 6th Edition, PHI Learning Pvt. Ltd., 2015.
3. Anita Goel; "Computer Fundamentals", Pearson Publications, 2010.
4. Beherouz. A Forouzan; "Data Communication and Networking", 4th Edition, TMH, 2000.
5. Andrew S.Tanenbaum; "Modern Operating Systems", 2nd edition, Addison Wesley, 2001.
6. Gary Nutt; "Operating Systems: A Modern Perspective", 2nd edition, Pearson Education, 2001.
7. William Stallings; "Operating Systems: Internals and Design Principles", 5th Edition, Prentice Hall, 2005.
8. Karnika Seth; "Computers, Internet and New Technology Laws", Lexis Nexis Buttersworth Wadhwa, 2012.
9. Vikas Vashishth.; "Law and practice of intellectual property in India"
10. Jonathan Rosenoer; "Cyber Law: The Law of Internet", Springer- Verlag, New York, 1997.
11. Sreenivasulu N.S; "Law Relating to Intellectual Property", Patridge Publishing, 2013
12. Pavan Duggal; "Cyber Law – The Indian Perspective", Saakshar Law Publications.
13. Harish Chander; "Cyber Laws and IT Protection", PHI Learning Pvt. Ltd, 2012.

JOURNAL AND SPECIAL ACTS REFERENCES:

1. The Copyright Act, 1957
2. The Patent Act, 1970
3. The Indian Evidence Act, 1872

DIGITAL REFERENCES:

1. https://mrcet.com/pdf/Lab%20Manuals/IT/R15A0533%20CF.pdf.
2. https://annamalaiuniversity.ac.in/studport/download/engg/it/resources/Cyber%20Forensics.pdf
3. https://www.ifsedu.in/cyber-forensics-cyber-crimes-cyber-security-cyber-law/
4. https://lawbhoomi.com/cyber-law-notes/

Pedagogy: Lecture, Assignments, Interactive Sessions, ICT, Group Discussion

Course Articulation Matrix -22OECRI402

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	2	1	3	2	1	2	2	2	2	2

CO2	3	3	2	2	3	2	1	3	3	2	2	2
CO3	3	3	3	3	3	2	1	3	3	2	3	3
Weighted Average	3	2.6	2.3	2	3	2	1	2.6	2.6	2	2.3	2.3

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end Examination. The pattern is 40:60 for IA and Semester End theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	Theory	Practical
Total Marks	100 Marks	50 Marks
Continuous Assessment-1(C1)	20 Marks	10 Marks
Continuous Assessment-2(C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks Shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, Seminar, case study, field work, project work etc. This assessment and score process should be Completed after completing 50% of syllabus of the courses and within 45 working days of Semester program

b). The second component (C2) of assessment is for 20% marks. This shall be based on test, Assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c). During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d). In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation

with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/ assignment /project work etc.

The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course Shall be as under:

	C1Marks	**C2 Marks**	**Total Marks**
Session Test	10 Marks	10 Marks	20 Marks
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	10 Marks	10 Marks	20 Marks
Total	20 Marks	20 Marks	40 Marks

For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the ratio is 25 (10 + 15):25).

Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

There shall be no minimum in respect of internal assessment marks.

Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations- III &IV Semester

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester.C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of

Procedure development and its execution. The student has to compulsorily submit the practical record for Evaluation during C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

  Part-A Practical Exercises (C1): 10 marks

  Part-B Practical Exercises (C2): 10 marks + Record: 05 marks = 15 marks

- The student is evaluated for 25 marks in C3 as per the following scheme:

Assessment Criteria	Marks
Any Three Questions Decided by the External Examiner	10+10+05
Total	25

DSC Theory Question Paper Pattern

For III & IV Semester

Max Marks: 60 **Times: 2 ½ Hours**

Instruction: Pattern Setting

- The Question Paper is divided into 3 parts: Part-A, Part-B and Part-C
- Part-A, Part-B, Part-C With Internal Choice.(Short, Medium and Long answer question)
- Part-A Each Question Carries 2 Marks and student has to answer 5 out of 7questions.

- Part-B Each Question Carries 5 Marks and student has to answer 4 out of 8 questions.
- Part-C Each Question Carries 10 Marks and student has to answer 3 out of 5 questions.

Part-A

I. Answers any FIVE questions of the following in about 50 words 5x2=10

a.
b.
c.
d.
e.
f.
g.

Part- B

II. Answer any FOUR questions of the following in about 300 words 4x5=20

2.

3.

4.

5.

6.

7.

8.

9.

Part-C

III. Answer any THREE questions of the following in about 500 words 3x10=30

10.

11.

12.

13.

14.

OE Theory Question Paper Pattern

For III & IV Semester

Max Marks: 60 **Times: 2 ½ Hours**

Instructions: Paper Setting

- The Question Paper is divided into 3 parts: Part-A, Part-B and Part-C
- Part-A, Part-B, Part-C With Internal Choice.(Short, Medium and Long answer question)
- Part-A Each Question Carries 2 Marks and student has to answer 5 out of 7questions.
- Part-B Each Question Carries 5 Marks and student has to answer 4 out of 8 questions.
- Part-C Each Question Carries 10 Marks and student has to answer 3 out of 5 questions.

Part-A

I. 1. Answers any FIVE questions of the following in about 50 words **5x2=10**

a.

b.

c.

d.

e.

f.

g.

Part- B

II. Answer any FOUR questions of the following in about 300 words **4x5=20**

2.

3.

4.

5.

6.

7.

8.

9.

Part-C

III. Answer any THREE questions of the following in about 500 words 3x10=30

10.

11.

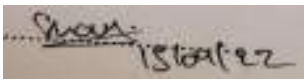
12.

13.

14.

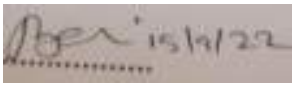
Department of Criminology and Forensic Science, BoS Meeting – 15.09.2022

1. **Megha Krishna Nilajkar**



2. **Shashidhar.E**

3. **Dr.G.B.Aravind**



4. **Prof.Basavaraj D Masthi**

ABSENT

5. **Dr.Sarita D'ssouza**

ABSENT

6. **Dr. Krishnarajuk.k**

7. **Francis Devasahayam.B**

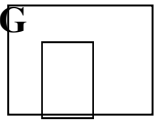
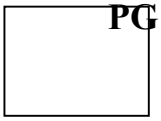
EducationtoExcel

SBRRMAHAJANAFIRSTGRADECOLLEGE(Autonomous)

Jayalakshmipuram,Mysuru – 570012Karnataka,INDIAAffiliatedto UniversityofMysore

Re-accreditedbyNAACwith„A"Grade,CollegewithPotentialforExcellence

BOARDOFSTUDIES2021 -2022

UG  PG 

SyllabiofVandVISemester

B.A.– CriminologyandForensicScienceChoiceBasedCreditSystem– 2020-2021

Date:07/08/2021

CreditPatternforCourses

L-Lecture,P-Practical

Sem	Type	Subject Code	Course	L:P=T
V	DSE1	211520	Correctional	3+ 1.5= 4.5
	DSE2	211530	AdministrationCyberCrimes&CyberForensics	3+1.5 =4.5
VI	DSE1	211540	Police Science- Techniques Of CrimeInvestigation	3+ 1.5= 4.5
	DSE2	211550	IntroductiontoForensicMedicine&Toxicology	3+1.5 =4.5
V	GE	211580	CrimeSceneInvestigation	2 +0=2
VI	GE	211590	FingerprintScience	2+0=2

DSE(Theory&Practical)

Creditmeanstheunitbywhichthecourseworkismeasured.

OnehoursessionofLectureorTutorial3hoursperweekfor16weeksamountingto3creditspersemester.

While the PracticalComponentI&IIfor 3hourssessionseachofthe practicalper week;for16week‟samountingtototal3creditspersemester.

GE(Theory)

OnehoursessionofLectureorTutorial2hoursperweekfor16weeksamountingto2creditsin each Semester.

DistributionofMarks

Model/Units	Total – Units 4/5				
Hours	Theory	Practical - IConduction/Visit		Practical - IIConduction/Visit	
Hours perWeek	3Hours	3Hours		3Hours	
Total Hours for16Weeks	48Hours	48Hours		48Hours	
IAMarks	IA– TheoryC1(Th)&C2(As)	IA- PracticalC1(Th) &C2(As)		IA - PracticalC1(Th)& C2(As)	
	10+ 10=20Marks	5+ 5 =10 Marks		5+ 5 =10 Marks	
ExamMarks	C3Examination	C3Examination		C3Examination	
	80Marks	Record/ Viva-Voce	Experimentation	Report/ /Viva-Voce	Presentation
		5+5=10 Marks	30Marks	5+5=10 Marks	30Marks
	100Marks	50Marks		50Marks	
	TOTALMarks(Theory+PracticalI&II=200Marks)EachSemester				
Duration of theExamination	Theory C3Examination	Practical- I&IIC3Examination		I.ATheory&Practical(C1)	
	3Hours	2Hours (Each)		1 Hour	

VSemester

DSE1–CORRECTIONALADMINISTRATION

Courseduration:16weeks with3 hoursofinstructionperweek

SubjectCode:211520 **LTP Credits:3**

LearningObjectives:

a. ConceptsofpunishmentandCorrectionalAdministration.
b. Typesof punishmentsinthepastandpresent.
c. Prisonasinstitution ofcorrection,its typesandtheproblemstherein.
d. Victimology

Learningoutcomes:

a. Understandingoftheconceptofpunishment
b. Workingofprisonsystems
c. FundamentalsofVictimology

UnitI:Introduction **10hours**

a) HistoricalDevelopmentofPenologyandDefinitionsofPunishment.

b) Conceptsofcorrectionaladministration

c) Theoriesofpunishments:Retributive,Prevention,DeterrenceandReformative

UnitII:Punishment. **07hours**

a. Corporal

b. Imprisonment.

c. Fineandforfeitureofproperty

d. Capitalpunishment.

UnitIII:CorrectionalInstitutions **12hours**

a) GeneralOrganizationofIndianprisons.

b) Prisonadministration-ClassificationofPrisoners.

c) Non-institutionalprograms-Probation; ParoleandAfter-CareServices.

d) JuvenileCorrectionalInstitutions

Unit IV:AnomalousissuesinCorrections **12hours**

a) Sexdeviance inprisons

b) PrisonViolence –Violent behaviour&HumanRights abuse

c) Rehabilitation&Prisonlabour.

d) Treatment&correctionofPrisoners

UnitV:Victimology. **07 hours**

a) Meaning,developmentandimportance.

b) Typologyofvictims

c) Victimizingfactors&VictimCompensation.

d) Restorativejustice

BOOKSFORREADING&REFERENCE

1. Paranjape.N.V Criminology&PenologywithVictimology,Sixteenthedition,Central LawPublications.(2014)

2. WalterCadeReckless,TheCrimeProblems,Thirdedition`Appleton-Century-Crofts,Inc.(1950)

3. E.H.Sutherland,DonaldR,Cressey,&David.F.LuckenbillPrinciplesofCriminology,Eleventhedition,Rowemam&Littlefield publishers.(1924)

4. JehangirM.J.Sethna. SocietyandCriminal ,Bombay, N.M. Tripathi,(1989)

VSemester

DSE2- CYBERCRIMESANDCYBERFORENSICS

Courseduration:16weekswith3hoursofinstructionperweek

SubjectCode:211530 **LTP Credits:3**

LearningObjectives: Afterstudyingthispaperthestudentswillknow–

a. Thebasicsofdigitalforensics.
b. Thecaseswhichfallunderthepurviewofdigitalcrimes.
c. Thetypesofdigital crimes.
d. Theelementsinvolvedininvestigationofdigitalcrimes.
e. thefundamentalsofcyber security

LearningOutcomes:Understandingof–

a. Fundamentalsofdigital,computing&storagedevices
b. Cybercrimes&theinvestigativeprocesses
c. Agencies involved in
Investigation.d.Cyber Security&Cyber
crimeprevention

Unit-I:Fundamentals ofComputer hardware&architecture 06 hours

a. Fundamentalsofcomputerhardwareandaccessories.

b. Developmentofharddisk,physicalconstruction,CHSandLBAaddressing,encodingmethodsandformats.

c. Memoryand processors– methods ofstoringdata,operatingsystems

d. Networks-LAN,WANandMAN.

Unit-II:Cyberspace& cyberoffences 12hours

a. Definitionandtypesofcomputercrimes.

b. Distinctionbetweencomputercrimesandconventionalcrimes.

c. Computervirusandcomputerworm–Trojanhorse,trapdoor,super zapping,logicbombs.

d. Types of computer crimes – Cyber stalking, spamming, phishing pornography, hacking, crimes relatedtointellectualpropertyrights,cyberterrorism,hatespeech,privateandnationalsecurityincyberspace
.

Unit-III:Law ofCyber crimes 10 hours

a. SalientFeaturesoftheInformationTechnologyAmendment Act 2008;

b. MeitYIntermediariesguidelinesof2011&2021

c. ProvisionsintheIndianPenal Code, Codeof Criminal Procedureandthe IndianEvidenceAct

Unit-IV:CyberForensics 10hours

a. Investigation;Seizureofsuspectedcomputer.Collectionandseizureofmagneticdata.

b. Restoration of deleted files –familiarization of software, Encase, Cyber check suites, Encryption anddecryptionmethods.Legaland privacyissues.

c. Extractionofinformationfromtheharddisk.Treatment ofexhibits.Creatingbitstreamoftheoriginalmedia.

d. Examiningforensicallysterilemedia. E-mailtracking&Passwordcracking

Unit:V-BasicsofInformationSecurity 10hours

a. InformationSecurity-OverviewofInformationsecurity,CIATriad,ThreatsandVulnerabilitiesandRisk,

b. Policy,Standards,Procedures,GuidelinesandBaselines.

c. Information & Assets: Classification of Information, Information Assets – Owner, Custodian, User.Accesscontrol, authentication and authorization.

Booksfor Reading &Reference

1. R.K.Tiwari,P.K.SastryandK.V.Ravikumar,ComputerCrimesandComputerForensics,SelectPublishers,NewDelhi(2003).
2. C.B.Leshin,InternetInvestigationsinCriminalJustice,PrenticeHall,NewJersey(1997).
3. R.Saferstein,Criminalistics,8thEdition,PrenticeHall,NewJersey(2004).
4. E.Casey,Digital EvidenceandComputerCrime,AcademicPress,London(2000).
5. NinaGodboleandSunitBelapore;"CyberSecurity:UnderstandingCyberCrimes,ComputerForensicsandLegalPerspectives",WileyPublications,2011.
6. ShonHarris,"AllinOneCISSP,ExamGuideSixthEdition",McGrawHill,2013.
7. BillNelson,AmeliaPhillipsandChristopherSteuart;"GuidetoComputerForensicsandInvestigations"– 3rd Edition, Cengage, 2010BBS.
8. WilliamStallings;"CryptographyandNetworkSecurity:PrinciplesandPractices",FifthEdition,PrenticeHallPublication Inc., 2007.

9. AtulJain;“CyberCrime: Issues,ThreatsandManagement”,2004.

10. MajidYar;“CybercrimeandSociety”,SagePublications,2006.
11. Michael E Whiteman and Herbert J Mattord; “Principles of Information Security”, Vikas PublishingHouse, NewDelhi,2003.
12. MattBishop,“ComputerSecurityArtandScience”,Pearson/PHI,2002.
13. Peter Singer and Allan Fredman; “Cybersecurity and Cyberwar: What Everyone needs to know”,OxfordUniversityPress, 2014.
14. RaefMeeuwisse;“CybersecurityforBeginners”,IcutrainLtd.,2015.

V

SemesterPRACT

ICAL1

Courseduration:16weekswith 3 hoursofinstructionperweek

SubjectCode:211520 **LTP Credits–3**

1. Portrait Parle[byusingthetemplateofPortrait BuildingSystem(PBS)]
2. AnalysisofCrimeStatistics-TabularcolumnMethod.
3. GraphicalrepresentationbyLineDrawing,BarDiagramandHistogram.
4. GivingofInformationtoPolice.(Anythreedifferenttypesof IPCCases)
5. RegistrationofFIR.(AnythreedifferenttypesofCrimes)
6. VisittoCyber &NarcoticsPoliceStation,Prison,andsubmissionofreport.(Tobewrittenbyhand)

VSemester

PRACTICAL2-FIELDWORK /PROJECT

Courseduration:16weekswith 3 hoursofinstructionperweek.

SubjectCode:211530 **LTP Credits–3**

1. Crimein urbanandruralareas.
2. Railwaycrimes.
3. Studyonviolentcrimes.
4. Prisonadministration.
5. Policeadministration.
6. Policetraining.
7. Police-Communityrelations
8. Policehelp-line.
9. Forestcrimes.
10. Criminalpersonalitytendencies-groups; tribes.
11. P.O.Act-releasedoffendersonprobation.
12. PrisonersAct-Releasedconvicts
13. VictimsofCrime.
14. Communalviolence.
15. Juvenilesinconflict withlaw.
16. Childlabor.
17. Drugabuse
18. Voluntaryagencies.
19. Ragging.
20. Economicoffences.
21. Cybercrimes.

22. Prostitution-sexworkers.

23. HumanRights.

24. Femalecriminality.

25. Crimesagainstwomen.

26. Crimesagainstchildren.

27. Massmediaandcrime.

28. CaseStudies.

29. Pornography

.30.Crimesagainstweakersections.

31. HabitualCriminals

32. ConsumerProtection.

STUDYMETHODOLOGY:

Thestudentsaregivenanoptiontoselect oneoftheabovementionedtopics.Duringtheallocatedsession,thetopic will haveto bestudied andaspecificmethodologyis tobefollowed;

1. Selectionofthetopic

2. Studythetopictoevolvethestatement oftheproblem

3. Literaturesurvey

4. Methodology

5. Collectionofdataorinformationontheinstitutionorcase(dependinguponthetopicandmethod)

6. Analysisandinterpretationofdata.

7. Findings and conclusions- The pedagogy to be followed is to mentor the student, review progress¬ andsuggest corrections.

The student will have to attend the designated classes and the teacher will conduct the contact session inrelationto the research methods to his/herassigned students.

The contact sessions will be deemed to be a part of the practical¬ workload of the designated teacher.Finalization and submission of the report will have to take place at least¬ one week before the scheduledpracticalexamination.

The report shall contain letters of permission from the institutions and¬ endorsement thereof as to havingvisitedthe institution for collectionof information.

The copies of the filled in questionnaires will have to be submitted in a¬ separate file in case if thestudent has usedthesurveymethod.

The reports shall be evaluated at the term end examination, conducted¬ by

the College.Theevaluationwillbebased alsoupontheviva-

voce,inrelationtothe¬report.

V SEMESTER

GENERIC ELECTIVE (GE)

CRIME SCENE INVESTIGATION

Subject code: 211580

Course duration: 36 Hours

Learning Objectives: After studyingthis paper the students will know

The methods of securing, searching and documenting crime scenes.

The art of collecting,packing and preserving different types of physical and trace evidence at crime scene.

The legal importance of chain of custody.

The tools and techniques for analysis of different types of crime scene evidence.

Learning Outcomes:

Understanding of scene of Crime, types & preservation

Documentation of Scene of Crime, evidence collection & packaging.

Content of Theorycourse	Hours
Unit – 1 CrimeScenePreliminaries	**14**

Chapter-1 CrimeSceneanditsimportance. • Meaningand Typesof crime scenes • indoorandoutdoor Mobile • primarysecondaryandtertiary. Chapter-2Securingandisolatingthecrimescene. • Crimescenesearch methods. • Safetymeasuresatcrimescenes. • Legalconsiderationsatcrimescenes.		**Text**
Unit – 2 CrimeSceneDocumentation	**14**	
Chapter-3CrimeSceneDocumentationanditsimportance • Typesof documentation of crimescenes • Photography. • Videography, • Sketchingand • Recording notes. Chapter-4 Dutiesof firstrespondersatcrimescenes. • Coordinationbetween policepersonneland forensicscientists atcrime scenes. • Theevaluation of 5Ws(who?, what?, when?,where?, why?) and1H(how?).		
Unit -3CrimeSceneEvidenceManagement.	**14**	
Chapter-5Classificationofcrimesceneevidence • Locard principle andImportance. • Physical evidenceand • Traceevidence. Chapter-6Collection,labelling,sealingof evidence. • Hazardousevidence. • Preservation of evidence.		

Books:

4.M. Byrd, CrimeSceneEvidence:AGuide totheRecovery andCollection of PhysicalEvidence, CRC Press, BocaRaton (2001).

5.T.J.GardenerandT.M. Anderson, CriminalEvidence,4thEd., Wadsworth, Belmont(2001).

6.S.H. Jamesand J.J. Nordby, ForensicScience:An IntroductiontoScientificandInvestigativeTechniques, 2nd Edition, CRC Press, BocaRaton (2005).

5.W.J.Tilstone,M.L.Hastrupand C. Hald,Fisher's,Techniquesof CrimeSceneInvestigation,CRC Press, BocaRaton (2013).

Pedagogy: Lecture,Assignments,InteractiveSessions, ICT,GroupDiscussion

B.A/B.Sc. Course
inCriminologyandForensicScience

V Semester: Paper 1 – POLICE SCIENCE – TECHNIQUES OF CRIME INVESTIGATION

Marks: C1–10, C2–10
C3 (Main exam) -80

Total Marks – 100

Teaching Hours– 4Hrs/week

Exam Duration: 3 Hrs
LTP Credits–4

UnitI:Introduction

Investigation-Meaning&importance.

ToolsofInvestigation.

GeneralprocedureofInvestigationofaCognizableoffence.

QualitiesofanInvestigatingOfficer.

UnitII:SceneofCrime

- Meaningandtypes
- Methodsofsearch.
- CollectionandpreservationofPhysicalclues.

UnitIII:Methodsofinvestigationof:

(a)Murder; (b) Suicide;(c)Burglary;(d)Traffic accidents.

UnitIV:MethodsofInterviewandInterrogation.

a) Typesofwitnessesandmethodsoftheirinterview.
b) Interrogationofsuspects.
c) Scientific approach to interrogation- Polygraph; Narco analysis, BrainFingerPrinting.

UnitV:Observationandidentification.

a) SketchingandPhotography&Videography.
b) PortraitParle.
c) M.O.Index
d) Identificationparade.

BOOKSFORREFERENCE

NameoftheAuthor	Name oftheBook
RamanujanP.	:PreventionDetectionofCrime
Sullivan	:PoliceScience.
SwensonandWendell	: Techniques of Crime Scene
Investigation.DeAngeles	:CrimeSceneInvestigation.
SoddermanandO'Connell	: Modern Criminal
Investigation.Horgan	: CriminalInvestigation.
SheshagiriRao	:PreventionandDetectionofCrime.

VI Semester: PRACTICAL - 1

Marks: C1–05, C2–05

C3 (Main exam) -30+5+5
Total Marks – 50

ExamDuration:3Hrs
TeachingHours–4Hrs/week

***Eachpracticalisof4hoursduration(2hourspractical=1credit)LTPCredits–2**

PoliceScience-TechniquesofCrimeInvestigation.

1. Kim'sGame.
2. ExaminationofCrimeSceneofa)Murder,b) Suicide,c)Burglary,
   d)Traffic Accidents
3. Sketching.
4. NeatSketchingandReconstructionofCrimeScene.

5. Handling, Packing and Forwarding of material evidence of articles with a)Fingerprints; b)FingerprintsandBloodstains;c)BloodstainedCloth; d)Hairsample;e)Bullets/cartridgecase,f)Suspectedliquid.

B.A/B.Sc. Course inCriminologyandForensicScienc e

VI Semester: Paper 2. INTRODUCTION TO FORENSIC MEDICINE.

Marks: C1–10, C2–10

C3 (Main exam) -80
Total Marks – 100

Teaching Hours– 4Hrs/week

Exam Duration: 3 HrsLTP Credits–4

UnitI:Introduction

Definitions,meaningandhistoricaldevelopment.

Inquest:Police,MagistratesandMedicalExaminersSystem.

Personalidentificationoftheliving.

UnitII:Wounds&Injuries

(a) Meaning &types ofWoundsandinjuries;
(b) CharacteristicsandMedico-legalimportanceofwoundsandinjuries;
(c) ExaminationofHumanSkeletondeterminationofage&Sex.

UnitIII: Death

Meaningandmodesofdeath

Changesafterdeath.

Asphyxial death: Meaning, types & Medico-legal importance of hanging,Strangulationanddrowning.

UnitIV:BodyFluids andDNA.

- Blood.

- Semen.
- DN AProfiling.

UnitV:Toxicology

Poisons-MeaningandDefinition.

Classificationofpoisons–Originbased.

Signs, symptoms and Medico legal importance of Arsenic, Alcohol, Barbiturates,Cyanide,Datura, Opiumand Organo-Phosphoruspoisons.

BOOKSFORREFERENCE:

1. Modi Dr.:MedicalJurisprudenceandToxicology.
2. Dr. NarayanaReddy:SynopsisofForensicMedicine.
3. Parikh.Dr.:MedicalJurisprudenceandToxicology
4. PillaiV.V.Dr.: Toxicology.

NagalotiMath:KanoonuvydyakiyaShastra.

Ashoka : Police Vignyana mathu nyaya vidyakiyashastra

VISemester:PRACTICALCOMPULSORYPAPER

Marks: C1–05, C2–05
C3(Mainexam) -30+5+5
TotalMarks –50

TeachingHours–4Hrs/week
LTPCredits–2

ExamDuration: 3Hrs

***Eachpracticalisof4hoursduration(2hourspractical=1credit)**

1. Preliminary examination of blood.
   BenzadineTest.

   LeucomalachiteTest

   a. ConfirmatoryTests
   b. Tiechman'sTest.
   c. Takayama'sTest.
   d. HaemotoporophyrinTest
   e. BloodGrouping.
2. ExaminationofSkeletalremainsforageandsexdetermination.
3. Examination of models for identification of the characteristics of wounds andinjuries.

V SEMESTER

GENERIC ELECTIVE (GE)

CRIME SCENE INVESTIGATION

Subject code: 211590 **LTP Credits : 3**

Course duration: 48 Hours

Unit-I:Basics ofFingerprinting

Introduction and history, with special reference to India.
Biological basis of Finger Prints. Formation of ridges.
Fundamentalprinciples of fingerprinting.

Unit-II:Fingerprint patterns andridge characteristics

Fingerprint patterns , Fingerprintcharacters/minutiae.
Methods ofRecordingof Plain and rolled fingerprints.
Classificationof fingerprintrecord.

Unit-III: Development of Fingerprints

Type of Chanceprints at acrime sceneand their development.
Preservationof developedfingerprints.
Digitalimagingfor fingerprintenhancement.

Unit-IV:Other Impressions

Castingof foot prints andElectrostatic liftingof latentfoot prints.
Palm prints and theirhistoricalimportance.
GaitPatternand its use in crime investigation.
Lip Prints and classification

College with potential for excellence

Jayalakshmipuram, Mysuru - 570 012

BOARDOF STUDIES(BoS)

DEPARTMENTOFECONOMICS

UG ☑

PG ☐

NEP Syllabi for I and II Semester BA Economics

2021-22

DEPARTMENT OFECONOMICS

Motto

Economics for Empowerment and Enhancement

Vision

To prepare Students for successful careers as applied economists through

fine tuning ofminds & to make them understand and analyze the dynamics of Economic changes

Mission

Providing a sound theoretical base to develop quantitative aptitude,

to substantiate theoretical learning,

Exposure to practical aspects of present day economic challenges

POs	Details of the Programme Outcomes (POs)
PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.
PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

Department of Economics - List of Board of Studies Members

Sl. No.	Category	Name	Designation	Address for communication	E-mail and Mobile No.
01	**University Nominee**	**Dr. NavithaThimmaiah**	Associate Professor	DoS in Economics & Cooperation, UoM, Mysuru.	navithaprasad@gmail.com +919036180571
02	**HoD& Faculty of the Department**	**Venkatalakshmi M N**	Associate Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	venkatalakshmimn.fgc@mahajana.edu.in +91 9448472024
		Dr.Pushparani P G	Assistant Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru - 12	pushparanimfgc@gmail.com +91 9945094843
		Siddappa R	Assistant Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru - 12	mnsh1611@gmail.com +91 8050365338
		Chaluvegowda S M	Assistant Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru - 12	Chaluvegowda25@gmail.com +918217310214
03	**Two Experts from other University**	**Dr. Ramakrishna B M**	Associate Professor	University college,Hampanakatta, (A Constituent college of Mangalore University) Mangaluru-575001	rama_bmr@yahoo.co.in +91 9448427705
		Dr. E. Thippeswamy	Associate Professor	Field Marshal K. M. Cariappa College, (A Constituent college of Mangalore University) Madikeri-571201	ethippeswamy@yahoo.com +91 9448639972
04	**Alumnus**	**Dr. RoopaPatavardhan**	Alumnae & Assistant Professor	School of Business studies and social sciences, Christ (Deemed to be University)Hulimavu, Bengaluru-76	roopa.patavardhan@christuniversity.in +91 9901997086
05	**Industry Expert**	**Nikhil Maruthi**	Stakeholder & LLP Partner	Merako Media Pvt Ltd Mysuru	Nikhilmaruthi26@gmail.com +91 9650266082

Duration of the programs and Credit Requirements:

A Certificate / Diploma/ Bachelor Degree or Bachelor Degree with Honours in Economics in BA Economics is awarded at the completion of every progressive year.

Exit Option	**with Certificate/ Diploma/ Degree/Honors**
Successful completion of First year (two semesters) of the four years multidisciplinary undergraduate degree programme	Certificate in Economics
Successful completion of second year (four semesters) of the four years multidisciplinary undergraduate degree programme	Diploma in Economics
Successful completion of three year (six semesters) of the four years multidisciplinary undergraduate degree Programme	Bachelor of Arts Degree in Economics
Successful completion of four years (eight semesters) of the four years multidisciplinary undergraduate degree Programme	Bachelor of Arts Degree with Honours in Economics
Successful completion of Five years (Ten semesters) of the five years multidisciplinary degree programme	Master of Arts Degree with Honours in Economics

Evaluation process of IA marks:

- The first component (C1), of assessment is for 20 marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and scoreprocessshouldbecompletedaftercompleting50%ofsyllabusofthecourse/sand within the first half of thesemester.
- The second component (C2), of assessment is for 20 marks. This shall be based on test, assignment, seminar, case study, field work, internship / industrial practicum / project work etc. This assessment and score process should be based on completion of the remaining 50 percent of syllabus of the courses of thesemester.
- During the 17^{th} – 20^{th} week of the semester, a semester end examination of Two and Half hours (2.30) duration shall be conducted by the University for each Course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be60%.

- In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the concerned teacher/ Program Coordinator / HOD and suitable decision takenaccordingly.
- For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (of A4 size), graph sheets etc., required for such tests / assignments and these be stamped by the concerned department using their department seal at the time of conducting tests / assignment / worketc.

The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

Outline for continuous assessment activities for C1 and C2

Activities	C1	C2	TotalMarks
Session Test	10 marks	10 marks	20
Case study / Assignment / Field work / Project work/ Academic Quiz/ Reviewof the Book/ etc.	10 marks	---	10
Case study / Assignment / Field work/ Project work/ Academic Economics Quiz/ Review of the Book/ etc	---	10 marks	10
Total	20 marks	20 marks	40

Year-wiseProgrammeStructure(NEP2020)

Discipline Specific Courses(DSC)andOpen Elective(OE)

I & II SEMBA – Economics (2022-23)

Course Type,Code andTitle		Hour/Week		Credits	Maximum Marks			ExamDuration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Economics –ISem									
DSC-1 211137	Basic Economics-I	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**
DSC-2 211138	Contemporary Indian Economy	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**
OE-1	1. Kautilya'sArthaShastra 21OEECO101 2. Pre-reforms Indian Economy 21OEECO102 3.DevelopmentStudies 21OEECO103 **(Any one to be opted)**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**

Economics–IISem

Course Type,Code andTitle		Hour/Week		Credits	MaximumMarks			ExamDuration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
DSC-3 211237	Basic Economics -II	**3**	**0**	**3:0:0**	**20**	**20**	**60**	2 ½ Hours	**100**
DSC-4 211238	Karnataka Economy	**3**	**0**	**3:0:0**	**20**	**20**	**60**	2 ½ Hours	**100**
OE-2	1.Contemporary IndianEconomy-21OEECO201 2.Sustainable Development Goals -21OEECO202 3.Economics ofBusiness Environment-21OEECO203 (**Any one to be opted)**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	2 ½ Hours	**100**

BA (Honors) in Economics

Semester - 1

Course Code: 211137	**Course Title:**DSC 1: Basic Economics – I
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes:

CO1. Identify the facets of an economicproblem andExamine the basic economic concepts andterms.

CO2.Illustratethe operation of a marketsystem,analyze the production and cost relationships of businessfirms.

CO3.Evaluate the pricing decisions under different market structures;andUsebasiccost-benefitcalculationsasameansofdecisionmaking

Content of Basic Economics 1	42 Hrs
Unit–1 Basic Concepts inEconomics:	**14**
Chapter No. 1 Nature and Scope of Economics: Meaning ofEconomics Nature ofEconomics Scope ofEconomics Methods ofEconomics **Chapter No. 2 Thinking Like an Economist:** Thinking Like anEconomist The Economist asScientist The Economist as a PolicyAdviser **Chapter No. 3 Economic System:** Meaning and Types of Economic Systems Circular Flow of Economic Activities Evolution of the Present EconomicSystem **Practicum:** 1. Group Discussions on Choice Problem Assignment on Types of Economic Systems	5 4 5
Unit – 2 Demand, Supply and Markets:	**14**

Chapter No. 4. Firms and Households: Meaning of Firms andHousehold Relationship Between Firms andHousehold Input and output markets	4
Chapter No. 5. Demand and Supply: Individual Demand MarketDemand Determinants of Demand &Supply MarketEquilibrium	5
Chapter No. 6. Elasticity and its Measurement: Meaning & Types of Elasticity ofDemand Price, Income and CrossElasticity of Demand Measurement of Elasticity ofDemand Determinants of Elasticity ofDemand **Practicum:** 1. Estimation of Demand and Supply Elasticities 2. Solving an Equilibrium Problem	5
Unit – 3 Cost and Market Structures:	**14**
Chapter No. 7 Production and Production Function: Meaning and types ofproduction Function TotalProduct AverageProduct MarginalProduct	4
Chapter No. 8. Production, Cost and Revenue Curves: TC, AC andMC Cost in theShort-run Fixed Costs and VariableCosts Long run AC andMC TR, MR andAR	5
Chapter No. 9. Market Structure: Markets: Meaning and Features of Perfect and Imperfect/MonopolisticCompetition Meaning and Features of Monopoly, Duopoly andOligopoly **Practicum:** 1.Calculation of various costs, a mini-project can be taken up.2. Studying the real-life pricing mechanism through a project/ case studies	5

References :

1. Cohen, A.J. (2020). *Macroeconomics for Life: Smart Choices for All? + MyLabEconomics with Pearson eText*(updated 2nd ed.). Toronto, ON: Pearson CanadaInc. Type: Textbook:ISBN:9780136716532
2. Cohen, A.J. (2015). *Microeconomics for Life: Smart Choices for You + MyLabEconomics with Pearson eText*(2nd ed.). Toronto, ON: Pearson Canada Inc. Type: Textbook:ISBN:9780133899368
3. Case Karl E. and Fair Ray C. Principles of Economics, Pearson Education Asia, 2014.
4. Mankiw N. Gregory. Principles of Economics,Thomson,2013.
5. Stiglitz J.E. and Walsh C.E. Principles of Economics, W.W. Norton & Co, New York,2011

Web links:

- https://leverageedu.com/blog/nature-and-scope-of-economics
- https://old.amu.ac.in/emp/studym/100007461https://corporatefinanceinstitute.com/resources/economics/economic-system
- https://testbook.com/learn/economics-demand-and-supplyhttps://www.tutorialspoint.com/managerial_economics/theory_of_production.htm
- https://www.analyticssteps.com/blogs/simple-guide-perfect-and-imperfect-competition

Course Articulation Matrix - 211137

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	1	2	2	1	1	1	-	2
CO2	2	2	1	1	2	2	2	1	1	1	1	2
CO3	3	2	2	2	2	2	1	1	1	1	-	2
Weighted Average	2.3	1.6	1.3	1.3	1.6	2	1.6	1	1	1	1	2

Semester I

Course Code: 211138	**Course Title:** DSC 2: Contemporary Indian Economy
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1. Comprehend the LPG Conceptand current problems of IndianEconomy

CO2. Identify the factors contributing to the recent growth of the IndianEconomy

CO3. Analyze the sector specific policies adopted for achieving the rationalgoals&Review various economic policiesadopted by Govt. Authorities.

Content of Course 1	42 Hrs
Unit – 1 LPG POLICIES, ECONOMIC REFORMS AND AGRICULTURE:	**14**
Chapter No. 1 Recent Issues: Concept ofLPG India's populationpolicy DemographicDividend	4
Chapter No. 2 Urbanization and governance: Urbanization and Smart CityMission Impact of COVID-19Pandemic AtmaNirbhara BharatAbhiyan	4
Chapter No. 3 Economic Reforms and Agriculture: Commercialization andDiversification of Agriculture Public Distribution System :TPDS Doubling Farm Incomes -MGNREGS (briefintroduction)	6
Practicum 1. Mini-project to ascertain the impact of pandemic on lives of different sections ofpopulation 2. Field visits to understand the agrariansituation	

Unit – 2 INDUSTRY, BUSINESS, FISCAL POLICY:	**14**
Chapter No. 4. Industrial Policy: New Industrial Policy andChanges Public SectorReforms PrivatisationandDisinvestment	4
Chapter No. 5. Business: Ease ofDoingBusiness Performance ofMSMEs Role of MNC's in IndustrialDevelopment	5
Chapter No. 6. Fiscal Policy: Tax, Expenditure, BudgetaryDeficits GST (meaning and features), Fiscal Federalism andFiscal Consolidation (in brief)	5

Recommendations of the Current FinanceCommission **Practicum**: Mini-projects to assess the business climate	
Unit – 3 MONETARY POLICY, FOREIGN TRADE AND INVESTMENT:	**14**
Chapter No. 7 Monetary Policy: Organisation of India's MoneyMarket Financial SectorReforms	5
Chapter No. 8. Money and Capital Markets Working of SEBI inIndia Changing roles of the Reserve Bank ofIndia Foreign Banks and Non-Banking FinancialInstitutions Demonetization and itsimpact	5
Chapter No. 9. Foreign Trade and Investment: Direction of India's foreigntrade Balance of payments since1991(trends) FDI – Trends andPatterns New EXIMpolicy Bilateral and Multilateral Trade Agreements (inbrief)	4
Practicum: 1. Computation and analysis of Wholesale Price Index, Consumer PriceIndex: 2. Group Discussions on India's trade policies and trade agreements	

References:

1. Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development inIndia,
2. Oxford University Press, New Delhi.
3. Bhaduri Amit, (2015), A Model of Development ByDispossession, FourthFoundation
4. Byres Terence J. (ed.), (1998), The State, Development Planning and Liberalisationin India, Delhi, OUP
5. DuttRuddar and K.P.M Sundaram(2001): Indian Economy, S Chand & Co. Ltd.New
6. Delhi.
7. Frankel Francine R., (2004), India's Political Economy, Delhi. OUP Jenkins Rob, 2000, Economic Reform in India,Cambridge,CUP
8. Jalan, B. (1996), India's Economic Policy- Preparing for the Twenty First Century, Viking, NewDelhi.
9. Joshi Vijaya and L.M.D. Little, (1998), India's Economic Reform 1991-2001,Delhi,OUP.
10. KapilaUma: Indian Economy: Policies and Performances, AcademicFoundation
11. Mishra S.K & V.K Puri (2001) "Indian Economy and –Its development experience", Himalaya PublishingHouse.
12. MukharjiRahul (ed.) (2007), India's Economic Transition: The Politics of Reforms, edited by Rahul Mukherji, Oxford University Press , NewDelhi.

WEBLINKS

- **https://en.wikipedia.org/wiki/Smart_Cities_Mission**
- **https://prepp.in/news/e-492-new-industrial-policy-1991-indian-economy-notes**
- **https://en.wikipedia.org/wiki/Foreign_trade_of_India**
- **https://tavaga.com/tavagapedia/sebi**
- **https://entri.app/blog/role-of-rbi-in-indian-banking-system**
- **https://www.drishtiias.com/daily-updates/daily-news-editorials/a-new-foreign-trade-policy-for-india**
- **https://www.jagranjosh.com/general-knowledge/population-policies-of-india-1448689756-1**

Course Articulation Matrix-211138

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	3	3	3	2	2	2	2	1	1	-	2
CO2	2	2	2	3	2	1	2	1	1	1	1	1
CO3	1	1	1	2	1	-	2	1	1	1	1	1
Weighted Average	1.6	2	2	2.6	1.6	1.5	2	1.3	1	1	1	1.3

Semester I

Course Code: 21OEECO101	**Course Title:OE1:** Kautilya'sArthashastra
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Enlighten the students about the ancient fundamentals about political and economic constituents, which will frame out a basic Knowledge of understanding the modern trends.

CO2 Identify the upcoming needs in the area of policy making for states at national and internationallevel.

CO3 Equip them with the science of Governance, so it projects out all the dimensions needed to be evaluated by the students about the present socio-economic and political rules and regulations of thestate.

Unit	Description	42 Hrs
I	**Chapter 1:** Introduction to Arthashastra	3
	Chapter 2: Various disciplines of Indian Education System	3
	Chapter 3: Place of Kautilya'sArthashastra among them	3
II	**Chapter 4:** Importance of science dealing with governance - Introduction to	5
	Tantrayuktis – The methods of preparing a compendium, tools and techniques of writing a compendium	
	Chapter 5: Governance Procedure- Appointment of the ministers, duties of	5
	Government superintendents, treasury, spies, royal writ, punishment-Vakparushyaand Dandaparushya;	
	Chapter 6: Laws of Inheritance – Determination of forms of Agreements,	5
	determination of legal disputes, Division of inheritance, Special shares in	
	inheritance, Distinction between sons	
III	**Chapter 7:** Economic Dimension- Body of income of the state, collection of	9

	revenue, duties of a Chamberlin (Koshadhyksha), Forty ways of embezzlement of the revenue, Punishment for the embezzlement of revenue,	
	Expenditure, Loss andProfit, Keeping up the Accounts, Recovery of Debts, Deposits of the state, Resumption of the gifts, Remission of Taxes	
	Chapter 8: Political Dimension- Six-fold Policy- War, Combination of Powers, Agreement of Peace with or without definite terms, Double Policy, Circle of States Conduct of Corporations, Secret means, Plan of treatise	9

Suggested readings:

1.Arthashastra of Kautilya by T. Ganapati Shastri, ChaukhambhaSurbhartiPrakashana, Varanasi,India,2005.

2.Arthashastra of Kautilya by Sri. VacaspatiGairola, ChaukhambhaVidyabahavan, Varanasi, India,2013.

3.Kautilya, The Arthashastraby L.N. Rangarajan, Penguin Books Ltd,London.

4. Kautilya'sArthashastra: The Way of Financial Management and Economic Governance, JaicoPublishing House, Mumbai,India.

WEBLINKS:

- https://en.wikipedia.org/wiki/Arthashastra
- https://www.youtube.com/watch?v=Yg_yOUPrB5s
- https://www.youtube.com/watch?v=-WV9KPqjV_I
- https://www.amazon.in/Arthashastra-Kautilya/dp/0140446036

Course Articulation Matrix-21OEECO101

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	1	1	-	1	1	2	1	2	1	1	-	-
CO2	1	1	2	2	1	1	-	2	1	1	-	-
CO3	1	1	1	2	1	1	2	1	-	1	-	1
Weighted Average	1	1	1.5	1.6	1	1.3	1.5	1.6	1	1	-	1

Semester 1

Course Code:21OEECO102	**Course Title:OE1**: Pre-Reforms Indian Economy
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Trace the evolution of IndianEconomy; Identify the structural features and constraints of the IndianEconomy

CO2 Evaluate planning models and strategy adopted inIndia

CO3 Analyze the sector specific problems and their contributions and Review various economic policiesadopted towards overall economicgrowth

Unit	Description	Hours
I	**Features and problems of Indian Economy:**	**15**
	Chapter 1: Features of Indian Economy: India as a DevelopingEconomy DemographicFeatures Problems of Poverty: Unemployment and IncomeInequality	4
	Chapter 2: Issues in Agriculture sector in India: Agriculture Marketing inIndia Agricultural PricePolicy	6
	Chapter 3: Industrial and Service Sectors: IndustrialPolicy Micro, Small and MediumEnterprises Service Sector inIndia. **Practicum:** 1. Identifying economic problems and their causes; 2.Mini-project on any aspect of Indian Agriculture, Industry, Service and Public Sectors	5
II	**Economic Policies:**	**13**
	Chapter 4: Planning: BombayPlan	5

	GandhianModel Nehru-MahalanobisModel Objectives and Achievements of Economic Planning in India (before1991) **Chapter 5: Monetary policy in India** Instruments of MonetaryPolicy Black money in India – Magnitude andImpact	2
	Chapter-6: Fiscal Policy in India: TaxRevenue PublicExpenditure Budgetary Deficit **Practicum:** Assignment on successes and failures of India's planning; Monetary and Fiscal Policy instruments	6
III	**External sector and Nature of Reforms in India**	**14**
	Chapter-7: India's Foreign Trade: SalientFeatures Volume, Composition and Direction ofTrade Balance ofPayments	6
	Chapter-8: Pre-reforms Strategies: Stabilization Strategies/Measures in all the three sectors of theeconomy Tariff Policy: Types andImpact Exchange RateDynamics	4
	Chapter 9: Planning Commission: Organization andObjectives Functions Practicum: Calculation of BoP and evaluating trade policies; Assignment and group discussion on the planning commission.	4

References:

1. DuttRuddar and K.P.M Sundaram(2001): Indian Economy, S Chand & Co. Ltd. NewDelhi.
2. Mishra S.K & V.K Puri (2001) "Indian Economy and –Its development experience", Himalaya PublishingHouse.
3. KapilaUma: Indian Economy: Policies and Performances, AcademicFoundation
4. Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, NewDelhi.
5. Jalan, B. (1996), India's Economic Policy- Preparing for the Twenty First Century, Viking,

Weblinks:

- https://www.insightsonindia.com/indian-economy-3/structure-of-indian-economy
- https://www.yourarticlelibrary.com/agriculture/top-13-problems-faced-by-indian-agriculture/62852
- https://www.economicsdiscussion.net/industries/role-of-industries-in-indian-economy/29539
- https://www.yourarticlelibrary.com/foreign-trade/11-main-features-of-volume-composition-and-direction-of-indias-foreign-trade/5901
- https://www.slideshare.net/BharathiRaj3/monetary-and-fiscal-policy-of-india

Course Articulation Matrix-21OEECO102

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	1	1	2	2	1	2	1	1	1	-	1
CO2	1	2	2	2	1	1	-	1	1	1	2	1
CO3	1	2	1	2	1	1	2	1	1	1	1	1
Weighted Average	1.3	1.6	1.3	2	1.3	1	2	1	1	1	1.5	1

Semester I

Course Code:21OEECO103	**Course Title:OE1:** Development Studies
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Providesolidfoundationoffundamentalsrequiredtosolve socioeconomic problems

CO2 Acquire knowledge to appreciate the dimensions of contemporarydevelopmentissues,togeneratesensitivitytoproblemsconcerning ethicsandhumanvaluestodeveloporientationtowardseffectivecommunication andcriticalanalysis

CO3 Cultivate professional and ethical attitude, effective Communication skills, teamwork skills, multidisciplinary approach, and to facilitate an advanced understandingandappreciationoftheprinciples,methodologies,valuesystems,and thought processes employed in humaninquiries.

Unit	Description	Hrs
I	**Development: Meaning and Current Challenges**	**9**
	Chapter-1: Meaning of Development: The Concept ofDevelopment, Growth andDevelopment Transition from quantitative to qualitativeindices	3
	Chapter-2: Modern economic growth: Characteristics of Modern EconomicGrowth Regional and GlobalDisparities Common Characteristics and Dissimilarities among DevelopingCountries.	3
	Chapter-3: Current Development Challenges: Inequality Migration Conflicts Practicum: Group discussion on migration	3

II	**Approaches to Development:**	**12**
	Chapter-4: Development Ethics Concept andMeaning Principles and Importance of DevelopmentEthics **Chapter-5: Assessing Development:** Per Capita Income Physical Quality of Life Index(PQLI) Gender EmpowermentIndex HDI	2 4
	Chapter-6: Approaches of Development: AdamSmith Marx Schumpeter StructuralistApproach Neo-liberalism, IMF and StructuralAdjustment CapabilitiesApproach Practicum: Calculation of different Human Development Indices	6
III	**Theories and Current Issues in Development:**	**21**
	Chapter-7: Theories of Development Theorizing Development - Modernization Theory, DependencyTheory Capitalist WorldSystem The Evolution of Thought on PovertyReduction Colonial Regimes and TheirLegacies **Chapter-8: The Industrial Revolution** Genesis andSpread International specialization ofLabour/Industry IndustrialLabour ILO and its activities to promote labourstandards **Chapter-9: Environment and Development** Increasing degradation of natural environment – Water and Air pollution andDeforestation Depletion of GlobalCommons Sustainable development - Concept andMeasures Sustainable Development Goals(SDGs) Climate Change – Causes, Impact, Measures of Mitigation and Adaptations Practicum: Identify the different pollutionsources	6 5 10

References:

1. Crocker, D. (2008). Ethics and development theory-practice, Ethics of Global Development Agency, Capability, and DeliberativeDemocracy,67-106
2. Des Gasper (2008), 'Denis Gouletand the Project of Development Ethics: Development, 8, 99. 481-9, Elsevier Science,1,pp.10-26.
3. Drèze, Jean and Amartya Sen(2002), India: Development and Participation, second edition. Oxford: Oxford UniversityPress.
4. Gasper, D. (2004). The ethics of development: From Economism to human development. Edinburgh: EdinburghUniversityPress
5. Myrdal, Gunnar. (1974), "What is Development?" Journal of EconomicIssues8(4):729-736.
6. Sen, Amartya (1999) Development as Freedom. New York: AnchorBooks.

WEB LINKS:

- **https://www.investopedia.com/terms/d/development-economics.asp**
- **https://press.princeton.edu/books/hardcover/9780691132921/introduction-to-modern-economic-growth**
- **https://www.investopedia.com/terms/i/industrial-revolution.asp**
- **https://testbook.com/learn/development-and-environment**
- **https://www.acciona.com/sustainable-development/?_adin=02021864894**
- **https://www.nrcm.org/climate/global-warming-air-pollution**

Course Articulation Matrix- 21OEECO103

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	1	2	2	2	2	1	3	2	1	2	1	1
CO2	2	2	1	2	1	2	2	2	1	1	-	1
CO3	1	2	1	2	1	2	2	2	-	-	1	1
Weighted Average	1.3	2	1.3	2	1.3	1.6	2.3	2	1	1.5	1	1

Continuous Internal Evaluation and Semester Examination

Total marks for each course shall be based on continuous assessmentsand term end examinations. AsperthedecisionoftheKarnatakaStateHigherEducationCouncil,itis necessary to have uniform pattern of 40:60 for CIA and Semester End examinations respectively, among all the Universities, their affiliated and autonomouscolleges.

The committee deliberated on the same and suggested the following pattern for the CIE Marks.

Sl. No.	**Parameters for the Evaluation**	Marks
	Continuous Internal Evaluation (CIE)	
A	**Continuous & Comprehensive Evaluation (CCE)**	**20**
B	**Internal Assessment Tests (IAT)**	**20**
	Total of CIE (A+B)	**40**
C	**Semester End Examination (SEE)**	**60**
	Total of CIE and SEE (A+B+C)	**100**

Outline for continuous assessment activities for C1 and C2(DSC&OE)

Activities	**C1**	**C2**	**TotalMarks**
Session Test	10 marks	10 marks	20
Case study / Assignment / Field work / Project work/ Academic Quiz/ Review of the Book/ etc.	**10 marks**	---	**10**
Case study / Assignment / Field work / Project work/ Academic Economics Quiz/ Review of the Book/ etc	**---**	**10 marks**	**10**
Total	**20marks**	**20marks**	**40**

QUESTION PAPER PATTERN (C3)FOR DSC & OE PAPERS

Maximum Marks: 60 **Duration:** $2\frac{1}{2}$Hours

PART -A

Answer any Five ofthefollowing: **5X2=10**

Sl. No. 1

a.

b.

c.

d.

e.

f.

g.

h.

PART - B

Answer any Six ofthefollowing: **6X5=30**

Sl. No. 2 to 10

PART - C

Answer any Two ofthefollowing: **2X10=20**

Sl. No. 11 to 14

Semester – II

Course Code: 211237	**Course Title:**DSC 3: Basic Economics - II
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Examine the operation of the overall economicsystem; Calculate national income and relatedaggregates

CO2 Evaluate the macroeconomic policies for solving major problems like poverty andunemployment

CO3 Analyze the relationship between macroeconomicaggregates andthe nature of business cycles and policies towards controllingthem;

Unit	Description	42 Hrs
I	**Macro Economic Concepts and Relationships:**	**12**
	Chapter-1: Macro Economy;	5
	Introduction to National IncomeAccounting	
	Concepts of GDP, GNP and NationalIncome	
	Approaches to calculating GDP, Personal Income, Nominal and RealGDP	
	Limitations of the GDP Concept	4
	Chapter-2: Monetary Economy	
	Characteristics ofMoney	
	The Demand forMoney	
	The Supply of Money and Overall LiquidityPosition	3
	CreditCreation	
	Chapter-3: Inflation	
	Meaning and Causes ofInflation	
	Calculating InflationRate	
	Impact ofInflation	
	Practicum: 1. Understanding the relationships between various NI concepts used in India's NI accounting;	
	2.Estimating the components of money supply and interpreting the various price indices.	

II	**Macroeconomic Challenges and Policies:**	**12**
	Chapter-4: Macroeconomic Challenges: BusinessCycles EconomicGrowth **Chapter-5: Monetary Policy:** Objectives Instruments **Chapter-6: Fiscal Policy:** Public Finance vs. PrivateFinance Fiscal policy - Role of Government: Allocation, Distribution and Stabilization	3 3 6
	Practicum: 1. Reviewing the Monetary Policy ofRBI; .A project to identify the nature and causes of poverty and the latest central budget	
III	**Public Policy and Globalization:**	**18**
	Chapter 7: Poverty and Public Policy: Meaning, Types and Measurement ofPoverty Poverty Alleviation Strategies inIndia **Chapter 8: International Trade:** The Economic basis for trade—Absolute Advantage and ComparativeAdvantage. Terms of Trade: Meaning andTypes Exchange Rates: Meaning, Types andDeterminants Trade Barriers: Tariffs, Subsidies and Quotas Balance of Payments: The Current and CapitalAccount **Chapter9:Globalization:** Meaning Importance Pros and cons ofGlobalization Survey on identification of poor; Calculating the components of BoP of India	6 9 3

References

1. Cohen, A.J. (2020). *Macroeconomics for Life: Smart Choices for All? + MyLab Economics with Pearson eText*(updated 2nded.). Toronto, ON: Pearson Canada Inc. Type: Textbook: ISBN: 9780136716532
2. Cohen, A.J. (2015). *Microeconomics for Life: Smart Choices for You + MyLab Economics with Pearson eText*(2nd ed.). Toronto, ON: Pearson CanadaInc.
3. Type: Textbook: ISBN: 9780133899368
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5. Mankiw N. Gregory. Principles of Economics,Thomson,2013.
6. Stiglitz J.E. and Walsh C.E. Principles of Economics, W.W. Norton & Co, NewYork,2011.

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- https://www.economicsdiscussion.net/national-income/4-main-concepts-of-national-income/17241
- https://www.investopedia.com/terms/i/inflation.asp
- https://www.investopedia.com/ask/answers/100314/whats-difference-between-monetary-policy-and-fiscal-policy.asp
- https://education.nationalgeographic.org/resource/effects-economic-globalization

Course Articulation Matrix-211237

POs / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	1	1	1	2	1	-	1
CO2	2	1	1	1	1	1	2	1	1	1	1	1
CO3	1	2	2	2	1	1	1	1	1	1	1	1
Weighted Average	2	1.6	1.6	1.6	1.3	1	1.3	1	1.3	1	1	1

Semester II

Course Code: 211238	**Course Title:**DSC 4:Karnataka Economy
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours

Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Identifythe nature of economic growth and problems of Karnatakastate.

CO2 Examinethe process of structural growth in KarnatakaEconomy

CO3 EvaluatethepoliciesandprogramsundertakenbytheGovt.ofKarnatakaforbringing about socio-economicdevelopment

Units	Description	Hours
Unit -I	**Characteristics of Karnataka Economy:**	**12**
	Chapter-1: State Income State Domestic Product andPCI Measures to redress economicinequality. **Chapter-2: Human and Natural Resources** Population Human DevelopmentIndex Poverty and Unemployment– Anti-Poverty and Employment generation Programmes Functioning of Panchayat RajInstitutions **Chapter-3: Natural Resources in Karnataka:** Land, Water, Forest and Mineral Resources inKarnataka Sustainable Development Goals inKarnataka Karnataka EnvironmentalPolicy Practicum: conduct field visit to Forest/Reservoir/Mining and prepare thereport	2 6 4
II	**Agriculture and Industries in Karnataka:** **Chapter-4: Agriculture in Karnataka:** Importance ofAgriculture Problems inAgriculture LandReforms CroppingPattern Irrigation Watershed DevelopmentProgramme Dry LandFarming Farmers Suicide – Causes And Solutions	**18** 5

	Chapter-5: Rural Development: Regional Imbalance: Prof. D. M. Nanjundappareport Public Distribution System Rural DevelopmentPrograms **Chapter 6: Industrial Development in Karnataka:** Major Industries in Karnataka - Problems andProspects MSMEs - Problems andMeasures IT Industries inKarnataka Industrial Finance inKarnataka Industrial Policy ofKarnataka Practicum: visit to industrial units in local area and prepare the report/Trace-out the impact of Prof. D. M. Nanjundappa Committee report	9 4
III	**Infrastructure and Finances:**	12
	Chapter7: Economic Infrastructure in Karnataka: Transportation: Road, Rail, Water and AirTransport Information and Communication TechnologyFacilities **Chapter 8: Social Infrastructure:** Drinking Water,Sanitation Housing, Health and Education Health and Education, RuralElectrification **Chapter 9: State Finance:** Sources of Revenue: Direct and IndirectTaxes GST: Impact ofGST StateExpenditure StatesIndebtedness State FinanceCommission Current StateBudget Practicum: Discussion on State budget	3 3 6

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2. Planning Department, Annual Publication, Government ofKarnataka.
3. Karnataka at Glance, Annual Publication Government ofKarnataka.
4. Madaiah M &Ramapriya. Karnataka Economy Growth: Issues and Development, Himalaya Pub., House,NewDelhi.
5. AdulAziz and K.G. Vasanti. (Eds) KarnatakaEconomy.
6. Government District DevelopmentReports
7. HanumanthaRao. Regional Disparities and Development inKarnataka.
8. KrishnaiahGowda H.R. Karnataka Economy, SpandanaPublications,Bangalore
9. NanjundappaD.M. Some Aspects of KarnatakaEconomy.
10. PuttaswamiahK. Karnataka Economy, TwoVolumes

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- https://en.wikipedia.org/wiki/Economy_of_Karnataka
- https://planning.karnataka.gov.in/storage/pdf-files/Economic%20Survey/Chapter%20Eng%2021.pdf
- https://www.britannica.com/place/Karnataka-state-India/Economy

Course Articulation Matrix -211238

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	3	3	3	2	2	2	2	1	1	1	1
CO2	2	2	2	2	2	1	1	1	1	1	-	1
CO3	1	1	1	1	1	1	2	1	1	1	1	1
Weighted Average	1.6	2	2	2	1.6	1.3	1.6	1.3	1	1	1	1

Semester II

Course Code: 21OEECO201	**Course Title:OE2**: Contemporary Indian Economy
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Evaluate the LPG Concept and current problems of IndianEconomy

CO2 Identify the factors contributing to the recent growth of the IndianEconomy

CO3 Examine the sector specific policies adopted for achieving the rationalgoals &review of various economic policiesadopted.

Content of Course 1	42 Hrs
Unit – 1 LPG POLICIES, ECONOMIC REFORMS AND AGRICULTURE:	**14**
Chapter No. 1 Recent Issues: Concept ofLPG India's populationpolicy DemographicDividend	4
Chapter No. 2 Urbanization and governance: Urbanization and Smart CityMission Impact of COVID-19Pandemic AtmaNirbhara BharatAbhiyan	4
Chapter No. 3 Economic Reforms and Agriculture: Commercialization andDiversification of Agriculture Public Distribution System :TPDS Doubling Farm Incomes -MGNREGS (briefintroduction)	6
Practicum 3. Mini-project to ascertain the impact of pandemic on lives of different sections ofpopulation 4. Field visits to understand the agrariansituation	
Unit – 2 INDUSTRY, BUSINESS, FISCAL POLICY:	**14**
Chapter No. 4. Industrial Policy: New Industrial Policy andChanges Public SectorReforms PrivatisationandDisinvestment	4
Chapter No. 5. Business: Ease ofDoingBusiness Performance ofMSMEs Role of MNC's in IndustrialDevelopment	5
Chapter No. 6. Fiscal Policy: Tax, Expenditure, BudgetaryDeficits GST (meaning and features), Fiscal Federalism andFiscal Consolidation (in brief) Recommendations of the Current FinanceCommission	5
Practicum: Mini-projects to assess the business climate	

	Unit – 3 MONETARY POLICY, FOREIGN TRADE AND INVESTMENT:	**14**
	Chapter No. 7 Monetary Policy: Organisation of India's MoneyMarket Financial SectorReforms	5
	Chapter No. 8. Money and Capital Markets Working of SEBI inIndia Changing roles of the Reserve Bank ofIndia Foreign Banks and Non-Banking FinancialInstitutions Demonetization and itsimpact	5
	Chapter No. 9. Foreign Trade and Investment: Direction of India's foreigntrade Balance of payments since1991(trends) FDI – Trends andPatterns New EXIMpolicy Bilateral and Multilateral Trade Agreements (inbrief)	4
	Practicum: Computation and analysis of Wholesale Price Index, Consumer PriceIndex: Group Discussions on India's trade policies and trade agreements	

Course Articulation:

References:

- Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development inIndia,Oxford University Press, New Delhi.
- Bhaduri Amit, (2015), A Model of Development ByDispossession, FourthFoundation
- DuttRuddar and K.P.M Sundaram(2001): Indian Economy, S Chand & Co. Ltd.New Delhi.
- Jalan, B. (1996), India's Economic Policy- Preparing for the Twenty First Century, Viking, NewDelhi.
- Joshi Vijaya and L.M.D. Little, (1998), India's Economic Reform 1991-2001,Delhi,OUP.
- Mishra S.K & V.K Puri (2001) "Indian Economy and –Its development experience", Himalaya PublishingHouse.

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- **https://en.wikipedia.org/wiki/Smart_Cities_Mission**
- **https://en.wikipedia.org/wiki/Smart_Cities_Mission**
- **https://prepp.in/news/e-492-new-industrial-policy-1991-indian-economy-notes**
- **https://www.jagranjosh.com/general-knowledge/population-policies-of-india-1448689756**

ation Matrix-21OEECO201

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	2	3	3	2	2	2	2	1	1	1	2
CO2	2	2	2	2	2	1	2	1	1	1	-	1
CO3	1	1	1	1	1	-	2	1	1	1	-	1
Weighted Average	1.6	1.6	2	2	1.6	1.5	2	1.3	1	1	1	1.3

Semester II

Course Code:21OEECO202	**Course Title:OE2**: Sustainable Development Goals
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40

Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Comprehend the basic concept of Sustainable Development (SD), the environmental, social and economicdimensions.

CO2 Know the history and evolution of the SD concept and discuss the conflicts which are involved in the SD concept on the national as well as on the globalscale.

CO3 Examine the disadvantages of instruments involved in SD; Evaluate the sustainable development goals and theirattainments.

Unit	Description	42 Hrs
	Development, Environment and Pollution	**15**
	Chapter-1: Environmental Goods and Services: Relationship between Environment andDevelopment Environmental Kuznets Curve – Meaning andEvidence	3
	Chapter-2: Resource Use and Management: Resource Taxonomy – Renewable and Non-renewableResources Economic Theory of DepletableResources Optimal Use of RenewableResources Resource Scarcity and Economic Growth – Limits to GrowthModel Tragedy of Commons and Common PropertyResources Resource Pricing and Resource Conservation	6
	Chapter-3: Sustainable Development Sustainable Development – Meaning andIndicators Objectives andPrinciples Approaches and Strategies for SustainableDevelopment Environmental AccountingMeasures **Practicum:** Mini project on the impact of local environment	6
I	**Sustainable Development Goals**	**10**
	Chapter-4: Introduction and History Brundtland CommitteeRecommendations Rio Summit andAgenda21	3
	SDGs: Targets and Indicators **Chapter-5: Government and theSDGs** Planning	4

	Localizing theSDGs SDG PolicyInstruments Industrial Policies and theSDGs **Chapter-6: Financing the SDGs** Types ofFinancing New Financing Mechanisms and GlobalFunds Assignment on Progress in attainment of various SDGs in India and their states **SDGs and their Achievement:** **Chapter-7: Realizing the SDGs:** De-growth and CircularEconomy Sustainable Production andConsumption Sustainable Cities andTransportation Sustainable Designs, Technology, Digital Revolution andInnovation RenewableEnergy **Chapter-8: Tools for SDGs Achievement:** Governance and PolicyTools Openness, Participation andAccountability Effectiveness andCoherence India's framework for SustainableDevelopment **Chapter-9: Other Issues in SDGs:** Social business, Civil Society Organizations (CSOs) andOperations DevelopmentAssistance Cross-BorderCooperation **Practicum:** Group Discussion on sustainable practices – other agriculture	3 17 8 5 4	**Course Articulation Matrix-** 21OEECO202 **Semester II**

CO's \ PO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2	1	3	2	1	1	-	1
CO2	2	2	2	2	1	2	2	2	1	1	-	-
CO3	2	2	1	2	2	2	2	2	1	1	1	-
Weighted Average	2	2	1.5	2	1.6	1.6	2.3	2	1	1	1	1

Suggested Readings:

1.Baumol, W.J. and W.E. Oates (1988): *The Theory of Environmental Policy* (2e), CUP,Cambridge.

2.Bhattacharya, R.N. (Ed): Environmental Economics: An Indian Perspective, OUP, NewDelhi.

3.Dalby, Simon, et al. Achieving the Sustainable Development Goals: Global Governance Challenges.Routledge,2019.

4.Day, G.S., and P.J.H. Schoemaker (2011), Innovating in uncertain markets: 10 lessons for green technologies, MIT Sloan Management Review, 52.4:37-45.

WEB LINKS:

- **https://www.undp.org/sustainable-development-goals**
- **https://testbook.com/learn/development-and-environment**
- **https://www.elsevier.com/journals/sustainable-cities-and-society/2210-6707/guide-for-authors**
- **https://sdgresources.relx.com/tools**
- **https://en.wikipedia.org/wiki/Cross-border_cooperation**

Course Code: 21OEECO203	**Course Title:OE2**: Economics of Business Environment:
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:**3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

At the end of the course the student should be able to:

CO1 Examine the elements and concepts of BusinessEnvironment.

CO2 Identify the environmental constraints in the growth of a businessfirm.

CO3 Analyze the ways to utilize the current environmental conditions to achieve higher growth in the field of Business.

Unit	Content of Course:	42 Hrs
	Introduction to Business Environment:	**12**
	Chapter-1: Introduction: Definition, Objectives, Importance of BusinessEnvironment. Strategies of BusinessEnvironment Business EnvironmentDeterminants The Micro Environment of Business and The Macro Environment ofBusiness.	3
	Chapter-2: Economic Environment: Meaning of EconomicEnvironment Impact of Liberalization Privatization &Globalization (LPG) on Indian Business Environment. Monetary policy – Meaning andObjectives Fiscal policy – Meaning andObjectives EXIM policy – Meaning andObjectives Industrial policy – Meaning and Objectives (Latest PolicyMeasures).	6
	Chapter-3: Global Business Environment: Meaning Globalization: Nature and Impact ofGlobalization Challenges of InternationalBusiness WTO and its Implications on IndianEconomy. **Practicum** 1. Group discussion on WTO and its impact on Indian business	3
I	**Non-Economic Environment:**	**16**

	Chapter-4: Social and Cultural Environment: Business andSociety Social Objectives ofBusiness Corporate Social Responsibility Consumer Rights & CorporateGovernance BusinessEthics	5
	Chapter-5: Technological Environment: Meaning Technological Changes – R & D inIndia Public and Private Investment in R andD.	5
	Chapter-6: Financial Environment: Introduction andMeaning An Overview of Indian FinancialSystem Financial Institutions and theirRoles Role of Foreign Direct Investment and its impact on IndianBusiness **Practicum:** Students are expected to analyze the major economic and financial indicators such as GDP/BSE/NSE and submit the report .	6
II	**Governance and Business in India:**	**14**
	Chapter-7: Political Environment: Introduction andMeaning Political Environment and the EconomicSystem Provisions of Indian Constitution forBusiness	4
	Chapter-8: Legal Environment of Business: Indian CompanyLaw Competition policy andlaw Patents&Trademarks Industrial Policy- anoverview LabourLaws & SocialSecurity, EnvironmentalLaws.	4
	Chapter-9: Current Issues in Environmental Business: Ease of DoingBusiness Performance ofMSMEs Make inIndia Development of Economic and SocialInfrastructure National MonetizationPipeline (The teacher should include the latest policy of the government) **Practicum:** Students are expected to give a report on how the economic environment has affected the performance of any one of the large Indian Business Houses.	6

REFERENCES:

1. Francis Cherunilam: Business Environment, Himalaya Publishing House, Mumbai.
2. K. V. Sivayya and VBM Das: Indian Industrial Economy, Sulthan Chand Publications, Delhi.
3. M. Adhikari: Economic Environment of Business, Sulthan Chand and Sons, New Delhi. Raj
4. Agarwal: Business Environment, Excel Publications, New Delhi.

WEB LINKS:

- **https://www.toppr.com/guides/business-environment**
- **https://www.marketingtutor.net/economic-factors-affect-business-environment**
- **https://pestleanalysis.com/legal-factors-affecting-business**
- **https://www.mca.gov.in/MinistryV2/easeofdoingbusiness.html**
- **https://www.india.gov.in/spotlight/national-monetisation-pipeline-nmp**

Course Articulation Matrix- 21OEECO203

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	3	1	1	1	2	2	2	1	1	1	2	2
CO2	2	2	2	2	2	1	2	1	2	1	2	2
CO3	3	2	2	2	3	1	2	3	2	1	2	1
Weighted Average	2.6	1.6	1.6	1.6	2.3	1.3	2	1.6	1.6	1	2	1.6

Continuous Internal Evaluation and Semester Examination

Total marks for each course shall be based on continuous assessmentsand term end examinations. AsperthedecisionoftheKarnatakaStateHigherEducationCouncil,itis necessary to have uniform pattern of 40:60 for CIA and Semester End examinations respectively, among all the Universities, their affiliated and autonomouscolleges.

The committee deliberated on the same and suggested the following pattern for the CIE Marks.

Sl. No.	**Parameters for the Evaluation**	Marks
	Continuous Internal Evaluation (CIE)	
A	**Continuous & Comprehensive Evaluation (CCE)**	**20**
B	**Internal Assessment Tests (IAT)**	**20**
	Total of CIE (A+B)	**40**
C	**Semester End Examination (SEE)**	**60**
	Total of CIE and SEE (A+B+C)	**100**

Outline for continuous assessment activities for C1 and C2

Activities	**C1**	**C2**	**TotalMarks**
Session Test	10 marks	10 marks	20
Case study / Assignment / Field work / Project work/ Academic Quiz/ Review of the Book/ etc.	10 marks	---	10
Case study / Assignment / Field work / Project work/ Academic Economics Quiz/ Review of the Book/ etc	---	10 marks	10
Total	20marks	20marks	40

QUESTION PAPER PATTERN FOR C3 (DSC&OE Papers)

Maximum Marks:60**Duration:**$2\frac{1}{2}$**Hours**

PART -A

Answer any Five ofthefollowing: 5X2=10

Sl. No. 1

a.

b.

c.

d.

e.

f.

g.

h.

PART - B

Answer any Six ofthefollowing: 6X5=30

Sl. No. 2 to 10

PART - C

Answer any Two ofthefollowing: 2X10=20

Sl. No. 11 to 14

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Department of Economics

BoS meeting of the Department of Economics was held on 17.09.22 at 11.00 am in AVC-1. Necessary changes and modifications for the Syllabi of I and II Semester BA have been incorporated and some minor changes have been made in the syllabi of III & IV Semester BA as instructed by University of Mysore and as per the NEP- 2020 Guidelines. Proposed List of the Examiners for the academic year 2022-23 was placed before the members. The same was approved by the following BoS Members.

Board of Studies - Department of Economics

Sl. No.	Designation	Name	Signature
01	University Nominee	**Dr. Navitha Thimmaiah,** Associate Professor DoS in Economics & Cooperation, UoM, Mysuru.	Navitha Thimmaiah 17/09/2022
02	Subject expert	**Dr. Ramakrishna B M** Associate Professor University college Hampankatta (Constituent college of Mangalore University) Mangaluru-575001	17/9/22
03	Subject expert	**Dr. E. Thippeswamy** Associate Professor, Field Marshal K. M. Cariappa College (Constituent college of Mangalore University) Madikeri-571201	Thippeswamy 17/09/22
04	HoD & Faculty Member	**Venkatalakshmi M N** Associate Professor, SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	Venkatalakshmi M N
05	Faculty Member	**Dr. Pushparani P G** Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	— ABSENT —

06	Faculty Member	**Siddappa R** Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	
07	Faculty Member	**Chaluvegowda S M** Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	
08	Subject Expert & Alumnus	**Dr. Roopa Patavardhan** Assistant Professor School of Business studies and Social Sciences, Christ(Deemed to be University) Hulimavu, Bengaluru-76	
09	Industry Person	**Nikhil Maruthi** Stake Holder LLP Partner,Solution Infinite Media Pvt.Ltd, T-301, Chicago Avenue, Cunningham Road,Opp.Fortis Hospital, Bengaluru-560001	ABSENT

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BOARDOF STUDIES(BoS)

DEPARTMENTOFECONOMICS

UG √

PG

NEP Syllabi for III and IV Semester BA Economics

2022-23

DEPARTMENT OF ECONOMICS

Motto

Economics for Empowerment and Enhancement

Vision

To prepare Students for successful careers as applied economists

Throughfine tuning ofminds & to make them understand and analyze the

dynamics of Economic changes

Mission

Providing a sound theoretical base to develop quantitative aptitude,

to substantiate theoretical learning

Exposure to practical aspects of Present day economic challenges

POs	Details of the Programme Outcomes (POs)
PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.

PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.
PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

Department of Economics - List of Board of Studies Members

Sl. No.	Category	Name	Designation	Address for communication	E-mail and Mobile No.
01	**University Nominee**	**Dr. NavithaThimmaiah**	Associate Professor	DoS in Economics & Cooperation, UoM, Mysuru.	navithaprasad@gmail.com +919036180571
02	**HoD& Faculty of the Department**	**Venkatalakshmi M N**	Associate Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	venkatalakshmimn.fgc@mahajana.edu.in +91 9448472024
		Dr.Pushparani P G	Assistant Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru - 12	pushparanimfgc@gmail.com +91 9945094843
		Siddappa R	Assistant Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru - 12	mnsh1611@gmail.com +91 8050365338
		Chaluvegowda S M	Assistant Professor	SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru - 12	Chaluvegowda25@gmail.com +918217310214
03	**Two Experts from other University**	**Dr. Ramakrishna B M**	Associate Professor	University college,Hampanakatta , (A Constituent college of Mangalore University) Mangaluru-575001	rama_bmr@yahoo.co.in +91 9448427705
		Dr. E. Thippeswamy	Associate Professor	Field Marshal K. M. Cariappa College, (A Constituent college of Mangalore University) Madikeri-571201	ethippeswamy@yahoo.com +91 9448639972
04	**Alumnus**	**Dr. RoopaPatavardhan**	Alumnae & Assistant Professor	School of Business studies and social sciences, Christ (Deemed to be University)Hulimavu, Bengaluru-76	roopa.patavardhan@christuniversity.in +91 9901997086
05	**Industry Expert**	**Nikhil Maruthi**	Stakeholder & LLP Partner	Merako Media Pvt Ltd Mysuru	Nikhilmaruthi26@gmail.com +91 9650266082

Year-wiseProgrammeStructure(NEP2020)

Discipline Specific Courses(DSC)andOpen Elective(OE)

III& IV SEM

Course, Type,Code andTitle		Hour/Week		Credits	Maximum Marks			ExamDuration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Economics –IIISem									
DSC-5 221337	MicroEconomics	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**
DSC-6 221338	Mathematics for Economics	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**
	1.RuralEconomics	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	

OE-3	22OEECO301 2. Economics ofInsurance 22OEECO302 3. EconomicsofHumanDevelopment 22OEECO303 **(Any one to be opted)**								**100**
Course, Type,Code andTitle		**Hour/Week**		**Credits**	**Maximum Marks**			**ExamDuration**	**Total**
					IA		**Exam**		
		L	**T/P**	**L:T:P**	**C1**	**C2**	**C3**		**Marks**
Economics –IVSem									
DSC-7 221437	MacroEconomics	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**
DSC-8 221438	StatisticsforEconomics	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**
OE-4	1. Karnataka Economy 22OEECO401 2. EntrepreneurialEconomics 22OEECO402 3. Economicsand Law 22OEECO403 4. Economics of GST 22OEECO404 **(Any one to be opted)**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	$2\frac{1}{2}$**Hours**	**100**

III Semester BA

Course Code: 221337	**Course Title:**DSC 5: Micro Economics
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1.Recognize &illustrate the Micro economic concepts,basic supplyand demandanalysis with Determinants of Demand and Supply

CO2. Examinethestructureand the roleof costs in theeconomy and describe,usinggraphs,variousmarketmodels to examine structure of both perfectand Imperfect competitions

CO3.Evaluate as to howequilibriumis achievedinthevarious marketmodels, Identifyproblemareasintheeconomy,andpossiblesolutions,usingtheanalytical toolsdevelopedinthe course.

Contents	42 Hrs
Unit–1:BasicsofMicroeconomics	**6**
Chapter:1 Exploring Microeconomics: Nature and scope of economics – Opportunity cost,Scarcity,Productionpossibilityfrontier-Marketsystemasawaytoorganiseeconomicactivities	3
Chapter:2SupplyandDemand:Law of demand, Demand schedule and Exceptions to Law of Demand, Law of supply;supplyschedulesandshiftsinthedemandandsupplycurves.	3
Practicum: ➢ Readingand workingwith graphs ➢ Estimationofelasticityanddiscussingitsapplications;solvingproblemstoestimatetheequilibriumpriceand quantity	
Unit-2:ConsumptionDecisions	**5**
Chapter3 **The Households:**Diminishingmarginalutility;Indifferencecurves–Meaningandproperties;Budget constraint;Maximization ofsatisfaction;Price,Income and	

Substitution effects;	
Practicum:Conductingaconsumersurveyto understandtheirtastes andpreferences	

Unit-3:ProductionandCosts	**8**
Chapter 4: The Firms: Concept of firm and industry; Production function; Law of variableproportions; iso-quant and iso-cost lines, cost minimizing equilibrium condition;Meaning ofCobb-Douglasproduction function	5
Chapter5: CostofProduction: Shortrunand longruncosts;Returns to Scale.(diminishing,constantand increasing)	3
Practicum: ➢ Analysingreasons for diminishingmarginalreturns ➢ Examiningtherelationshipbetweencostand output/Derivingcostfunctionsfrom outputfunctions	
Unit -4:Pricing	**13**
Chapter6:TheMarkets: MeaningofmarketstructureandTypes; Pricingunder perfectcompetition;Monopolypricingandpricediscrimination;Monopolisticcompetition–Oligopoly,Interdependence,Collusive and non-collusiveoligopoly;	7
Chapter 7: The Inputs (Factors): Functional and Personal income; Demand for and supply offactors; Marginal productivity theory of distribution; Meaning and determinants ofrent, wages,interestand profits.	6
Practicum: ➢ ConductingMarketSurveytoidentifythenature andfeatures ofmarketsfor differentgoods/services ➢ Understandingdistribution ofnational incomeas factorincomes	
Unit-5:WelfareEconomics 6	
Chapter8:WelfareEconomics: Meaningofwelfare;Pigou'swelfareeconomics;Compensation principle;Impediments to attainmaximum social welfare;	
Practicum: Examiningdaytodayexternalitiesand proposingsolutions tothem	
Unit-6:Economicsin Action	**4**
Chapter9:EconomicTheoryandPolicy:Basicsofmonetaryandfiscalpolicies; controlsandregulations; incentivesand penalties;	
Practicum:AnalysisoflatestbudgetoftheCentralGovernment;Reviewofterminologyused inthelatest MonetaryPolicyofthe RBI	

Note:Strictly followthePracticum

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1	Ahuja,H.L.(2008):*PrinciplesofMicroeconomics*, S.Chand andCo.,NewDelhi
2	Mankiw,N. Gregory(2020).*Principlesof Economics*(Ninthed.).Boston,MA.
3	Jhingan,M.L.(2016):*Microeconomics*,VrindaPublications,NewDelhi
4	Koutsoyianis,A(1979):*ModernMicroeconomics*,London,Macmillan
5	Omkarnath,G.(2012: *Economics:APrimerforIndia*,OrientBlackswan,Hyderabad
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Course Articulation Matrix- 221337

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	1	2	2	-	-	1	2	1
CO2	2	2	2	2	1	2	2	1	1	1	2	1
CO3	2	2	2	2	2	2	2	1	1	1	1	1
Weighted Average	2.3	2	1.6	1.6	1.3	2	2	1	1	1	1.6	1

Semester –III

Course Code: 221338	**Course Title:**DSC 6: Mathematics for Economics
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1. Acquire the knowledge of mathematical tools and their application to Economic Concepts; Performthe basic operations inSets and Matrices.

CO2. Calculatelimits, derivativesofEconomic functionsand identifythenatureof relationship among Costs and Revenue curves.

CO3. Computation of maxima and minima offunctions through integral and differential calculus.

Contents	**42 Hrs**
Unit–1:Preliminaries	**12**
Chapter:1-IntroductiontoMathematicalEconomics: Natureandscopeofmathematicaleconomics-Role ofmathematics in economictheory	4
Chapter:2-NumbersystemandSettheory: TypesofNumbers:NaturalNumber,Realnumber,integers,Irrationalnumber ,Complexnumber.Conceptsofsets-meaning–types-unionofsets –interaction ofsets.	4
Chapter:3-Functions: Meaningoffunction-Types offunctions:LinearFunction: Derivation of Supply and Demand Functions throughTwo Point Formula. Non-Linear Functions: Quadratic Functions	4
Unit-2:Economic Functions, theirApplicationand Matrices	**14**
Chapter4Economic Functions: Demand function,Supplyfunction,Production function,Cost,Revenue and Profitfunction, Consumption function	4
Chapter-5:ApplicationsofFunctions: Graphofeconomicfunctions,Marketequilibrium;Equilibriumpriceand quantity,Impact ofspecific taxand subsidyon marketequilibrium	5

Chapter-6:Matrices: DefinitionandTypesofmatrices-Matrixoperations:Addition,SubtractionandMultiplication,Transposeofamatrix,Determinantsofmatrix-Cramer'srule	5

Unit-3:DifferentialCalculusandIts Applications	**16**
Chapter7-Limits: Limitsoffunctions,differentiationandrules ofdifferentiation.	4
Chapter8DerivativesofEconomicfunctions:Derivationofmarginalfunctionsfromtotalfunction-Marginalproduction,Marginal cost,MarginalrevenueandMarginalprofit.	6
Chapter9-ApplicationsofDerivativesand Higherorderderivatives: Elasticityofdemand-Secondorder derivatives- Maximaand Minimaof economicfunction.	6

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1	Chiang, A.C.andWainwright,K.,(2005)*"Fundamental MethodsofMathematicalEconomics",* McGraw-Hill/Irwin,4th Edition.
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4	Dowling,E.T.,*"IntroductiontoMathematicalEconomics"*,McGraw-Hill,2001.
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- https://byjus.com/maths/derivative-function-calculus/

Course Articulation Matrix-221338

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	1	2	1	2	1	1	1	1	1	1	1
CO2	2	3	2	1	2	1	1	-	2	1	2	1
CO3	2	3	2	1	2	1	1	-	1	1	1	1

Weighted Average	**2**	**2.3**	**2**	**1**	**2**	**1**	**1**	**1**	**1.3**	**1**	**1.3**	**1**

III SEMESTER

Course Code: 22OEECO301	**Course Title:**OE 3: Rural Economics
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Identifying thebasicsof rural development, study the characteristics, problems, and programs of rural redevelopment

CO2 Evaluate thetrendsandpatterns ofeconomicactivities in ruralareas

CO3 Examine theroleof infrastructuralfacilities and governanceinrural development and enablethestudentstoknowaboutsignificanceofruralenterprisesandagriculture.

Contents	**42 Hrs**
Unit–1:	**14**
Chapter:1 - Introduction to Rural Economy : Meaning and objectives of rural economy-Characteristics of Rural Economy-Indicators of rural development- Concepts of inclusive andsustainabledevelopment	5
Chapter:2-ApproachestoRuralDevelopment Gandhianmodel:Communitydevelopmentapproach,Minimumneedsapproach,Integratedruraldevelopmentand Inclusivegrowthapproach.	4

Chapter:3-Povertyand UnemploymentinRuralIndia Meaningandmeasurementofpoverty-Causesofpoverty-Farmandnon-farmemployment Measurementandtypes of employment- Reviewofpovertyalleviationandemploymentgenerationprogramsin India.	5
Practicum: • Fieldvisittonearbyvillage and studythepovertysituation • Fieldvisittovillageandstudytheemployment pattern • Undertakeevaluationstudyonemploymentgenerationprogrammesandprepareanassignment.	
Unit -2:	**14**
Chapter4-RuralEnterprises Meaning and importance, Classification of MSME - Progress and problems of MSME Khadiand **Village industries**	5
Chapter-5:RuralBanking andFinance Creditco-operativesocieties-Regionalruralbanks-RoleofNABARD-Microfinanceinstitutions	4
Chapter-6:RuralInfrastructure EducationalandhealthInfrastructure-Housingandsanitation, Drinkingwatersupply-Ruraltransportand communication ruralelectrification	5
Practicum: • Writeanassignmenton Ruralinfrastructure • Writeasmall reportonRuralIndustry	
Unit -3:	**14**
Chapter7-RuralDevelopment Programmes Wageemploymentprogrammes-Self-employmentandentrepreneurshipdevelopment programs-Rural housingprograms-Ruralsanitationprograms	4
Chapter8 - Rural Markets Meaningandtypesofruralmarkets-Defectsandgovernmentmeasuresforremovalofdefectsinruralmarkets-Co-operativemarketingsocieties-Meaningandimportanceofregulatedmarkets-digitalmarketing(e-MAN).	5
Chapter9 -RuralGovernance Legislationspowers,functionsandsourcesofrevenueofpanchayatrajinstitutions-RoleofNGOsinruraldevelopment - People's participationin ruraldevelopment	5
Practicum: • GroupDiscussiononRuralGovernance • InterviewGramPanchayatmembersandpreparebriefnoteontheirparticipationinruraldevelopment.	

Undertakeevaluationstudyonruraldevelopmentprogramsandprepareanassignment.

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1	Chambers,R.(1983*):RuralDevelopment:PuttingtheLastFirst*,Longman,Harlow.
2	Dandekar,V.M.andN.Rath(1971):*PovertyinIndia*,GIPE,Pune.
3	Dantwala,M.L. (1973): *PovertyinIndia:ThenandNow,1870-1970*,Macmillan,Bombay.
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11	Tyagi,B.P.(1998):*AgriculturalEconomicsandRuralDevelopment*,JaiPrakashMathandCo.,Meerut
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- https://www.rural21.com/english/news/detail/article/rural-governance-a-precondition-for-inclusive-and-sustainable-rural-transformation.html

Course Articulation Matrix- 22OEECO301

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	3	2	2	2	2	3	3	2	2	1	1	1
CO2	3	2	2	2	1	2	2	2	2	1	-	1
CO3	2	2	2	1	2	3	2	2	2	1	2	1

Weighted Average	2.6	2	2	1.6	1.6	2.6	2.3	2	2	1	1.5	1

III SEMESTER

Course Code: 22OEECO302	**Course Title:**OE 3: Economics of Insurance
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1. Gain knowledgerelating tofundamentals and types of theinsurancein thefield of insurance

CO2. Examine the role of Insurance planning and tax advantages and Dis advantages

CO3. Acquiring Knowledge in Health insurance, Insurance plans and legislations involved.

Contents	42 Hrs
Unit–1:Introduction toEconomicsofInsurance	**17**
Chapter:1-FundamentalsofEconomicsofinsurance Definitionofinsurance-Scopeof economicof insurance-Importanceof insurance	6
Chapter:2-Theconceptualframework Briefhistoryofinsurance-Perilsandrisksininsurance,Classificationofriskshazards-Howinsuranceworks -Classesofinsuranceandassumptions	6
Chapter:3- TypeofInsurance Riskpoolingandrisktransferininsurance-Socialvsprivateinsurance-Lifevsnon-lifeinsurance	5
Unit -2:InsurancePlanning	**12**
Chapter4-Types of Insurance Planning Wealthaccumulationplanandlifecycleplanning-Taxadvantageandtaxnon-advantage	4
Chapter-5:RetirementPlanning Essentialofindividualretirementplanning-Investingpensionplan,basicprinciplesofpensionplans- Pension plans in India.	4
Chapter-6:GeneralInsuranceStructure conceptofGeneralInsurance -Types ofGeneralInsurance,MarineInsurance, Motors Insurance,AgriculturalInsurance -Fire Insurance,PersonalAccidentInsurance.	4
Unit-3:personal insurance/Health Insurance	**13**
Chapter7-Essential ofLifeandHealthInsurance FundamentalsofLifeandHealthInsurance,functionsofLifeandHealthInsuranceHealthInsura	4

nceandEconomic Development,Insurance andFarmerSecurity	

Chapter8 -InsuranceDocumentation HealthInsuranceproducts,HealthInsuranceunderwriting-HealthInsuranceclaims.	4
Chapter9-InsuranceLegislation The insurance act, 1938- Registration- Accounts and Returns-Investments -Limitation on expenseof Management - RegulationofInsurance,InsuranceregulationinIndia,roleandneedofregulation, history of insurance regulation in India - Insurance Reforms Development Authority(IRDA),performanceofIRDA-IndianInsuranceinglobalplatform,futurepotentialinIndian InsuranceBusiness.	5

References	
1	Chambers,R.(1983):*RuralDevelopment:PuttingtheLastFirst*,Longman,Harlow.
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Course Articulation Matrix-22OEECO302

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	1	1	-	-	1	1	1	1	-	1	-	-
CO2	1	-	-	-	1	1	-	2	1	1	1	1

CO3	1	1	1	-	1	1	1	2	-	1	1	1
Weighted Average	1	1	1	-	1	1	1	1.6	1	1	1	1

III SEMESTER

Course Code: 22OEECO303	**Course Title:**OE 3: Economics of Human Development
Course Credit (L:T:P): 3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Duration of Exam: $2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

CourseOutcomes (COs):

CO1. DifferentiatebetweenHumanResourceDevelopment (HRD),HumanDevelopment (HD)andHRM

CO2.ComprehendtheconceptsofHumansecurity,describedimensionsofhumandevelopment,and variouspractices andpoliciesofhumandevelopment

CO3. Measurement of human development and analysis of the impact of globalization on Human Development

Contents	**42 Hrs**
Unit–1:IntroductiontoHumanDevelopment	**12**
Chapter1: Humangrowthandhumandevelopment-Basicneedsapproach-Qualityoflifeapproach-Capabilityapproach	04
Chapter2: Humanresourcedevelopment (HRD),Human resourcemanagement(HRM).	04
Chapter3: HumanDevelopment:meaninganddefinition,importance,andobjectives.	04
Unit-2:HumanSecurity,SDGsandApproachestoHumanDevelopment.	**12**
Chapter4: HumanSecurity:Economicsecurity-Foodsecurity-Healthsecurity-Environmentalsecurity-Personalsecurity-Communitysecurity-Politicalsecurity.	04
Chapter5: SustainableDevelopmentGoals(SDGs):UnderstandingtheSDGs-Linkagesbetweenhumandevelopmentand theSDGs.	04

Chapter6: IndianPerspectivesandExperiencewithHumanDevelopment:Approachtohum andevelopment innational plans	04
Unit-3:Dimensions andMeasurementofHumanDevelopment	**18**

Chapter7: DimensionsofHumanDevelopment:Empowerment-meaningandusage,Cooperation - definition and brief introduction, Equity - concept and usage, Sustainability – meaningandimportance,Participation-concept,differentformsofparticipation,Humandevelopment &Productivity-factors determining productivity.	06
Chapter 8: Measuring Human Development: Need for indices- limitations of per capitaGDPas an indicator. Earlier indices (meaning): - Physical Quality of Life Index (PQLI), - DisabilityAdjusted Life Years (DALYs), - Social Capability Index. Human Development Index - HDI ascompared to per capita GDP - Method of computing HDI - Critique of HDI. Other indices(meaning):HumanPovertyIndex(HPI)-Gender-relatedDevelopmentIndex(GDI)-Gender EmpowermentMeasure(GEM).	08
Chapter9: SelectedIssuesinHumanDevelopment:ImpactofGlobalisationonHumanDevelopment-Tradeand HumanDevelopment.- TechnologyandHumanDevelopment	04

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2	https://hdr.undp.org/en/2020-report
3	https://www.un.org/millenniumgoals/
4	https://www.undp.org/india/publications/national-human-development-report-india
5	https://www.sdgfund.org/mdgs-sdgs

Course Articulation Matrix -22OEECO303

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	1	1	1	1	1	1	1	1	1	-	1
CO2	1	1	1	1	1	1	1	1	1	1	1	1
CO3	2	1	1	1	1	1	1	2	1	1	-	1
Weighted Average	1.6	1	1	1	1	1	1	1.3	1	1	1	1

Continuous Internal Evaluation and Semester Examination

Total marks for each course shall be based on continuous assessments and term end examinations. AsperthedecisionoftheKarnatakaStateHigherEducationCouncil,itis necessary to have uniform pattern of 40:60 for CIEand Semester End examinations respectively, among all the Universities, their affiliated and autonomouscolleges.

The committee deliberated on the same and suggested the following pattern for the CIE Marks.

Sl. No.	**Parameters for the Evaluation**	Marks
	Continuous Internal Evaluation (CIE)	
A	**Continuous & Comprehensive Evaluation (CCE)**	**20**
B	**Internal Assessment Tests (IAT)**	**20**
	Total of CIE (A+B)	**40**
C	**Semester End Examination (SEE)**	**60**
	Total of CIE and SEE (A+B+C)	**100**

Outline for continuous assessment activities for C1 and C2

Activities	**C1**	**C2**	**TotalMarks**
Session Test	10 marks	10 marks	20
Case study / Assignment / Field work / Project work/ Academic Quiz/ Review of the Book/ etc.	10 marks	---	10
Case study / Assignment / Field work / Project work/ Academic Economics Quiz/ Review of the Book/ etc	---	10 marks	10
Total	20marks	20marks	40

QUESTION PAPER PATTERN (C3) FOR DSC & OE PAPERS

Maximum Marks: 60 **Duration:** $2\frac{1}{2}$Hours

PART -A

Answer any Five ofthefollowing: **5X2=10**

Sl. No. 1

a.

b.

c.

d.

e.

f.

g.

h.

PART - B

Answer any Six ofthefollowing: **6X5=30**

Sl. No. 2 to 10

PART - C

Answer any Two ofthefollowing: **2X10=20**

Sl. No. 11 to 14

IV SEMESTER

Course Code: 221437	**Course Title:**DSC 7:MacroEconomics
Course Credit (L:T:P):3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours:42 Hours	**Formative Assessment Marks:** 40
Duration of Exam:$2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1.Gain the Knowledge about classical and Keynesian Employment Theoriesand National Income Accounting

CO2. ExaminetheprocessofConsumptionandInvestmentFunctions

CO3. Evaluatethe Concept ofMultiplier, Accelerator along withmoney supply, Demand and Inflation

Content	42 Hrs
Unit–1:Theoryof NationalIncomeDetermination	**14**
Chapter:1ClassicalFramework: Typical Features of classical theory of employment; Assumptions- Basis of Classical theory:Say's Law, Pigou's wage price flexibility, Fisher's quantity theory of money, Knut Wicksell'sloanablefundstheory,Criticismofclassical theory	7

Chapter-2:**TheKeynesianFramework** Introductory: connecting growth of national income to development; why incomes of all fall orrise?Areincome,output,andemploymentrelated? Somebasicconcepts:Theideaofequilibrium and identity; ex- ante and ex-post concepts. Aggregate demand and its components. Consumptionfunction:MarginalandAverage propensity to consume. Investment function;savings and investment relationship. Aggregate Supply: Meaning and graphical explanation; Effective demand. Determination of national income in Keynes' two sector economy withAggregateDemandandAggregateSupply DeterminationofnationalincomeinKeynes'twosectoreconomywithinvestmentandsavings.	7

Unit-2:AggregateConsumptionandInvestment	**15**
Chapter-3:TheoriesofDeterminantsofConsumption: Keynesianpsychologicallawofconsumption;determinantsandpermanent incomehypothesisofMiltonFriedman	5
Chapter-4:Investment and Savings Typesofinvestment- Determinantsofinvestment:rateofinterestandmarginalefficiencyofcapital:meaningand determinants-Savings and itsdeterminants	5
Chapter-5:ConceptsofMultiplierandAccelerator InvestmentMultiplier:Meaningandassumptions.multiplier;leakages;	5
Unit -3:MonetaryEconomics	**13**
Chapter-6:MoneySupply: ConceptofMoneySupply;recentmeasuresofmoneysupplyassuggestedbyRBI-Determinants of money supply:high powered money and money multiplier. The reserve ratioand depositmultiplier	5
Chapter-7: Moneydemand: Cashtransactionsapproach(onlymeaning)andCambridgeapproach(OnlyMarshall'sequation) -Theliquiditypreferenceapproach of Keynes	4
Chapter-8:Inflation andUnemployment: PhillipsCurve andWagecuttheoryandemployment	4

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- https://www.microeconomicsnotes.com/investment/multiplier-and-accelerator-in-economics-working-equational-model-and-limitations/16056
- https://www.economicsdiscussion.net/money/demand-for-and-supply-of-money-discussed/1853

Course Articulation Matrix- 221437

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	2	2	1	1	1	1	2	1
CO2	3	1	-	-	2	2	1	1	-	1	1	1
CO3	3	2	2	2	2	2	1	-	1	1	1	1
Weighted Average	3	1.6	1.5	1.5	2	2	1	1	1	1	1.3	1

IV SEMESTER

Course Code: 221438	**Course Title:**DSC 8:StatisticsforEconomics
Course Credit (L:T:P):3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours:42 Hours	**Formative Assessment Marks:** 40
Duration of Exam:$2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1 Identifythe natureand Sources ofData and their presentation

CO2 CalculateDescriptivestatisticslikemeasures ofcentraltendencyanddispersion

CO3 Applystatistical techniques likecorrelation andregression in the study of Economic analysis

Contentof Theory	**42 Hrs**
Unit–1:Preliminaries	**12**
Chapter:1IntroductiontoStatistics: Meaningandimportanceofstatistics,functionsofstatistics, types of statistics: descriptive statistics and inferential statistics-variables; qualitativevariableandquantitativevariable	4
Chapter-2: Data types, sources and collection of data: qualitative and quantitative data - crosssection data, time series data and panel data - primary and secondary sources of data – methodsof collectingprimarydata	4
Chapter-3:Tabulationandpresentationofdata:classificationandtabulationofdata-frequency distributions – continuous and discrete frequency distribution. graphical presentation-histogram- frequencypolygon -Ogive curves-bar diagram,pie chart	4
Unit-2:Measures ofCentralTendencyandDispersion	**14**
Chapter-4:ArithmeticAverage:Definitionofcentraltendency,typesofcentraltendency: Arithmetic mean:meaningand properties ofarithmetic mean– computation of arithmetic mean	5
Chapter-5:PositionalAverages-MedianandMode: Definitionandimportanceofmedian-calculation of median- definition and importanceof mode -calculation of mode.	4

Chapter-6:Dispersion:Meaningof dispersion-measuresof dispersion-range-quartiledeviation-meandeviation-standarddeviation-coefficientofvariation andtheircomputation.	5
Unit-3:Correlation,Regression andTimeSeriesAnalysis	**16**
Chapter-7:Correlation: Meaningofcorrelation-typesofcorrelation-methodsofmeasuringcorrelation-Karl Pearson's correlation coefficients.	5
Chapter-8:Regression: Meaningandimportanceofregression-regressionequation-estimationof regressionequation-applicationsofregressionequationineconomics.	6
Chapter-9:TimeSeriesAnalysis: Definitionoftimeseries–componentsoftimeseries–estimationand forecastingof trend.	5

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Course Articulation Matrix-221438

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	3	3	3	2	1	1	1	1	1	1	1
CO2	2	2	2	2	2	1	-	-	2	1	1	1
CO3	2	2	2	2	1	-	-	-	1	1	1	1
Weighted Average	2	2.3	2.3	2.3	1.6	1	1	1	1.3	1	1	1

IV SEMESTER

Course Code: 22OEECO401	**Course Title:**OE 4:KarnatakaEconomy
Course Credit (L:T:P):3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours:42 Hours	**Formative Assessment Marks:** 40
Duration of Exam:$2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1. Understandthe natureofeconomic growth and problemsof Karnatakastate.

CO2. Explaintheprocess of structuralgrowth in KarnatakaEconomy

CO3. EvaluatethepoliciesandprogramsundertakenbytheGovt.ofKarnatakaforbringingaboutsocio-economicdevelopment

Contents	42 Hrs
Unit–1:KarnatakaEconomy –Anoverview	**15**
Chapter:1CharacteristicsofKarnatakaEconomy FeaturesofKarnatakaeconomy-Trendsandsectoraldistributionofstatedomesticproductandpercapitaincome Measurestoredressregionalimbalances–Dr.Nanjundappacommitteereport,-Article371J	6
Chapter-2:HumanResources Humanresources:importance,sizeandhealthindicators-HumanDevelopmentIndex–Povertyandunemployment–Eradicationprograms	4
Chapter-3:NaturalResourcesManagement NaturalResources: Importanceandvolumeofdifferentnaturalresources-Karnatakaenvironmental policy	5
Practicum:ConductfieldvisittoForest/Reservoir/Miningandpreparethereport	
Unit-2:Agriculture,Ruraldevelopment,andIndustriesin Karnataka	**11**
Chapter-5:RuralDevelopment Publicdistributionsystem-Ruraldevelopmentprograms(brief)-Governmentschemesforruralwomen	4
Chapter-6:IndustriesinKarnataka MajorindustriesinKarnataka:problemsandprospects-MSMEs:problemsandmeasures-ITindustriesin Karnataka-IndustrialfinanceinKarnataka-IndustrialpolicyofKarnataka	7
Practicum:visittoindustrialunitsinlocalareaandpreparethereport/Trace-outtheimpactof Prof.D. M.NanjundappaCommitteereport	

Unit-3:Infrastructure andFinanceinKarnataka	**16**
Chapter-7:EconomicInfrastructure Transportation:Road,Rail,WaterandAirtransport.Informationandcommunicationtechnologyfacilities	6
Chapter-8:SocialInfrastructure Drinkingwater - Housingand Sanitation -Health andEducation -RuralElectrification	4
Chapter-9:StateFinance SourcesofRevenue:DirectandIndirectTaxes-ImpactofGSTonKarnatakaeconomy-StateExpenditure- StateFinanceCommission -Current StateBudget (Brief)	6
Practicum:DiscussiononStatebudget	

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- https://www.merriam-webster.com/dictionary/infrastructure%20and%20finance%20in%20karnataka
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Course Articulation Matrix - 22OEECO401

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	3	2	2	2	2	2	2	1	1	1	1
CO2	2	2	2	2	2	1	1	1	1	1	-	1
CO3	1	1	2	2	1	-	2	1	1	1	-	1
Weighted Average	1.6	2	2	2	1.6	1.5	1.6	1.3	1	1	1	1

IV Semester

Course Code -22OEECO402	**Course Title:**OE 4:EntrepreneurialEconomics
Course Credit (L:T:P):3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours:42 Hours	**Formative Assessment Marks:** 40
Duration of Exam:$2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1. Gain the capacity to Startown business as an Entrepreneur

CO2. Enablingthe students tofind career opportunitiesin the field of business.

CO3. Enablethestudentstogainknowledgeandskillsneededtorunabusinesssuccessfully.

Contents	42 Hrs
Unit–1:EntrepreneurandEntrepreneurship	**12**
Chapter1:EntrepreneurandEntrepreneurship: Meaning, Definitions, Evolution, types, Characteristics, qualities and functions of entrepreneur- Distinctionbetweenentrepreneurandmanger,Distinctionbetweenentrepreneurandintra-preneur,	05
Chapter2: RoleandimportanceofEntrepreneurship: RoleandimportanceofEntrepreneurshipineconomicdevelopment,Factorsinfluencingentrepreneurship'-Psychological, social, economicand environmental.	04
Chapter3:Newgenerationsofentrepreneurship: Newgenerationsofentrepreneurship:social,health,tourismandwomenentrepreneurship;barrierstoentrepreneurship.	03
Unit-2:LaunchingEntrepreneurialVentures	**12**
Chapter4:Generationof ideas: Generationofideas:Methodsandprocess-sourcesofideas-screeningprocess-Assessingopportunities-Challenges,pitfallsand criticalfactorsofnewventure;	04
Chapter5:Businessplan Businessplan-Newventures:Stepsinvolvedinsettingupabusiness–identifying,selecting good business opportunity, Market survey and research, techno-economic feasibility assessment.	04
Chapter6: RoleofInnovation&Creativity:Innovation-Meaningandimportanceofinnovation;Typesofinnovation;Sourcesofinnovation;Conditionsforeffectiveinnovationat Organizationlevel.	04

Unit-3:BusinessandEntrepreneurialdevelopment	**18**
Chapter7: Creativity: Creativity:Conceptandprocessofcreativity;roleandimportanceofcreativityandmentalblocksto creativity;branding,trademarks,patents,copyrights,andregistereddesignprotection- Methodsof protectinginnovationandcreativity.	05
Chapter8:Entrepreneur Assistance: Entrepreneur Assistance: Assistance to an entrepreneur-Industrial Park (Meaning, features, &examples)-SpecialEconomicZone (Meaning,features&examples)-Financialassistance bydifferentagencies-License,EnvironmentalClearance,e-tenderprocess,Exciseexemptionsand concession,Exemptionfromincometax-QualityStandards withspecialreferencetoISO.	06
Chapter9:Business andEntrepreneurialdevelopment BusinessandEntrepreneurialdevelopment:Determiningandacquiringrequiredresources(Financial, Physical and Human): Search for entrepreneurial capital- Debt vs. Equity; VentureCapitalMarket;Angelfinancingandalternativesourcesoffinanceforentrepreneurs.Entrepreneurship development programme (EDP) in India– Objectives, phases, and inputs ofEDP;-Governmentinitiativesforentrepreneurship–MakeinIndia,Start-upIndia,MUDRAetc.	07

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- https://mitidinnovation.com/recreation/role-of-innovation-in-entrepreneurship/

Course Articulation Matrix - 22OEECO402

PO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12

CO's												
CO1	2	2	1	-	2	1	1	1	3	1	3	2
CO2	2	1	-	1	2	1	-	1	2	1	1	1
CO3	2	2	1	-	2	1	1	1	3	1	3	3
Weighted Average	2	1.6	1	1	2	1	1	1	2.6	1	2.3	2

IV Semester

Course Code: 22OEECO403	**Course Title:**OE 4:EconomicsandLaw
Course Credit (L:T:P):3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours:42 Hours	**Formative Assessment Marks:** 40
Duration of Exam:$2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

CourseOutcomes (COs):

CO1. Comprehendthebasiceconomicissuesaffectingtheeconomyalongwiththerelatedlegalprovisions

CO2. Acquireknowledgeon thebasicprovisionsoflawrelatingtoconsumeractivities,businessorganizations,environment also to recognizethelawframeworkinordertoframetheeconomicmodelclosertoreality.

CO3. Enablethestudentstorealizetheconsequencesoflegalrules,primarilyasanexerciseinapplied microeconomics,macroeconomics,industrial andinternationaleconomics.

Contents	42 Hrs
Unit–1:Economic analysisoflaw	**14**
Chapter1:Introductiontolegal reasoning Efficiency- Marketsand efficiency- Marketfailure -Coasetheoremand relatedideas.	5
Chapter2:welfareeconomics Compensationprinciples- Socialwelfarefunction-Maximizationproblem	4
Chapter3:EconomicReasoning Natureof economicreasoning-Economicapproach tolaw – History-Criticism	5
Practicum: 1. GroupDiscussionsonEconomicreasoning. 2. AssignmentonCoasetheoremandrelatedissues	
Unit-2:AnIntroductiontoLaw andLegalInstitutions	**12**
Chapter4: Law Definition-TerritorialNatureofLaw-Kinds ofLaw-General LawandSpecial Law- Kinds ofSpecialLaw	6
Chapter5:Civillaw and theandtheCommonLawTraditions Theinstitutions ofthefederaland State Court systems- Thenatureoflegaldispute - Howlegalrulesevolve	6
Practicum: 1. GroupDiscussionson Civillawand theandtheCommonLawTraditions 2. Assignmentonthedifferentkindsof Law	
Unit-3:EconomicLaws	**16**

Chapter6:Law RelatingtoConsumerActivities Bargainingtheory-Economictheoryofcontract -Definingtortlaw-Economics oftortliability-DefinitionofConsumer-Consumerprotection;TheConsumerProtectionAct,2019–Consumer courts.	5

Chapter7:LawofBusiness Organizations Structureoffirm— Kinds,Corporations -Capital,Shares,Debentures,Insiders'andtrading-RBI,IRDA,MRTP, RoleofSEBI,	5
Chapter8:MacroeconomicsandLaw Inequality;Contracttheory of Distributivejustice-Economicandsocialcostsofpoverty – WealthdistributionbyLiabilityRules–Taxationandefficiency-Nationalandglobalenvironmentalproblemsandinternationalenvironmentalagreements -their legaland economicimplications	6

Practicum

1. Hold the moot court in the classroom and let there be discussion consisting of at least two or moredifferentviews on Nationaland Globalenvironment problemsand acts.
2. DiscussthecasestudiesonEconomicandsocialcostsofpovertyandconsumercourtjudgements protectingthe consumers.

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1	Bouckaert,B.andG.DeGeest(Ed.)(1999),EncyclopaediaofLawandEconomics,(VolumeItoV),EdwardElgar Publishing Ltd., U.K.
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Course Articulation Matrix- 22OEECO403

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	1	-	-	1	2	2	2	1	1	1	1
CO2	2	1	1	1	1	2	2	2	1	1	-	1
CO3	2	1	1	1	1	2	2	2	-	1	1	1
Weighted Average	2	1	1	1	1	2	2	2	1	1	1	1

IV Semester

Course Code: 22OEECO404	**Course Title:**OE 4:Economicsof GST
Course Credit (L:T:P):3 (3:0:0)	**Teaching Hours/Week:** 3 Hours
Total Contact Hours:42 Hours	**Formative Assessment Marks:** 40
Duration of Exam:$2\frac{1}{2}$Hours	**Summative Assessment Marks:** 60

Course Outcomes (COs):

CO1. Acquireknowledge on indirecttaxeswithspecial reference to GST

CO2. Application of theoretical and Practical knowledge of GST and its Evolution in India**CO3**. Enablethestudentstobe aware of theGSTLaw, ITC,Valuationofsupplyand returns, SimplecalculationofGSTandInputTaxCredit,ValuationofSupply

Contents	42 Hrs
Unit–1:IntroductiontoEconomicsof GST	**14**
Chapter1:Indirect taxesbeforeGST IndirectTaxes-Meaning,Typeswithexamples- ConstitutionalframeworkofIndirectTaxesbeforeGST(TaxationPowersofUnion&StateGovernment)-ConceptofVAT:Meaning,VariantsandMethods;	5
Chapter2:Reformsin IndirectTaxes MajorDefectsinthestructureofIndirectTaxespriortoGST;NeedforTaxreforms-Kelkarcommitteeon Tax Reforms	4
Chapter3:Introduction to GST RationaleforGST-Constitution[101stAmendment]Act,2016-GST-Meaning,OverviewofGST-TaxessubsumedunderGST-TerritorialJurisdictionofGST-MultipleratesofGST-Recentreforms inGST.	5
Practicum: 1. GroupDiscussionsonIndirectTaxesdefectsprior toGST. 2. AssignmentonTypes ofIndirectTaxespriortoGSTand Afterintroduction ofGST.	
Unit–2Fundamentalsof GST	**12**
Chapter4: GST Structure in India GST:AdvantagesandDisadvantages-OneNation-OneTax-StructureofGST-FeaturesofSingleandDualGSTModel	6

Chapter5:DualGSTModeandGSTCouncil DualGSTModeinIndia:lSGST,CGST,UTGST&IGST)- GoodsandServicesTaxNetwork[GSTN] - GSTCouncil;Creation,Members,Decisions,Compensationtostates- GSTNetwork– Registration.	6
Practicum: 1. GroupDiscussionsonadvantagesanddisadvantagesof GST 2. Holdthe moot of GSTCouncil in theclassroomand decidethedifferentslabs of GST	
Unit-3:TaxesandDuties	**16**
Chapter6:Transactions andtaxescoveredand notcovered Transactionsand taxescoveredunderGST -Taxesand dutiesoutside thepurviewofGST - TaxstructureComputation - AdministrationofTaxonitemscontainingalcohol,petroleumproducts, tobaccoproducts - Taxationonservices.	4
Chapter7:Levy andCollection ofTax Taxable event- "Supply" of Goods and Services - Place of Supply: Within state, Interstate Levyand Collection - Import and Export; Time of supply - Valuation for GST- Valuation rules -Taxability of reimbursement of expenses - Exemption from GST: Small supplies and CompositionSchemeClassificationofGoodsand Services:Composite and Mixed Supplies.	6
Chapter8:InputTax Credit Eligible and Ineligible Input Tax Credit - Apportionments of Credit and Blocked Credits - TaxCredit in respect of Capital Goods - Recovery of Excess Tax Credit - Availability of Tax Credit inspecial circumstances - Transfer of Input Credit (Input Service Distribution) - Payment of Taxes;Refund; Doctrineofunjust enrichment.	6
Practicum 1. Simpleillustrationsoncalculation ofGSTandInput Tax Credit, 2. Valuationof Supply(Numericalon valuation andcalculation oftax) 3. SimplecalculationAdjustmentofInputtaxcreditagainstoutputCGST,SGST,IGST.	

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Course Articulation Matrix -22OEECO404

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO11	PO12
CO1	2	2	1	1	2	1	1	1	-	1	1	1
CO2	2	1	1	1	1	1	1	1	1	1	-	1
CO3	3	2	1	1	1	1	1	1	-	1	1	1
Weighted	2.3	1.6	1	1	1.3	1	1	1	1	1	1	1

Average												

Continuous Internal Evaluation and Semester Examination

Total marks for each course shall be based on continuous assessments and term end examinations. AsperthedecisionoftheKarnatakaStateHigherEducationCouncil,itis necessary to have uniform pattern of 40:60 for CIEand Semester End examinations respectively, among all the Universities, their affiliated and autonomouscolleges.

The committee deliberated on the same and suggested the following pattern for the CIE Marks.

Sl. No.	**Parameters for the Evaluation**	Marks
	Continuous Internal Evaluation (CIE)	
A	**Continuous & Comprehensive Evaluation (CCE)**	**20**
B	**Internal Assessment Tests (IAT)**	**20**
	Total of CIE (A+B)	**40**
C	**Semester End Examination (SEE)**	**60**
	Total of CIE and SEE (A+B+C)	**100**

Outline for continuous assessment activities for C1 and C2

Activities	C1	C2	TotalMarks
Session Test	10 marks	10 marks	20
Case study / Assignment / Field work / Project work/ Academic Quiz/ Review of the Book/ etc.	10 marks	---	10
Case study / Assignment / Field work / Project work/ Academic Economics Quiz/ Review of the Book/ etc	---	10 marks	10
Total	20marks	20marks	40

QUESTION PAPER PATTERN (C3) FOR DSC & OE PAPERS

Maximum Marks: 60 **Duration:** $2\frac{1}{2}$Hours

PART -A

Answer any Five ofthefollowing: 5X2=10

Sl. No. 1

a.

b.

c.

d.

e.

f.

g.

h.

PART - B

Answer any Six ofthefollowing: 6X5=30

Sl. No. 2 to 10

PART - C

Answer any Two ofthefollowing: 2X10=20

Sl. No. 11 to 14

Mahajana Education Society (R)

Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
Affiliated to University of Mysore,
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Department of Economics

BoS meeting of the Department of Economics was held on 17.09.22 at 11.00 am in AVC-1. Necessary changes and modifications for the Syllabi of I and II Semester BA have been incorporated and some minor changes have been made in the syllabi of III & IV Semester BA as instructed by University of Mysore and as per the NEP- 2020 Guidelines. Proposed List of the Examiners for the academic year 2022-23 was placed before the members. The same was approved by the following BoS Members.

Board of Studies - Department of Economics

Sl. No.	Designation	Name	Signature
01	University Nominee	**Dr. Navitha Thimmaiah,** Associate Professor DoS in Economics & Cooperation, UoM, Mysuru.	Navitha Thimmaiah 17/09/2022
02	Subject expert	**Dr. Ramakrishna B M** Associate Professor University college Hampanakatta (Constituent college of Mangalore University) Mangaluru-575001	17/9/22
03	Subject expert	**Dr. E. Thippeswamy** Associate Professor, Field Marshal K. M. Cariappa College (Constituent college of Mangalore University) Madikeri-571201	Thippeswamy 17/09/22
04	HoD & Faculty Member	**Venkatalakshmi M N** Associate Professor, SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	Venkatalakshmi M N
05	Faculty Member	**Dr. Pushparani P G** Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	— ABSENT —

DEPARTMENT OF ENGLISH

Motto

Write better, speak better

Vision

To mould the students to confront the global challenge

Mission

To inculcate values to become better

human beings through literature

Program Outcome (PO) Attributes

PO1 Domain Knowledge

PO2 Problem Analysis

PO3 Design/Development of Solutions

PO4 Investigation and Research

PO5 Use of Modern Techniques/Tools

PO6 Impact on Society

PO7 Environment and Sustainability

PO8 Moral and Ethical Values

PO9 Individual and Team Work

PO10 Communication

PO11 Project Management and Finance

PO12 Lifelong Learning

General Objectives

- Comprehension of written and spoken English
- Knowledge of various elements of grammar to write better and speak better
- Effective use of English for various purposes: academic, business, professional and social media
- Develop interest in appreciation of literature and its significance to the society
- Understand human life better
- Ability to use English in real life situations

List of Board of Studies Members

Sl. No.	Category	Name Smt./Sri	Designation	Address for Communication	E-mail and Mobile No.
1	HoD & Chairman	Manjunath K R	Assistant Professor	SBRR Mahajana First Grade College, Mysore	manjunathkr.fgc@mahajana.edu.in 9448493596
2	Faculty Member	Geetha D	Assistant Professor	SBRR Mahajana First Grade College, Mysore	geethalit@rediffmail.com 9945653221
3	Two Experts from external university	1. Dr. Nataraj G	Assistant Professor	DoS in English, KSOU, Mysuru	Nataraj.g.ukkalagere@gmail.com 9741219820
		2. Dr. B.N. Shreekerthy	Assistant Professor	DoS in English, Jnanabharathi, University of Bangalore, Bengaluru	drskeerthy@gmail.com 9739012854
4	Nominee by the Vice Chancellor	Dr. Vanamala S M	Associate Professor	Mandya P G Centre, Mandya	vanamalasm861@gmail.com 9449789748
5	Alumnus	Ms. Spoorthi C S	Assistant Professor	St. Joseph's College, Hunsuru	cssporrthi@gmail.com 8867091969

Course

Structure (NEP 2020)

English Language (AECC) and Open Elective (OE)

I Year for all Progams

I Semester

Course Type, Code and Title	L:T:P	Credits	Teaching Hours per Week	Total No. of Hours	Maximum Marks			Total Marks	Exam Duration
					IA		Exam		
					C1	C2	C3		
AECC- Poetry, Prose and Language Component – I **BA / BSc / BCA** – 21ENG119 **BCom/BBA(All)/-** 21ENG120	2 : 1 : 0	3	04	56	20	20	60	100	2½

OE (I)- Functional English Grammar and Study Skills 21OEENG101	3 : 0 : 0	3	03	42	20	20	60	100	2½
II Semester									
AECC -Poetry, Prose and Language Component – II **BA / BSc / BCA** – 21ENG219 **BCom/BBA(All)/-** 21ENG220	2 : 1 : 0	3	04	56	20	20	60	100	2½
OE (II) – Spoken English for Corporate Jobs 21OEENG201	3 : 0 : 0	3	03	42	20	20	60	100	2½

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)
ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Arts and Faculty of Science (BA, BSc., BCA)

Title of the Paper – Poetry, Prose and Language Component-1

Semester I **Course Code:** **BA / BSc. / BCA 21ENG119**	**Course Title:** **Poetry, Prose and Language Component-1**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Obtain knowledge of literary genres and devices

CO2: Familiarity with representative literary texts with attention to historical, geographical, cultural contexts. Inquire into the socio-political background

and determine its impact on the society.

CO3: Develop the skill to interpret, analyze, criticize and to express creatively

for a variety of purposes and audience.

CO4: Gain an insight into the aesthetic values of literature and relate the didactic purpose of literature to lead a successful life.

CO5: Heightened awareness of correct usage of English grammar in written and oral Communication.

Course Content

POETRY **20 hrs**

1. When in Disgrace – William Shakespeare
2. The Pulley – George Herbert
3. The Quiet Life – Alexander Pope
4. Fidelity – William Wordsworth
5. The Man He Killed – Thomas Hardy
6. Freedom – Rabindranath Tagore
7. Refugee Blues – W. H. Auden
8. The Cold Within – James Patrick Kinney

PROSE **16 hrs**

1. With the Photographer- Stephen Leacock
2. Prospects of Democracy in India- Dr. B. R. Ambedkar
3. What is Science? – George Orwell
4. Fool's Paradise- Isaac Bashevis Singer

LANGUAGE COMPONENT AND LITERARY ACTIVITY **20 hrs**

1. Punctuation
2. Articles
3. Prepositions
4. Verb in relation to Tense, Person and Number of the Subject
(Subject- Verb Agreement/Concord)

TEXT BOOK

REVERBERATION – 1 for I Semester Bachelor's Degree, University of Mysore, Mysuru

References:

- https://orelt.col.org/module/unit/4-grammar-improving-composition-skills
- https://www.academia.edu/26724441/A_Concise_Grammar_for_English_Language_Teachers

- Jain Charul, Pradyumnasinh Raj & Yunus Karbharj. English Skills for Academic Purposes, Macmillan Education. London, 2017
- Murphy, Raymond, Grammar in Use, CUP, 2019, 5th Edition
- Swan Michael, Basic English Usage, OUP
- Thomson A J, A V Martinet, A Practical English Grammar, Oxford University Press

Course Articulation Matrix - BA / BSc. / BCA 21ENG119

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	-	1	-	-	2	1	3	-	3	1	3
CO 2	3	3	2	3	1	3	3	3	1	3	1	3
CO 3	2	3	1	1	3	3	2	2	1	3	1	3
CO 4	2	2	2	-	-	3	2	3	1	3	-	3
CO 5	3	3	2	-	3	2	-	-	1	3	-	3
WA	**2.6**	**2.7**	**1.6**	**2**	**2.3**	**2.6**	**2**	**2.7**	**1**	**3**	**1**	**3**

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)
ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Commerce and Management

(B.Com., BBA)(BBA (H & H) (BBA Aviation & International Tourism)

Title of the Paper – Poetry, Prose and Language Component-1

Semester I **Course Code:** **B.Com. / BBA (All) 21ENG120**	**Course Title:** **Poetry, Prose and Language Component-1**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Obtain knowledge of literary genres and devices

CO2: Familiarity with representative literary texts with attention to historical, geographical, cultural contexts. Inquire into the socio-political background

and determine its impact on the society.

CO3: Develop the skill to interpret, analyze, criticize and to express creatively

for a variety of purposes and audience.

CO4: Gain an insight into the aesthetic values of literature and relate the didactic purpose of literature to lead a successful life.

CO5: Heightened awareness of correct usage of English grammar in written and oral Communication.

Course Content

POETRY **20 hrs**

1. When Forty Winters Shall Besiege Thy Brow (Sonnet 2) – William Shakespeare
2. The World is Too Much with Us– William Wordsworth
3. A Wagon of Shoes – Avrom Sutzkever
4. Nine Gold Medals- David Roth
5. False Religion- Rabindranath Tagore
6. Avarice – George Herbert
7. O, My Luve's like a Red, Red Rose- Robert Burns
8. On Killing a Tree – Gieve Patel

PROSE **16 hrs**

1. The Miser – George Orwell

2. The Storyteller – Saki
3. Going Green – Ramachandra Guha
4. The Position of Women in Hinduism and Buddhism- Dr. B. R. Ambedkar

LANGUAGE COMPONENT AND LITERARY ACTIVITY **20 hrs**

1. Punctuation
2. Articles
3. Prepositions
4. Verb in relation to Tense, Person and Number of the Subject
(Subject- Verb Agreement/ Concord)

TEXT BOOK

RESPELENDENCE – 1 for I Semester Bachelor's Degree, University of Mysore, Mysuru

References:

- https://orelt.col.org/module/unit/4-grammar-improving-composition-skills
- https://www.academia.edu/26724441/A_Concise_Grammar_for_English_Language_Teachers
- Jain Charul, Pradyumnasinh Raj & Yunus Karbharj. English Skills for Academic Purposes, Macmillan Education. London, 2017
- Murphy, Raymond, Grammar in Use, CUP, 2019, 5th Edition
- Swan Michael, Basic English Usage, OUP
- Thomson A J, A V Martinet, A Practical English Grammar, Oxford University Press

Course Articulation Matrix B.Com. / BBA (All) 21ENG120

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	-	1	-	-	2	1	3	-	3	1	3
CO 2	3	3	2	3	1	3	3	3	1	3	1	3
CO 3	2	3	1	1	3	3	2	2	1	3	1	3
CO 4	2	2	2	-	-	3	2	3	1	3	-	3
CO 5	3	3	2	-	3	2	-	-	1	3	-	3
WA	**2.6**	**2.7**	**1.6**	**2**	**2.3**	**2.6**	**2**	**2.7**	**1**	**3**	**1**	**3**

Formative Assessment for I Semester Common to all Programs	
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	20

First Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Total	**40**

Formative Assessment = 40 Marks

Term End Examination = 60 Marks

Total = 100 Marks

Question Paper Pattern for Semester End Examination Common to all Programs

Language English – I

Title of the Paper: Poetry, Prose and Language Component-I

Time: 2½ hours Max. Marks: 60

I Answer <u>EIGHT</u> of the following Questions in a Word, a Phrase or a sentence each: 8x1=8

a)

b)

c)

d)

e)

f)

g)

h)

i)

j)

k)

l)

II Annotate THREE of the following: 3x4=12

a) b)

c)

d)

e)

f)

III Answer <u>TWO</u> of the following: 2x5=10

a)

b)

c)

d)

IV **Answer <u>TWO</u> of the following:** **2x5=10**

a)

b)

c)

d)

V **Language Component:** **2x5=10**

a) Punctuate the following: **5x1=5**

i)

ii)

iii)

iv)

v)

b) Filling the Blanks with appropriate Articles: **5x1=5**

i)

ii)

iii)

iv)

v)

c) Filling the Blanks with appropriate Prepositions: **5x1=5**

i)

ii)

iii)

iv)

v)

d) Choose the correct form of the Verb: 5x1=5

i)

ii)

iii)

iv)

v)

** *** **

Annexure: English Open Elective Syllabus - I

For all Undergraduate Programs

Title of the Paper-Functional English Grammar and Study Skills

Semester I **Course Code: 21OEENG101**	**Course Title: Functional English Grammar and Study Skills**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Knowledge of elements of grammar for better written and oral communication.

CO2: Enhanced ability in rudiments of written process for functional uses of English for various purposes-personal, academic and business.

CO3: Equipped with the mechanics of effective reading skills.

Course Content

Section I: Functional English Grammar

1. Grammar of Spoken and Written English
2. Basic Sentence Patterns in English
3. Analysis of Sentence Patterns (SVO, SV, SVOC, SVOA, SVO A/C)
4. Functions of Various Types of Phrases: Noun Phrases, Verb Phrases, Adjective Phrases, Adverbial Phrases, Prepositional Phrases
5. Functions of Clauses: Noun Clause, Adjective Clause and Adverbial Clause and Prepositional Clauses
6. Verbs – Tense and Aspects, Modal Verbs, Functions and Uses

Section II: Writing Skills

1. Writing as a Skill–Its Importance, Mechanism of Writing, Words and Sentences, Paragraph as a Unit of Structuring the Whole Text, Analysis of Paragraph
2. Functional Uses of Writing: Personal, Academic and Business
3. Writing Process: Planning a Text, Finding Materials, Drafting, Revising, Editing, Finalising Draft
4. Models of Writing: Expansion of Ideas, Dialogue Writing,

   Drafting an Email

Section III: Reading Skills

1. Meaning and Process of Reading
2. Strategies and methods to Improve Reading Skill
3. Sub-skills of Reading: Skimming, Scanning, Extensive Reading, Intensive Reading

References:

- Geoffrey Leech and Svartik. *Communicative Grammar English*, Pearson
- Geoffrey Leech. *English Grammar for Today*, Palgrave
- Leena Sen. *Communication Skills*, Princeton Hall
- Prasad P. *The Functional Aspects of Communicative Skills*.
- Vandana Singh. *The Written Word*, OU

Course Articulation Matrix - 21OEENG101

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	-	-	-	1	2	1	1	2	2	1	3
CO 2	3	1	1	3	1	2	1	1	3	3	1	3
CO 3	3	1	-	3	1	2	1	1	3	3	1	3
WA	3	1	1	3	1	2	1	3	2.6	2.6	1	3

Formative Assessment for I Semester Common to all Programs	
Assessment Occasion/type	**Weightage in Marks**
First InternalTest	20
First Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Total	**40**

FormativeAssessment = 40 Marks

Term End Examination = 60 Marks

Total = 100 Marks

Question Paper Pattern for Semester End Examination Common to all Programs

English Open Elective-I

Title of the Paper- Functional English Grammar and Study Skills

Time: 2½ hours Max. Marks: 60

I Answer TEN of the following questions in about 2-3 sentences : 10x2=20

(12 questions given should cover all the sections)

a)
b)
c)
d)
e)
f)
g)
h)
i)
j)
l)
m)
n)
o)

II Write short notes on Four of the following: 4x5=20

(6 Questions to be given covering all sections)

a)
b)
c)
d)
e)
f)

III Answer the following: 2x5=10

a) Write a dialogue (a situation to be given)

b) Write a Paragraph on:

IV Answer One of the following: 1x10=10

(Two concepts to be given from any two sections)

a)

b)

****

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)
ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Arts and Science (BA, BSc, BCA)

Title of the Paper – Poetry, Prose and Language Component-II

Semester II **Course Code:** **BA / BSc. / BCA 21ENG219**	**Course Title:** **Poetry, Prose and Language Component-II**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Obtain knowledge of literary genres and devices

CO2: Familiarity with representative literary texts with attention to historical, geographical, cultural contexts. Inquire into the socio-political background

and determine its impact on the society.

CO3: Develop the skill to interpret, analyze, criticize and to express creatively

for a variety of purposes and audience.

CO4: Gain an insight into the aesthetic values of literature and relate the didactic purpose of literature to lead a successful life.

CO5: Heightened awareness of correct usage of English grammar in written and oral Communication.

Course Content

POETRY **20 hrs**

1. How Do I Love Thee? (Sonnet 43)- Elizabeth Barrett Browning
2. Thou Art Indeed Just, Lord – Gerard Manley Hopkins
3. The Laboratory - Robert Browning
4. No Men are Foreign - James Kirkup
5. Caged Bird – Maya Angelou
6. The Bread of the People – Bertolt Brecht
7. Bankers are like Anybody Else - Ogden Nash
8. Stammer- Satchidananda

PROSE **16 hrs**

1. A Devoted Son – Anita Desai
2. Social Responsibilities of a Scientist- Bertrand Russell
3. The Story of an Hour- Kate Chopin
4. Pandit Jasraj- Captain Gopinath

LANGUAGE COMPONENT AND LITERARY ACTIVITY **20 hrs**

1. Adjectives
2. Adverbs
3. Linkers (Conjunctions)
4. Words Often Confused (Text based)

TEXT BOOK

RESPELENDENCE – II for II Semester Bachelor's Degree, University of Mysore, Mysuru

References:

- https://orelt.col.org/module/unit/4-grammar-improving-composition-skills
- https://www.academia.edu/26724441/A_Concise_Grammar_for_English_Language_Teachers
- Jain Charul, Pradyumnasinh Raj & Yunus Karbharj. English Skills for Academic Purposes, Macmillan Education. London, 2017
- Murphy, Raymond, Grammar in Use, CUP, 2019, 5th Edition
- Swan Michael, Basic English Usage, OUP
- Thomson A J, A V Martinet, A Practical English Grammar, Oxford University Press

Course Articulation Matrix - BA / BSc. / BCA 21ENG219

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	-	1	-	-	2	1	3	-	3	1	3
CO 2	3	3	2	3	1	3	3	3	1	3	1	3
CO 3	2	3	1	1	3	3	2	2	1	3	1	3
CO 4	2	2	2	-	-	3	2	3	1	3	-	3
CO 5	3	3	2	-	3	2	-	-	1	3	-	3
WA	**2.6**	**2.7**	**1.6**	**2**	**2.3**	**2.6**	**2**	**2.7**	**1**	**3**	**1**	**3**

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)
ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Commerce and Management

B.Com, BBA, BBA (H & H), BBA (Aviation and International Tourism)

Title of the Paper – Poetry, Prose and Language Component-II

Semester II **Course Code:** **B.Com. / BBA (All) 21ENG220**	**Course Title:** **Poetry, Prose and Language Component-II**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Obtain knowledge of literary genres and devices

CO2: Familiarity with representative literary texts with attention to historical, geographical, cultural contexts. Inquire into the socio-political background

and determine its impact on the society.

CO3: Develop the skill to interpret, analyze, criticize and to express creatively

for a variety of purposes and audience.

CO4: Gain an insight into the aesthetic values of literature and relate the didactic purpose of literature to lead a successful life.

CO5: Heightened awareness of correct usage of English grammar in written and oral Communication.

Course Content

POETRY **20 hrs**

1. Death, Be Not Proud – John Donne
2. My Last Duchess- Robert Browning
3. Ozymandias – P. B. Shelley
4. Unknown Citizen- W. H. Auden
5. I, Too – Langston Hughes
6. Mirror- Sylvia Plath
7. Mending Wall – Robert Frost
8. Ulysses by the Merlion – Edwin Thamboo

PROSE **16 hrs**

1. Self-Portrait (Rashtrapati) – Jawaharlal Nehru
2. The Night Train at Deoli – Ruskin Bond

3. On the Rule of the Road- A. G. Gardiner
4. After Twenty Years – O. Henry

LANGUAGE COMPONENT AND LITERARY ACTIVITY **20 hrs**

1. Adjectives
2. Adverbs
3. Linkers (Conjunctions)
4. Words Often Confused

TEXT BOOK

RESPELENDENCE – II for II Semester Bachelor's Degree, University of Mysore, Mysuru

References:

- https://orelt.col.org/module/unit/4-grammar-improving-composition-skills
- https://www.academia.edu/26724441/A_Concise_Grammar_for_English_Language_Teachers
- Jain Charul, Pradyumnasinh Raj & Yunus Karbharj. English Skills for Academic Purposes, Macmillan Education. London, 2017
- Murphy, Raymond, Grammar in Use, CUP, 2019, 5th Edition
- Swan Michael, Basic English Usage, OUP
- Thomson A J, A V Martinet, A Practical English Grammar, Oxford University Press

Course Articulation Matrix
B.Com. / BBA (All) 21ENG220

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	-	1	-	-	2	1	3	-	3	1	3
CO 2	3	3	2	3	1	3	3	3	1	3	1	3
CO 3	2	3	1	1	3	3	2	2	1	3	1	3
CO 4	2	2	2	-	-	3	2	3	1	3	-	3
CO 5	3	3	2	-	3	2	-	-	1	3	-	3
WA	**2.6**	**2.7**	**1.6**	**2**	**2.3**	**2.6**	**2**	**2.7**	**1**	**3**	**1**	**3**

Formative Assessment for II Semester Common to all Programs	
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	20
First Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Total	**40**

Formative Assessment = 40 Marks

Term End Examination = 60 Marks
Total = 100 Marks

Question Paper Pattern for Semester End Examination Common to all Programs

Language English – II

Title of the Paper: Poetry, Prose and Language Component-II

Time: 2½ hours Max. Marks: 60

I Answer <u>EIGHT</u> of the following Questions in a Word, a Phrase or a sentence each: 8x1=8

a)

b)

c)

d)

e)

f)

g)

h)

i)

j)

k)

l)

II Annotate THREE of the following: 3x4=12

a) b)

c)

d)

e)

f)

III Answer <u>TWO</u> of the following: 2x5=10

a)

b)

c)

d)

IV **Answer <u>TWO</u> of the following:** **2x5=10**

a)

b)

c)

d)

V **Language Component:** **2x5=10**

a) Identify the adjectives in the following sentences: **5x1=5**

i)

ii)

iii)

iv)

v)

b) Identify the adverbs in the following sentences: **5x1=5**

i)

ii)

iii)

iv)

v)

c) Rewrite the following sentences uses suitable linkers given in the brackets: **5x1=5**

i)

ii)

iii)

iv)

v)

d) Choose the correct word given in the brackets: 5x1=5

i)

ii)

iii)

iv)

v)

** *** **

Annexure: English Open Elective Syllabus - II
For all Undergraduate Programs

Title of the Paper-Spoken English for Corporate Jobs

Semester II **Course Code: 21OEENG201**	**Course Title: Spoken English for Corporate Jobs**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Skills for Enhanced Job opportunities

CO2: Enriched vocabulary and Knowledge of Business English

CO3: Effective communication for various social situations

CO4: Ability to thrive in a multi-cultural society

Course Content

Section I: English for Front Desk Management

1. Greeting, Welcoming
2. Dealing with Complaints, Giving Instructions or Directions
3. Giving Information: About Various Facilities, Distance, Area, Local Specialties
4. Consultation and Solution of Problems
5. Accepting Praises and Criticism, Apologizing

Section II: Fluency and Etiquettes

1. Polite sentences and Words
2. Use of persuading words
3. Intonation and Voice Modulation
4. Developing Vocabulary

Section III: Business Speeches

1. Principles of Effective Speech and Presentations
2. Speeches: Introduction, Vote of Thanks, Occasional Speech, Theme Speech
3. Use of Audio -Visual Aids in Presentations

Section IV: Cross-Cultural Communication

1. Dealing with Language Differences
2. Probing Questions to get Information
3. Etiquettes in Cross-cultural Communication

References:

- JV Vilanilam, More effective communication, Sage Publication Pvt. Ltd.
- Krishna Mohan and Banarji, Developing Communication Skills.
- Lesikar & Pettit, Business Communication, AITBS, Publishers Delhi
- Ludlow & Panton PHI, The Essence of Effective Communication, New Delhi.

- N Krishnaswamy, Lalitha Krishnaswamy and others, Mastering Communication Skills and Soft Skills - Bloomsbury, New Delhi, 2015
- Pradhan Bhende & Thankur, Business Communication Himalaya Publishing House, Mumbai.
- Rai & Raj - Effective Documentation & Presentation, Himalaya Publishing House – Mumbai
- Ray Rubeen, Communication Today - Himalaya Publishing House, Mumbai.
- R S N Pillai & Bhagawati, S Chand & Co.- Commercial Correspondence & Office Management
- Sushil Bahl , Business Communication Today, Response Books, Sage Publication, New Delhi.

Course Articulation Matrix
21OEENG201

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	2	1	1	3	1	1	1	2	3	1	3
CO 2	3	2	1	1	2	3	1	2	2	3	1	3
CO 3	3	1	1	2	1	2	1	2	2	3	1	3
WA	3	1.5	1	1.5	1.75	2.25	1	2	2	3	1	3

Formative Assessment for II Semester Common to all Programs	
Assessment Occasion/type	**Weightage in Marks**
First Internal Test	20
First Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Total	**40**

FormativeAssessment = 40 Marks

Term End Examination = 60 Marks

Total = 100 Marks

Question Paper Pattern for Semester End Examination Common to all programs

English Open Elective-II

Title of the Paper- Spoken English for Corporate Jobs

Time: 2½ hours Max. Marks: 60

I Answer TEN of the following questions in about 2-3 sentences : 10x2=20

(12 questions given should cover all the sections)

a)

b)

c)

d)

e)

f)

g)

h)

i)

j)

l)

m)

n)

o)

II Write short notes on Four of the following: 4x5=20

(6 Questions to be given covering all sections)

a)

b)

c)

d)

e)

f)

III Answer Two of the following: 1x10=10

(Three concepts to be given from any three sections)

a)

b)

c)

****

English Syllabus 2021-22

Board of Studies

Sl. No.	Name and address	Designation	Signature
01	Manjunath K R HoD – Department of English SBRR Mahajana First Grade College Mysuru manjunathkr.fgc@mahajana.edu.in	Chairman	K.R Manjunath 20-12-2021
02	Dr. Vanamala S M Associate Professor Mandya P G Centre Mob. 9449789748 Vanamalasm861@gmail.com	Member	S.M.Vanamala
03	Dr. Nataraj G Assistant Professor DoS in English, KSOU, Mysuru Mob. 9741219820 nataraj.g.ukkalagere@gmail.com	Member	
04	Dr. B.N. Shreekeerthy Assistant Professor DoS in English Jnanabharathi, University of Bangalore, Bengaluru Mob. 9739012854 drskeerthy@gmail.com	Member	
05	Smt. Geetha D Assistant Professor Department of English SBRR Mahajana First Grade College, Mysuru Mob. 9945653221 geethalit@rediffmail.com	Member	Dgeetha
06	Ms. Spoorthi C S Assistant Professor St. Joseph's College, Hunsuru Mob. 8867091969 cspoorthi@gmail.com	Member	Absent

K R Manjunath
Chairman
BOS in English
SBRR Mahajana First Grade College

DEPARTMENT OF ENGLISH

Motto

Write better, speak better

Vision

To mould the students to confront the global challenge

Mission

To inculcate values to become better

human beings through literature

Program Outcome (PO) Attributes

PO1 Domain Knowledge

PO2 Problem Analysis

PO3 Design/Development of Solutions

PO4 Investigation and Research

PO5 Use of Modern Techniques/Tools

PO6 Impact on Society

PO7 Environment and Sustainability

PO8 Moral and Ethical Values

PO9 Individual and Team Work

PO10 Communication

PO11 Project Management and Finance

PO12 Lifelong Learning

General Objectives

- Comprehension of written and spoken English
- Knowledge of various elements of grammar to write better and speak better
- Effective use of English for various purposes: academic, business, professional and social media
- Develop interest in appreciation of literature and its significance to the society
- Understand human life better
- Ability to use English in real life situations

List of Board of Studies Members

Sl. No.	Category	Name Smt./Sri	Designation	Address for Communication	E-mail and Mobile No.
1	HoD & Chairman	Manjunath K R	Assistant Professor	SBRR Mahajana First Grade College, Mysore	manjunathkr.fgc@mahajana.edu.in 9448493596
2	Faculty Member	Geetha D	Assistant Professor	SBRR Mahajana First Grade College, Mysore	geethalit@rediffmail.com 9945653221
3	Two Experts from external university	1. Dr. Nataraj G	Assistant Professor	DoS in English, KSOU, Mysuru	Nataraj.g.ukkalagere@gmail.com 9741219820
		2. Dr. B.N. Shreekerthy	Assistant Professor	DoS in English, Jnanabharathi, University of Bangalore, Bengaluru	drskeerthy@gmail.com 9739012854
4	Nominee by the Vice Chancellor	Dr. Vanamala S M	Associate Professor	Mandya P G Centre, Mandya	vanamalasm861@gmail.com 9449789748
5	Alumnus	Ms. Spoorthi C S	Assistant Professor	St. Joseph's College, Hunsuru	cssporrthi@gmail.com 8867091969

Course Structure (NEP 2020)

English Language (AECC)

Generic English (L2)

II Year for all Progams

III Semester

Course Type, Code and Title	L:T:P	Credits	Teaching Hours per Week	Total No. of Hours	Maximum Marks			Total Marks	Exam Duration
					IA		Exam		
					C1	C2	C3		

AECC- Generic English L2 Drama and Language Component **BA / BSc / BCA** – 22ENG319 **BCom / BBA (All) –** 22ENG320	2:1:0	3	04	56	20	20	60	100	2½
IV Semester									
AECC- Generic English L2 Fiction and Language Component **BA / BSc / BCA** – 22ENG419 **BCom / BBA (All) –** 22ENG420	2:1:0	3	04	56	20	20	60	100	2½

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)
ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Arts and Science (BA, BSc, BCA)

Title of the Paper – Generic English, L2 - Drama and Language Component

Semester III **Course Code:** **BA / BSc / BCA - 22ENG319**	**Course Title: AECC, Generic English L2 Drama and Language Component**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Ability to critically analyse, interpret and appreciate literary texts and gain an awareness of social, cultural, religious and ethnic diversities for an inclusive outlook to function effectively in a multi-cultural society.

CO2: Augmented presentation and analytical skills.

CO3: Prepare students for the technologically advanced world, its challenges and opportunities.

CO4: Acquire and apply language skills for competitive exams and employability skills for emerging sectors such as content writers, interpreters, translators and transcribers.

CO5: Enhanced competency for LSRW (Listening, Speaking, Reading, Writing skills)

Course Content

Unit-1			
Receptive Skills	Reading and Listening Skills		
Reading Skills	**Play**		
	Othello by Shakespeare	26 Hours	30 Marks
Listening Skills	**Persuasive Speeches**	5 Hours	10 Marks
1-Swami Vivekananda's speech at the World Parliament of Religions in Chicago, in which he introduced Hinduism to North America, which became historical.			
2- "Crisis of Civilization" speech by Rabindranath Tagore at Shanti Niketan in April 1941 was his last speech. Tagore had been unwell for some time, yet his words were very moving. https://www.youtube.com/wat			
3-"Quit India" speech delivered by Mahatma Gandhi on August 8, 1942, addressed the A.I.C.C. at Mumbai. https://youtu.be/QXajHuEKY			
4-Dr. B R Ambedkar's Constituent Assembly Speech on Dec 17,1946 https://www.youtube.com/wat			
5-Martin Luther King's 'I Have a Dream' Speech, 1963 https://www.youtube.com/wat			

Productive Skills: Speaking and Writing Skills		

Speaking Skills	**Presentation Skills**		
	Types - • Informative/Instructional Presentation • Persuasive Presentation • Decision Making Presentation • Demonstrative Presentation	5 Hours	5 Marks
Writing Skills	**Introduction to Writing and Types of Writing**		
	Introduction to Writing Types of Writing • Descriptive Writing • Narrative Writing • Reflective Writing • Persuasive/Argumentative Writing • Comparative Writing • Cause and Effect Writing	5 Hours	5 Marks
	Business Correspondence		
	Letters of Enquiry, Order Letters, Letters of Complaint, Reply to Letter of Complaint, Promotion Letters, Sales Letters	6 Hours	5 Marks
	Commercial Writing		
	• Advertisement Writing • Product Manual • Poster/Brochure Writing	5 Hours	5 Marks
Formative Assessment Activities	**Formative Assessment** First Internal Test Second Internal Test First Class Test/Oral Test/ Assignments/ Surveys/ Interviews Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	4 Hours	4 Hours

- **Text: Othello by William Shakespeare (Unit – 1)**

References for Unit - 2:

- Chaturvedi PD and Mukesh Chaturvedi, Business Communication, Concepts, Cases and Applications. Pearson, 2011
- Garg Manoj Kumar. English Communication – Theory and Practice – Ability Enhancement Compulsory Course. Cengage, 2019.
- Peck, John and Martin Coyle. Write It Right – Secrets of Effective Writing (Palgrave Study Skills), Palgrave Macmillan, 2005, 2012
- Seely, John, Oxford Guide to Effective Writing and Speaking. OUP, 2998, 2013
- Yadugiri, M A. Making Sense of English – A Textbook of Sounds, Words and Grammar, Viva Books, 2005, 2020

Course Articulation Matrix - BA / BSc / BCA - 22ENG319

COs /	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

POs												
CO1	3	3	2	1	2	3	1	3	2	3	1	3
CO2	3	2	1	1	1	1	1	3	2	3	1	3
CO3	1	1	2	-	3	3	1	2	2	3	1	3
CO4	3	3	2	1	2	3	-	1	3	3	1	3
CO5	3	3	1	1	1	2	1	1	1	3	-	3
WA	**2.6**	**2.4**	**1.6**	**1**	**1.8**	**2.4**	**1**	**2**	**2**	**3**	**1**	**3**

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)

ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Commerce and Management

B.Com, BBA, BBA (H &H), BBA (Aviation & International Tourism)

Title of the Paper – Generic English – 2 Drama and Language Component

Semester III **Course Code:** **BCom / BBA (All) – 22ENG320**	**Course Title: AECC, Generic English - 2 Drama and Language Component**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Ability to critically analyse, interpret and appreciate literary texts and gain an awareness of social, cultural, religious and ethnic diversities for an inclusive outlook to function effectively in a multi-cultural society.

CO2: Augmented presentation and analytical skills.

CO3: Prepare students for the technologically advanced world, its challenges and opportunities.

CO4: Acquire and apply language skills for competitive exams and employability skills for emerging sectors such as content writers, interpreters, translators and transcribers.

CO5: Enhanced competency for LSRW (Listening, Speaking, Reading, Writing skills)

Course Content

Unit-1			
Receptive Skills	Reading and Listening Skills		
Reading Skills	**Play**		
	Macbeth by Shakespeare	26 Hours	30 Marks
Listening Skills	**Persuasive Speeches**	5 Hours	10 Marks
1-Swami Vivekananda's speech at the World Parliament of Religions in Chicago, in which he introduced Hinduism to North America, which became historical.			
2- "Crisis of Civilization" speech by Rabindranath Tagore at Shanti Niketan in April 1941 was his last speech. Tagore had been unwell for some time, yet his words were very moving. https://www.youtube.com/wat			
3-"Quit India" speech delivered by Mahatma Gandhi on August 8, 1942, addressed the A.I.C.C. at Mumbai. https://youtu.be/QXajHuEKY			
4-Dr. B R Ambedkar's Constituent Assembly Speech on Dec 17,1946 https://www.youtube.com/wat			
5-Martin Luther King's 'I Have a Dream' Speech, 1963 https://www.youtube.com/wat			

Productive Skills: Speaking and Writing Skills			
Speaking Skills	**Presentation Skills**		
	Types - • Informative/Instructional Presentation • Persuasive Presentation • Decision Making Presentation • Demonstrative Presentation	5 Hours	5 Marks
Writing Skills	**Introduction to Writing and Types of Writing**		
	Introduction to Writing Types of Writing • Descriptive Writing • Narrative Writing • Reflective Writing • Persuasive/Argumentative Writing • Comparative Writing • Cause and Effect Writing	5 Hours	5 Marks
	Business Correspondence		
	Letters of Enquiry, Order Letters, Letters of Complaint, Reply to Letter of Complaint, Promotion Letters, Sales Letters	6 Hours	5 Marks
	Commercial Writing		
	• Advertisement Writing • Product Manual • Poster/Brochure Writing	5 Hours	5 Marks
Formative Assessment Activities	**Formative Assessment** First Internal Test Second Internal Test First Class Test/Oral Test/ Assignments/ Surveys/ Interviews Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	4 Hours	4 Hours

- **Text: Macbeth by William Shakespeare (Unit – 1)**

References for Unit - 2:

- Chaturvedi PD and Mukesh Chaturvedi, Business Communication, Concepts, Cases and Applications. Pearson, 2011
- Garg Manoj Kumar. English Communication – Theory and Practice – Ability Enhancement Compulsory Course. Cengage, 2019.
- Peck, John and Martin Coyle. Write It Right – Secrets of Effective Writing (Palgrave Study Skills), Palgrave Macmillan, 2005, 2012
- Seely, John, Oxford Guide to Effective Writing and Speaking. OUP, 2998, 2013
- Yadugiri, M A. Making Sense of English – A Textbook of Sounds, Words and Grammar, Viva Books, 2005, 2020

Course Articulation Matrix

BCom / BBA (All) – 22ENG320

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	3	1	3	2	3	1	3
CO2	3	2	1	1	1	1	1	3	2	3	1	3
CO3	1	1	2	-	3	3	1	2	2	3	1	3
CO4	3	3	2	1	2	3	-	1	3	3	1	3
CO5	3	3	1	1	1	2	1	1	1	3	-	3
WA	**2.6**	**2.4**	**1.6**	**1**	**1.8**	**2.4**	**1**	**2**	**2**	**3**	**1**	**3**

Assessment Pattern for III Semester Common to all Programs		
A	Formative Assessment	40 Marks
B	Summative Assessment	60 marks
	Total	**100 Marks**

Formative Assessment	40 Marks
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	20
First Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Total	40

Question Paper Pattern for Semester End Examination Common to all Programs

Language English – II (AECC)

Title of the Paper: Generic English – 2 Drama and Language Component

Time: 2½ hours Max. Marks: 60

UNIT - 1

I Answer FOUR of the following: 4x5=20

(Characters / Scenes from the Drama – 4 questions out of 6 to be answered)

1.
2.
3.
4.
5.
6.

II Answer ONE of the following: 1x10=10

(Characters / Scenes from Drama – 1 question out of 3 to be answered)

1.
2.
3.

III Answer TWO of the following: 2X5=10

(Persuasive Speeches – 2 questions out of 4 to be answered)

1.
2.
3.
4.

Unit – 2

IV Answer ONE of the following: (1X5=5)

(Presentation Skills – 1 question out of 3 to be answered)

1.
2.
3.

a) Answer ONE of the following: (1X5=5)

(Writing Skills – 1 question out of 3 to be answered – Introduction to Writing and Types of Writing)

1.
2.
3.

b) Answer ONE of the following: (1X5=5)

(Business Correspondence - 1 question out of 3 to be answered)

1.
2.
3.

c) Answer ONE of the following: (1X5=5)

(Commercial Writing- 1 question out of 3 to be answered)

1.
2.
3.

** *** **

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)

ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Arts and Science (BA BSC BCA)

Title of the Paper – Generic English – 2 Fiction & Language Component

Semester IV **Course Code:** **BA / BSc./ BCA – 22ENG419**	**Course Title: AECC, Generic English - 2 Fiction & Language Component**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Ability to critically analyse, interpret and appreciate literary texts and gain an awareness of social, cultural, religious and ethnic diversities for an inclusive outlook to function effectively in a multi-cultural society.

CO2: Augmented presentation and analytical skills.

CO3: Prepare students for the technologically advanced world, its challenges and opportunities.

CO4: Acquire and apply language skills for competitive exams and employability skills for emerging sectors such as content writers, interpreters, translators and transcribers.

CO5: Enhanced competency for LSRW (Listening, Speaking, Reading, Writing skills)

Course Content

Unit-1			
Receptive Skills: Reading and Listening Skills			
Reading Skills	**Novel**		
	***Talkative Man by* R K Narayan**	26 Hours	30 Marks
Listening Skills	**Listening and Decoding**		
Listen to and understand the following Poems: 1. Darkling Thrush- Thomas Hardy 2. Good-Bye Party for Pushpa T S -Nissim Ezekiel 3. Snake- D. H. Lawrence 4. The Learned Astronomer – Walt Whitman		5 Hours	10 Marks

Productive Skills: Speaking and Writing Skills			
Speaking Skills			
Speaking Skills	• Group Discussion • Public Speaking	6 Hours	5 Marks
Writing Skills	**Technical Skills**		

	Copy writing Business Writing Travel Writing Article Writing	8 Hours	5 Marks
E-correspondence and Content Writing Skills			
E-mail- **Casual and Professional**	Apology Letters, Appreciation Letters Congratulation Letters	5 Hours	5 Marks
Social Media Content Writing skills	• Blog writing • Podcast writing • Writing on Instagram	6 Hours	5 Marks

- **Text: Talkative Man by R K Narayan (Unit – 1)**

References for Unit - 2:

- Chaturvedi PD and Mukesh Chaturvedi, Business Communication, Concepts, Cases and Applications. Pearson, 2011
- Garg Manoj Kumar. English Communication – Theory and Practice – Ability Enhancement Compulsory Course. Cengage, 2019.
- Peck, John and Martin Coyle. Write It Right – Secrets of Effective Writing (Palgrave Study Skills), Palgrave Macmillan, 2005, 2012
- Seely, John, Oxford Guide to Effective Writing and Speaking. OUP, 2998, 2013
- Yadugiri, M A. Making Sense of English – A Textbook of Sounds, Words and Grammar, Viva Books, 2005, 2020

Course Articulation Matrix – BA / BSc./ BCA – 22ENG419

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	3	1	3	2	3	1	3
CO2	3	2	1	1	1	1	1	3	2	3	1	3
CO3	1	1	2	-	3	3	1	2	2	3	1	3
CO4	3	3	2	1	2	3	-	1	3	3	1	3
CO5	3	3	1	1	1	2	1	1	1	3	-	3
WA	**2.6**	**2.4**	**1.6**	**1**	**1.8**	**2.4**	**1**	**2**	**2**	**3**	**1**	**3**

Annexure: English Language Syllabus

Syllabus For Ability Enhancement Compulsory Course (AECC)
ENGLISH LANGUAGE (L2)

For Undergraduate Programs offered in

Faculty of Commerce and Management

B.Com, BBA, BBA (H &H), BBA (Aviation & International Tourism

Title of the Paper – Generic English – 2 Fiction and Language Component

Semester IV **Course Code:** **B.Com / BBA (All) – 22ENG420**	**Course Title: AECC, Generic English - 2** **Fiction & Language Component**
Course Credits: 03 (2:1:0)	**Hours of Teaching/Week:** 04
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO1: Ability to critically analyse, interpret and appreciate literary texts and gain an awareness of social, cultural, religious and ethnic diversities for an inclusive outlook to function effectively in a multi-cultural society.

CO2: Augmented presentation and analytical skills.

CO3: Prepare students for the technologically advanced world, its challenges and opportunities.

CO4: Acquire and apply language skills for competitive exams and employability skills for emerging sectors such as content writers, interpreters, translators and transcribers.

CO5: Enhanced competency for LSRW (Listening, Speaking, Reading, Writing skills)

Course Content

Unit-1			
Receptive Skills: Reading and Listening Skills			
Reading Skills	**Novel**		
	***The Man-Eater of Malgudi*- R K Narayan**	26 Hours	30 Marks
Listening Skills	**Listening and Decoding**		
Listen to and understand the following Poems: 5. Darkling Thrush- Thomas Hardy 6. Good-Bye Party for Pushpa T S -Nissim Ezekiel 7. Snake- D. H. Lawrence 8. The Learned Astronomer – Walt Whitman		5 Hours	10 Marks

Productive Skills: Speaking and Writing Skills			
Speaking Skills			
Speaking Skills	• Group Discussion • Public Speaking	6 Hours	5 Marks
Writing Skills	**Technical Skills**		
	Copy writing Business Writing Travel Writing Article Writing	8 Hours	5 Marks
E-correspondence and Content Writing Skills			

E-mail- **Casual and Professional**	Apology Letters, Appreciation Letters Congratulation Letters	5 Hours	5 Marks
Social Media Content Writing skills	• Blog writing • Podcast writing • Writing on Instagram	6 Hours	5 Marks

- **Text: The Man-Eater of Malgudi - R K Narayan (Unit – 1)**

References for Unit - 2:

- Chaturvedi PD and Mukesh Chaturvedi, Business Communication, Concepts, Cases and Applications. Pearson, 2011
- Garg Manoj Kumar. English Communication – Theory and Practice – Ability Enhancement Compulsory Course. Cengage, 2019.
- Peck, John and Martin Coyle. Write It Right – Secrets of Effective Writing (Palgrave Study Skills), Palgrave Macmillan, 2005, 2012
- Seely, John, Oxford Guide to Effective Writing and Speaking. OUP, 2998, 2013
- Yadugiri, M A. Making Sense of English – A Textbook of Sounds, Words and Grammar, Viva Books, 2005, 2020

Course Articulation Matrix – B.Com / BBA (All) – 22ENG420

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	3	1	3	2	3	1	3
CO2	3	2	1	1	1	1	1	3	2	3	1	3
CO3	1	1	2	-	3	3	1	2	2	3	1	3
CO4	3	3	2	1	2	3	-	1	3	3	1	3
CO5	3	3	1	1	1	2	1	1	1	3	-	3
WA	**2.6**	**2.4**	**1.6**	**1**	**1.8**	**2.4**	**1**	**2**	**2**	**3**	**1**	**3**

Assessment Pattern for IV Semester Common to all Programs		
A	Formative Assessment	40 Marks
B	Summative Assessment	60 marks
	Total	**100 Marks**

Formative Assessment	40 Marks
Assessment Occasion/ type	**Weightage in Marks**
First Internal Test	20
First Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Second Class Test/Oral Test/ Assignments/ Surveys/ Interviews	10
Total	40

Question Paper Pattern for Semester End Examination, Common to all Programs

Language English – II

Title of the Paper: Generic English Fiction and Language Component

Time: 2½ hours Max. Marks: 60

UNIT - 1

I **Answer FOUR of the following:** **4x5=20**

(Characters / Key Incidents from the Novel – 4 questions out of 6 to be answered)

1.
2.
3.
4.
5.
6.

II **Answer ONE of the following:** **1x10=10**

(Characters / Incidents from the Novel - 1 question out 3 of to be answered)

1.
2.
3.

III **Answer TWO of the following:** **2X5=10**

(Poetry – 2 questions out of 4 to be answered - Poetry)

1.
2.
3.
4.

Unit – 2

IV **a) Answer ONE of the following:** **(1X5=5)**

(Speaking Skills – 1 question out of 2 to be answered)

1.
2.

b) Answer ONE of the following: **(1X5=5)**

(Technical Skills – 1 question out of 4 to be answered)

1.
2.
3.
4.

V **a) Answer ONE of the following:** **(1X5=5)**

(E-mail – Casual and Professional – 1 question out of 3 to be answered)

1.

2.

3.

b) Answer ONE of the following: **(1X5=5)**

(Social Media Content Writing Skills – 1 question out of 3 to be answered)

1.

2.

3.

** *** **

English Syllabus 2022-23
Board of Studies

Sl. No.	Name and address	Designation	Signature
01	Manjunath K R HoD – Department of English SBRR Mahajana First Grade College Mysuru manjunathkr.fgc@mahajana.edu.in	Chairman	K.R. Manjunath.
02	Dr. Vanamala S M Associate Professor Mandya P G Centre Mob. 9449789748 vanamalasm861@gmail.com	Member	S.M.Vanamala 20/10/22
03	Dr. Nataraj G Assistant Professor DoS in English, KSOU, Mysuru Mob. 9741219820 nataraj.g.ukkalagere@gmail.com	Member	
04	Dr. B.N. Shreekeerthy Assistant Professor DoS in English Jnanabharathi, University of Bangalore, Bengaluru Mob. 9739012854 drskeerthy@gmail.com	Member	ON LINE
05	Smt. Geetha D Assistant Professor Department of English SBRR Mahajana First Grade College, Mysuru Mob. 9945653221 geethali@rediffmail.com	Member	Dgeetha
06	Ms. Spoorthi C S Assistant Professor St. Joseph's College, Hunsuru Mob. 8867091969 csspoorthi@gmail.com	Member	Absent

Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF ENVIRONMENTAL SCIENCE

UG ☑

PG ☐

Revised NEP Syllabi for I and II Semester Environmental Studies (AECC)

2022-23

DEPARTMENT OF ENVIRONMENTAL SCIENCE

Motto

Environmental Education for
Sustainable Life

Vision

To sensitize the people about environmental protection, conservation and equitable use of resources for sustainable livelihood

Mission

To develop a positive action for improving the environment using a practical approach based on observations

Program Outcome (PO) Attributes

PO1	Domain Knowledge
PO2	Problem Analysis
PO3	Design and Development of Solutions
PO4	Investigation & Research
PO5	Use of Modern Techniques/Tools
PO6	Impact on Society
PO7	Environment and Sustainability
PO8	Moral and Ethical Values
PO9	Individual and Team Work with Time Management
PO10	Communication
PO11	Project Management and Finance
PO12	Life-long Learning

List of BoS members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Smt. Sunitha MH Assistant Professor & HoD	Department of Environmental Science SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	sunithamh.fgc@mahajana.edu.in 9663679317
2	Two Experts from Other University	Dr.Shivaraju H Puttaiah Assistant Professor and academy coordinator	Course Coordinator, Environmental Sciences, JSS academy of higher education & research, JSS University, Mysore	shivarajuenvi@gmail.com 8277102057
3		Saritha HB Assistant Professor in Environmental Studies	Amritha school of arts and science ,Mysore-570026	sarithahb@gmail.com 9986895034
4	Nominee by the Vice Chancellor	Dr N.S.Raju Professor and Chairman	Post graduation Department of Studies in Environmental Science, Manasagangothri, Mysore	nsrajuenv@yahoo.com 9448345959

5	Alumnus	Praphul.G Junior research biologist - Conservation Biology	Salim Ali Centre for Ornithology and Natural History. Anaikatty P.O., Coimbatore 641108, Tamil Nadu, India	Praphulgopal.btr@gmail.com 9483902056

Course Structure (NEP)

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)

I Year

	Course Type, Code and Title		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
						IA		Exam		
			L	T/P	L: T:P	C1	C2	C3		Marks
Environmental Studies– I/II Sem										
AECC	BA/BCA/BSc/BCom/BBA: 22EVSF26		3	-	3:0:0	20	20	60	2hr 30 mins	100

ABILITY ENHANCEMENT COMPULSORY COURSE:AECC for All Courses

NOTE: This Papers will be handled by the Department of Environmental Science for all I /II Semester B.Com./B.B.A/B.Sc/B.A./BCA/BBA (H&H)/BBA (A&Intl.T)

AECC Module

Course Code: 22EVSF26	**Course Title: Environmental Studies**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hour (Theory)
Total Contact Hours: 45 Hours (Class room based and Field work)	**Formative Assessment Marks:** 40
Exam Duration: 2 Hour 30 Minutes(Theory)	**Semester End Examination Marks:** 60

COURSE OUTCOMES (COs):

CO 1: Imbibe ecological perspective and value of environment, along with significance of various natural resources and its management.

CO 2: Analyze and Implement biodiversity techniques and pollution concepts.

CO3: Analyze global environmental problems and design possible solutions for sustainable development.

Content of ENVIRONMENTAL STUDIES – AECC		45 Hours
Unit 1	**Chapter 1: Introduction to Environmental Studies:** • Multidisciplinary nature of environmental studies. • Scope and importance; Concept of sustainability and sustainable development.	2
	Chapter 2: Ecosystems • What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, foodwebs and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem	6

	b) Grassland ecosystem c) Desert ecosystem Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	
	Chapter 3: Natural Resources: Renewable and Non-Renewable Resources • Land resources and land-use change; Land degradation,soil erosion and desertification. • Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribalpopulations. • Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (International& Inter-state). • Energy resources: Renewable and non-renewable energysources, use of alternate energy sources, growing energy needs, case studies.	**7**
Unit 2	**Chapter 4: Biodiversity and Conservation** • Levels of biological diversity: Genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hotspots. • India as a mega-biodiversity nation; Endangered andendemic species of India. • Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity • Ecosystem and biodiversity services: Ecological, economic,social, ethical, aesthetic and Informational value.	**8**
	Chapter 5: Environmental Pollution • Environmental Pollution: Types, causes, effects andcontrols; Air, water, soil and noise pollution. • Nuclear hazards and human health risks. • Solid waste management, Control measures of urban andindustrial waste. • Pollution case studies.	**7**
Unit 3	**Chapter 6: Environmental Policies and Practices** • Climate change, global warming, ozone layer depletion,acid rain and impacts on human communities and agriculture.	**7**

	• Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Preventionand Control of Pollution) Act; Wildlife (Protection) Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD). • Nature reserves, tribal populations and rights, and humanwildlife conflicts in Indian context.	
	Chapter 7: Human Communities and the Environment • Human population growth: Impacts on environment,human health and welfare. • Resettlement and rehabilitation of project affectedpersons; case studies. • Disaster management: Floods, Earthquake, Cyclones andLandslides. • Environmental movements: Chipko, Silent valley, Bishnoisof Rajasthan. • Environmental ethics: Role of Indian and other religionsand cultures in environmental conservation. • Environmental communication and public awareness, casestudies (e.g., CNG vehicles in cities).	**6**
	Chapter 8: Field work (Any two) • Visit to an area to document environmental assets:river/forest/flora/fauna, etc. • Visit to a local polluted site-urban/Rural/Industrial/Agricultural. • Study of common plants, insects, birds, and basic principlesof identification. Study of simple ecosystems – pond, river, Delhi ridge, etc.	**2**

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Wilson, E. O. (2006). *The Creation: An appeal to save life on Earth*. New York: Norton.

World Commission on Environment and Development.(1987). *Our Common Future* . Oxford University Press .

Websites:

https://www.nature.com

https://frontiersin.org

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https://www.springer.com

https://cpcb.nic.in

Course Articulation Matrix – 22EVSF26

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	2	1	-	1	1	2	3	2	1	2	-	3
CO2	3	2	1	2	2	2	3	3	2	2	1	3
CO3	2	2	1	1	2	2	3	3	3	2	1	3
Wt. Avg.	2.33	1.7	1	1.33	1.7	2	3	2.7	2	2	1	3

Continuous Formative Evaluation/Internal Assessment

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively.

	THEORY
Total Marks	100 Marks
Continuous Assessment – 1 (C1)	20 Marks
Continuous Assessment – 2 (C2)	20 Marks
Semester End Examination (C3)	60 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Assessment Test -1	20	-	20
Seminar/Presentation/Assignment/Activity /CaseStudy/ Group discussion/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

AECC Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** 2hr 30 mins

Instructions: Paper Setting

- The Question Paper is divided into 4 parts: Part - A Part –B Part-C and Part – D.
- Part – A: Should consist of 10 Questions (Multiple Choice Questions).
- Part – B: Should consist of 6 Questions (Short Answer Questions).
- Part – C: Should consist of 5 Questions (Medium Answer Questions)
- Part – D: Should consist of 3 Questions (Long Answer Questions)

PART – A

1. Answer all the TEN questions. Each Question carries 1 Mark. 10Q X 1M = 10Marks

a.

b.

c.

d.

e.

f.

g.

h.

i.

j.

PART – B

2. Answer any FIVE Questions. Each Question carries 2 Marks. 5Q X 2M = 10 Marks

a.

b.

c.

d.

e.

f.

PART – C

3. Answer any FOUR Questions. Each Question carries 5 Marks. 4Q X 5M = 20 Marks

a.

b.

c.

d.

e.

PART – D

4. Answer any TWO Questions. Each Question carries 10 Marks. 2Q X 10M = 20 Marks

a.

b.

c.

___***___

Mahajana Education Society (R)

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SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru - 570 012

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Department of Environmental Science

Board of Studies Meeting held on 10th September 2022

Sl.No.	Name and address	Designation	Signature
1	Sunitha.M.H HoD, Dept of Environmental Science SBRR Mahajana First Grade College Mysore Contact No: 9663679317 sunithamh15@gmail.com	Chairman	
2	Dr.N.S.Raju Professor and Chairman Post graduation Department of Environmental Science, Manasagangothri, Mysore Contact No: 9448345959 nsr@envsci.uni-mysore.ac.in	Member	
3	Dr. H.P Shivaraju, M.Sc, Ph.D Assistant Professor and Academic Coordinator Department of Water and Health JSS Academy of Higher Education and Research Sri Shivarathreeshwara Nagara Mysuru-570015, Karnataka, India Contact No: +91-8277102057 shivarajuenvj@gmail.com	Member	
4	Saritha HB Assistant Professor in Environmental studies, Amritha School of Arts and Science, Mysore sarithahb@gmail.com	Member	Absent
5	Praphul.G Junior research biologist - Conservation Biology Salim Ali Centre for Ornithology and Natural History, Anaikatty P.O., Coimbatore 641108, Tamil Nadu, India Contact No: 9483902056 Praphulgopal.btr@gmail.com	Member	10/09/22

Chairperson

Mahajana Education Society (R.)

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012

Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade

College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF GEOGRAPHY

UG ☑

PG ☐

NEP Syllabi for I and II Semester B.A. Geography

2021-22

DEPARTMENT OF GEOGRAPHY

MOTTO

Down to Earth Awareness

VISION

To make a centre of excellence in Geographic information for a balanced development

MISSION

To spread the awareness of Geographic base and to

Develop Geographic consciousness among younger

Generations for understanding and creating a healthier Physical and Cultural Environment.

Program Outcomes (POs) for Bachelor of Arts

POs	Details of the Programme Outcomes (POs)
PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.

PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.
PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

List of BoS Members

Sl. No	Category	Name & Designation	Address for Communication	E-mail & Mobile No.
1	Chairperson	**Dr.K.K.Somashekara** Assistant Professor & HoD	Department of Geography SBRR Mahajana FirstGrade College (A), Jayalakshmipuram,Mysuru-12	somashekarkk.fgc@mahajana.edu.in Mobile: 9035456449
2	Member	**Dr. Doddarasaiah. G** Assistant Professor	Department of Geography SBRR Mahajana FirstGrade College (A), Jayalakshmipuram,Mysuru-12	gdurs2014@gmail.com Mob: 8892963344
3	Member	**Siddaraju. C. S** Assistant Professor	Department of Geography SBRR Mahajana FirstGrade College (A), Jayalakshmipuram,Mysuru-12	sidducs1981@gmail.com Mob: 9141481046
4	Nominee bythe Vice Chancellor	**Dr. H. Nagaraj** Professor	Registrar (Evaluation), Karnataka University, Dharwad	Nagarajh66@yahoo.com Mob: 9448939134
5	Experts from OtherUniversity	**Dr. C. Mallanna** Assistant Professor	Department of Geography, KLE Society Lingaraju College (Autonomous) College Road, Belagavi	mallannac@gmail.com Mob: 9480555474
6	Experts from OtherUniversity	**Dr. Srinivas** Assistant Professor	Department of Geography Govt. First Grade College, Vijayanagara, University of Bangalore, Bengaluru	yadavaniseena@gmail.com Mobile: 9845286949

7	Alumnus	**Ms. Sreeja** Assistant Teacher	Excel Public School ,Koorgalli Industrial Area, Belwadi Post, Mysuru, Karnataka 570018	shree-shreeja@yahoo.com Mobile -7204220808
8	One Person from Industry/ Corporate Sector/Allied Area	**Ravi. R.** Global Agency	# 471, D.Subbaiah Road, K.R.Mohalla, Near Ramaswamy Circle, Mysuru-570004	ravi_coop1978@yahoo.com Mobile: 9900143297

Year-wise Structure (NEP 2020): Geography

Discipline Specific Courses (DSC) and Open Elective (OE)

I Year

Course Type, Code and Title		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Geography – I Sem									
DSC(1)	Principles of Geomorphology-211144	4	0	4:0:2	20	20	60	2 $\frac{1}{2}$Hours	150
DSC(1)-Lab	Principles of Geomorphology Practical	0	4		10	15	25	3 Hours	
OE(1)	**(Any one to be opted)** 1.Introduction to Physical Geography 21OEGEO101 2.Fundamentals of Remote sensing 1OEGEO102	3	0	3:0:0	20	20	60	2 $\frac{1}{2}$Hours	100
Geography – II Sem									
DSC(2)	Introduction to Climatology - 211244	4	0	4:0:2	20	20	60	2 $\frac{1}{2}$Hours	150
DSC(2)-Lab	Introduction to Climatology Practical	0	4		10	15	25	3 Hours	

OE(2)	**(Any one to be opted)** 1.Human of Geography 21OEGEO201 2. Basics of Geographic Information Systems 21OEGEO202	3	0	3:0:0	20	20	60	2 $\frac{1}{2}$Hours	100

Syllabus DSC (1) Syllabus for B.A. Geography (Basic and Honors)

Semester I

Course Code: 211144	**Course Title:** Principles of Geomorphology (Theory) Geomorphology (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration:2 $\frac{1}{2}$Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs)

1. Acquire the knowledge of fundamental concepts and the essential principles of Geomorphology.
2. Knowledge of systems and cycles of the solid Earth, crustal mobility and tectonics.
3. Describe the dynamics of Earth related to folds, faults, earthquakes volcanoes and associated landforms.
4. Identify and interpret the evolution of landforms and agents of denudation.

Course Content

Content	Hours

UNIT - 1 Geomorphology	
Introduction to geography: physical and human geography Introduction to Geomorphology: meaning, nature, development, and scope Principles of Geomorphology Geological Time Scale Distribution of continents and oceans	**14**
UNIT – 2 Systems and Cycles of the Solid Earth	
Internal structure of the earth Alfred Wegener's continental drift Theory Theory of Isostacy: Views of Pratt and Airy Convectional current theory and concept of sea floor spreading Theory of Plate Tectonics: plate boundaries, subduction. **Case Studies:** Volcano, Earthquake: reporting of latest incidents	**14**
UNIT – 3 The Dynamics of Earth	
Earth's Movements: Endogenetic and Exogenetic forces, Sudden and Diastrophic movements- Epeirogenetic and Orogenetic Movements-Process of folding and faulting, Vulcanicity and earthquake Rocks: Characteristics, types, importance, and rock cycle Weathering: meaning, types and controlling factors Mass Movement: meaning, controlling factors, types-landslides, rock-falls	**14**
UNIT - 4 Evolution of Landforms	
Evolution of Landforms: meaning, types and factors controlling landforms development Slope development: concept and types Concept of Cycle of Erosion–W.M. Davis and W. Penck Agents of Denudation: river; drainage patterns, groundwater, Sea waves, Wind and Glaciers and resultant landforms. Application of geomorphology: in India and Karnataka (Regional planning, Urban planning and transportation, Mining, Hazard management, Agriculture and Environmental management).	**14**

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1. Ahmed E. (1985) Geomorphology, Kalyani Publishers, New Delhi.

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3.Brunsden D. (1985) Geomorphology in the Service of Man: The Future of Geography, Methnen, U.K.

4.Chorley, R.J., Schumm, S. A. and Sugden, D.E. 1984: Geomorphology, Methuen,London

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8.Goudie Anrew et.al. (1981) Geomorphological Techniques, George Allen & Unwin, London.

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11.Hugar M R Physical Geography part 1(Kannada Version)

12.Kolhapure and S S Nanjan, Physical Geography (Kannada Version)

13.Nanjannavar S S: Physical Geography (Kannada Version)

14.P Mallappa, Physical Geography (Kannada Version)

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14.Strahler A.N. (1968) The Earth Sciences, Harper & Row Intl. Edn, New York

16.Thornberry W.D. (1969) Principles of Geomorphology 2nd Edition, Wiley Intl. Edn. & Wiley,1984.

17.Verstappen H. (1983) Applied Geomorphology, Geomorphological Surveys for Environmental Development, Elsevier, Amsterdam

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http://www.solarviews.com/eng/earth.htm

http://www.moorlandschool.co.uk/earth/tectonic.htm

https://www.usgs.gov/

https://www.ksndmc.org/

DSC (1)-Lab

Geomorphology Practical

Content of Practical Course 1: List of Experiments to be conducted

Exercise-1:

Identification of Rocks and Minerals:

Mineral samples: Iron ore, Bauxite ore and Manganese

Rock Samples: Granite, Basalt, Lime Stones, Sandstone, quartzite and marble

Exercise-2:

Extraction and interpretation of Geomorphic information from Topographical maps

Exercise-3:

Preparation of contour map from toposheet, Construction of Relief Profiles-serial, Super imposed, Projected & Composite.

Exercise-4:

Slope Analysis: Slope Maps (Wentworth method), Slope calculation and conversion (Isotan and Isosin) and aspect maps & Hypsometric curve and integral

Exercise-5:

Drainage Morphometry: Delineation of watershed, stream ordering and Morphometric analysis: mean stream length, drainage density and drainage frequency.

Field Work:

Measurement of channel cross-sections in the field, Geomorphic map of channel bed, Study of erosional and depositional features in the field.

Case Study:

Students must be taken to observe local land formation and degradation and write a report on their effectiveness.

Course Articulation Matrix-211144

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	1	2	1	1	2	-	1	1	-	2
CO2	2	1	1	2	1	1	2	-	1	1	-	2
CO3	2	2	1	2	1	1	2	-	1	1	-	2
CO4	2	2	1	-	-	-	2	-	1	1	-	1
Weighted Average	**2**	**1.75**	**1**	**2**	**1**	**1**	**2**	**-**	**1**	**1**	**-**	**1.75**

OE(1) Geography Syllabus for All Programs(Except Arts)

Semester I

Course Code: 21OEGEO101	**Course Title: Introduction to Physical Geography**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

1. Acquire the knowledge of structure and movement of the earth.
2. Analyze the interior and exterior aspects of earth sciences.
3. Analyze and interpret atmospheric phenomena.
4. Examine and describe the structure, composition and nature of water bodies.

Course Content

UNIT – 1	**10 HOURS**
Origin, Shape and Size of the Earth, Movement of the Earth- Rotation and Revolution, Effects of the movement of Earth, Coordinates -Latitude, Longitude and Time. Structure of the Earth,	
UNIT – 2	**12 HOURS**
Rocks - types, significance, Weathering – types. Agents of Denudation - River, Glacier, Wind and Under Ground water. Volcanicity, Earthquakes and Tsunamis	
UNIT – 3	**10 HOURS**
Structure and Composition of Atmosphere, Weather and Climate. Atmospheric Temperature, Heat Budget of the atmosphere Atmospheric Pressure, Winds and Precipitation	
UNIT – 4	**10 HOURS**
Distribution of Land and Sea, Submarine Relief of the Ocean, Temperature and salinity of Sea Water. Ocean Tides, Waves and Deposits, Ocean currents - Atlantic, Pacific and Indian Oceans. Marine Resources: Biotic, mineral and energy resources	

References

1. B.S. Negi (1993) Physical Geography. S.J. Publication, Meerut
2. D.S. Lal (1998) Climatology. Chaitnya publishing house, Allahabad

3. K. Siddhartha (2001) Atmosphere, Weather and Climate. Kisalaya publication, New Delhi

4. R.N. Tikka (2002) Physical Geography. Kedarnath Ramnath & co, Meerut.

5. Willian D. Thornbury (1997) Principle of Geomorphology. New Age,International (Pvt.Ltd.) New Delhi.

Reference Websites

1. http://www.physicalgeography.net
2. https://www.geography.com
3. https://libguides.tru.ca › physicalgeography › websites
4. https://www.nationalgeographic.org › activity › reason
5. https://www.gale.com › physical-geography

Course Articulation Matrix- 21OEGEO101

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	1	2	2	3	1	2	1	-	3
CO2	3	2	2	2	2	2	3	2	2	2	2	3
CO3	3	2	1	1	1	2	3	2	1	1	-	3
CO4	3	2	1	1	-	2	3	2	1	1	-	3
Weighted Average	**3.66**	**2.33**	**1.33**	**1.25**	**1.66**	**2**	**3**	**2.33**	**1.5**	**1.25**	**2**	**3**

OE(1) Geography Syllabus for All Programs(Except Arts)

Semester I

Course Code: 21OEGEO102	**Course Title: Fundamentals of Remote Sensing**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes:

1. Demonstrate the basic concepts and impart necessary skills of remote sensing
2. Analyze sensing and recording reflected or emitted energy and processing it.
3. Analyze and interpret remotely sensed satellite images on the Earth surface.
4. Comprehend the concepts of Remote sensing and describe its practical significance.

Course Content

UNIT - 1 Introduction	10 HOURS
Definition of Remote Sensing, developmental stages, Laws of Physics, electromagnetic waves, spectrum, regions, wavelength, frequencies, and applications. Types-Satellites, Sensors, Payloads, Orbits, telemetry of satellites.	
UNIT - 2 Process and types of Remote Sensing	**10 HOURS**
Process of remote sensing, interaction of radiation with atmosphere and targets, atmospheric noises, attenuation in radiance, resolutions of remote sensing, optical remote sensing, visible region of the spectrum, thermal remote sensing, micro wave remote sensing, Hyper spectral remote sensing, LiDAR, and other remote sensing Platforms.	
UNIT - 3 Image Classification and Interpretation	**10 HOURS**
Satellite products and its spectral characteristics, composite images, band ratios; Land use land cover classification schemes-Anderson and NRSC;Visual image interpretation, elements, stages of interpretation and interpretation keys. Image classification- supervised, unsupervised, and principal component analysis (PCA) and accuracy assessment.	
UNIT – 4 Applications of Remote Sensing	**12 HOURS**
Disaster Management, Meteorological Studies, Agricultural and Irrigation Studies, Forestry Studies, Hydrological Studies, Natural Resource, Oceanic and Coastal mapping, Soil resource mapping, Urban and Rural Mapping and Management.	

Reference

1. Image processing and GIS for remote sensing: techniques and applications; Second Edition (2016) - Liu, Jian-Guo, Mason, Philippa J
2. Introduction to Remote Sensing and Image Interpretation (2003); Lillesand T.M.

   Introduction to Remote Sensing, Fifth Edition (2011); James B. Campbell, Randolph H.Wynne
3. Introductory Digital Image Processing: A Remote Sensing Perspective, Fourth Edition(2015) - John R. Jensen
4. Practical handbook of remote sensing, First Edition (2016) - Lavender, Andrew,

Lavender, Samantha

5. Remote Sensing and GIS, Second Edition (2011), Bhatta, B.

6. Remote sensing and image interpretation (2015); Chipman, Jonathan W., Kiefer, Ralph W., Lillesand

7. Remote Sensing of the Environment: An Earth Resource Perspective (Prentice HallSeries in Geographic Information Science) - Second Edition (2006), John Jensen

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1. https://onlinecourses.nptel.ac.in/noc19_ce41/preview
2. http://www.rsi.ca
3. http://www.earthsat.com
4. http://www.cr.usgs.gov
5. http://edc.usgs.gov/

Course Articulation Matrix- 21OEGEO102

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2	3	2	2	2	2	2	2	3
CO2	2	2	3	2	2	2	3	-	1	1	1	2
CO3	2	2	2	2	2	1	2	-	1	1	1	2
CO4	3	2	3	2	2	2	3	1	2	1	2	3
Weighted Average	**2.25**	**2.25**	**2.75**	**2**	**2.25**	**2.33**	**2.50**	**1.5**	**1.5**	**1.25**	**1.5**	**2.5**

Scheme of Valuation for Practical Examination-I Semester

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 isthe semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For

C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:Part-A Practical Exercises (C1): 10 marks
- Part-B Practical Exercises (C2): 10 marks + Record: 05 marks = 15 marks
- The student is evaluated for 25 marks in C3 as per the following scheme:

Identification of Minerals and rocks	04 marks
Extraction and Interpretation of Topographical maps	04 marks
Preparation of Contour maps from toposheet	04 marks
Slope Analysis	04 marks
Drainage Morphometry	04 marks
Field work /Case study assessment (Viva)	05 marks
Total	**25 marks**

Syllabus DSC (2) Syllabus for B.A. Geography (Basic and Honors)

Semester II

Course Code: 211244	**Course Title:** Introduction to Climatology (Theory) Climatology (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04

	(Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 $\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

1. Acquire the knowledge of climatology, structure and composition of atmosphere.
2. Analyze the dynamics of the Earth's atmospheric phenomena
3. Understand the nature and impact of the atmospheric pressure and winds.
4. Determine & describe the atmospheric cycle and factors associated with atmospheric changes.

Course Content:

Content	Hours
UNIT – 1 Composition and Structure of the Atmosphere	**14**
Nature and Scope of Climatology, Atmospheric Sciences; Climatology and Meteorology Origin and structure of the Atmosphere: Troposphere, Stratosphere, Mesosphere, Ionosphere, Exosphere and their characteristics. Composition of the atmosphere Weather and Climate.	
UNIT – 2 Atmospheric Temperature	**14**
Isolation: Definition, Mechanism, Solar Constant. Factors affecting the Insolation: Angle of incidence, length of the day, Sunspots, Distance between the earth and the sun, effect of the atmosphere. Heating and cooling process of the atmosphere- Radiation, Conduction, convection, and advection. **Temperature**: meaning and Influencing Factors on the Distribution of Temperature Distribution of the temperature: Vertical, Horizontal, and Inversion of temperature. Global Energy Budget: Incoming shortwave solar radiation, Outgoing Long wave **Terrestrial radiation, Albedo. Net Radiation and Latitudinal Heat Balances.**	
UNIT – 3 Atmospheric Pressure and Winds	**14**
Atmospheric Pressure: Influencing factors on atmospheric pressure. Vertical and Horizontal Distribution of the atmospheric pressure and Pressure Belts, Pressure Gradient. Tri-cellular-Hadley, Ferrell's and Polar Cells. Winds: influencing factors, Types - planetary, seasonal, local wind Variable winds- Cyclones and anti-cyclones. Air-Masses and Fronts: Definition, Nature, Source Regions, Classification.	

Unit – 4 Atmospheric Moisture	14
Humidity: Sources, influencing factors and types-Absolute, Relative and Specific. Hydrological cycle: process of evaporation, condensation. Clouds and its types Precipitation and its forms. **Climate Change: Causes and consequences, recent issues-floods, drought,**	

References

1. Lal, D. S. (1998). Climatology. Allahabad: Chaitanya Publishing House.
2. P Mallappa, Physical Geography (KannadaVersion)
3. Ranganath Principles of Physical Geography (Kannada Version)
4. Nanjannavar S S: Physical Geography (Kannada Version)
5. Hugar M R Physical Geography part 1(Kannada Version)
6. Goudar M B, Physical Geography (Kannada Version)
7. Kolhapure and S S Nanjan, Physical Geography (Kannada Version)
8. Lutgens, Frederic K. & Tarbuck, Edward J. (2010). The Atmosphere: An Introductionto Meteorology. New Jersey: Pearson Prentice Hall.
9. Oliver, John E. & Hidore, John J. (2003). Climatology: An Atmospheric Science.Delhi: Pearson Education.
10. Singh, S. (2005). Climatology. Allahabad: Prayag Pustak Bhawan.
11. Barry, R.G. and Chorley, R.J. (2003): Atmosphere, Weather and Climate; Psychology Press, Hove; East Sussex.
12. Critchfield, H.J., (1975): general Climatology, Prentice Hall, New Jersey.
13. Mather,J.R.(1974): Climatology: Fundamentals and Applications; Mc Craw Hill BookCo., U.S.A.
14. Rumney, G.R. (1968): Climatology and the World Climates, Macmillan, London.
15. Trewartha, G.T. (1980): An Introduction to Climate; McGraw Hill, New York, 5thedition, (International Student Edition)

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1. https://earthobservatory.nasa.gov/
2. https://mausam.imd.gov.in/
3. https://www.weatheronline.in/
4. https://earthexplorer.usgs.gov/
5. https://www.nhc.noaa.gov/satellite.php

DSC(2)-LAB

Climatology Practical

Content of Practical Course 1: List of Experiments to be conducted

Conduct all exercises with Goal, Procedure, devices, and findings.

Exercise 1: Understanding Structure and functions of the Indian Meteorological Department (IMD).

Exercise 2: Collection of climatic data from IMD website- https://mausam.imd.gov.in/bengaluru/.

Exercise 3: Plotting of downloaded climatic data using graphical methods-Elementary Instrumental Observation:

Exercise 4: Centigrade and Fahrenheit thermometer for measuring temperature.

Exercise 5: Mercurial Barometer and Aneroid Barometer for measuring atmospheric Pressure

Exercise 6: Wind Vane and cup-anemometer.

Exercise 7: Wet and Dry bulb thermometer for measuring humidity

Exercise 8: Rainguage- Dial type for measuring rainfall Exercise 3: Rainfall Trend Analysis.

Exercise 9: Interpretation of Indian Daily Weather charts.

Exercise 10: Deriving water balance chart, Actual and potential evapotranspiration

Note: Students are expected to download weather charts of the four seasons.

Course Articulation Matrix - 211244

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	-	1	2	3	1	-	1	-	2
CO2	2	2	1	-	1	2	3	1	-	1	-	2
CO3	3	2	1	1	2	2	3	1	1	1	-	2
CO4	2	2	1	1	1	2	2	1	1	1	-	2
Weighted	**2.25**	**2**	**1**	**1**	**1.25**	**2**	**2.75**	**1**	**1**	**1**	**-**	**2**

Average												

OE(2) Geography Syllabus for All Programs(Except Arts)

Semester II

Course Code: 21OEGEO201	**Course Title: Introduction to Human Geography**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

1. Comprehend the evolution, approaches and development of Human Geography.
2. Understand the geographical analysis of population dynamics and migration.
3. Determine and introspect the concept of culture, cultural diffusion, factors, pattern and process of realm.
4. Analyze and describe the Economic activities and human settlements.

Course Content

UNIT - 1 Introduction to Human Geography	**10 HOURS**
Nature and scope, Development Environmental Determinism and Possiblism, Neo determinism (stop and go-determinism) Approaches to human geography: Exploration and Descriptive approach, regional analysis Approach, Areal Differentiation Approach, Spatial organization Approach. Modern approaches: Welfare or Humanistic Approach, Radical Approach, Behavioral Approach, Post Modernism in geography	

Fields and sub fields in Human geography
UNIT - 2 Geographical Analysis of Population **10 HOURS**
Distribution and Growth of Population Density of population: meaning and Types: Arithmetic Density and Physiological Density. Regional distribution of Density of Population. Population Movement: Migration, Raventein's Law of Migration, Factors of population Migration, Economic Push and Pull factors, Cultural Push and Pull Factors, Environmental Push and Pull Factors. Migration Types: Immigration and Emigration, Internal and International Migration
UNIT - 3 Cultural Patterns and Processes **10 HOURS**
Concept of Culture, Material and Non material culture Cultural Regions, cultural Traits and Complexes, cultural Hearths, cultural Diffusion. Languages of the World: Types, Classification and Distribution. Religions: Types and Classification. Distribution. Universalizing Religions: Christianity, Islam, Buddhism. Ethnic Religions: Hinduism, the Chinese religion, Shintoism, Judaism. The Major tribal population of the world.
UNIT –4.Human Economic Activities, Development and Settlements **12 HOURS**
Primary Economic Activities – Agriculture, Types: Primitive Subsistence, Intensive subsistence, Plantation Agriculture, Extensive Commercial grain cultivation, Mixed Farming, Dairy Farming **Secondary Activities:** Manufacturing, classification – based on size – Small Scale and Large scale. Based on Raw material – Argo-based, Mineral based, Chemical Based and Forest based. Industrial Regions of the world. **Tertiary Activities:** Types: Trade and commerce, Retail Trading services, Wholesale trading. Transport and communications: Factors, communication services – Telecommunication. Services: Informal and Non formal sector. Information technology and service. **Human Settlements:** Factors, Classification, Types and Patterns: Rural, Urban. Compact or Nucleated and Dispersed settlements. Rural settlement Patterns: linear, rectangular, circular, star shaped, T shaped.

References

1. Hartshorne, T. A., & Alexander, J. W. (2010). Economic Geography. New Delhi: PHI Learning.
2 .Knox, P., Agnew, J., & McCarthy, L. (2008). The Geography of the World Economy. London: Hodder Arnold.
3 .Lloyd, P., & Dicken, B. (1972). Location in Space: A Theoretical Approach to Economic Geography. New York: Harper and Row.
4. Siddhartha, K. (2000). Economic Geography: Theories, Process and Patterns, NewDelhi: Kisalaya Publications.
5. Smith, D. M. (1971). Industrial Location: An Economic Geographical Analysis, NewYork: John Wiley and Sons.

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1.https://open.umn.edu ›

2.https://sccollege.edu ›

3.https://web.ung.edu ›

4.https://oer.galileo.usg.edu ›

5.https://geography.wisc.edu ›

6.https://www.pdfdrive.com ›

7.https://old.amu.ac.in ›

Course Articulation Matrix- 21OEGEO201

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	-	1	2	1	-	-	-	2
CO2	2	2	1	1	1	2	2	2	1	1	2	2
CO3	2	2	1	1	-	2	2	1	-	-	1	3
CO4	3	2	2	1	-	2	2	2	1	1	1	3
Weighted Average	**2.25**	**1.75**	**1.25**	**1**	**1**	**1.75**	**2**	**1.5**	**1**	**1**	**1.33**	**2.5**

OE(2) Geography Syllabus for All Programs(Except Arts)

Course Code: 21OEGEO202	**Course Title: Basics of Geographic Information Systems (GIS)**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration:2 $\frac{1}{2}$Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes:

1. Acquiring the knowledge of concept development components and functions of GIS
2. Analyze the theoretical concepts in a practical way through the mathematical models of geography.
3. Understand the various modes of data collection and scale.
4. Solve geographical problems through the preparation of thematic maps.

Course Content

UNIT - 1 Introduction	**10 HOURS**
Emergence of GI Science, Milestone and Developmental stages in GIS, Definition, scope,role of GIS in digital world; Components, functionalities, merits and demerits, global market, interdisciplinary domains, and its integration with GIS.	
UNIT - 2 Geodesy and Spatial Mathematics	**10 HOURS**
Cartesian coordinates, latitude, longitudes, formats of angular units, geographical coordinates, Datum: WGS84, vs NAD32. UTM, Aerial Distance measurement using Geographic and projected coordinates, Area, Perimeter, length by coordinates and various international measures.	
UNIT - 3 GIS Data and Scale	**10 HOURS**
Spatial Data and its structures; sources and types of data collection; data errors, topology of data and relationship. Large Scale vs Small Scale, generalization; precision and accuracy of data-logical consistency and non-spatial data integration	
UNIT –4. Geo processing and Visualization	**12 HOURS**
Spatial and Non-Spatial Queries, proximity analysis, Preparation of Terrain and Surface models. Hotspot and density mapping. Types of maps, thematic maps and Its types, relief maps, flow maps and cartograms. Tabulations: Graphs and Pivot tables	

References

1. An Introduction to Geographical Information Systems - Ian Heywood (2011)
2. Geographic Information Systems and Cartographic Modelling - Tomlin, C.D. (1990)
3. Geographic Information Systems and Environmental Modelling - Clarke, C., K. (2002)
4. Geographic Information Systems and Science - Paul A. Longley, et. al. (2015)
5. Geographic Information Systems: A Management Perspective - Aronoff, S. (1989)
6 GIS - Fundamentals, Applications, and Implementations - Elangovan, K. (2006)
7. Introduction to Geographical Information Systems - Chang, Kang-Tsung (2015)
8. Mathematical Modeling in Geographical Information System, Global Positioning System and
9. Digital Cartography - Sharma, H.S. (2006)
10. Remote Sensing and GIS - Bhatta, B. (2011)
11 Spatial analysis and Location-Allocation Models - Ghosh, A. and G. Rushton (1987)

Reference Websites

1. IIRS MOOC programme: https://isat.iirs.gov.in/mooc.php
2. ITC Netherlands, Principles of GIS
3. https://webapps.itc.utwente.nl/librarywww/papers_2009/general/principlesgis.pdf
4. Geographical Information Systems: Principles, Techniques, Management and Applications

5..https://www.geos.ed.ac.uk/~gisteac/gis_book_abridged/

Course Articulation Matrix- 21OEGEO202

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2	3	2	2	1	2	1	2	3
CO2	2	2	2	2	3	2	2	1	1	1	2	2
CO3	2	2	2	2	2	1	2	1	1	1	2	3
CO4	2	2	3	2	3	2	3	1	2	1	2	3
Weighted Average	**2**	**2**	**2.5**	**2**	**2.75**	**1.75**	**2.25**	**1**	**1.5**	**1**	**2**	**2.75**

Continuous Formative Evaluation Internal Assessment/Exams I & II Semester

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester end Theory Examinations respectively and 50:50 for IA and Semesterend Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the courses and within 45 working days of semester program

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc.

This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks forthe final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc, required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment /project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course Shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	10	10	20
Seminar/Presentation/Assignment/Activity	10		10
Case Study/Field Work/Project Work/Quiz etc.		10	10
Total	**20**	**20**	**40**

- For practical course of full credits, seminar shall not be compulsory. In its place, marks
  shall be awarded for Practical Record Maintenance (the ratio is 25 (10 + 15):25).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2
  component as decidedby the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencementof the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

J Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations-I&II Semester

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 isthe semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

Part-A Practical Exercises (C1): 10 marks

Part-B Practical Exercises (C2): 10 marks + Record: 05 marks = 15 marks

The student is evaluated for 25 marks in C3 as per the following scheme:

Assessment Criteria	Marks
Indian Meteorological Department (IMD) Maps	04
Meteorological Instruments	04
Precipitation measuring Maps	04
Indian Weather Maps	04
Water Balance & Evapotranspiration Charts	09
Total	**25**

DSC Theory and OE Question Paper Pattern

B.A GEOGRAPHY (For I and II Semester) 2022 Onwards

Exam Duration: $2\frac{1}{2}$ Hours **Max. Marks: 60**

Part-A

I. Answer any Four of the following questions. **4X3=12**

1).....

2).....

3).....

4).....

5).....

6).....

Part-B

II. Answer any Three of the following questions. **3X6=18**

7)……..

8)……..

9)…….

10)……

11)……

Part –C

III. Answer any Three of the following questions. **3X10=30**

12)……

13)……

14)……

15)……

DSC Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** 2 $\frac{1}{2}$Hours

Instructions: Paper Setting

The Theory exam shall be conducted for 60 Marks and it consists of 3 Sections namely

- The Question Paper is divided into 3 parts: Part – A, Part – B and Part- C
- Section A, Section B, Section C with internal choices. (Short, Medium and Long answer questions).
- Section A - Each question carries 3 marks and student has to answer 4 out of 6 questions.
- Section B - Each question carries 6 marks and student has to answer 3 out of 5 questions, and
- Section C - Each question carries 10 marks and student has to answer 3 out of 4 questions.

Open Elective Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** $2\frac{1}{2}$ Hours

Instructions: Paper Setting

The Theory exam shall be conducted for 60 Marks and it consists of 3 Sections namely

- The Question Paper is divided into 3 parts: Part – A, Part – B and Part- C
- Section A, Section B, Section C with internal choices. (Short, Medium and Long answer questions).
- Section A - Each question carries 3 marks and student has to answer 4 out of 6 questions.
- Section B - Each question carries 6 marks and student has to answer 3 out of 5 questions, and
- Section C - Each question carries 10 marks and student has to answer 3 out of 4 questions.

06	Faculty Member	Siddappa R Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	
07	Faculty Member	Chaluvegowda S M Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru -12	
08	Subject Expert & Alumnus	Dr. Roopa Patavardhan Assistant Professor School of Business studies and Social Sciences, Christ(Deemed to be University) Hulimavu, Bengaluru-76	
09	Industry Person	Nikhil Maruthi Stake Holder LLP Partner,Solution Infinite Media Pvt.Ltd, T-301, Chicago Avenue, Cunningham Road,Opp.Fortis Hospital, Bengaluru-560001	ABSENT

Mahajana Education Society (R.)
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BOARD OF STUDIES (BoS)

DEPARTMENT OF GEOGRAPHY

UG ☑

PG ☐

NEP Syllabi for III and IV Semester B.A. Geography

2022-23

DEPARTMENT OF GEOGRAPHY

MOTTO

Down to Earth Awareness

VISION

To make a centre of excellence in Geographic information for

a balanced development

MISSION

To spread the awareness of Geographic base and to

Develop Geographic consciousness among younger

Generations for understanding and creating a healthier Physical and Cultural Environment.

Program Outcomes (POs) for Bachelor of Arts

POs	Details of the Programme Outcomes (POs)
PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.

PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	E-mail & Mobile No.
1	Chairperson	**Dr.K.K.Somashekara** Assistant Professor& HoD	Department of Geography SBRR Mahajana FirstGrade College (A), Jayalakshmipuram, Mysuru – 12	somashekarkk.fgc@mahajana.edu.in 9035456449
2	Member	**Dr. Doddarasaiah. G** Assistant Professor	Department of Geography SBRR Mahajana FirstGrade College (A), Jayalakshmipuram, Mysuru - 12	gdurs2014@gmail.com, Mobile: 8892963344
3	Member	**Siddaraju. C. S** Assistant Professor	Department of Geography SBRR Mahajana FirstGrade College (A), Jayalakshmipuram, Mysuru - 12	sidducs1981@gmail.com, Mobile: 9141481046
4	Nominee bythe Vice Chancellor	**Dr. B.Chandrashekara** Professor & BOS Chairman	Department of studies in Geography, Manasagangothri University of Mysore, Mysore	chandrubuom@gmail.com, Mob: 9448912063
5	Experts from OtherUniversity	**Dr. Srinivas** Associate Professor	Department of Geography Govt. First Grade College, Vijayanagara University of Bangalore Bengaluru	yadavaniseena@gmail.com, Mob: 9845286949
6	Experts from OtherUniversity	**Dr.Amarendra. K.N** **Associate Professor**	HoD, Department of Geography Sri Siddaganga First Grade College Nelamangala Rural, Bangalore University	knamarnath2010@gmail.com, Mobile: 9008046170

7	Alumnus	**Ms. Sreeja** Assistant Teacher	Excel Public School ,Koorgalli Industrial Area, Belwadi Post, Mysuru, Karnataka 570018	shree- shreeja@yahoo.com Mobile -7204220808
8	One Person from Industry/ Corporate Sector/Allied Area	**Ravi. R.** Global Agency	# 471, D.Subbaiah Road, K.R.Mohalla, Near Ramaswamy Circle, Mysuru-570004	ravi_coop1978@yahoo.com Mobile: 9900143297

Year-wise Structure (NEP 2020): Geography

Discipline Specific Courses (DSC) and Open Elective (OE)

II Year

Geography – III Sem									
Course Type, Code and Title		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L: T:P	C1	C2	C3		Marks
DSC(3)	Fundamentals of Human Geography -221344	4	0	4:0:2	20	20	60	2 $\frac{1}{2}$Hours	150
DSC(3)-Lab	Fundamental Techniques in Human Geography	0	4		10	15	25	3 Hours	
OE(3)	**(Any one to be opted)** 1. Geography of India 22OEGEO301 2. Application of GIS and Remote sensing 22OEGEO302	3	0	3:0:0	20	20	60	2 $\frac{1}{2}$Hours	100
Geography – IV Sem									
DSC(4)	India: Resources and Sustainability-221444	4	0	4:0:2	20	20	60	2 $\frac{1}{2}$Hours	150
DSC(4)-Lab	Representation of Indian Geographical features and resources.	0	4		10	15	25	3 Hours	

OE(4)	**(Any one to be opted)** 1. Geography of Karnataka 22OEGEO401 2. Population and settlement Geography 22OEGEO402	3	0	3:0:0	20	20	60	$2\frac{1}{2}$Hours	100

Syllabus DSC(3) Syllabus for B.A. Geography (Basic and Honors)

Semester III

Course Code: 221344	**Course Title:** Fundamentals of Human Geography (Theory) Fundamental Techniques in Human Geography (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 $\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs)

1. Associate and describe the basic concepts related to the History and evolution of Human Geography.
2. Interpret the concept of culture and cultural diffusion in the realm of Geography.
3. Analyze and describe the dynamics of geographical population and migration.
4. Analyze and demonstrate the nature of economic activities and human settlements.

Course Content

Content	Hours
UNIT - 1 Introduction to Human Geography	
1.1 Nature and scope, Development and Branches of Human Geography, 1.2 Themes in Geography: Location, Place, Human-Environment Interaction, Movement and Region. 1.3 Man- Environment Relation: Environmental Determinism and Possiblism, Neo- Determinism (stop and go determinism) 1.4 Approaches to Human geography: Exploration and Descriptive Approach, Regional Approach, Areal Differentiation Approach, Spatial organization Approach. Modern Approaches: Welfare or Humanistic Approach, Radical Approach, Behavioral Approach, Post Modernism in geography.	**14**
UNIT – 2 Cultural patterns and Processes	

2.1 Concept of culture, Material and Non-Material Culture, Cultural traits and Cultural regions. 2.2 Meaning and Definition of races, Classification of races, Main characteristics (traits) and Broad racial groups of the world and their distribution. 2.3 Languages: Classification and Distribution of languages. 2.4 Religion: Types, Classification and Distribution of religions: Hinduism, Christianity, Islam and Buddhism. **Assignment:** Each student is expected to prepare a brief report on the cultural composition of their own locality/ place/ village/ ward/town or neighborhoods through field Investigation and also can use published data.	**14**
UNIT – 3 Population and Settlements	
3.1 Distribution and Growth of Population; Factors affecting population Distribution. 3.2 Density of Population: Meaning and Types; Arithmetic Density, Physiological Density and Agricultural density, Regional Distribution of Density of Population; Carrying capacity and Sustainability 3.3 Concept of Settlements, Origin and evolution of Human settlements, Factors of settlements, origin and distribution, types and pattern of settlements, 3.4 Rural and Urban settlements, Trends and Patterns of World Urbanization. **Field Activity:** Students should study and identify the factors influencing on the origin and growth of the settlement and each student is expected to identify patterns of settlements by visiting nearest settlement. The students are advised to carry topographical map of the place during field visit.	**14**
UNIT - 4 Economic Activities	

4.1 Concept and Classification of Economic activities; Factors affecting Economic Activities. 4.2 Primary Economic Activities – Agriculture, Types: Primitive Subsistence, Intensive Subsistence, Plantation Agriculture, Extensive Commercial grain Cultivation, Mixed Farming, Dairy Farming. 4.3 Secondary Activities: Manufacturing, Classification – a. Based on size – Small Scale and Large scale. b. Based on Raw Material – Agro-based, Mineral based, Chemical Based and Forest based. 4.3.1. Industrial Regions of the world. 4.4 Tertiary Activities: Types: Trade and Commerce, Retail Trading Services, Wholesale Trading. Transport and communications: Factors. Communication Services – Telecommunication Services: Informal and Non formal sector. Information technology and service. **Case Study:** Students have to visit a village/a town nearby and observe the economic activities and understand different classes and identify the most dominant economic activities.	**14**

References:

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9) Siddhartha,K.(2000).Economic Geography: Theories, Process and Patterns, New

Delhi: Kisalaya Publications.
10) Smith,D.M.(1971).Industrial Location: An Economic Geographical Analysis, New York: John Wiley and Sons.

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1) A P Human Geography
2) https://ung.edu/university-press/books/introduction-to-human-geography.php
3) https://www.thoughtco.com
4) https://ncert.nic.in
5) https://vedantu.com

DSC (3)-Lab

Fundamental Techniques in Human Geography Practical

	Content of the Practical Course	Hours
Exercise 1	**Maps:** Definition, Elements of map: scale, direction, map projection, conventional signs and symbols, legend, Types of map: **1. Based on scale**: A. large scale: cadastral maps, Topographic maps, B. Small scale: wall maps, atlas maps, maps 2. **Based on purpose and content**: Physical Maps, Political Maps, Thematic Maps. Uses of Maps.	08
Exercise 2	**Map Scales:** Definition of Scale, Methods of representing Scales: Statement Method, Graphical Method, Ratio Method (R F).	08
Exercise 3	**Conversion of Scale**: Verbal to RF, RF to Verbal, Verbal to Graphical. Exercises on Measuring Distances on Map and converting map distance to ground distance.	08
Exercise 4 and 5	**Map Projections:** Meaning and Purpose, Latitudes and Longitudes, Classification of Map Projections and their general properties: Conical Projections, Cylindrical Projections, Zenithal Projections. UTM Projections. Choice of Map Projection.	08
Exercise 6	Drawing of conical projection with One Std. Parallel and Two Std. Parallels,	08
Exercise 7	Drawing of Cylindrical Equal Area Projection.	06
Exercise 8	Drawing of Zenithal Polar Gnomonic Projection.	06
Exercise 9	Introduction to UTM Projection, uses and importance.	04

References:

1. Dr.L.R.Singh (2010), Fundamentals Of Practical Geography, Sharda Pustak Bhavan,

Allahabad, India.
2. Pijushkanti Saha, Partha Basu (2013) Advanced Practical Geography
3. Ashis Sarkar (2015) Practical Geography: A Systematic Approach, Orient Black swan Pvt Ltd.
4. Rana Pb Singh Rl Singh (2018), Elements of Practical Geography. Kalyani Publishers
5. Dent B.D., 1999. Cartography: Thematic Map Design, (Vol. 1), McGraw Hill
6. Gupta K.K and Tyagi V.C., 1992. Working with Maps, Survey of India, DST, New Delhi.
7. Mishra R.P. and Ramesh A., 1989. Fundamentals of Cartography, Concept Publishing.
8. Monk house, F.J. and Wilkinson, H.R., 1971. Maps and Diagrams. Methuen and Co. Ltd., London. K.
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	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	-	2	2	1	-	-	-	2
CO2	2	2	1	1	-	2	2	1	1	-	-	2
CO3	2	2	1	1	-	2	2	1	1	-	-	2
CO4	2	2	1	1	-	1	2	1	1	-	-	2
Weighted Average	**2**	**2**	**1.25**	**1**	**-**	**1.75**	**2**	**1**	**1**	**-**	**-**	**2**

Course Articulation Matrix-221344

OE(3) Geography Syllabus for All Programs(Except Arts)

Semester III

Course Code: 22OEGEO301	**Course Title: Geography of India**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2 $\frac{1}{2}$ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

1. Acquire the knowledge of location, relief features, climate and vegetation of India.
2. Examine and interrelate the Irrigation and Agricultural systems in India.
3. Analyze the nature and challenges associated with natural resources and Industries in Indian context.
4. Describe the modes of transport and communication and analyze the dynamics of Human Population.

Course Content

UNIT - 1 Physical Basis	**12 HOURS**
1.1 Location, Size and Extent, Political Divisions 1.2 Relief Features-Northern Mountains, Northern Great Plain,The Peninsular Plateau and Coastal Plain and Islands 1.3 Climate: Seasons – Summer Season, South-West Monsoon, Retreating Monsoon Season, Winter Season, 1.4 Drainage system- Rivers of North India, Rivers of South India, 1.5 Vegetation - Types and Distribution- Afforestation programs	
UNIT - 2 Irrigation and Agriculture	**10 HOURS**
2.1 Irrigation: Need for Irrigation and Types 2.2 Soils- Types and Distribution, Issues and conservation 2.3Irrigation: Need for Irrigation and Types 2.4Agriculture: Significance and Types- Intensive and Extensive Farming, Subsistence and	

Mixed Farming

2.5Major Crops- Production and Distribution: Rice, Wheat, Cotton , Sugar cane and Tea, Development of Agriculture- Green Revolution

UNIT - 3 Minerals, Power and Industries **10 HOURS**

3.1Mineral and Power Resources-Types and Significance

3.2Production and Distribution: Iron Ore, Manganese

3.3Production and Distribution: Coal, Petroleum, Hydro Electricity

3.4Major industries- Iron and Steel, Cotton textile, Sugar.

3.5Major industrial regions of India

3.6Special Economic Zones

UNIT – 4 Transport, Communication and Human Population **10 HOURS**

4.1Roadways, Railways, Airways and Waterways.

4.2Important Ports: Calcutta, Chennai, Mumbai and New Mangalore.

4.3Indian Space Programme (Indian Communication Satellites)

4.4Growth of Population

4.5Distribution and Density of Population

4.6Population Composition – Sex Ratio, Literacy

4.7Population Issues

References:

1.Gopal Singh : Geography of India, Atmarama and Sons, New Delhi.

2.Hussain M,2014, Geography of India, Tata McGraw-Hill Education- New Delhi

3.ICAR: Cropping pattern in India,1974.

4.Mathur,S.M.: Physical Geology of India, NBT1991.

5.Ranganath : Regional and economic Geography of India (Kan.Ver) VidyanidhiPrakashana, Gadag,2020.

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8.Khullar D.R.2000, India a Comprehensive Geography ,Kalyani Publishers,Ludhiana.

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10.Tiwari R.C 2006, Geography of India, Prayag Pustak Bhawan, Allahabad,

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7. ISRO WEBSITE……..

Course Articulation Matrix-22OEGEO301

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	3	1	1	1	1	3

CO2	3	2	1	1	2	2	3	1	-	-	1	3
CO3	2	2	1	1	1	2	3	1	-	-	1	3
CO4	2	2	1	1	1	2	3	1	1	-	1	3
Weighted Average	**2.5**	**2**	**1.25**	**1.25**	**1.5**	**2**	**3**	**1**	**1**	**1**	**1**	**3**

OE(3) Geography Syllabus for All Programs(Except Arts)

Semester III

Course Code: 22OEGEO302	**Course Title: Application of GIS and Remote sensing**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration:2 $\frac{1}{2}$Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

5. Describe the basic concepts associated with the evolution of remote sensing.
6. Analyze the factors of remote sensing and their application in different areas.
7. Interpret the concepts, components and data structures in GIS.
8. Examine and describe the nature of Data analysis and its application in the context of GIS.

Course Content

UNIT – 1	**12 HOURS**
Remote Sensing; Concept, Definition, Evolution of Remote Sensing, Process of Remote sensing, EMR; Wave length, Frequency, Electromagnetic Spectrum; Bands, Atmospheric window, Interaction of EMR with atmosphere and surface. Spectral signature.	
UNIT – 2	**10 HOURS**
Remote Sensing Platforms, Orbit, Active and Passive Remote Sensing, Indian remote sensing satellites and launch vehicle's, Application of Remote Sensing in Agriculture, Disaster management, Urban studies, Coastal management and EIA.	
UNIT – 3	**10 HOURS**
Geographic information System; Definition, Development of GIS, Components of GIS, Data types; Spatial and Non-spatial data, Raster and Vector data models, Data Sources, errors, Data input methods; Manual and Automated.	
UNIT – 4	**10 HOURS**
Data Analysis; Buffer Analysis and its applications, Overlay functions, Query, Network Analysis, GIS Applications in urban monitoring & planning, Disaster Mitigation, Forestry, Wetland monitoring.	

References:

1.Lilles and Thomas M. & Kiefer Ralph: Remote Sensing and Image Interpretation Third Edition John Wiley

2.Campbell John B.: Introduction to Remote Sensing Taylor &Francis

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5.George Joseph: Fundamentals of Remote Sensing; Universities Press India Pvt Ltd, Hyderabad, India

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4. https://search.earthdata.nasa.gov/ Science data

5. https://www.class.ngdc.noaa.gov/

Course Articulation Matrix-22OEGEO302

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	2	1	2	-	-	-	-	2
CO2	2	2	2	2	2	2	2	1	1	-	1	2
CO3	2	-	2	-	2	1	2	-	-	-	1	2
CO4	2	2	3	2	2	2	2	1	1	-	-	2
Weighted Average	**2**	**2**	**2.25**	**1.66**	**2**	**1.5**	**2**	**1**	**1**	**-**	**1**	**2**

Scheme of Valuation for Practical Examinations- III Semester

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 isthe semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:Part-

  A Practical Exercises (C1): 10 marks

  Part-B Practical Exercises (C2): 10 marks + Record: 05 marks = 15 marks
- The student is evaluated for 25 marks in C3 as per the following scheme:

Assessment Criteria	Marks
Maps	04
Maps Scales	04
Conversion of Scales	04
Maps Projections	04
Drawing of Projection	09
Total	**25**

Syllabus DSC (4) Syllabus for B.A. Geography (Basic and Honors)

Semester IV

Course Code: 221444	**Course Title: India- Resources and Sustainability**(Theory) **Representation of Indian Geographical features and Resources** (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration:2 $\frac{1}{2}$Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

1. Associate and explain the different types and factors associated with Physical features in the Indian context.
2. Describe nature and interplay between water and agricultural resources
3. Analyze the origin, significance and challenges associated with Industries, transportation and communication in Indian context.
4. Analyze and interpret the nature and dynamics of Human resources.

Course Content:

Content	Hours
UNIT – 1 Physical Setting:	
1.1.Location, Size and Extent. Major Physiographic Regions-Northern Mountains, Northern Great Plains, Peninsular Plateau and Coastal Plains and Islands and their Characteristics; 1.2.Climate: Seasonal Weather Characteristics, Climatic Zones. Mechanism and Characteristics of Indian Monsoons. 1.3.Tropical Cyclones and Western Disturbances. 1.4.Floods and Droughts 1.5.Drainage System. 1.6.Soil: Types, Erosion and Conservation.	**14**

1.7.Vegetation: Types, Distribution, Afforestation programs, National Parks, Wildlife Sanctuaries, and Biosphere reserves.	
UNIT – 3 Industries, Transportation and Communication:	
3.1.Locational factors of industries, Major Industrial Regions and their characteristics	
3.2.Classification of Industries: Agro-based, Mineral-based, Forest-based and Animal-based industries.	**14**
3.3.Special Economic Zones: Industrial / Economic Corridor 3.4.Transport & Communication: Significance, Growth and Development– Road ways, Railways, Waterways, Airways and Pipeline Networks and their Complementary and Competition. 3.5.Communication: Means of Communication and their significance **Assignment:** Selecting a region students have to study the locational factors nearby industry and prepare a report.	**14**
UNIT – 2 Water and Agricultural Resources: 2.1.Water resources of India, Surface and Groundwater, Water Demand and Utilization. 2.2.Irrigation: Sources, Types and Intensity. Issues and Challenges: Water Resources Scarcity, Water Conservation and Management 2.3.Watershed Management, Rainwater Harvesting, Recycle and Reuse of water. Interlinking of Rivers. 2.4.National Water Policies, National Water Mission, Jalashakti Abhiyaan. Command Area Development and Water Management. Central Water Commission and Water Tribunal and their role. 2.5.Agriculture: Land Use and Cropping Pattern – Meaning and Concepts, Land Use and Cropping Patten in India, Agro-climatic Regions, Green Revolution – Causes and Effects, Hunger Index and Malnutrition; Food security and right to food to achieve Zero hunger and Good Health and Wellbeing	**14**
Unit – 4 Human Resources: 4.1. Growth, Distribution and Density of Population. 4.2. Composition of Population: Age, Sex, Rural-Urban Population Composition. 4.3. Migration: Meaning, Factors, Types, Causes and Consequences. 4.4. Human Development in India: Measures, Levels of Development based on HDI 4.5. Field Study: Selecting a region / district students have to examine the levels of Human Development using HDI and prepare a report.	**14**

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1. Majid Husain (2020) Geography of India, McGraw Hill Publishers
2. R.C. Tiwari (2016) Geography of India, Provolika Publications, Allahabad
3. D.R.Khullar (2019) India: A Comprehensive Geography ,Kalyani Publishers
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5. https://dpiit.gov.in/

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DSC(4)-Lab

Representation of Indian Geographical features and Resources

	Content of the Practical Course	Hours
Ex.No.1	Mapping exercises on Indian outline Map: International Boundaries, Mountain peaks, Passes, Glaciers and important Physical Divisions of India, Rivers, National Biospheres and National Parks, Dams and Reservoirs, Lakes and Water Bodies, Islands, National Waterways, Ports and Harbours, National High ways, Important Airports, Industrial Corridors, Important Coastal Zones and Beaches, Ecologically Sensitive areas, Important industrial zones, Special Economic Zones, Resource centres and Mining, Cultural Regions, Tribal Areas. **Note:** Each student is expected to complete at least 3 mapping exercises from the above topics which should cover brief description on: Location (Latitude and longitude, state, district, place,) geographic/environmental/ ecological/ political/ economic significance of the place/ location. Minimum 10 locations shall be involved in each exercise.	10
Ex.no.2 and 3,	Mapping Temperature and Rainfall Distribution of India / Karnataka using Isopleth method.	10
Ex.no.4 and 5	Mapping of Agro-climatic zones of India, Flood Prone and Drought Prone Areas	8
Ex. No.6 and 7	Mapping of Cropping Pattern and Crop intensity of India/ Karnataka. Weaver's Method, Bhatia's Method. Calculation and mapping of Irrigation intensity.	10
Ex.no.8	Human Development Index: Concept, Calculation and Mapping	6
Ex.no.9	Gender Development Index: Concept, Calculation and Mapping	6
Ex.no.10	Human Poverty Index: Concept and Calculation and Mapping	6

Reference:

1) Hartshorne,T.A.,&Alexander,J.W.(2010).EconomicGeography.NewDelhi:PHILearning.
2) Knox,P.,Agnew,J.,&Mc Carthy, L.(2008).The Geography of the World Economy. London: Hodder Arnold.
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4) Siddhartha,K.(2000).EconomicGeography:Theories,ProcessandPatterns,NewDelhi:KisalayaPublications.
5) Smith,D.M.(1971).Industrial Location: An Economic Geographical Analysis, New York: John Wiley and Sons.

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2. https://www.mapsofindia.com
3. https://en.wikipedia.org
4. https://kids.nationalgeographic.com
5. https://byjus.com › UPSC Preparation

Course Articulation Matrix - 221444

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	2	1	1	1	2	3
CO2	3	2	-	-	-	3	3	2	1	-	1	3
CO3	2	2	2	1	1	2	3	1	-	-	-	2
CO4	2	2	1	1	-	2	2	1	-	-	-	2
Weighted Average	**2.5**	**2**	**1.66**	**1.33**	**1.5**	**2.25**	**2.5**	**1.25**	**1**	**1**	**1.5**	**2.5**

OE(4) Geography Syllabus for All Programs(Except Arts)

Semester IV

Course Code: 22OEGEO401	**Course Title: Geography of Karnataka**	**Course**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)	
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40	
Exam Duration: $2\frac{1}{2}$ Hours (Theory)	**Semester End Examination Marks:** 60	

Outcomes (COs):

1.Acquire the knowledge of basic Physical features , climate and vegetation in reference to specific landscape of Karnataka.

2. Analyze the different aspects of Soil, Irrigation and Agriculture and their interrelation.

3. Examine the natural resources and their utilization in the Industries; especially in special Economic zones (SEZ's).

4.Analyze the emergence and growth of transport and Information technology in the context of Karnataka; and also describe the socio-demographics distinctly .

Course Content

UNIT - 1 Physical Background	**12 HOURS**
1.1.Location, size and Administrative divisions. 1.2.Physiographic Divisions: Coastal Regions, Malnad Regions and Maidan Regions. 1.3.Weather and Climate: Seasons, Distribution of Rainfall and Temperature, Climatic regions, Drought prone areas in Karnataka. 1.4.Drainage Systems: Major Drainage Systems in Karnataka. East flowing rivers and West flowing rivers. 1.5.Natural Vegetation: Types of vegetation, Distribution of forests in Karnataka, Protection and Conservations. Reserve Forests and Protected Forests in Karnataka, National Parks and Bird Sanctuaries in Karnataka.	
UNIT - 2 Soil, irrigation and Agriculture	**10 HOURS**
2.1.Soil: Types and Distribution, Regional Issues of Soil Quality and Management. 2.2.Water Resources: Distribution of Water Resources, Irrigation – Sources of irrigation, Multipurpose River Valley Projects. 2.3.River Water Disputes with the neighbouring states. 2.4.Agriculture regions of Karnataka. Major Food Crops – Paddy, Ragi, Maize, Pulses. 2.5.Commercial Corps – Cotton, Sugarcane, Tobacco, Coffee, Spices, 2.6.Livestock and Fishing. **Assignment**: Students need to visit local fields and get to know how soil conservation plans are prepared and submit report	

UNIT - 3 Minerals, Energy and Manufacturing:	**10 HOURS**
3.1. Major Mineral resources of Karnataka and their Regionalization. Iron ore, Manganese, Gold, Bauxite 3.2. Energy Resources: Types and their Distributions. Conventional and Non-Conventional Sources. 3.3. Industries: Textile Industries, Iron and Steel Industries, Sugar Industries. Industrial Regions and Special Economic Zones of Karnataka.	
UNIT –4. Transport, Information & Communication Technology and Population	**10 HOURS**
4.1.Transportation: Types, Distribution of Transportation. 4.2.Growth and Distribution of Information Technology in Karnataka. 4.3.Population Growth, Distribution and Density of Population. Population Composition – Sex Ratio, Literacy. Human Development in Karnataka (HDI)	

Reference:

1. Ranganath (2015), Geography of Karnataka, Publisher: Mysore Book House
2. S.S.Nanjannavar (2016), Geography of Karnataka, Prabhu publications
3. R. N. Tikka (2002),Physical Geography
4. MisraR.P(1969) Geography of Mysore State
5. SarmahDipak (2019), Forest of Karnataka-A Paronomic View, Notion Press
6. Director, Census Reports Published by Govt. of Karnataka
7. Karnataka State Gazetteer Volume- I & II

Websites:

1. https://ksrsac.karnataka.gov.in/

2. https://ksdma.karnataka.gov.in/english

3. https://raitamitra.karnataka.gov.in/english

4. https://www.karnatakatourism.org/tourism-department/

Course Articulation Matrix – 22OEGEO401

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	2	1	1	1	2	3
CO2	3	2	-	-	-	3	3	2	1	-	1	3
CO3	2	2	2	1	1	2	3	1	-	-	-	2
CO4	2	2	1	1	-	2	2	1	-	-	-	2
Weighted Average	**2.5**	**2**	**1.66**	**1.33**	**1.5**	**2.25**	**2.5**	**1.25**	**1**	**1**	**1.5**	**2.5**

OE(4) Geography Syllabus for All Programs(Except Arts)

Course Code: 22OEGEO402	**Course Title: Population and Settlement Geography**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

1. Understand the basic concepts of Socio- demographics in Population and Human Settlement.
2. Determine and explain the dynamics of human Demography.
3. Analyze of the interaction between man-environment and its influence on Human settlements.
4. Classify and interpret the nature and structure of Human settlements in rural and urban contexts.

Course Content

UNIT - 1 Population Geography	12 HOURS
1.1.Meaning, Definitions, Scope and nature of population geography 1.2.Global Population size and growth, Malthus Theory, Demographic Transition Theory 1.3.Over, Under and Optimum Population 1.4.Population Policies in the world – Social Well being, Quality of Life	
UNIT - 2 Population Dynamics	**10 HOURS**
2.1. Fertility – Measures and Distribution 2.2.Mortality – Measures and Distribution 2.3.Migration – Types, Causes and Consequences	
UNIT - 3 Settlement Geography	**10 HOURS**
3.1.Meaning, Definitions, nature and importance of settlement geography, 3.2.Origin of settlement, influencing factors 3.3.Site and situation of settlement – Stable and Unstable settlement	
UNIT –4. Classification of Settlements- Rural and Urban Settlements	**10 HOURS**
4.1.Rural Settlement – Types, Pattern, Functions 4.2.Rural-Urban Continuum and Fringe 4.3.Urban Settlement - Definition of urban place, Hierarchy, 4.4.Functional classification of towns, Concept of Urban morphology. 4.5. Primate City, Rank Size Rule	

References:

1.Alan Bowman and Andrew Wilson (2011), Settlement, Urbanization, and Population,

Oxford University Press, UK.

2.Chandna R.C (2011), Geography of Population, Kalyani publishers, Bangalore.

3.Izzi Howell (2019), Population and Settlement Geography (Geographics), Franklin Watts, UK.

4.John Pallister (2004), GCSE Geography: Human - Population and Settlement,Hodder Education Group, UK.

5.Majid Husain (2011) Human Geography, Rawat Publication, Jaipur.

6.Prithvish Nag, Debnath (2021), Population Geography, BharatiPrakashan, Bangalore.

7.Rama Yagya Singh (1994), Geography of Settlement, Rawat Publications, Jaipur

8.Sumita Ghosh (1998), Introduction to Settlement Geography, Orient Longman, Hyderabad.

Websites:

1.https://www.bdu.ac.in

2.https://www.thegeographeronline.net

3.https://lotusarise.com › introduction-to-settlement-

4.https://www.geographypods.com

5.https://en.wikipedia.org

6.http://www.rnlkwc.ac.in

Course Articulation Matrix – 22OEGEO402

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	1	-	3	3	1	-	-	-	2
CO2	2	2	2	1	1	2	2	2	-	-	-	2
CO3	2	1	1	1	2	-	2	2	1	-	-	2
CO4	2	2	2	2	1	2	2	1	-	-	1	3
Weighted Average	**2.25**	**1.66**	**1.66**	**1.25**	**1.33**	**2.33**	**2.25**	**1.5**	**1**	**-**	**1**	**2.25**

Continuous Formative Evaluation Internal Assessment/Exams-IV Semester

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester end Theory Examinations respectively and 50:50 for IA and Semester end Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the courses and within 45 working days of semester program

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc.

This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks forthe final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/ assignment /project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course Shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	10	10	20
Seminar/Presentation/Assignment/Activity	10		10
Case Study/Field Work/Project Work/Quiz etc.		10	10
Total	**20**	**20**	**40**

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the ratio is 25 (10 + 15):25).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decidedby the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencementof the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or

rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations III &IV Semester

- C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 isthe semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:Part-A Practical Exercises (C1): 10 marks

  Part-B Practical Exercises (C2): 10 marks + Record: 05 marks = 15 marks
- The student is evaluated for 25 marks in C3 as per the following scheme:

Assessment Criteria	Marks
Mapping Exercises	04
Distribution Maps	04
Climate Maps	04
Cropping pattern Maps	04
Human Index Maps	09
Total	**25**

DSC Theory and OE Question Paper Pattern

B.A GEOGRAPHY (For III and IV Semester) 2022 Onwards

Exam Duration: 2 $\frac{1}{2}$Hours **Max. Marks: 60**

Part-A

I. Answer any Four of the following questions. **4X3=12**

1).....

2).....

3).....

4).....

5).....

6).....

Part-B

II. Answer any Three of the following questions. **3X6=18**

7).....

8).....

9).....

10).....

11).....

Part –C

III. Answer any Three of the following questions. **3X10=30**

12)……

13)……

14)……

15)……

DSC Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** $2\frac{1}{2}$ Hours

Instructions: Paper Setting

The Theory exam shall be conducted for 60 Marks and it consists of 3 Sections namely

- The Question Paper is divided into 3 parts: Part – A, Part – B and Part- C
- Section A, Section B, Section C with internal choices. (Short, Medium and Long answer questions).
- Section A - Each question carries 3 marks and student has to answer 4 out of 6 questions.
- Section B - Each question carries 6 marks and student has to answer 3 out of 5 questions, and
- Section C - Each question carries 10 marks and student has to answer 3 out of 4 questions.

Open Elective Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** $2\frac{1}{2}$ Hours

Instructions: Paper Setting

The Theory exam shall be conducted for 60 Marks and it consists of 3 Sections namely

- The Question Paper is divided into 3 parts: Part – A, Part – B and Part- C
- Section A, Section B, Section C with internal choices. (Short, Medium and Long answer questions).
- Section A - Each question carries 3 marks and student has to answer 4 out of 6 questions.
- Section B - Each question carries 6 marks and student has to answer 3 out of 5 questions, and
- Section C - Each question carries 10 marks and student has to answer 3 out of 4 questions.

Education to Excel
SBRR Mahajana First Grade College (Autonomous)
Affiliated to University of Mysore, Accredited by NAAC with 'A' Grade,
College with Potential for Excellence
Jayalakshmipuram, Mysuru – 570 012

DEPARTMENT OF GEOGRAPHY

MOTTO: Down to Earth Awareness

VISION: To make a centre of excellence in Geographic information for a balanced development

MISSION: To spread the awareness of Geographic base and to develop Geographic consciousness among younger generations for understanding and creating a healthier Physical and Cultural Environment.

SYLLABI FOR V AND VI SEMESTER BA GEOGRAPHY

2021-22

B.A. Programme in Geography
Semester with Choice Based Credit System (CBCS)
Discipline Specific Electives

Semester	Course	Title of the Paper	Instruction Hrs (L:T:P)/ Week	Credit	Duration of Exam (Hrs.)	Marks		Total Marks
						IA (C1+C2)	Final Exam (C3)	
V	DSC-1-Theory	Economic Geography	3:0:0	3	3	10+10	80	100
	DSC-1a-Theory	Settlement Geography	3:0:0	3	3	10+10	80	100
	DSC-1b-Theory	Tourism Geography	3:0:0	3	3	10+10	80	100
	DSC-1-Practical	Interpretation of Topographical Maps	0:0:3	3	3	05+05	40	50
	DSC-1a-Practical	Indian Daily Weather Report & Socio-economic Survey-Project	0:0:3	3	3	05+05	40	50
VI	DSC-2-Theory	Environmental Geography	3:0:0	3	3	10+10	80	100
	DSC-2a-Theory	Regional Geography of Karnataka	3:0:0	3	3	10+10	80	100
	DSC-2b-Theory	Population & Political Geography	3:0:0	3	3	10+10	80	100
	DSC-2-Practical	Surveying	0:0:3	3	3	05+05	40	50
	DSC-2a-Practical	GIS-Geographical Information System	0:0:3	3	3	05+05	40	50
GENERIC ELLECTIVE								
V	GE - 1	Introduction to Physical Geography	2:0:0	2	2	05+05	40	50
	GE - 2	Regional Geography of the World	2:0:0	2	2	05+05	40	50
VI	GE - 3	Introduction to Human Geography	2:0:0	2	2	05+05	40	50
	GE - 4	Regional Geography of India	2:0:0	2	2	05+05	40	50

B.A GEOGRAPHY

Discipline Specific Elective Papers (3 Compulsory Papers)

V Semester, DSE-1 (Paper – I)

Economic Geography

Choice Based Credit System (CBCS)

Subject Code: 211516
Teaching Hours: 09 hrs (Theory- 3hrs + Practical – 3+3= 06 hrs), Credit 3:0:3,
Total Credits = 06 (Total Number of Working Hours-48)

Course objectives:

- Highlight the importance of Economic Geography in analyzing contemporary societies and Economies
- Provide a comprehensive introduction to basic concepts and key theoretical approaches in Economic Geography
- Introduce Economic Geography as a dynamic, diverse and contested body of knowledge
- Enable you to apply this knowledge to key Social and Economic issues in the context of economic globalization
- Encourage you to think about policy options for overcoming inequality and uneven development in the globalizing world.

Course / Learning outcomes:

Students will

- Explain the importance of Economic Geography in analyzing the ways societies and economies work
- Explain and apply key concepts and theoretical approaches in Economic Geography
- Discuss and critically evaluate these concepts and theoretical approaches
- Apply these concepts and theoretical approaches to key Social and Economic issues in the context of economic globalization
- Discuss policy options for overcoming inequality and uneven development in the globalizing World.

Module-1: 08 Hours

i) **Economic Geography**- Definition, Scope and Field
ii) Evolution of Economic Geography

Module-2: 12 Hours

i) **Resources** - Concept and Characteristics
ii) Classification- Conservation and Management

Module-3: **16 Hours**

i) **Agriculture**-Agricultural types
ii) Agricultural Regions -Von Thunen's Agricultural Location Theory
iii) Crops -Rice and Wheat, Cotton and Sugar Cane, Coffee and Tea

Module-4: **12 Hours**

i) **Industries**- Factors of Location – Weber's Theory
ii) Industrial Regions of the World
iii) International Trade – Basis, Pattern and Trends

Books for Reading

1. Economic Geography: Alexander and Hartshorne
2. A New approach to Economic Geography: Guha and Chattoraj
3. World Resources and Trade: Khanna and Gupta
4. Economic Geography (Kan.Ver): Mallappa
5. Advanced Economic Geography: Alka Goutham

Books for References

1. Alexander and Hartshorne: Economic Geography Prentice-Hall, III ed. 2000.
2. Guha and Chattoraj: A New approach to Economic Geography.
3. Khanna and Gupta: World Resources and Trade, S.Chand and Company, New Delhi.
4. Mallappa: Economic Geography (Kan.Ver), Chetana Book House, Mysore 2001.
5. Ranganath: A Geography of Industrial Resources, Vidyanidhi Prakashna, Gadag 2001.

Web links and Video Content

1. https://www.sciencedirect.com
2. http://geog.ufl.edu
3. https://www.tandfonline.com
4. https://onlinelibrary.wiley.com
5. https://www.springer.com

B.A GEOGRAPHY

Discipline Specific Elective Papers (3 Compulsory Papers)

V Semester, DSE-2 (Paper – II)

Settlement Geography

Choice Based Credit System (CBCS)

Subject Code: 211526
Teaching Hours: 09 hrs (Theory 3hrs + Practical – 3+3= 06 hrs), Credit 3:0:3,
Total Credits = 06 (Total Number of Working Hours-48)

Course objectives:

- Describe the meaning of Settlement
- Identify various types of Rural Settlements
- Describe various house types in India
- Establish the relationship between house types with Relief, Climate and Building materials
- Analyze the distributional patterns of Rural and Urban Settlements
- Explain functional classification of Urban Settlements as given by census of India.

Course / Learning outcomes:

Students will

- Understand why people settle in certain areas
- Understand how Ecosystems influence community development
- Understand the needs of humans and how these needs impact the Physical Environment.

Module-1: 10 Hours

i) Meaning, Field and Scope of Settlement Geography
ii) Development of Settlement Geography

Module-2: **12 Hours**

i) Rural Settlements - Definition, Classifications based on Site, Situation, Shape and Features
ii) Rural Settlement types of India

Module-3: **14 Hours**

i) Housing types- Evolution of Dwellings, influencing factors
ii) Construction Materials, Roofing types
iii) Housing types in India with Suitable examples

Module-4: **12 Hours**

i) Urban Settlements – Definition, Location and Situation, Types of Urban Settlements
ii) Primate city Concepts, Central Place theory of Christaller

Books for Reading

1. The study of Urban Geography: Harold Carter
2. Principles of Human Geography (Kan. Ver.): Dr. Ranganath
3. Geography of Settlements: Singh. R.Y
4. Introduction to Human Geography: Dickens and Pitts

Books for References

1. Rubenstein J.M: An Introduction to Human Geography, Macmillan Publishing Company, 1992
2. Harm d. Blij : Human and Economic Geography, Mac Millan, New York, 1992
3. Hussain M: Human Geography, Rawat Publications, Jaipur, 2003
4. Nellson, Gabler & Vining: Human Geography, People, Cultures and Landscapes, 1995

Web links and Video Content

1. https://www.thegeographeronline.net
2. https://mu.ac.in/wp-content
3. https://www.oxfordbibliographies.com
4. https://www.tandfonline.com
5. https://www.jstor.org

B.A GEOGRAPHY

Discipline Specific Elective Papers (3 Compulsory Papers)

V Semester, DSE-3 (Paper – III)

Geography of Tourism

Choice Based Credit System (CBCS)

Subject Code: 211536
Teaching Hours: 09 hrs (Theory 3hrs + Practical – 3+3= 06 hrs), Credit 3:0:3,
Total Credits = 06 **(Total Number of Working Hours-48)**

Course objectives:

- Creating Employment - direct and indirect
- Increasing Foreign Currency Earnings
- Economic Development and Regeneration
- Environmental Education
- To Promote understanding of different cultures
- Creating a Regional or National identity

Course / Learning outcomes:

Students will

- Able to describe the Tourism Geography and cognitive framework related to the Tourism Geography and will be able to explain the importance of strategy and planning to improving sustainable Tourism
- Able to evaluate the natural Geographic Resources and classes of Tourism.
- Recognizes the global Tourism Regions
- Acquire an understanding of and appreciation for the relationship between Geography and Culture
- Develop the ethical aptitudes and dispositions necessary to acquire and hold leadership positions in Industry, Government and Professional organizations

Module-1: **12 Hours**

i) Tourism- meaning, scope and importance of Geography of Tourism
ii) Evolution and significances of Tourism

iii) Factors influencing on Tourism-Geographical, Cultural, Political and Social

Module-2: **12 Hours**

i) Types of Tourism- Domestic and Foreign –Recreational, Religious, Eco-Tourism, Ethnic Tourism etc
ii) Major Tourist Centers in India

Module-3: **12 Hours**

i) Tourism and Sustainable Development
ii) Tourism infrastructure- Accommodation-Types of Accommodation, Communication, Transportation-Road, Rail, Air and Water ways

Module-4: **12 Hours**

i) Tourism Planning and development, marketing advertisement -Hospitality - Associated problems, Accessibility and resources, Financial problem and Resources
ii) Impact of Tourism- Economic and Social

Books for Reading

1. Indian Tourism, Bezbaruah M P
2. Tourism and the Environment, Batta. N
3. Domestic Tourism in India, Bhardwaj & Kandan Chaudhary

Books for References

1. Jagmohannegi and Gaurav N Manohar: Tourism-India, 50 years of Independence, 1947
2. Manohar Sajani: Encyclopedia of Tourism Resources in India Gyan publications, 2001, New Delhi
3. GoswamiV.K: Tourism in India, Gyan Publications, 1987
4. Manoharsajani: Tourism and Growth, Management and incentives, Gyan Publications 2002

Web links and Video Content

1. https://www.cukashmir.ac.in
2. https://www.tandfonline.com
3. https://www.tandfonline.com

V SEMESTER

Practical Paper-V

Interpretation of Topographical Maps

(Teaching hours: 03 hrs, Total Credits: 1.5)

Module-1:

i) Topographical Maps – Importance, Types of Topographical Maps based on Scale.

Module-2:

i) Conventional Symbols – Meaning – Importance, Conventional Symbols of Physical and Cultural Phenomena

Module-3:

i) Marginal Features of the Topographical Maps

Module-4:

Interpretation of the Topographical maps under the followings:
i) Relief features
ii) Drainage Pattern
iii) Natural Vegetation and Land Use
iv) Settlements, Transportation and other Cultural features.

References

1.Singh. R.L: Elements of Practical Geography, Kalyani Publishers, New Delhi, 1991
2. Gopal Singh: Map Work and Practical Geography, III ed, Vikas Publishing House, New Delhi,
3. Mishra R.P: Fundamentals of Cartography, 1969, Prasaranga, University of Mysore, Mysore.
4. Monkhouse F.J and Maps and Diagrams
5. D.R.Khullar : Essentials of Practical Geography., New Academic Publishing, Mai Hiran Gate, Jalandhar, 2003
6. Practical Geography (Kannada Version), S.S.Nanjannanavara

V SEMESTER

Practical Paper-VI

Indian Daily Weather Reports

(Teaching hours: 03 hrs, Total Credits: 1.5)

Module-1:

i) Introduction to Indian daily Weather Maps
ii) Conventional Signs and Symbols of Weather Maps

Module-2:

Interpretation of Indian Weather Reports under the following:
i) Rainy season
ii) Winter season
iii) Summer season

Module-3:

Project Work: Socio- Economic Survey of the Village

OR

Industrial Visit Report

References:

1.Singh. R.L: Elements of Practical Geography, Kalyani Publishers, New Delhi, 1979
2. Gopal Singh: Map Work and Practical Geography, III ed, Vikas Publishing House, New Delhi
3. Gupta K.K and Tyagi V.C: Working with maps, Survey of India, Department of Science and Technology, Govt of India, Dehra Dun 1992.
4. Mishra R.P : Fundamentals of Cartography**,** 1969, Prasaranga, University of Mysore, Mysore.
5. Monkhouse F.J and Maps and Diagrams
6. Wilkinson H.R: Mathuen and Co, Ltd., London, 1952.
7. D.R.Khullar : Essentials of Practical Geography, New Academic Publishing, Mai Hiran Gate, Jalandhar, 2003

B.A GEOGRAPHY

Discipline Specific Elective Papers (3 Compulsory Papers)

VI Semester, DSE-1 (Paper – IV)

Environmental Geography

Choice Based Credit System (CBCS)

Subject Code: 211616
Teaching Hours: 09 hrs (Theory 3hrs + Practical – 3+3= 06 hrs), Credit 3:0:3,
Total Credits = 06 (Total Number of Working Hours-48

Course objectives:

- To Understand its interrelationship with man and his linkages with other organisms, which varies in different Biomes
- To Sensitize the students with the Environmental problems and degradations
- Understands the core Geographic lexicon and basic concepts in the human, Environmental and Geospatial information science disciplinary streams
- To define Geography and be able to describe in good detail the major subdivisions of the field of Geography; explain what geographers do and how Geography relates to a variety of real-world jobs

Course / Learning outcomes:

Students will

- Gain factual knowledge about the world and its regions focusing on the diversity of natural and cultural landscape features, and they will know some basic principles, definitions, and themes in the subject matter of geography
- Attain increased global awareness and become more geographically-informed people.
- Collect and analyze geographical data and interpret its significance within the context of the Biophysical Environment and surface processes.
- Learn the importance of conserving Biodiversity to maintain ecological balance as well as National and International concerns on various Environmental issues.

Environmental Geography

Module-1: **12 Hours**

i) Meaning, Field and Scope of Environmental Geography
ii) Concept and Components of Environment
iii) Interdisciplinary Nature of Environmental Geography

Module-2: **12 Hours**

i) Meaning of Ecology and Ecosystem-Types- Functions
ii) Energy Flow, Ecological Pyramids, Bio- Geo Chemical Cycles

Module-3: **14 Hours**

i) Environmental Pollution -Meaning, Types, Causes and Consequences of Pollution
   a) Air Pollution
   b) Water Pollution
   c) Noise Pollution
ii) Natural Hazards and Degradation of Environment –Volcanoes, Earthquakes and Cyclones, Depletion of Ozone layer, Green house effect, Climate change

Module-4: **10 Hours**

i) Conservation and Management of Environment -Role of International and National Polices- Role of UNO, Rio Summit declarations

Books for Reading

1. Environmental Pollution Consequences and Measures: Chaurasia. B.P
2. Environmental Geography: Saxena, H.M
3. Ecology and Environment: Sharma P.D
4. Environmental Geography: S.S. Nanjannanavar (Kan.Version)

Books for References

1. Agarwal K.C: Environmental Biology, Nidhi Publishers Ltd, 2001
2. MathurH.S: Environmental Resources; The crisis of Development
3. OdumE.P: Fundamentals of Ecology, WB Saunders Co, London, 1971
4. Dash M.C: Fundamentals of Ecology, Tata McGraw Hill New Delhi 2002

Web links and Video Content

1.https://patnawomenscollege.in
2. https://byjus.com/biology/ecosystem
3. http://www.pcpolytechnic.com/mechanical
4. http://egyankosh.ac.in/bitstream

B.A GEOGRAPHY

Discipline Specific Elective Papers (3 Compulsory Papers)

VI Semester, DSE-2 (Paper- V)

Regional Geography of Karnataka

Choice Based Credit System (CBCS)

Subject Code: 211656
Teaching Hours: 09 hrs (Theory 3hrs + Practical – 3+3= 06 hrs), Credit 3:0:3,
Total Credits = 06 (Total Number of Working Hours-48

Course objectives:

- Critically Analyze current and historical cultural concepts effecting different regions of the Karnataka and the inter-relationships between these regions.
- Assess current Socio-Economic, Cultural and Political issues resulting from the interactive and opposing forces of homogenization and diversification.
- Examine Geographic factors that have influenced the student's life on a global, national and local level.

Course / Learning outcomes:

Students will

- Analyze how varying conditions of the physical and/or cultural environment contribute to human diversity.
- To help the students to understand the recent trends in regional studies

Module-1: **14 Hours**

i) Physical Setting - Location, Size and Extent
ii) Relief Features
iii) Climate
iv) Rivers
v) Soils
vi) Vegetation

Module-2: **10 Hours**

i) Major River Valley projects of Karnataka - Krishna and Cauvery River basins
ii) Major Agricultural Regions – Major Crops- Dairy farming

Module-3: **06 Hours**

i) Minerals – Iron ore and Manganese
ii) Industries – Silk, Sugar

Module-4: **10 Hours**

i) Population- Growth and Density, Sex- ratio
ii) Urbanization, Trends and Patterns

Module-5: **08 Hours**

i) Transportation – Roads, Railways, Ports and Harbours
ii) Important Major Tourist Centers

Books for Reading

1. Regional Geography of Karnataka: Dr. Ranganath
2. Regional Geography of Karnataka, (Kan.Ver): Dr. Ranganath
3. Geography of Karnataka (Kan.Ver): Mallappa

Books for References

1. Karnataka State Gazetter, 2 Volumes
2. Misra R.P: Geography of Mysore State
3. NBK Reddy and Murthy G.S: Regional Geography of Mysore State

Web links and Video Content

1. https://en.wikipedia.org/wiki/Geography_of_Karnataka
2. https://www.karnataka.com/profile/physiography
3. https://www.britannica.com/place/Karnataka-state-India
4. https://www.globalsecurity.org/military/world/india/karnataka-geography.htm

B.A GEOGRAPHY

Discipline Specific Elective Papers (3 Compulsory Papers)

VI Semester, DSE-3 (Paper- VI)

Population and Political Geography

Choice Based Credit System (CBCS)

Subject Code: 211666

Teaching Hours: 09 hrs (Theory 3hrs + Practical 3+3 = 06hrs), Credit 3:0:3,

Total Credits = 06 **Total Number of Working Hours-48**

Course objectives:

- It Introduces the Spatial Distribution of Population with causative factor.
- It deals with various theories and concepts related with Population
- It deals Population Policies in developed & developing countries
- Analyze the Concepts in contemporary political Geography, including the State, the Nation, Territory, Boundaries
- Analyze how human agency interacts with the Physical Environment to shape and reshape Political Geographic outcomes

Course / Learning outcomes:

Students will

- Understand the distribution of Population.

- Population distribution and its problems
- Understand Population policies & its importance.
- Students aware about the Population Policies

Module-1: **12 Hours**

i) Population Geography -Evolution, Nature and Scope
ii) Sources of Population data.

Module-2: **12 Hours**

i) Population Growth – Distribution, Density and Demographic Cycle
ii) Migration-Causes- Types and Consequences

Module-3: **12 Hours**

i) Population Composition - Literacy, Age Structure, Sex-ratio, Life expectancy, Rural -Urban Occupation

Module-4: **12 Hours**

i) Elements of Political Geography – State and Nation, Frontiers, Boundaries and Buffer Zones
ii) Heart land and Rim land theory

Books for Reading

1. Political Geography, Norris and Haring
2. Political Geography, Dixit. R.D
3. Principles of Human Geography, Ranganath

Books for References

1. Chandna. R.C: Geography of Population, Kalyani Publishers, New Delhi, 2008
2. Mohammad: Population Geography, Rawat Publications, New Delhi, 2008
3. Sudeepta Adhikari; Political Geography of India, Sharada Publication, Allahabad,

Uttar Pradesh

Web links and Video Content

1. https://www.researchgate.net
2. http://www.eolss.net/sample-chapters
3. https://ncert.nic.in/ncerts
4. https://ncert.nic.in/textbook
5. https://researchguides.dartmouth.edu
6. https://www.merriam-webster.com

VI SEMESTER

Practical Paper – VII

Surveying

(Teaching hours: 03 hrs, Total Credits: 1.5)

Module-1:

i**) Surveying** – Meaning, Importance and Types of Surveying

Module-2:

i) **Plane Table Surveying** – Radiation and Intersection

Module-3:

i) **Prismatic Compass Surveying** – Radiation and Intersection

Module-4:

i) **Chain Surveying** – Types of Chains - Triangulation

References:

1. Singh. R.L: Elements of Practical Geography, Kalyani Publishers, New Delhi, 1979
2. Mishra R.P:Fundamentals of Cartography,1969, Prasaranga, University of

Mysore, Mysore
3. Punmia. B.C, Jain: Surveying, Laxmi publications (p) Ltd, New Delhi, 2005
4. Singh. L.R:Practical Geography, Sharada Pustak Bhavan, Alahabad, 2009
5. Burrough P.A: Principles of GIS, OUP, 1998.
6. Star J.C and J.E: Geographic Information Systems, An introduction
7. Kang-Tsung-Chang: Introduction to Geographic Information Systems, Tata McGraw – Hill, New Delhi – 2008
8. Tor Bernardsen: Geographic Information System, Wiley, New Delhi-2002.
9. Prithvish Nag and Smitha Guptha: Geographical Information System, Concept, New Delhi- 2007,

VI SEMESTER

Practical Paper – VIII

Geographical Information System (GIS)

(Teaching hours: 03 hrs, Total Credits: 1.5)

Module-1:

i) GIS - Meaning, Scope and Components of GIS
ii) Spatial data entities – Point, Line, Polygon
iii) Source of Spatial data – Topographical Maps, Aerial Photographs, Satellite imageries

Module-2:

i) Spatial data structure and Management - Vector data Structure, Raster data structure,
ii) Creating database

Module-3:

i) Creating maps – Digitization-Creating database, Creating Thematic maps

Module-4:

i) **MAPINFO SOFTWARE**

References:

1.Singh. R.L:Elements of Practical Geography**,** Kalyani Publishers, New Delhi, 1979, Dehra Dun, 1992.
2. Mishra R.P : Fundamentals of Cartography,1969, Prasaranga, University of Mysore, Mysore
3. Punmia. B.C, Jain: Surveying, Laxmi publications (p) Ltd. New Delhi – 2005
4. Singh. L.R:Practical Geography, Sharada Pustak Bhavan, Alahabad, 2009
5. Burrough P.A: Principles of GIS, OUP, 1998.
6. Maguire D.J: Computer in Geography. Longman, London 1989.
7. Star J.C and J.E: Geographic Information Systems, An introduction
9. Tor Bernardsen : Geographic Information System, Wiley, NewDelhi – 2002.
10. Prithvish Nag & Smitha Guptha: Geographical Information System, Concept, New Delhi, 2007

B.A GEOGRAPHY

Generic Elective (2 Compulsory Paper)

B.A V- Semester GE- 1 (Paper – I)

Introduction to Physical Geography

Choice Based Credit System (CBCS)

Subject Code: 211583

Teaching Hours: 02 hrs, Credit 2:0:0, Total Credits = 02

Total Number of Working Hours-32

Module-1: **08 Hours**

i) Meaning, Field and Scope of Physical Geography
ii) Solar System – Movements of the Earth and effects
iii) Rocks and their types

Module-2: **08 Hours**

i) Weathering and Types
ii) Denudation – Elements and Factors

Module-3: **10 Hours**

i) Atmosphere.
ii) Weather and Climate.
iii) Temperature and Pressure
iv) Winds and their types

Module-4: **06 Hours**

i) Hydrosphere
ii) Ocean Currents
iii) Temperature and Salinity

Books for Reading

1. Principles of Physical Geography: Majid Hussain
2. Physical Geography, (Kannada Version): Mallappa, P
3. Physical Geography: R.N. Tika
4. Physical Geography: Alan H. Strahler

Books for References

1.Dasagupta and Kapoor: Principles of Physical Geography, S.Chand and Co, New Delhi, 2001
2.Mallappa, P: Physical Geography, (Kannada Version)- Chethana Book House, Mysore 2000.
3.Ranganath: Principles of Physical Geography, (Kannada Version), Vidhyanidi Publication, Gadag, 2003.
4. Savindra Singh: Physical Geography, Pravag, Pustak Bhavan, Allahabad-1998.

Web links and Video Content

1.https://courses.lumenlearning.com
2. https://ncert.nic.in
3. https://www.britannica.com/science/physical-geography-science
4. https://www.oxfordbibliographies.com

B.A GEOGRAPHY

Generic Elective (2 Compulsory Paper)

B.A V- Semester GE- 2 (Paper- II)

Regional Geography of the World

Choice Based Credit System (CBCS)

Subject Code: 211586

Teaching Hours: 02 hrs, Credit 2:0:0, Total Credits = 02

Total Number of Working Hours-32

Module-1: **06 Hours**

i) Political Division of the World- Continents, Oceans and Seas
ii) Rivers

Module-2: **10 Hours**

Natural Regions of the World - Classification, Major Regions with reference to location, Extent places, Climatic, Vegetation, Animal life and Human activities with reference to-

i) Equatorial
ii) Monsoon
iii) Mediterranean
iv) Grassland
v) Hot and Cold Deserts
vi) Tundra Regions

Module-3: **10 Hours**

i) Economic activities -Agricultural types
ii) Mines- Iron ore and Manganese
iii) Power Resources- Coal, and Petroleum.
iv) Industry- Location factors
v) Industrial Regions

Module-4: **06 Hours**

i) Population - Distribution
ii) Transportation - Continental Railways, Ocean Routes

Books for Reading

1. World Geography: Husain M
2. Regional Geography of world: Dr. Ranganath
3. Economic Geography: Hartshorn T. A
4. Principles of Human Geography: Dr. Ranganath

Books for References

1. Heintzelman and High Smith: World Regional Geography, Prentice Hall, New Delhi 1965.
2. Tikkha, Bali, Sekhon : World Regional Geography, New Academic Publishing Company, Jalandhar, 2002
4. Hartshorn.T.A and Alexander. J.W: Economic Geography, PHI, New Delhi, 2009

Web links and Video Content

1. https://worldgeo.pressbooks.com
2. https://open.umn.edu
3. https://open.umn.edu
4. https://resources.saylor.org
5. https://courses.lumenlearning.com

B.A GEOGRAPHY

Generic Elective (2 Compulsory Paper)

B.A VI Semester GE- 3 (Paper- III)

Introduction to Human Geography

Choice Based Credit System (CBCS)

Subject Code: 211693

Teaching Hours: 02 hrs, Credit 2:0:0, Total Credits = 02

Total Number of Working Hours-32

Module-1: **08 Hours**

i) Meaning and Scope of Human Geography
ii) Approaches of Man-Environment Relationship
iii) Environmental Determinism, Possibilism

Module-2: **10 Hours**

Culture and Cultural Diffusion –
i) Race
ii) Religion
iii) Language

Module-3: **07 Hours**

Major Primitive Tribes of the World-Eskimos, Kirghiz, Todas, Bushman

Module-4: **07 Hours**

i) Population - Growth -Demographic Cycle
ii) Migration- Causes and Effects

Books for Reading

1. Introduction to Human Geography: Dickens and Pitts
2. Human Geography: Hussain. M
3. Principles of Human Geography (Kan. Ver.) : Dr. Ranganath

Books for References

1. Harm d. Blij : Human and Economic Geography, Mac Millan, New York, 1992.
2. Nelson, Gabler&Vining : Human Geography, People, Cultures and Landscapes,1995.
3. Peter Daniels, Michael Bradshaw, Denis Shaw, James Sidaway: Human Geography, Issues for the 21st Century , Pearson 2003.
4. Norris and Haring : Political Geography, Charles. E. Merill Publishing Company.
5.Rubenstein J.M: An Introduction to Human Geography, Macmillan Publishing Company

1992

Web links and Video Content

1. https://sccollege.edu
2. https://ncert.nic.in
3. https://www.lkouniv.ac.in
4. https://open.umn.edu
5. https://www.researchgate.net

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B.A GEOGRAPHY

Generic Elective (2 Compulsory Paper)

B.A VI Semester GE- 4 (Paper- IV)

Regional Geography of India

Choice Based Credit System (CBCS)

Subject Code: 211696

Teaching Hours: 02 hrs, Credit 2:0:0, Total Credits = 02

Total Number of Working Hours-32

Module-1: **10 Hours**

i) Location and extent
ii) Physical features
iii) Rivers
iv) Climate
v) Soils
vi) Natural Vegetation

Module-2: **06 Hours**

i) Population - Growth and Distribution, Diversity

Module-3: **08 Hours**

i) Agriculture - Major crops
ii) Mineral Resources- Iron ore, Manganese
iii) Power Resources- Coal, Petroleum

Module-4: **08 Hours**

i) Industries -Iron and Steel, Cotton textiles
ii) Industrial Regions

Books for Reading

1. India a Comprehensive Geography: Khullar D.R.
2. Regional and Economic Geography of India (Kan.Ver) : Dr. Ranganath
3. A Geography of India: Gopal Singh

Books for References

1. ICAR : Cropping pattern in India, 1974.
2. Mathur, S.M.: Physical Geology of India, NBT 1991.

3. RanjitThirtha : Geography of India, Raniat, Jaipur 1996.
4. Tiwari R.C: Geography of India, PrayagPustakBhawan, Allahabad 2 ed. 2003.

Web links and Video Content

1. https://byjus.com
2. https://www.kopykitab.com
3. https://data-flair.training
4. https://www.jagranjosh.com
5. https://www.examrace.com

ANNEXTURE- I

PROFORMA OF INSTRUCTION AND EXAMINATION UNDER CHOICE BASED CREDIT SEMESTER SYSTEM (CBCSS) AND CONTINUOUS ASSESSMENT GRADING PATTERN (CAGP)
OF THE OPTIONAL SUBJECT GEOGRAPHY B.A PROGRAMME

INTERNAL ASSESSMENT/ EXAMS -5th and 6th Semester

For Theory:

C1= One Assignment/Seminar/Presentation 5 Marks and One test 5 Marks.

C2= One Assignment/Seminar/Presentation 5 Marks and One test 5 Marks.

C3= 80 Marks Three hours Semester Examinations.

For Practical:

C1= Performance of Student at every exercise 5 Marks and test for 5 Marks.

C2= Performance of Student at every exercise 5 Marks and test for 5 Marks.

C3= 40 Marks, out of that (30+10) Marks for Semester exams.

C3 Component of the Practical's will be conducted with two Examiners of whom, at least one is an external examiner. (03 Hours Exams)

Generic Elective:

C1= One Assignment/Seminar/Presentation 5 Marks.

C2= One Assignment/Seminar/Presentation 5 Marks.

C3= 40 Marks Two hours Semester Examinations.

(ANNEXTURE- III)

DEPARTMENT OF GEOGRAPHY

MODEL QUESTION PAPER FOR UNDER CHOICE BASED CREDIT SEMESTER SYSTEM (CBCSS) AND CONTINUOU ASSESSMENT GRADING PATTERN (CAGP) OF THE OPTIONAL SUBJECT GEOGRAPHY B.A PROGRAMME

B.A GEOGRAPHY (For 5th and 6th Semester) 2021 Onwards

Time: 03 Hours **Max. Marks: 80**

Part-A

I. Answer any Five of the following questions. **5X2=10**

1)……
2)……
3)……
4)……
5)……
6)……
7)……

Part-B

II. Answer any Six of the following questions. **6X5=30**

8)……
9)……
10)……
11)……
12)……
13)……
14)……
15)……

Part –C

III. Answer any Four of the following questions. **4X10=40**

16)……
17)……
18)……
19)……
20)……
21)..... …….

(ANNEXTURE- III)

DEPARTMENT OF GEOGRAPHY

GENERIC ELECTIVE GEOGRAPHY B.A PROGRAMME

For 5th and 6th Semester 2021 Onwards

Time: 02 Hours **Max. Marks: 40**

Part-A

I. Answer any Five of the following questions. **5X2=10**

1)……
2)……
3)……
4)……
5)……
6)……
7)……

Part-B

II. Answer any Four of the following questions. **4X5=20**

8)……
9)……
10)……
11)……

12)……
13)……

Part –C

III. Answer any One of the following questions. **1X10=10**

14)……
15)……

DEPARTMENT OF HINDI

Motto/लक्ष्य

हिन्दी के माध्यम से एकता Unity Through Hindi

VISION/दृष्टि

निज भाषा उन्नति अहै,सब उन्नति को मूल।

बिन निजभाषा ज्ञान के, मिटत न हिय को सूल॥

Progress Through Language

MISSION/कार्य

- भाषा के शुद्ध एवं सही ज्ञान के साथ संप्रेषण क्षमता को बढाना।
- भाषा एवं साहित्य के विविध आयामों को विद्वानों के व्याख्यानों द्वारा समझाना।
- देश एवं समाज के प्रति सक्षम नागरिक बनाने की ओर कार्यरत रहना।

Program Outcomes (POs) for Bachelor of Science/Arts/Commerce/Managements/BCA

PO 1: Domain Knowledge

PO 2: Problem Analysis

PO 3: Design and Development of Solutions

PO 4: Investigation & Research

PO 5: Use of Modern Techniques/Tools

PO 6: Impact on Society

PO 7: Environment and Sustainability

PO 8: Moral and Ethical Values

PO 9: Individual and Team Work with Time Management

PO 10: Communication

PO 11: Project Management and Finance

PO 12: Life-long Learning

Objectives: HINDI LANGUAGE

Course Learning Outcomes

- Hindi was adopted as an official Language in Indian Constitution with Devanagari Script.
- Students are going to learn as a Language and they will know about Hindi Literature and writers of Hindi.
- Students will learn better Communication Skills through different types of Hindi Literature and Usage of Language.
- In the era of Globalization Students will get good opportunity for Livelihood through better Hindi Communicative Skills.
- By reading Hindi Literature Students will adopt moral values, life skills. Ethics.

- भारतीय संविधान ने देवनागरी लिपी में लिखित हिन्दी को राजभाषा के रूप में स्वीकृती दी है।
- विद्यार्थी हिन्दी को एक भाषा के रूप में अध्ययन करके अलग-अलग लेखकों के साहित्य पढ़ते हैं।
- तत्परिणाम भाषा के प्रयोग में नवीनता अपना सकते हैं और संप्रेषण की क्षमता बढाते हैं।
- वैश्वीकरण के संदर्भ में शुद्ध हिन्दी के प्रयोग एवं संप्रेषण की क्षमता के कारण विद्यार्थी अपने जीवन में अच्छे मौके पाते हैं।
- अलग-अलग लेखकों के विचार प्रधान लेख को पढ़ने के कारण पात्रों का विश्लेषण की पद्धती, नैतिक मूल्य, आदर्श,जीवन में अपनाने की प्रेरणा मिलती है।

List of BoS Members 2022-23

1	HoD	Shri Parameshwar Hegde	**Assistant Professor**	**Mahajana First Grade College**	**pggejjehegde@rediffmail.com** **9449679747**
2	Nominee by the Vice Chancellor	Dr.Vasanti M	**Prof in Hindi** **Department of Studies in Hindi Manasagangotri** **University of Mysore.**	**Department of Studies in Hindi Manasagangotri**	919611368670
3	Two Experts from Outside the University	1. Dr. Shridhar Hegde	**Prof in Hindi & Head of the Department**	**1.Department of Hindi** **Field Marshal K.M Kariyappa College Madikeri**	**Shridharhegde1970@gmail.com** **9449584354**
4		2. Shri.Padmanabha A.N	**Prof in Hindi & Head of the Department**	**2.D.V.S Arts and Science College Shivmogga.577201**	**Principal.dvscollege@gmail.com** **9611011509** **College-08182-278455**
5	Alumni	Shri.Pankaj Mishra	**MICA**	**Metagalli Industrial Area MYSORE**	**Pankajmishra33015@gmail.com**

Course Structure (NEP)

AECC (Hindi)

I Year

Course Type (AECC) NEP		HOURS/ WEEK		CREDITS			MARKS			Duration of Exam	Total Marks
							IA		EXAM		
		L	T	L	T	P	C1	C2	C3		
HINDI I SEM											
AECC−1	Hindi Kahani and grammar **B.Com/BBA (All) - 22HIN106**	**2**	**2**	**2:1:0**			**20**	**20**	**60**	**2½ Hours**	**100**
AECC-1	Hindi Kahani and grammar **BCA/BSc/BA - 22HIN107**										
HINDI II sem											
AECC-2	Hindi Gadya our Vyavaharik Hindi **B.Com/BBA (All) - 22HIN206**	**2**	**2**	**2:1:0**			**20**	**20**	**60**	**2½ Hours**	**100**
AECC-2	Hindi Kavita our Anuvad **BCA/BSc/BA - 22HIN207**										

AECC(1) HINDI Syllabus for B.Com/BBA(All)

Semester I **Course Code:** **22HIN106**	**Course Title:** AECC(1) Hindi Kahani and grammar (Theory)
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials))
Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Knowledge of Short Stories as a form of Literature, familiarity with Socio-Economic disparity and identity good character trait for day to day life.

CO2: Accept divergent opinions to build strong intrapersonal Skills personality and professionally.

CO3: Understand the pluralistic nature of Society, respect other people's values and traditions to live in harmony.

CO4: Enhanced Skills in grammar for better LSRW (Listening, Speaking, Reading, and Writing.

Course Content:

Course Content Content	Hours
UNIT – 1	
प्रेमचन्द- परीक्षा. मोहन राकेश- मवाली धर्मवीर भारती- एक बच्ची की कीमत	**12**
UNIT – 2	
सुदर्शन- अलबम ममता कालिया-बोलने वाली औरत महीम सिंह- पानी और पुल	**14**

UNIT – 3	
भीष्म साहनी- चीफ की दावत जयप्रकाश कर्दम- नो बार	**12**
UNIT – 4	16
1.Varnamala,Varno ka bhed-svara,vyanjan,visarga. 2.Shabdha Vichar-Uthpathi, Vyutpathi,Prayog. hours 3.Sanjya-Paribhasha,bhed, 1 hour 4.Sarvanam- Paribhasha,bhed. 1 to 2 hours 5.Ling- Paribhasha, bhed.Shabho ke Ling Parivarthan. 6.Kirya- Paribhasha,bhed.Samrachana ke Aadhar per Bhed. 1 to 2 hours 7.Kal- Paribhasha,bhed. 1 to 2 hours	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना (संगोष्ठी),पाठ का संदेश लिखना, शुद्ध हिन्दी लिखना (कार्यशाला)। 10

Text Book: **कहानी कुंज-सं-राजेन्द्र पोवार**

Recommended Books :

- हिंदी व्याकरण- कामताप्रसाद गुरु – प्रभात प्रकाशन, दिल्ली
- हिंदी व्याकरण रचना –संपा- गो,मो. दाभोळकर, अशोक कामत- प्रकाशन- गुरुकुल प्रकाशन्न पुणे
- शिक्षार्थी व्याकरण- प्रो, नागप्पा- राजपाल एण्ड सन्स- दिल्ली
- https://www.youtube.com/watch?v=nrYr7lpwqqs

Course Articulation Matrix – 22HIN106

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	2	1	1	1	2	1	3	2	3	1	2
CO 2	1	2	1	1	1	2	1	3	2	3	1	2
CO 3	1	2	1	1	1	2	1	3	2	3	1	2
CO 4	1	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**1**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

Semester I **Course Code:** **22HIN107**	**Course Title:** AECC(1) Hindi Kahani and grammar
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials))
Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Knowledge of Short Stories as a form of Literature, familiarity with Socio-Economic disparity and identity good character trait and gender sensitised..

.CO2: Appreciate the richness of Indian tradition:Understand the Psychological conflict and instill the spirit of nationalism.

CO3: Empathise with aged people and develop a more humane approach towards the needy.

CO4: Enhanced Skills in grammar for better LSRW (Listening, Speaking, Reading, and Writing.

Course Content:

Course Content Content	**Hours**
UNIT – 1	
चन्द्रधर शर्मा "गुलेरी"-बुद्धऊ का काँटा. प्रेमचन्द-पूस की रात, विश्वंम्बरनाथ शर्मा "कौशिक-ताई,	**12**
UNIT – 2	
जयशंकर प्रसाद-पुरस्कार, जैनेन्द्र-पाजेब, यशपाल- परदा.	**14**
UNIT – 3	
उषा प्रयंवदा-वापसी रांगेय राघव-पंच परेमेश्वर	**12**

UNIT – 4	16
1.Varnamala,Varno ka bhed-svara,vyanjan,visarga. 2.Shabdha Vichar-Uthpathi, Vyutpathi,Prayog. hours 3.Sanjya-Paribhasha,bhed, 1 hour 4.Sarvanam- Paribhasha,bhed. 1 to 2 hours 5.Ling- Paribhasha, bhed.Shabho ke Ling Parivarthan. 6.Kirya- Paribhasha,bhed.Samrachana ke Aadhar per Bhed. 1 to 2 hours 7.Kal- Paribhasha,bhed. 1 to 2 hours	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना (संगोष्ठी),पाठ का संदेश लिखना, शुद्ध हिन्दी लिखना (कार्यशाला) । 10

Text Book:कथा अष्टक-डॉ रीता गौड़

Recommended Books

- हिंदी व्याकरण- कामताप्रसाद गुरु – प्रभात प्रकाशन, दिल्ली
- हिंदी व्याकरण रचना –संपा- गो,मो. दाभोळकर, अशोक कामत- प्रकाशन- गुरुकुल प्रकाशन पुणे
- शिक्षार्थी व्याकरण- प्रो, नागप्पा- राजपाल एण्ड सन्स- दिल्ली
- https://www.youtube.com/watch?v=nrYr7lpwqqs

Course Articulation Matrix – 22HIN107

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	2	1	1	1	2	1	3	2	3	1	2
CO 2	1	2	1	1	1	2	1	3	2	3	1	2
CO 3	1	2	1	1	1	2	1	3	2	3	1	2
CO 4	3	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**1.5**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

AECC(2) HINDI Syllabus for B.Com/BBA(All)

Semester II **Course Code:** **22HIN206**	**Course Title:** AECC(2) Hindi Gadya our Vyavaharik Hindi
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Familiarly with Socio-economic disparity, identity good character traits for character building.
CO2: Learn to accept divergent opinions to build strong intrapersonal skills personally and professionally.
CO3: Understand the pluralistic nature of Society; respect other people's values and live in harmony.
CO4: Enhance skills in usage of grammar for formal communication-both written and oral.

Course Content:

Course Content Content		Hours
UNIT – 1		
कहानी निबंध	-नमक का दारोगा -प्रेमचन्द -विज्ञापन युग,- मोहन राकेश -नाखून क्यों बढते हैं? हजारी प्रसाद द्विवेदी	**12**
UNIT – 2		
रेखाचित्र-वह चीनी भाई महादेवी वर्मा यात्रा वृत्तांत-गिरमिटियों के देश में प्रतिभामुदलियार संस्मरण-मदन मोहन मालवीय महात्मा गाँधी		**14**

UNIT – 3	
व्यंग्य-भगत की गत हरिशंकर परसाई एकांकी-महाभारत की एक सांझ-भरत भूषण अग्रवाल	**12**
UNIT – 4	16
पत्र व्यवहार 1.पत्र व्यवहार का सामान्य परिचय- गुण-लक्षण,पारिवारिक.व्यावहारिक, अ) सरकारी पत्र.(Personal) 2.व्यावहारिक पत्र- पूछ-ताछ, बैंक,बीमा, परिपत्र, 3. सरकारी पत्र–आवेदन पत्र-प्राचार्य को, सरकारी अधिकारियों को,	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना (संगोष्ठी),पाठ का संदेश लिखना, शुद्ध हिन्दी लिखना (कार्यशाला)। 10

Text Book: साहित्य सोपान-प्रो.प्रतिभामुदलियार

Recommended Books

- राजभाषा हिंदी राजकीय पत्रव्यवहार – डॉ. घनश्याम अग्रवाल, जयभारती प्रकाशन, माया प्रेस रोड, इलाहाबाद-3
- https://www.youtube.com/watch?v=7xUTguLaaXI

Course Articulation Matrix – 22HIN206

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	3	1	2
CO 2	2	2	1	1	1	2	1	3	2	3	1	2
CO 3	2	2	1	1	1	2	1	3	2	3	1	2
CO 4	3	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**2.25**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

Semester II **Course Code:** **22HIN207**	**Course Title:** AECC(2) **Hindi Kavita aur Anuvada Abhyas.**
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Awareness of the richness of Indian tradition and culture; Imbibe values for life-long character shaping.

CO2: Strong decision making skills with a vision for clear goal setting.

CO3: Insight into the current Socio-political and economic situation of the Society; reverence for struggle and sacrifice o the freedom fighters.

CO4: Ability to use learns skills as as mechanism for better communication; Adopt values in life for Harmonious living.

Course Content:

Course Content Content	**Hours**
UNIT – 1	
मैथिलीशरण गुप्त- भारत की श्रेष्ठता. सुमित्रानंदन पंत- बापू सूर्यकांत त्रिपाठी निराला- तोडती पत्थर.	**12**
UNIT – 2	
केदारनाथ अग्रवाल- यह धरती है उस किसान की हरिवंशराय बच्चन- पथ की पहचान सुभद्राकुमारी चौहान- झाँसी* की रानी	**14**
UNIT – 3	
भवानी प्रसाद मिश्र- गीतफरोश नागार्जुन- प्रेत का बयान	**12**

Unit-4	16
Translation -अनुवद अभ्यास- 1.अनुवाद शब्द की व्युत्पत्ती.अनुवाद का अर्थ, परिभाषा, 4 2.अनुवद के प्रकार–१. गद्यत्व-पद्यत्व,साहित्यिक विधा,विषय,अनुवाद की प्रकृती के आधार पर.4 3.अनुवाद-हिन्दी से अंग्रेजी/ अंग्रेजी से हिन्दी, single sentence, Paragraphs . पारिभाषिक शब्दावली. 4	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना (संगोष्ठी),पाठ का संदेश लिखना, शुद्ध हिन्दी लिखना (कार्यशाला)। 10

Text Book: पद्य चयन-Ed- **Sushama Agraval**

Recommended Books :

- Anuvaad Vigyan- Bholanatha Tiwari, Shabdkar, Delhi,110092
- Anuvaad kala-Kuch vichar- by Anand Prakash Khemani, S.Chand & Co., New Delhi.
- Anuvaad Siddhant aur samsyayen: R.N.Srivastav and K.K. Goswami, Alok Prakashan, Delhi.
- https://www.youtube.com/watch?v=68MiLy_-VOc

Course Articulation Matrix – 22HIN207

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	3	1	2
CO 2	2	2	1	1	1	2	1	3	2	3	1	2
CO 3	2	2	1	1	1	2	1	3	2	3	1	2
CO 4	3	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**2.25**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

Continuous Formative Evaluation/Internal Assessment (AECC)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY
TOTAL MARKS	100
Continuous Assessment – 1 (C1)	20
Continuous Assessment – 2 (C2)	20
Semester End Examination (C3)	60

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.
b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.
c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.
e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.
f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1	C2	TOTAL
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
TOTAL	20	20	40

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

• The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

QUESTION PAPER PATTERN

For Ability Enhancement Compulsory Course

B.Com., B.B.A, BBA(H&H) BBA (Avi &Int.Tour) B.C.A, B.SC, B.A.,

Text Book-40 Marks.

Grammar-20 Marks

Max Marks 60 Exam Duration-2.30Hours

Qn. No.	Particulars		Marks	Total
	SECTION – A			
I	Objective Type Questions (Compulsory) From Grammar only	10 out of 10	01	10
II	Reference to Context From Text Book only 1. 2. 3. 4.	2 out of 4	05	10
	SECTION – B			
III	Short Answer Questions (From Text Book) 1. 2. 3.	2 out of 3	05	10
IV	Short Answer Questions From Grammer/Prayojanamulak) 1. 2. 3.	2 out of 3	05	10
	SECTION – C			
V	Essay type Answer Questions From Text Book only	2 out of 4	10	20
	Total			**60**

Mahajana Education Society
Education to Excel
SBRR Mahajana First Grade College (Autonomous)
Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
Affiliated to University of Mysore,
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Department of Hindi

Date: 08.09.2022

As Per NEP-2020 Proposed Syllabi for 2022-23

Members of the Board of Studies

The Board of Studies meeting of **HINDI** (UG) was held on **08.09.2022** The following Board members were present.

Sl. No.	Name	Signature with date
1	Sri. PARAMESHWAR HEGDE	
2	Smt. RESHMA	ABSENT
3	Dr.VASANTI.M	Vasanthi. M
4	Dr. SHRIDHAR HEGDE	
5	Sri PADMANABHA A V	
6	Sri. PANKAJ MISHRA	

Place : MYSURU

Date: 08.09.2022

Signature of the Chairperson
Chairperson
BOS/BOE in Hindi
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

DEPARTMENT OF HINDI

Motto/लक्ष्य

हिन्दी के माध्यम से एकता Unity Through Hindi

VISION/दृष्टि

निज भाषा उन्नति अहै,सब उन्नति को मूल।

बिन निजभाषा ज्ञान के, मिटत न हिय को सूल॥

Progress Through Language

MISSION/कार्य

- भाषा के शुद्ध एवं सही ज्ञान के साथ संप्रेषण क्षमता को बढाना।
- भाषा एवं साहित्य के विविध आयामों को विद्वानों के व्याख्यानों द्वारा समझाना।
- देश एवं समाज के प्रति सक्षम नागरिक बनाने की ओर कार्यरत रहना।

Program Outcomes (POs) for Bachelor of Science/Arts/Commerce/Managements/BCA

PO 1: Domain Knowledge

PO 2: Problem Analysis

PO 3: Design and Development of Solutions

PO 4: Investigation & Research

PO 5: Use of Modern Techniques/Tools

PO 6: Impact on Society

PO 7: Environment and Sustainability

PO 8: Moral and Ethical Values

PO 9: Individual and Team Work with Time Management

PO 10: Communication

PO 11: Project Management and Finance

PO 12: Life-long Learning

Objectives: HINDI LANGUAGE

Course Learning Outcomes

- Hindi was adopted as an official Language in Indian Constitution with Devanagari Script.

- Students are going to learn as a Language and they will know about Hindi Literature and writers of Hindi.
- Students will learn better Communication Skills through different types of Hindi Literature and Usage of Language.
- In the era of Globalization Students will get good opportunity for Livelihood through better Hindi Communicative Skills.
- By reading Hindi Literature Students will adopt moral values, life skills. Ethics.

- भारतीय संविधान ने देवनागरी लिपी में लिखित हिन्दी को राजभाषा के रूप में स्वीकृती दी है।
- विद्यार्थी हिन्दी को एक भाषा के रूप में अध्ययन करके अलग-अलग लेखकों के साहित्य पढ़ते हैं।
- तत्परिणाम भाषा के प्रयोग में नवीनता अपना सकते हैं और संप्रेषण की क्षमता बढाते हैं।
- वैश्वीकरण के संदर्भ में शुद्ध हिन्दी के प्रयोग एवं संप्रेषण की क्षमता के कारण विद्यार्थी अपने जीवन में अच्छे मौके पाते हैं।
- अलग-अलग लेखकों के विचार प्रधान लेख को पढ़ने के कारण पात्रों का विश्लेषण की पद्धती, नैतिक मूल्य, आदर्श,जीवन में अपनाने की प्रेरणा मिलती है।

List of BoS Members 2022-23

1	HoD	Shri Parameshwar Hegde	**Assistant Professor**	**Mahajana First Grade College**	**pggejjehegde@rediffmail.com**

					9449679747
2	Nominee by the Vice Chancellor	Dr.Vasanti M	**Prof in Hindi** **Department of Studies in Hindi Manasagangotri** **University of Mysore.**	**Department of Studies in Hindi Manasagangotri**	919611368670
3	Two Experts from Outside the University	1. Dr. Shridhar Hegde	**Prof in Hindi & Head of the Department**	**1.Department of Hindi** **Field Marshal K.M Kariyappa College Madikeri**	**Shridharhegde1970@gmail.com** **9449584354**
		2. Shri.Padmanabha A.N	**Prof in Hindi & Head of the Department**	**2.D.V.S Arts and Science College Shivmogga.577201**	**Principal.dvscollege@gmail.com** **9611011509** **College-08182-278455**
4	Alumni	Shri.Pankaj Mishra	**MICA**	**Metagalli Industrial Area MYSORE**	**Pankajmishra33015@gmail.com**

Course Structure (NEP)

AECC (Hindi)

II YEAR

Course Type, Code and Name	HOURS/ WEEK	CREDITS	MARKS	Duration of	Total

							IA	EXAM		Exam	Marks
		L	T	L	T	P	C1	C2	C3		
HINDI III SEM											
AECC-3	हिन्दी कविता + सरकारी पत्राचार, पारिभाषिक, शब्दावली . **B.Com/BBA(All) - 22HIN306**	**2**	**2**	**2:1:0**			**20**	**20**	**60**	**2½ Hours**	**100**
AECC- 3	हिंदी नाटक साहित्य +संचार माध्यम और हिंदी **BCA/BSc/ BA - 22HIN307**										
HINDI IV sem											
AECC-4	हिंदी नाटक साहित्य +संचार माध्यम और हिंदी **B.Com/BBA(All) - 22HIN406**	**2**	**2**	**2:1:0**			**20**	**20**	**60**	**2½ Hours**	**100**
AECC-4	हिंदी गद्य + सरकारी पत्राचार, शब्दावली पारिभाषिक, **BCA/BSc/ BA - 22HIN407**										

AECC (3) HINDI Syllabus for B.Com/BBA(All)

Semester III **Course Code:** **22HIN306**	**Course Title:** AECC(3) हिन्दी कविता + सरकारी पत्राचार, पारिभाषिक, शब्दावली
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials))
Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Awareness of the richness of Indian tradition and culture; Imbibe values for life-long character shaping.

CO2: Strong decision making skills with a vision for clear goal setting.

CO3: Insight into the current Socio-political and economic situation of the Society; reverence for struggle and sacrifice o the freedom fighters.

CO4: Ability to use learns skills as as mechanism for better communication; Adopt values in life for Harmonious living.

Course Content:

Course Content Content	Hours
UNIT – 1	
मैथिलीशरण गुप्त- भारत की श्रेष्ठता. सुमित्रानंदन पंत- बापू सूर्यकांत त्रिपाठी निराला- तोडती पत्थर.	**12**
UNIT – 2	
केदारनाथ अग्रवाल- यह धरती है उस किसान की हरिवंशराय बच्चन- पथ की पहचान सुभद्राकुमारी चौहान- झाँसी* की रानी	**14**
UNIT – 3	
भवानी प्रसाद मिश्र- गीतफरोश नागार्जुन- प्रेत का बयान	**12**

UNIT – 4	16
सरकारी पत्राचार - सरकारी पत्र व्यवहार और पारिभाषिक शब्दावली. 1.सरकारी पत्र व्यवहार का सामान्य परिचय- गुण-लक्षण, सरकारी पत्र के विभिन्न प्रकार, अ) सामान्य सरकारी पत्र, आ) परिपत्र, इ) कार्यालय ज्ञापन ई) प्रेस-विज्ञप्ति और प्रेस नोट	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना (संगोष्ठी),पाठ का संदेश लिखना, शुद्ध हिन्दी लिखना (कार्यशाला) । 10

Text Book: पद्य संचयन-सुष्मा अग्रवाल

Recommended Books :

- राजभाषा हिंदी राजकीय पत्रव्यवहार – डॉ. घनश्याम अग्रवाल, जयभारती प्रकाशन, माया प्रेस रोड, इलाहाबाद-3
- अभिनव व्यावहारिक हिन्दी-डॉ.परमानन्द गुप्त.विद्या मंदिर. बेंगलूर-२.
- https://www.youtube.com/watch?v=iW-1sCzWHNM
- https://www.youtube.com/watch?v=5qnjlpP7i70

Course Articulation Matrix – 22HIN306

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	3	1	2
CO 2	2	2	1	1	1	2	1	3	2	3	1	2
CO 3	2	2	1	1	1	2	1	3	2	3	1	2
CO 4	3	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**2.25**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

AECC(3) HINDI Syllabus for BA/BCA/BSc

Semester III **Course Code:** **22HIN307**	**Course Title:** AECC(3) **Hindi Natak aur** Sanchar Madyam our Hindi
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials

Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Understand the concept of drama and process of dramatics to pursue acting as a career.
CO2: Obtain Knowledge of Indian art, architecture, heritage and historical events.
CO3: Imbibe good morals and values to shape as a better humanbeing with rationale thinking.
CO4: Equipped with skills of communicative Hindi for various digital and non-digital platforms.

Course Content:

Course Content Content	Hours
UNIT – 1	
Chaper I of the Drama	**12**
UNIT – 2	
Chaper II of the Drama	**14**
UNIT – 3	
Chaper III of the Drama	**12**

UNIT – 4	16
संचार माध्यम और हिंदी 1 to 02 Hours -संचार माध्यम प्रस्तावना, 1 to 02 Hours - परिभाषा, स्वरूप 1 to 02 Hours - भेद (प्रकार) एवं महत्व, 1 to 02 Hours -उद्धेश्य. 1 Hour - संचार भाषा के रूप में हिन्दी 1 to 02 Hours -संचार माध्यमों से जनता पर प्रभाव. 1 to 02 Hours	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना (संगोष्ठी),पाठ का संदेश

लिखना, शुद्ध हिन्दी लिखना (कार्यशाला)। 10

Text Book:कोणार्क-जगदीश चन्द्र माथुर

Recommended Books :

- पत्रकारिता की विविध विधआएँ- डॉ. राजकुमार श्रीवास्तव- जयभारती प्रकाशन, माया प्रेस रोड, इलाहाबाद-
- व्यावसायिक संप्रेषण- अनुपचंद भयानी- प्रकाशक- राजपास एण्ड सन्स, दिल्ली
- संचार,सूचना,कप्यूटर और प्रयोजनमूलक हिन्दी जगत-डॉ.एम.वासन्ती-जवाहर पुस्तकालय,मथुरा-281001.
- https://www.youtube.com/watch?v=IWf2InPiwb8
- https://www.youtube.com/watch?v=OlbtgjVBVcw
- https://www.youtube.com/watch?v=Vgcb9TIS-2w
- https://www.youtube.com/watch?v=1YrhckUjdtI

Course Articulation Matrix – 22HIN307

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	3	1	2
CO 2	2	2	1	1	1	2	1	3	2	3	1	2
CO 3	2	2	1	1	1	2	1	3	2	3	1	2
CO 4	3	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**2.25**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

AECC(4) HINDI Syllabus for B.Com/BBA(All)

Semester IV **Course Code: 22HIN406**	**Course Title:** AECC(4) **Hindi Natak aur** Sanchar Madyam Aur Hindi
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:**

	02 Hours (Theory) 02 Hours (Tutorials
Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Grasp about Enacting Drama, one should become the actor, Knowing Great Indian Traditions and Heritage .Art and Architecture. Culture. Believes. Character Building, Analyze and adopt the good Character in the life, Develop a New Ideas. Inculcate Communication Skills.

CO2: Patriotism, Selfish character in the society. Ability to take right Decisions.

CO3: Dramatic turn in the life. Delicacy, Study of Indian Historical events and Hummanity.

CO4: Usage of Communicative Hindi in Different Digital Non digital Platforms.

Course Content:

Course Content Content	Hours
UNIT – 1	
Chapter I of the Drama	**12**
UNIT – 2	
Chapter II of the Drama	**14**
UNIT – 3	
Chapter III of the Drama	**12**

UNIT – 4	16
संचार माध्यम और हिंदी 1 to 02 Hours -संचार माध्यम प्रस्तावना, 1 to 02 Hours - परिभाषा, स्वरूप 1 to 02 Hours - भेद (प्रकार) एवं महत्व, 1 to 02 Hours -उद्धेश्य. 1 Hour - संचार भाषा के रूप में हिन्दी 1 to 02 Hours -संचार माध्यमों से जनता पर प्रभाव. 1 to 02 Hours	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना (संगोष्ठी),पाठ का संदेश

लिखना, शुद्ध हिन्दी लिखना (कार्यशाला)। 10

Text Book:कोणार्क-जगदीश चन्द्र माथुर

Recommended Books :

- पत्रकारिता की विविध विधआएँ- डॉ. राजकुमार श्रीवास्तव- जयभारती प्रकाशन, माया प्रेस रोड, इलाहाबाद-
- व्यावसायिक संप्रेषण- अनुपचंद भयानी- प्रकाशक- राजपास एण्ड सन्स, दिल्ली
- संचार,सूचना,कप्यूटर और प्रयोजनमूलक हिन्दी जगत-डॉ.एम.वासन्ती-जवाहर पुस्तकालय,मथुरा-281001.
- https://www.youtube.com/watch?v=IWf2lnPiwb8
- https://www.youtube.com/watch?v=OlbtgjVBVcw
- https://www.youtube.com/watch?v=Vgcb9TIS-2w
- https://www.youtube.com/watch?v=1YrhckUjdtI

Course Articulation Matrix – 22HIN406

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	3	1	2
CO 2	2	2	1	1	1	2	1	3	2	3	1	2
CO 3	2	2	1	1	1	2	1	3	2	3	1	2
CO 4	2	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

AECC(4) HINDI Syllabus for BA/BCA/BSc

Semester IV **Course Code: 22HIN407**	**Course Title:** AECC(4) **Hindi Gadya aur Sarakari Patra.**
Course Credits: 02 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials

Total Contact Hours: 32 Hours (Theory) 32 Hours (Tutorials	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Familiarly with Socio-economic disparity, identity good character traits for character building.

CO2: Learn to accept divergent opinions to build strong intrapersonal skills personally and professionally.

CO3: Understand the pluralistic nature of Society; respect other people's values and live in harmony.

CO4: Using this as a tool for any type of Communication through Hindi. and Capacity to lead the life.

Course Content:

Course Content Content	Hours
UNIT – 1	
कहानी-1.नमक का दारोगा 3 hours 2.गैंग्रिन-3 3.रानी माँ का चबुतरा- 3	**12**
UNIT – 2	
रेखाचित्र-काळया 3 यात्रा वृत्तांत-जहाँ आकाश नहीं दिखाई देता 3 संस्मरण-यशपाल 'बडा ठोस आदमी है' 3	**14**

UNIT – 3	
व्यंग्य-तथागत नई दिल्ली में 3 एकांकी-महाभारत की एक सांझ 3	**12**
UNIT – 4	16
सरकारी पत्राचार - सरकारी पत्र व्यवहार और पारिभाषिक शब्दावली. 1.सरकारी पत्र व्यवहार का सामान्य परिचय- गुण-लक्षण, सरकारी पत्र के विभिन्न प्रकार, अ) सामान्य सरकारी पत्र, आ) परिपत्र, इ) कार्यालय ज्ञापन 2. सरकारी पत्र-आवेदन पत्र-प्राचार्य को, सरकारी अधिकारियों को, 1 to 02 Hours	

Activity : विद्यार्थीयों को पाठ पढ़ाना, सप्ताह में एक दिन समाप्त किये गये पाठ का सार लिखकर कक्षा मे पढ़ना

(संगोष्ठी),पाठ का संदेश लिखना, शुद्ध हिन्दी लिखना (कार्यशाला)। 10

Text Book:साहित्य सोपान- प्रो. प्रतिभा मुदलियार

Recommended Books

- राजभाषा हिंदी राजकीय पत्रव्यवहार – डॉ. घनश्याम अग्रवाल, जयभारती प्रकाशन, माया प्रेस रोड, इलाहाबाद-3
- अभिनव व्यावहारिक हिन्दी-डॉ.परमानन्द गुप्त.विद्या मंदिर. बेंगलूर-२.
- https://www.youtube.com/watch?v=iW-1sCzWHNM
- https://www.youtube.com/watch?v=5qnjlpP7i70

Course Articulation Matrix – 22HIN407

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	3	1	2
CO 2	2	2	1	1	1	2	1	3	2	3	1	2
CO 3	2	2	1	1	1	2	1	3	2	3	1	2
CO 4	2	2	1	1	1	1	1	-	1	3	1	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**3**	**1**	**2**

Continuous Formative Evaluation/Internal Assessment (AECC)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY

TOTAL MARKS	100
Continuous Assessment – 1 (C1)	20
Continuous Assessment – 2 (C2)	20
Semester End Examination (C3)	60

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.
b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.
c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.
e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.
f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1	C2	TOTAL
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
TOTAL	20	20	40

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

• The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

QUESTION PAPER PATTERN
For Ability Enhancement Compulsory Course
B.Com., B.B.A, BBA(H&H) BBA (Avi &Int.Tour) B.C.A, B.SC, B.A.,
Text Book-40 Marks.
Grammar-20 Marks

Max Marks 60 Exam Duration-2.30Hours

Qn. No.	Particulars		Marks	Total
	SECTION – A			
I	Objective Type Questions (Compulsory) From Grammar only	10 out of 10	01	10
II	Reference to Context From Text Book only 1. 2. 3. 4.	2 out of 4	05	10
	SECTION – B			
III	Short Answer Questions (From Text Book) 1. 2. 3.	2 out of 3	05	10
IV	Short Answer Questions From Grammer/Prayojanamulak) 1. 2. 3.	2 out of 3	05	10
	SECTION – C			
V	Essay type Answer Questions From Text Book only	2 out of 4	10	20
	Total			**60**

Mahajana Education Society
Education to Excel
SBRR Mahajana First Grade College (Autonomous)
Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
Affiliated to University of Mysore,
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Department of Hindi

Date: 08.09.2022

As Per NEP-2020 Proposed Syllabi for 2022-23

Members of the Board of Studies

The Board of Studies meeting of **HINDI** (UG) was held on **08.09.2022** The following Board members were present.

Sl. No.	Name	Signature with date
1	Sri. PARAMESHWAR HEGDE	
2	Smt. RESHMA	ABSENT
3	Dr.VASANTI.M	Vasanthi. M
4	Dr. SHRIDHAR HEGDE	
5	Sri PADMANABHA A V	
6	Sri. PANKAJ MISHRA	

Place : MYSURU

Date: 08.09.2022

Signature of the Chairperson
Chairperson
BOS/BOE in Hindi
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

Education Society (R)
Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
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BOARD OF STUDIES (BoS)

DEPARTMENT OF History

U ☑

P ☐

NEP Syllabi for I and II Semester BA-History

2021-22

DEPARTMENT OF History

Motto

History for future

Vision

Orienting the students to imbibe
Indian Culture and values through History

Mission

- To organize field visits to Historical places, Historical monuments, Excavation Sites, History museums, Conservation laboratory etc, which provides experiential learning.

- To take up special projects like conservation of monuments, heritage buildings etc.

- To organize exhibitions related to numismatics and philately

- To organize special lectures remembering National leaders, Martyrs and renowned personalities.

Name of the Degree program: BA **Discipline Course: History**

POs	Programme Outcomes (POs)
PO1	**Domain Knowledge:**Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:**Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:**Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:**Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:**Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.

PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

Department of History

List of Board of Studies Members-2021-22

Sl.No.	Name	Designation
1	**Mr. Dr. Sreedhara H** HoD& Assistant Professor SBRR Mahajana First Grade College (Autonomous), Jayalakshmipuram, Mysuru Email: sreedharah79@gmail.com **Cell: +91 9901041470**	**Chairperson**
2	**Dr. Dharmesha A.G.** Assistant Professor SBRR Mahajana First Grade College (Autonomous) Jayalakshmipuram, Mysuru dharmasourave@gmail.com **Cell: +91 9538245434**	**Member**
3	**Dr. K. Sadashiva** Prof& Chairman DOS History,Manasagangothri,Mysore sadashivak@gmail.com **Mobile : +91 9886153778**	**VC Nominee**

4	**Prof. Shashidhar B.R.** Assistant Professor Dept. of History Govt. First Grade College Madikere, Kodagu District. shashidharvalnur@gmail.com **Mobile : +91 9945915343**	**Expert from other University**
5	**Mrs. Shashikala A.S.** Assistant Professor Dept. of History Govt. First Grade College Chennapatna, Ramanagara Dist. shashidraj@gmail.com **Mobile : +91 8618430156**	**Expert from other University**
6	**Dr.GaviSiddaiya** Divisional ArchivesOffice, No.15/D, 2nd stage, V.V. Nagar, Mysuru **Mobile : +91 9448739096**	**Expert from Industry/Corporate Sector**

Course Structure& Pattern of Examination- B.A. (History)2022-23

[As per NEP – 2020 Guidelines]

FIRST SEMESTER

urse e & de	Title of the Course	Hours / week	Credits	Max. Marks				
				IA		Exam	Exam Duration	Total Marks
			L:T:P	C1	C2	C3		
C-1 129	Introduction to Ancient World Civilizations	3	**3:0:0**	20	20	60	$2\frac{1}{2}$	100
C-2 130	History of Ancient India (From Earliest times to 1206 CE)	3	**3:0:0**	20	20	60	$2\frac{1}{2}$	100
E-1	Cultural Heritage of India 21OEHIS101 OR Introduction to Archaeology 21OEHIS102	3	**3:0:0**	20	20	60	$2\frac{1}{2}$	100

SECOND SEMESTER

urse Type & Code	Title of the Course	Hours / week	Credits	Max. Marks				
				IA		Exam	Exam Duration	Total Marks
			L:T:P	C1	C2	C3		
DSC-1 11229	Introduction to Medieval World Civilizations	3	**3:0:0**	20	20	60	$2\frac{1}{2}$	100
DSC-2 11230	History of Medieval India (1206-1761)	3	**3:0:0**	20	20	60	$2\frac{1}{2}$	100

OE-2	Cultural Heritage of Karnataka 21OEHIS201 OR Manuscriptology 21OEHIS202	3	**3:0:0**	20	20	60	$\mathbf{2\frac{1}{2}}$	100

DEPARTMENT OF HISTORY

NEP (CBCS) Syllabus for I & II Semester

(Effective from Academic Year2021-22)

Four years IntegratedHonoursDegreePrograminHistorytobeintroduced underNEP

BA Semester-1

DSC-1CourseCode : 211129

Course Title: Introduction to Ancient World Civilizations	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

CO1. Acquire knowledge of Ancient Civilizations across the world and geographical influences which aided the establishment of these Civilizations.

CO2. Analyzeand Trace the evolution of political history, socio-economic characteristics of the different Civilizations andthe ideas of theocracy and statehood during this time.

CO3. Acquire knowledge ofvarious contributions in the fields on religion, law, education, language, literature, science mathematics, art and architecture.

BA Semester-1

DSC-1 **CourseCode : 211129**

Title of the Course: Introduction to Ancient World Civilizations

Course-1		**Course-2**	
Number of Theory	**Number of lecture**	**Number of Theory**	**Number of lecture**

Credits	hours/ semester	Credits	hours/semester
3	39 or 42	3	39 or 42

Content of Course-1	39/42 Hrs
Unit-1 : Mesopotamian, Egyptian and Chinese Civilizations	**13/14**
Introduction: Geographical Formation and Early Man Origin and Stages of the Earth – Geological Formation of World – Evolution of Human Species	02
Chapter-1 : Mesopotamian Civilization Geographical Background - From Neolithic to Bronze Age. **Sumerians** – Race - Political History of the Sumerians - Kings and Governments of Sumer **The Akkadians**- Old Babylonian Empire - Hammurabi and his Code - The Kassite domination - Attacks from the Hittites - The New Babylonian Empire – King Nebuchadnezzar and the Days of Babylonian Glory - The Decline of Babylon **The Assyrian Empire** - The reforms of Tiglathpileser III - Decline of Assyrians -The decline of Mesopotamian civilization Social condition - Economic Condition -–Theocratic State - Cultural contributions of Mesopotamians - Religion - Law – Education - Language and Writing–Literature - Art and Architecture - Hanging Garden - Science and Mathematics – Astronomy - Development of Calendar – Medicine	04
Chapter-2 : Egyptian Civilization Egypt – The Gift of Nile - Cultural Transition from Neolithic to Bronze Age Political History of Egyptian Civilization - Intermediate Periods - The New Kingdom or the Period of Empire (1560-1087 BCE) - The downfall of Egypt - Social Condition - Economic Condition – Agriculture – Industry – Trade – Cultural contributions of Egyptians - Writing and Literature – Games – Education - Religion- Akhenaton and his Monotheism - Art and Architecture	04
Chapter-3 : Chinese Civilization Early dynasties – The State – Decline of Ancient China – Economy and Society – Occupations – Art and Crafts – Ancestor Worship and Oracles – Script – Solar-Lunar Calendar - Literature	04

Unit – II : Greek, Roman Civilizations	**13/14**
Chapter-4 : Greek Civilization Geographical influences on the Greek City States - Polity – Socio-Economic Background - Class Conflict between Aristocracy and Peasantry: Process of Reforms - Transition to Democracy - Conflict with Persia: Delian League (478 BCE) - The Peloponnesian War (431-404 BCE) - The End of the Classical Period Social Conditions - Slavery in Ancient Greece: Economy and Society - Position of Women Economic Conditions – Agriculture – Crafts - Maritime Commerce – Taxation. Cultural contributions of Ancient Greece – Philosophy - Literature and Drama - Scientific Approach – Mathematics – Medicine - Astronomy – Religion – Olympic Games - Art and Architecture	05
Chapter-5 : Roman Civilization (Early Part) The founding of Rome City - Rome under Monarchy - The Assembly and the Senate - The Roman Republic - The Roman Expansion. Political Structure and Society during the Roman Republic - Effects of the Roman Expansion on commoners - Struggle between Patricians and Plebeians - Last Hundred Years of the Republic - Anti-Rome upheavals - Professional Army and War Lords - Rise of Dictatorship in Rome – Julius Caesar	04
Chapter-6 : Roman Principate and Empire Augustus Caesar and His Successors –Diocletian and Constantine- The decline of the Western Roman Empire Social Condition of the early Roman Empire - Social Structure of the Later Roman Empire - Status of Roman Women – Slavery -Economic Condition – Judicial System Cultural Contributions – Language – Philosophy and Literature - Religion in Ancient Rome - Judaism - Christianity - Art and Architecture - Sculpture - Painting- Coins and medals	05
Unit-III : Iranian, Early American and African Civilizations	**13/14**
Chapter-7 : Iranian Civilization Early History - Achaemenid Empire – Sassanid Empire – Economic and social Life – Religion – Art and Culture	05

Chapter-8 : Early American Civilizations Mayan Civilization – Astronomy – Calendar Making -The Aztecs -The Incas – The Olmec – Culture – Religion – Art - Decline.	04
Chapter-9 : Early African Civilizations The Kingdom of Kush – Kingdoms of Nubia and Aksum – Sudanic Kingdoms – Civilizations of the Bantu Peoples – Kingdom of Kongo- Lunda Empire.	04

Suggested Readings:

1. Austin, M. M., The Hellenistic World from Alexander to the Roman conquest, Cambridge,1981.
2. Algaze, Guillermo., Ancient Mesopotamia at the dawn of Civilisation: The Evolution of an Urban Landscape, University of Chicago Press, Chicago, 2009.
3. Badian, E., Studies in Greek and Roman History, Oxford University Press, 1964.
4. Badian, Ernst., Roman Imperialism in the Late Republic, Oxford, 1967.
5. Edward MacNall Burns and others, World Civilisations, Vol. A, GOYL SaaB Publishers & Distributors, Delhi, 2011.
6. Ferrero, Guglielmo., Characters and Events of Roman History, Barnes & Noble Books, New York, 1909.
7. Keith Bradley and Paul Cartledge, ed., The Cambridge World History of Slavery, vol. 1, Cambridge University Press, New York, 2011.
8. Nissen, Hans J., The Early History of the Ancient Near East, 9000-2000 BC, University of Chicago Press, Chicago, 1988.
9. Pollock, Susan., Ancient Mesopotamia: the Eden that never was, Cambridge University Press, Cambridge, 1999.
10. Potter, David S, ed., A Companion to the Roman Empire, Blackwell, Oxford and London, 2006.
11. Sharma. S.R., A Brief Survey of Human History, Hind Kitabs Ltd, Bombay, 1963.
12. Rakesh Kumar, Ancient and Medieval World, From Evolution of Humans to the Crisis of Feudalism, Sage Publications India Pvt Ltd, New Delhi, 2018.
13. Roux, George., Ancient Iraq, Penguin, London, 1992
14. Scarre, C., and Brian M. Fagan., Ancient Civilisations, Routledge, New York, 2016.
15. Sharma. S.R., A Brief Survey of Human History, Hind Kitabs Ltd, Bombay, 1963.
16. Shaw, Ian, ed., The Oxford History of Ancient Egypt, Oxford University Press, 2000.
17. Trigger, Bruce G., Understanding Early Civilisations, Cambridge University Press, 2003.
18. Wenke, Robert, The Ancient Egyptian State: The Origins of Egyptian Culture, c8000- 2000 BCE, Cambridge University Press, Cambridge, 2009

Course Articulation Matrix - 211129

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	1	2	1	2	3	1	-	2
CO2	3	1	1	-	1	2	1	2	2	1	1	2
CO3	3	1	1	-	-	2	1	2	3	1	1	2
Weighted Average	**3**	**1**	**1**	**1**	**1**	**2**	**1**	**2**	**2.66**	**1**	**1**	**2**

BA Semester-1

DSC-2CourseCode : 211130

Course Title: History of Ancient India (From Earliest Times to 1206 CE)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

CO1. Gain an extensive insight of the political developments in Ancient India and familiar with development of Human Evolution and Material Culture in the Indian sub-continent.

CO2. Analyze sources in different forms to study the history of Ancient India.Capture a glimpse of the evolving socio- cultural and religious diversities and dissents of Ancient India.

CO3. Understand the progress of early State formations and political structures in Ancient India.

BA Semester-1

DSC-2 **CourseCode : 211130**

Course Title: History of Ancient India (From Earliest Times to 1206 CE)

Content of Course-1	39/42 Hrs
Unit-1 : Pre Historic Culture to Nandas	**13/14**
Introduction Survey of Sources - Archaeological and literary sources Geographical Factors and their Impact.	02
Chapter-1 : Pre Historic Cultures in India Early Man in India – Paleolithic Ages –Mesolithic Cultures –Neolithic Culture – Growth of Villages from Baluchistan to Western Uttar Pradesh and Gujarat - Important sites- Bhimbetka,Daimabad, Isampur, Adichanallur , Chandravalli	03
Chapter-2 : The Indus Civilisation Origin and Chronology of the Indus Civilisation - Early Indus Cultures –Extent and Population – Agriculture and Subsistence – Agriculture and Crafts –Trade. Culture: Writing, Art, Religion– Social and Political Structure – Later Harappan	03

Phase – End of the Indus Civilisation	
Chapter-3 : The Vedic and Later Vedic Age Vedas as a Historical Source – Varna in the Rig Vedic Period – Religion: Sacrifices to the Gods –Coronation Rituals – Rajasuya and Ashwamedha - Later Vedic Age – TheEmergence of Monarchy - Polity in Vedic Period -Gana-Samudaya- Sabha, Samiti and Vidata.	03
Chapter-4 : The Age of Mahajanapadas to the Nandas Mahajanapadas- Republican States and their functioning – Political Conflicts and the Growth of the Magadhan Empire -The Nandas – Foregin Invasions on India – Persians and Macedonians - Alexander‟s Invasion The Religious Revolution - The Intellectual Ferment – Ajivikas – Jainism –Buddhism – Brahminism- Doctrines and Contributions.	03
Unit – II : The Age of Empire	**13/14**
Chapter-5 : The Mauryan Empire Sources - Chandragupta Maurya - Ashoka – Ashoka‟sDhamma – Political Philosophy of Mauryans – Arthashastra of Kautilya- Central and Provincial Administration - Revenue and Finance – Internal and Foreign Trade – Industries – Social Conditions – Ashoka‟sEdicts – Language – Literature – Art and Architecture	07
Chapter-6 : Post - Mauryan India: 200 BCE – 300 CE The Political History of North India – The Shungas – Kanvas - Indo-Greeks – The Shaka-Pahlavas–The Kushanas – Kanishka –Gandhara Art and Mathura school of Art- Shatavahana Empire in Deccan.	04
Chapter-7 : The Sangam Age Polity under earlyCheras, Cholas and Pandyas – SangamLiterature – The Sangam Government – Central and Local Self Government	03
Unit-III : Guptas and their Successors	**13/14**
Chapter-8 : The Guptas and Their Successors (CE 300–CE 750) Rise of the Gupta Dynasty - Chandragupta I – Samudragupta and Allahabad Prasasti - Chandragupta II – Administrative Structure -Central and Provincial Administration Economy and Society-Indian Feadalism Political Development in Deccan and North India: The Vardhanas – HarshavardhanaAdministration, Religion- Buddism- Education (Nalanda University) Political Development in South India: Pallavas – MahendraVarma, NarasimhaVarma – Cholas - Raja Rajachola- I, Rajendrachola, local self-government - Art and Architecture of Pallavas and Cholas.	09
Chapter-9 : The Rajputs	03

Chauhans–Paramaras –Chandellas – Polity, Administration and Art & Architecture.	
Maps for Study :I.Mauryan Empire under Ashoka II. Kushana Empire under Kanishka III.Gupta Empire under Samudragupta IV.Vardhana Empire under Harshavardhana	01
Important Historical Places: 1.Sanganakallu 2. Lothal 3.Kalibangan 4.Bimbetka 5. Harappa 6. Mahenjodharo 7.Purushapura 8.Gandhara 9. Allahabad 10.Kanauj 11. Shravanabelagola 12.Kausambi 12.Rajagriha 13.Ujjaini 14.Pataliputra 15.Bodhagaya 16. Delhi 17.Nalanda 18. Tarain 19.Kalibangan 20.Prayaga	01

Suggested Readings:

1. IrfanHabib- People‟s History of India Series (Vols 1- 7)
2. Upinder Singh - A History of Ancient and Early Medieval India
3. ChakrabarthiDilip K- A History of Indian Archaeology from beginning to 1947
4. S. Piggott - Prehistoric India
5. R.S. Sharma- Ancient India
6. RomilaThapar - Ancient India
7. D.D. Kosambi - The Culture and Civilisation of Ancient India in Historical Outline.
8. K.A. NilakantaSastri- A History of South India
9. V. N. HariRao - History of India Vol. I
10. S. R. Sharma - Comprehensive History of India
11. V. A. Smith - The Oxford History of India
12. R.S. Tripathi- History of Ancient India
13. Dr. Sreedhara H- History of Ancien India.

Web Links:

1. **https;//rgu.ac.in**
2. **https;//www.ahandfulofleaves.org**
3. **https;//nizamcollege.ac.in**
4. **https;//www.coreknowledge.org**
5. **https;//www.researchgate.net**

Course Articulation Matrix - 211130

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	-	1	1	2	1	2	1	1	-	2
CO2	3	1	1	1	1	2	1	2	1	1	2	2
CO3	3	-	1	1	-	2	1	2	2	1	1	2
Weighted Average	3	1	1	1	1	2	1	2	1.33	1	1.5	2

BA Semester-1

Open Elective

OE-1

Course Code: 21OEHIS101

Course Title: Cultural Heritage of India	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

CO1. Provide an insight about an extensive survey of heritage of India and familiarize oneself with Indian history and culture

CO2. Expertize to analyse further development of culture of India and the factor responsible for origin and decline of culture

CO3. Provide the opportunity to understand the process of cultural development

BA Semester-1

Open Elective

OE-1

Title of the Course: Cultural Heritage of India

Content of Course-1	39/42 Hrs
Unit-1 : Introduction	**13/14**
Chapter-1 : Cultural Heritage Meaning – Definitions – Concepts – Characteristics – Types of Indian Cultural Heritage – Tangible and Intangible – Significance of Cultural Heritage in Human Life – Cultural Zones of India	05

Chapter-2 : Fairs, Festivals and Rituals Ethnic Indian Cultural Construct – Significance and Historical background of Fairs, Festivals and Religious Rituals – Regional – Folk – Tribal – National – Monsoon Fairs - Animal Fairs – Jatres.	05
Chapter-3 : Pilgrimage Centres of India Kashi – Mathura– Rameshwara – Bodh Gaya– Amarnatha, Vaishnodevi, Nanjangud and Madurai.	04
Unit – II : Legends, Narratives and Cultural Ethos	**13/14**
Chapter-4 : Meaning – Significance – Forms and Traditions of Legends Puranic Legends – Tradition of Cultural Heritage: Ramayana and Mahabharata – Ancient Fables of Ethical and Moral Values: Panchatantra and Jataka Stories.	04
Chapter-5 : Traditional Performing Arts Indian Aesthetics – Important Sources: Bharata‟sNatyashastra - Kitab –i- Navaras by Ibrahim Adil Shah II – Indian Classical Dances: Bharatanatyam – Kathakali – Mohiniyattam – Kuchipudi – Odissi– Manipuri Dance. **Theatre:** Sanskrit Plays – Kutiyattam as a specimen of Oral and Intangible Cultural Heritage **Oral Tradition and Performing Arts** – Bhajan, ,Harikatha, Vedic Chants, Gurbani-Yakshagan, Bootaaradane.	06
Chapter-6 : Indian Classical Music **Sources** - Two Major Traditions: Hindustani and Carnatic Music - Historically Important Personalities of Indian Classical Music: Amir Khusrow, Tansen, Mohammad Shah “Rangeela”, Purandaradasa and Kanakadasa– M.S. Subbulakshmi– Bhimasen Joshi.	04
Unit-III : Architecture and Built Heritage	**13/14**
Chapter-7 : Indian Architecture The Beginnings – Indus Valley: Town Planning – Mauryan Architecture: Characteristics, Palaces and Pillars – Stupa Architecture – Important Stupas – Rock Cut -Architecture: Caves and Temples – Temple Architecture: Nagara, Dravida and Vesara Styles– Mughal Architecture – Colonial Architecture	06
Chapter-8 : Important Monuments of North India(Study of Historical and Cultural Sites through maps) Nalanda, Ajanta, Ellora, Prayaga, Dwaraka, Sun Temple -Konark, Khajuraho, Agra – TajMahal, Delhi – Red Fort,	04
Chapter-9 : Important Monuments of South India Shore Temple (Mahabalipuram), Aihole, Badami, Pattadakal, Hampi, Kanchi, Nagarjunakonda, Amaravati, Tanjore.	04

Historical Places: **1**. Pushkar**2.** Prayaga**3.**Shravanabelagola **4.** Ajmer **5.**Amritsara **6.**Delhi **7.**Kashi **8.**Nalanda **9.**Ajanta **10.**Dwarka **11.**Puri **12.**Konark **13.**Khajurahoo **14.**Tiruvanathapuram **15**.Ellor **16.**Mah**a**balipuram **17.**Pattadakal**l**u **18.**Hampi **19.**Kanchi **20.**Nagarjunakonda	

Note: Historical Tour and Preparation of Project Report based on field work is Mandatory

Suggested Readings:

1. K.T Acharya - Indian food: A Historical Companion, oxford University Press, 1998.
2. Banga, I. (ed). - The City in Indian History : Urban Demography, Society and Politics, Delhi, Manohar, 1991
3. A.L Basham - The wonder that was India. Picador Publisher, Indian ed. 2014
4. N.K Bose - Culture Zones of India" in culture and Society in India, Asia publishing House 49
5. S.Narayan - Indian Classical Dances, Shubhi Publications, 2005.
6. Prakash, H.S - Shiva - Traditional Theatres, Incredible India Series, New Delhi, 2007
7. S. Radhakrishnan - Culture of India" in the Annals of the American Academy of Political and Social Science, Vol 233, India Speaking (May 1944).pp 18-21.
8. K. Thapiyal , S. Shukla - SindhuSabhyataien, Luckhnow,2003 The Director General Survey of India (ed.), Guide Books: World Heritage Series, New Delhi
9. ShashiTiwari - Origin of Environmental Science from Vedas. A Research paper presented at the National Seminar on" Science and Technology" in Ancient Indian Text, Special Centre for Sanskrit Studies. JNU, 9-10th, January, 2010
10. Raman Varadara - Glimpses of Indian Heritage, Popular Prakashan Private Ltd., Bombay, 1989
11. Varapande, M.L - History of Indian Folk Theatre (LokRanga Panorama of Indian Folk Theatre) Abhinav Publications,1992
12. V. Vasudev - Fairs and Festivals, Incredible India series, 2007
13. A. Sundara (Ed.) - Kannada VishayaVishvakoshaIthihasamattuPuratatva
14. H. Tipperudraswamy - Karnataka SamskrutiSameekshe
15. JanapadaVishyaViswakoshaVol- I and II Prasaranga University of Mysore
16. Rangacharya - The Natyashastra, English translation with critical Notes, New Delhi, MunshiramManoharlal Publishers Pvt ltd.

Course Articulation Matrix -Course Code: 21OEHIS101

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

CO1	3	1	1	1	1	2	1	3	2	1	1	2
CO2	3	1	-	1	-	2	1	2	1	1	-	2
CO3	2	1	1	1	1	2	1	2	1	1	1	2
Weighted Average	**2.66**	**1**	**1**	**1**	**1**	**2**	**1**	**2.33**	**1.33**	**1**	**1**	**2**

BA Semester-1

Open Elective

OE-1

Course Code: 21OEHIS102

Course Title: Introduction to Archaeology	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

- **CO1.** Understand the concept of Archaeology as an ancillary for study of history and the various features of Archaeology in understanding history
- **CO2.** Familiarize with the scope of Archaeology.Understand the various tools and techniques imbibed in Archaeology
- **CO3.** Study various schools of disciplines of Archaeology.

BA Semester-1

Open Elective

OE-1

Title of the Course: Introduction to Archaeology

Content of Course-1	39/42 Hrs
Unit-1 : Introduction	**13/14**
Chapter-1 : Definition of Archeology Its Aims and Scope : difference between History and Archeology	07
Chapter-2 : Kinds of Archaeology – Ethno -Marine and Salvage	07
Unit – II : Archaeology by Period	**13/14**

Chapter-3 : Lower Paleolithic Middle Paleolithic – Upper Paleolithic – Mesolithic – Neolithic - Chalcolithic – Bronze age – Iron Age	06
Chapter-4 : Archaeology in India William Jones, James Princep, Alexander Cunningham, John Marshall, Sir Mortimer Wheeler, Allchin, H. D. Sankalia, S.R.Rao. M. H. Krishna**.**	06
Chapter-5 : Archaeological Survey of India – Department of Archaeology Government of Karnataka	02
Unit-III : Exploration, Excavation and Analysis	**13/14**
Chapter-6 :Identification of a site – field survey – sampling techniques – Application of Scientific methods.	04
Chapter-7 : Methods of Excavation – vertical and horizontal – Trenching -Gridding	02

Chapter-8 : Excavation of burial mounds – Open Stripping – Quadrant method – Excavation of pits – Excavation of a typical site	04
Chapter-9 : Visit to Local Archaeological Sites and Preparation of Field Study Report for Assignment is Mandatory	04

Suggested Readings:

1. Agrawal D.P - Archaeology in India
2. Aiken M.J - Science based dating in archaeology
3. Allchin Bridget
4. & Raymond Allchin - Rise of Civilisation in India and Pakistan
5. Atkinson RJC - Field Archaeology
6. Basker .P - Techniques of Archaeological Excavation
7. Chakrabarthi D.K - A History of Indian Archaeology from the Beginning to 1947
8. Chakrabarthi D.K - Theoretical Perspectives in Indian Archaeology
9. Gosha .A - Encyclopedia of Indian Archaeology
10. Rajan .K - Archaeology, Principles and Methods
11. Raman K.V - Principles and Methods in Archaeology
12. Dr.Srinivas V Padigar - Principles of Archaeology.
13. DrSrinivas V Padigar - PuratattvaParichaya-(Kan)
14. Sundara (Ed.) - Kannada VishayaVishvakoshaIthihasamattuPuratattva
15. SrikantaShastri - PuratattvaShodane

Course Articulation Matrix -Course Code: 21OEHIS102

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	1	2	1	2	2	1	1	2
CO2	2	1	1	1	1	2	1	2	2	1	1	2
CO3	2	-	1	-	-	3	1	3	1	1	1	2
Weighted Average	**2**	**1**	**1**	**1**	**1**	**2.33**	**1**	**2.33**	**1.66**	**1**	**1**	**2**

BA Semester-2

DSC-3CourseCode : 211229

Course Title : Introduction to Medieval World Civilization	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

- **CO1.** Understand the geographic limitations and advantages that contributed to the rise of different civilizations in the medieval world.
- **CO2.** Get information on the development of religious traditions and organizations in the medieval world and understand the growth of Feudalism and European towns in the middle ages.
- **CO3.** Indicate the causes and impact of the Crusades in the Medieval Europe.Derive the influences of Oriental Civilizations on Medieval Europe.Illuminate the aspects of Economy and its development in Medieval Western Europe.

BA Semester-2

DSC-3 **CourseCode : 211229**

Course Title :Introduction to Medieval World Civilizations

Content of Course-1	**39/42 Hrs**
Unit-1 : Arab and Persian Civilizations	**13/14**
Introduction to Medieval World Civilizations Introduction – „Medieval" – Terminology and Periodization – Transitions and Historical Debates	02
Chapter-1 : Arab Civilization Introduction - Arab on the Eve of the rise of Islam - Birth of Islam – Origin and Spread of Islam - The Doctrines of Islam The Caliphate State / The Arab Empire - Rashidun Caliphs - The Umayyad Caliphate -The Abbasid Caliphate. Arab contributions to Medieval World - Islamic Religious Traditions - Scholarship and Learning –Mathematics –Chemistry-Medicine-Paper and Bookmaking -Adab Literature –Philosophy -Art and Architecture	04

Chapter-2 : Persian Civilization (Iranian Civilization) Introduction – Early History - Muslim Conquest of Persia – Conquest of Persia (642–651) - Second and last Muslim invasion – Persian rebellion and reconquest Persia under Muslim rule – Administration – Religion - Language of Persia – Urbanisation	04
Chapter-3 : Persian Civilization - Safavid Dynasty - Shah Abbas the Great - Shah and his Achievements – Political - Shah and his Achievements - Cultural Persia„s Cultural Contributions - Fine Arts - Carpet Weaving – The Art of the Book Making – Ceramics – Literature – Architecture	04
Unit – II : European Civilisations	**13/14**
Chapter-4 :The Middle Ages in Europe (Political and Social Development) – Introduction - Successors Kingdoms to the Western RomanEmpire –Germanic Foundations of Early Medieval Europe. Europe in the Early Middle Ages (Political and Economic Institutions of Medieval Europe) - The Rise of Frankish Empire - Merovingian Period – Carolingian Period - Charlemagne (768-814) - New States in Response to Invasions - Otto the Great (936-973) - The Holy Roman Empire	05
Chapter-5 : The Age of Feudalism in Europe - Origin or Development of Feudalism - Feudal Polity and Economy - Decline of Feudalism	04
Chapter-6 :Religious Developments in Medieval Europ–Saintly& Virgin Mary Cults - Monasticism in Europe - Organization of the Church & Growth of Papacy.	04
Unit-III : The Middle Ages in Europe	**13/14**
Chapter-7 : Byzantine Empire - Constantine (306-337 CE) – Justinian (482-565 CE) - Decline of Byzantine Empire - Achievements of the Byzantium Empire - Effective Diplomacy - Trade and Commerce – Agriculture – Religious Reforms - Revival of Greek Classical Literature - Architecture and Art	04
Chapter-8 : Crusades Introduction - The Crusades - Causes for the Crusades - Pope„s call for Crusade – Crusades 1st to 9th - Crusades and Their Impact.	04
Chapter-9 : Growth of Economy and Culture in Medieval Western Europe Growth of European Towns - Growth of Middle Class - Early Medieval European Economy - The first Agricultural Revolution - Expansion of Trade and Commerce in Medieval Europe - Guild System Contributions of Medieval Europe - Intellectual and Cultural Life in Medieval Europe - Medieval European universities - Growth of Western Scientific and Speculative Thought - Literature – Drama – Music - Art and Architecture	04

Suggested Readings:

1. Arthur Hassall, (ed), General History of Europe, Oxford, 1901.
2. Edward MacNall Burns and others, World Civilisations, Vol. A, GOYL SaaB Publishers & Distributors, Delhi, 2011.
3. Holt. P.M., Ann K.S.Lambton and Bernard Lewis, The Cambridge History of Islam, Vol.1, Cambridge University Press, 1970.
4. Israel Smith Clare, Medieval History of the World, vol. I and II, Arihant Publishing House, Jaipur, 2008.
5. Lars Brown worth, Lost to the West – The Forgotten Byzantine Empire, Random House Inc., New York, 2009.
6. Rahman A, Islam on Science and Technology.
7. Rakesh Kumar, Ancient and Medieval World, From Evolution of Humans to the Crisis of Feudalism, Sage Publications India Pvt Ltd, New Delhi, 2018.
8. Ferrero, Guglielmo., Characters and Events of Roman History, Barnes & Noble Books, New York, 1909

Course Articulation Matrix -211229

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	2	1	2	1	2	1	1	1	2
CO2	2	2	1	1	2	2	1	2	1	1	1	2
CO3	2	-	1	1	1	2	1	2	1	1	1	2
Weighted Average	**2**	**1.5**	**1.33**	**1.33**	**1.33**	**2**	**1**	**2**	**1**	**1**	**1**	**2**

BA Semester-2

DSC-4CourseCode : 211230

Course Title : History of Medieval India (1206-1761)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

CO1. The students will get the knowledge of the political history of Delhi Sultanate, Mughals and Marathas. To analyze the changes in state and society under the Delhi Sultanates with respect to their administrative structure and theory of state/kingship of the Delhi Sultanate.

CO2. Understand the critical historiographical approaches on the State and also the Decline of the Delhi Sultans and Mughal Empire. To understand the fusion of art, architecture, literature, language and fine arts in medieval India under Islamic and Hindu styles.

CO3. To understand the significance of the Bhakti and Sufi Movements and their impact on the socio-cultural sphere.

BA Semester-2

DSC-4 **CourseCode : 211230**

Course Title :History of Medieval India (1206-1761)

Content of Course-1	39/42 Hrs
Unit-1 : Arab, Turks and Delhi Sultanate	**13/14**
Chapter-1 : Sources of Medieval Indian History Source - Literary, Foreign accounts and Archaeological sources.	02
Chapter-2 : Advent of Arabs and Turks in Medieval India Political condition of India in the Beginning of 8th Century – Arab Invasion – Muhammud Bin Qasim – Rise of Turks –The invasions of Muhammud of Ghazni and Ghori and their Impact – Tarain Wars	04
Chapter-3 : Foundation of the Delhi Sultanate Qutubud din Aibak –Razia as sultan- Era of Balban –- Early Life and accession, Theory of kingship, Achievements. Khalji dynasty – AlauddinKhalji – Conquests – Administrative measures. Mohammad bin Tughlaq– Experimentsand Reforms – Firoz Shah Tughlaq andhis Administrative reforms. The Later Tughlaqs – Decline of the Delhi Sultanate.	08

Chapter-4 : State-Polity, Society and Economy under the Delhi Sultanates Central and Provincial Administration – Economy –Slavery under the Delhi Sultans.	**02**

Unit – II : The Mughal Empire	13/14
Chapter-5 : The Foundation of the Mughal Empire Babar and Humayun – Revival of Afghan Power – Sher Shah Suri– The Second Battle of Panipat and triumph of the Mughals – Akbar's rise and consolidation of power – Conquests, Rajput Polilcy, Religious Policy – (Din-Ilahi) – Revenue Administration-MansabdariSysem– Jahangir, Shah Jahan and Aurangazeb –Religious Policy, Deccan policy – Revolts and reaction- Decline of Mughal Empire.	06
Chapter-6 : Administration and Economy under the Mughals Mughal Administration –Central, Provincial, Local – Theory of Kingship – Mansabdari System – Jagirdari System – Sources of Revenue – Military – Judicial System – Development in Trade and Industries.	04
Chapter-7 : Society and Culture under the Mughals Social structure under Mughals –Religion and Celebration – development of Science, Literature, Art, Architecture and Painting.	04
Unit-III : Bhakti and Sufi Movements	**10/08**
Chapter-8 : Bhakti and Sufi Movements in India The Bhakti Movement– Alvars – NayanarsBasavanna – Kabir – MeeraBai – Guru Nanak – Causes for the popularity of the Movement – Impact of the Bhakti Movement – The Sufi Movement – ShaikNizamudinAuliya – SalimChisti	06
Chapter-9 : The Marathas Rise of Maratha Power under Shivaji –Peshwas Rule– Third Battle of Panipat 1761	04
Maps for Study: i. Khilji Empire under AllauddinKhilji ii. Tughlaq Empire under Muhammad Bin Tughlaq iii. Mughal Empire under Akbar iv. Maratha Empire under Peshwas/ Shivaji	01
Important Historical Places Delhi, Agra,Panipat, Fatehpur-Sikri, chittor, Gwalior, Udaipur, Kalinjar, Surat, Kanauj, Amarkot, Ayodhya, Ranthamboor, Devagiri, Dwarasamudra, Madurai, Srinagar, Sasaram, Raigar, Warangal, Poona, Lahore.	01

Suggested Readings:

A.L.Srivastava : Delhi Sultanate, Shiv LalAgarwal& Co. Agra, Reprint, 2017.
A.L.Srivastva : the Mughal Empire (Shiv LalAgarwal& Co., Agra, Reprint, 2017.
Sharma S.R., the Crescent in India (Agra 1933)
Srivastava A.L., Medieval Indian culture (Agra 1975)
Sharma L.P, The Sultanate of Delhi (Delhi, 1996)

Edwards S.M.& Garratt, Mughal rule in India (New Delhi 1974)
Banerjee A.C, A New History of Medieval India (New Delhi, 1983)
Lane Poole S, Medieval India under Muhammadan rule (London)
Majumdar R.C. (ed), History and Culture of the Indian people, Vol.V& VI (bhavan's Series)
. Majumdar R.C. (ed), BharatiyaJanateyaIthihasaMattuSamskriti (bhavan's Series)
. Sathish Chandra, History of Medieval India, Vol. I and Vol. 2.
. IrfanHabib, Medieval India.
. B.N.S. Yadav : Society and Culture in North India in the 12th century. RakaPrakashanPrayagraj, 2012.
. B.P. Majumdar: socio-Economic History of Northern India, Firma K.L. Mukhopadhyaya (1960)
. Herman Kulke (ed), The State in India (1000-1700), OUP, 199516. Ishwari Prasad: Medieval India 4th ed., Digitize 2006.
. J.N.Sarkar: Life and Times of Shivaji, Orient Blackswan Pvt., Ltd., New Delhi, 2010.
. K.N.Chitnis : Socio- Economic History of Medieval India, Atlantic Publishers, 2018.
. Majumdar, Rayachaudhary&Dutt : An Advanced History of India, Laxmi Publications, 2016.
. Mohammad Habib and K.A. Nizami, (ed): Comprehensive History of India, Vol.V, The Delhi Sltanate, PPH, 1992.
. R.C.Majumdar& others (ed): The History and culture of the Indian People Vol. 6 the Delhi Sultanate, bhartiyaVidyaBhawan, 2006.
. R.P.Tripathi :Rise and fall of the Mughal Empire SurjeetPublictions, 2012.
. S.r.Sharma : the Crescent in India: A Study in Medieval History, bhartiya Kala Prakashan, 2005.
. IshwariPrasad : A short History of Muslim Rule in India, Surjeet Publications, 2018.
. Satish Chandra – Medieval India From Sultanate to the Mughals.
. Dr. Sreedhara H- History of Medieval India.

eb Links:

1. https;//www.sscadda.com
2. https;//www.khansir.co.in
3. https;//old.mu.ac.in
4. https;//www.nios.ac.in
5. https;//jobscaptain.com

Course Articulation Matrix-211230

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	2	3	1	3	1	1	-	2
CO2	3	1	2	1	-	2	1	3	1	1	1	2
CO3	3	1	-	1	1	3	1	3	1	1	1	2
Weighted Average	**3**	**1**	**1.5**	**1**	**1.5**	**2.66**	**1**	**3**	**1**	**1**	**1**	**2**

BA Semester-2

Open Elective

OE-2

Course Code: 21OEHIS201

Course Title : Cultural Heritage of Karnataka	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

- **CO1.** Understand the concept of cultural heritage of Karnataka and study of various cultural factors which influence the flow of culture in society.
- **CO2.** Analyze the factors responsible for formation of pluralistic society.
- **CO3.** Understand the concept "Unity in Diversity".

BA Semester-2

Open Elective

OE-2

Title of the Course: Cultural Heritage of Karnataka

Content of Course-1	39/42Hrs
Unit-1 : Introduction	**13/14**
Chapter-1 : Cultural Heritage Meaning – Definitions – Concepts – Characteristics – Types of Indian Cultural Heritage – Tangible and Intangibl– Significance of Cultural Heritage in Human Life – Cultural Zones of Karnataka.	03
Chapter-2 : Fairs, Festivals, Rituals Ethnic Indian Cultural Construct – Significance and Historical background of Fairs, Festivals and Religious Rituals – Jatres: Mylarlinga, Mudukutore, Suttur – Dasara, Deepavali, Nagarapanchami, BangaloreKaraga.	04
Chapter-3 : PiligrimageCentres of Karnataka Nanjangudu, MalemahadeshwaraBetta, Dharmasthala, Shravanabelagola,	04

KukkeSubramanya..	
Unit – II : Legends, Narratives and Cultural Ethos	**13/14**
Chapter-4 : Meaning – Significance – Forms and Traditions of Legends Puranic Legends –Traditions of Cultural Heritage : Ramayana and Mahabharatha – Ancient Fables of Ethical and Moral Values: Panchatantra and Vaddakatha.	04
Chapter-5 : Traditional Performing Arts-Dravidian aesthetics **Folk Dances and Theatre – Important Folk Dances** Lavani, Kolata, Doddata etc. **Chapter-6: Oral Tradition and Performing Arts** Bhajane, Harikatha, Yakshagana, Bootaaradane.	05

Unit-III : Architecture and Built Heritage	13/14
Chapter-7 : Karnataka Architecture The Beginnings – Influence of Mauryan Art and Architecture – Inscriptions–Temple Architecture :Nagara, Dravida and Vesara Styles – Islamic Architecture – Colonial Architecture.	05
Chapter-8 : Important Monuments of North Karnataka (Study of Historical and Cultural sites through maps) Badami, Ihole, Pattadakallu, Hampi, Bijapur(Vijayapura) etc.	04
Chapter-9 : Important Monuments of South Karnataka Halebidu, Beluru, Somanathapura, Talakadu, Mysuru, Nandi etc.	04

Note: Historical Tour and Preparation of Project Report abased on field work is Mandatory.

Suggested Readings:

1. S.Settar - PrakritaJagadvalaya
2. A.Sndara (Ed) - Kannada VishayaVishvakoshaIthihasamattuPuratatva
3. K.R.Basavaraja - History and Culture of Karnataka
4. P.B. Desai - A History of Karnataka
5. A.Sundra (Ed.) - Karnataka Charitre, Vol. I.
6. B.SurendraRao (ed) - Karnataka CharitreVol.II
7. S.Setter - Halagannada: Bhashe, BhashaVikasa, BhashaBandhavya
8. M.Chidananda Murthy - Karnataka ShasanagalaSamskrutikaAdhyayana
9. S. Rajashekara - Karnataka Architecture
10. K.A.NilakataSastri - A History of South India
11. H.Tipperudraswamy - Karnataka SamskrutiSameekshe.

Course Articulation Matrix -Course Code: 21OEHIS201

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	3	1	3	1	1	-	2
CO2	3	-	-	-	-	3	1	3	1	1	-	2
CO3	2	-	-	-	-	2	1	2	1	1	-	2
Weighted Average	**2.66**	**-**	**-**	**-**	**-**	**2.66**	**1**	**2.66**	**1**	**1**	**-**	**2**

BA Semester-2

Open Elective

OE-2

Course Code: 21OEHIS202

Course Title : Manuscriptology	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (COs):

CO1. Understand the importance of manuscripts. Manuscripts as an ancillary for study of history, and the concept of cataloguing of manuscripts.

CO2. Practice the Science of conservation and preservation of manuscripts.

CO3. Visit Libraries and Achievesto study conservation and preservation.

BA Semester-2

Open Elective

OE-2

Title of the Course: Manuscriptology

Content of Course-1	39/42 Hrs
Unit-1 : Introduction	**13/14**
Chapter-1 : Cultural Heritage Meaning – Definitions –Characteristics – Scope and Importance	04
Chapter-2 : Types of Manuscripts Methods of Study – Writing Materials – Palm Leaf, Kadtatas (Black Book)	05
Unit – II : Collection	**13/14**
Chapter-3 : History of Manuscriptology	05
Chapter-4 : Introduction of Indian Manuscriptology	04
Chapter-5 : Manuscripts in Kannada, Tigalari, Samskrita, Pali, Tamil/Grantha, Tulu, Nandinagari and Modi	05
Unit-III : Editing	**13/14**
Chapter-6 : Collection of Manuscripts – Oriental Research Institute, Mysore, Melukote	03
Chapter-7 : Process of Editing	05
Chapter-8 : Preservation of Manuscripts – Regional Conservation Laboratory	06
Chapter-9 : Visit to Oriental Research Institute and Regional Conservation Laboratory Mysore, Academy of Sanskrit Research Centre, Melukote. Visit to Oriental Research Centres – Preparation Field Study Report for Assignment is Mandatory**.**	05

Suggested Readings:

1. ChintharChakravathi - Study of Manuscriptology
2. M.V.Seetharamaih& M.Chidananda Murthy - HastipratiSastra
3. N. Geethacharya - HastipratiSastraadhyayana
4. SitharamJahagirdarParichaya - Kannada GranthaSampadhanaSastra
5. S. Jagannath - GranthaSampadanaShastra
6. Devarakondareddy - LipiyaHuttumattuBelavanige
7. MadhavanaKatti - PipishastraPravesha

8. B.S.SanayaSoochi - Kannada Hasta Prathigala Micro film
9. T.V.VenkatachalaSastry - HalayaHonnu
10. A.K.Sashtri - SringeriKadathagalu
11. S.ShankarappaToranagallu - LipiNiguda

Course Articulation Matrix-Course Code: 21OEHIS202

COs/ POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	1	1	1	1	1	-	2
CO2	2	1	1	1	1	1	-	1	2	1	1	2
CO3	2	1	1	1	1	1	-	1	2	1	1	2
Weighted Average	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1.66**	**1**	**1**	**2**

Pedagogy and Assessment Pattern for All DSC and OE Papers

Pedagogy

- Lecture Method – Class Room Teaching
- Learning Through Project work
- Collaborative learning strategies
- Use of Resources like Audio- Visual aids, Films, Documentaries
- Visit to Historical Sites, Museums etc.
- ICT Supplemented Teaching
- Seminars/ Guest/ Special Lectures
- Group Discussions

Modes of Assignment

- Individual Assignments
- Project work
- Written Test
- Documentaries

Assessment:

Weightage for assessments (in percentage)

Formative Assessment		
Internal Assessment		**Theory Part Semester End Examination**
Internal Test	10	60
Assignment / Book Review	10	
Seminar with Group Discussion	10	
Viva Voice	10	
Total	**40**	
Grand Total		**100**

PATTERN OF QUESTION PAPER FOR

I & II SEMESTER EXAMINATION

2021-22

SCHEME OF EXAMINATION

B.A- History (NEP)

(DSCC& OPEN ELECTIVE with 3 Credits)

I and II Semester of B.A., (C1-20, C2-20, C3-60 Total=100 Marks)

SCHEME OF EXAMINATION for 100 Marks

(Each paper shall have two components)

I.	Internal Assessment	-	**40** Marks
II.	Theory Component	-	**60** Marks
	Total	-	**100** Marks

I. Internal Assessment in Each paper shall have the following sub components.

A) Internal Test - **10**Marks
B) Assignment/Book Review - **10**Marks
C) Seminar with Group Discussion - **10** Marks
D) Viva Voice- **10** Marks

Total - **40 Marks**

NOTE:

Question papers shall have one Extra-long Answer Question Carrying 10 marks exclusively for the **Visually impaired candidates**, provided such candidates are enrolled in the course. In that case the extra Question should be printed at the end of the question paper super scribed with "Note".

The theory question paper shall have THREE parts and the maximum duration of the theory part shall be $2\frac{1}{2}$Hours and it shall be as follows:

PATTERN OF QUESTION PAPER

HISTORY - DSC

Marks: 60 **Time: $2\frac{1}{2}$ Hours**

Instructions: All PARTS are Mandatory. (ಎಲ್ಲಾ ಭಾಗಗಳು ಕಡ್ಡಾಯ)

PART – A / ಭಾಗ – ಎ

Answer ALL the following Questions in ONE Sentence each. **10x1=10**

ಕೆಳಕಂಡ ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೂ ಒಂದು ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿ.

1.a.

b.

c.

d

e.

f.

g.

h.

i.

j.

PART – B / ಭಾಗ – ಬಿ

Answer any FOUR of the following Questions **4x5=20**

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

2

3

4

5

6

7

PART – C / ಭಾಗ – ಸಿ

Answer any THREE of the following Questions **3x10=30**

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

8

9

10

11

12

NOTE: Attending MAP Question is Mandatory.(ಭೂಪಟದ ಪ್ರಶ್ನೆಯುಕಡ್ಡಾಯವಾಗಿರುತ್ತದೆ.)

Questionsmustbepreparedsuchthatallunitsarecovered.

PATTERN OF QUESTION PAPER

HISTORY - OPEN ELECTIVE

Marks: 60 **Time: $2\frac{1}{2}$ Hours**

Instructions: All PARTS are Mandatory.

PART – A / ಭಾಗ – ಎ

Answer ALL the following Questions in ONE Sentence each. **10x1=10**

ಕೆಳಕಂಡ ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೂ ಒಂದು ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿ.

1. a.

b.

c.

d

e.

f.

g.

h.

i.

j.

PART – B / ಭಾಗ – ಬಿ

Answer any FOUR of the following Questions **4x5=20**

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

2

3

4

5

6

7

PART – C / ಭಾಗ – ಸಿ

Answer any THREE of the following Questions **3x10=30**

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

8

9

10

11

12

NOTE: Attending MAP Question is Mandatory.(ಭೂಪಟದ ಪ್ರಶ್ನೆಯುಕಡ್ಡಾಯವಾಗಿರುತ್ತದೆ.)

Questionsmustbepreparedsuchthatallunitsarecovered.

Education Society (R)
Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

Affiliated to University of Mysore,

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BOARD OF STUDIES (BoS)

DEPARTMENT OF History

U ☑

P ☐

NEP Syllabi for III and IV Semester BA- History

2022-23

DEPARTMENT OF History

Motto

History for future

Vision

Orienting the students to imbibe
Indian Culture and values through History

Mission

- To organize field visits to Historical places, Historical monuments, Excavation Sites, History museums, Conservation laboratory etc, which provides experiential learning.

- To take up special projects like conservation of monuments, heritage buildings etc.

- To organize exhibitions related to numismatics and philately

- To organize special lectures remembering National leaders, Martyrs and renowned personalities.

Name of the Degree program: BA **Discipline Course: History**

POs	Programme Outcomes (POs)
PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.
PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

Department of History

List of Board of Studies Members

Sl.No.	Name	Designation
1	**Mr. Dr. Sreedhara H** HoD& Assistant Professor SBRR Mahajana First Grade College (Autonomous), Jayalakshmipuram, Mysuru Email: sreedharah79@gmail.com **Cell: +91 9901041470**	**Chairperson**
2	**Dr. Nandeesha A R.** Assistant Professor SBRR Mahajana First Grade College (Autonomous), Jayalakshmipuram, Mysuru nandishar7@gmail.com **Cell: +91 9113060911**	**Member**
3	**Dr. K. Sadashiva** Prof & Chairman DOS History,Manasagangothri, Mysore sadashivak@gmail.com **Mobile : +91 9886153778**	**VC Nominee**
4	**Dr. Raghava B** Associate Professor, Field Marshal K M Cariappa College Mangalore University Madikeri, Kodagu-571201 desire.crb @gmail.com **Mobile : +91 9448721205**	**Expert from other University**
5	**Dr. Shambhulingamurthy H M** Associate Professor, Sahyadri Arts College Kuvempu University, Shivamogga-577203. shambhulingamurthyhm@gmail.com **Mobile : +91 8494999300**	**Expert from other University**
6	**Manjunatha H L** Senior Asst. Director Karnataka State Divisional Archives Office, Mysuru-560008 rajmanjuhlm@gmail.com **Mobile : +91 9483017571**	**Expert from Industry/Corporate Sector**

Course Structure&Pattern of ExamBA-History Discipline

(NEP Syllabus III & IV Semester)

emester	Course Type	Course Code	Course Title	Credits	L	T	P
III	DSC-5	221329	Rise of Modern West (1600 – 1871)	3	3	0	0
	DSC-6	221330	History of Modern India (1757 to 1947)	3	3	0	0
	OE-3	22OEHIS301	Freedom Struggle in India (1857-1947)	3	3	0	0
		22OEHIS302	Introduction to Epigraphy	3	3	0	0

emester	Course Type	Course Code	Course Title	Credits	L	T	P
IV	DSC-7	221429	History of Karnataka (From Earliest Times to 10th Century CE)	3	3	0	0
	DSC-8	221430	History of Modern Europe (1871-1945)	3	3	0	0
	OE-4	22OEHIS401	Freedom Movements in Karnataka(1800 to 1947)	3	3	0	0
		22OEHIS402	Principles and Practice of Museology	3	3	0	0

Pattern of Examination

Semester	Course Type	Course Title	Total Marks	IA Test/ Viva C1	IA Assignment/ Semina C2	Exam C3
III	**DSC-5**	Rise of Modern West(1600 – 1871)	100	20	20	60
	DSC-6	History of Modern India (1757to 1947)	100	20	20	60
	OE-3	Freedom Struggle in India(1857-1947)	100	20	20	60
		Introduction to Epigraphy	100	20	20	60
IV	**DSC-7**	History of Karnataka (From Earliest Times to 10th Century CE)	100	20	20	60
	DSC-8	History of Modern Europe (1871-1945)	100	20	20	60
	OE-4	Freedom Movements in Karnataka (1800 to 1947)	100	20	20	60
		Principles and Practice of Museology	100	20	20	60

II BA – III Semester

DSC-5 Rise of Modern West (1600-1871)Course Code: 221329

Course Title: Rise of Modern West (1600-1871)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. Comprehendhow the geographical discoveries impact on the economy, polity and society of Western Countries. Students will develop an understanding of the significant transformation in European polity and society between sixteenth to nineteenth centuries.

CO2. Acquire the knowledge of various themes like capitalism, mercantilism, Renaissance and Reformation.Understand how scientific view helps western countries to achieve scientific revolution and industrial revolution.

CO3. Recognize how the liberal and democratic ideas helped to achieve all round developmentsin western world.

II BA – III Semester

DSC-5

Title of the Course: Rise of Modern West (1600-1871)Course Code: 221329

Course-1		**Course-2**	
Number of Theory Credits	**Number of lecture hours/ semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3	39 or 42	3	39 or 42

Content of Course-1	**39/42Hrs**
Unit-1	**13/14**
Chapter-1 : Europe Expands and Divides The Overseas Discoveries and Conquests of Portugal and Spain	04
Chapter-2 : Transition from feudalism to Capitalism Capitalism – Mercantilism and the Commercial Revolution	04
Chapter-3 : Early Colonial Expansion and Overseas Trade Motives Beginning of the Era of Colonization –Mining and Plantation –African Slaves	04

Unit – II	13/14
Chapter-4 : Renaissance and Reformation Meaning of Renaissance – Spread of Renaissance – Renaissance of Art, Architecture – Music – Literature –Science – Reformations and Counter Reformation	05
Chapter-5 : The New Absolute Monarchies Emergence of Nation States – Theories of Government – Divine Right of Kings – Absolutism in Various States – Spain – Portugal – England – France – Austria – Russia	04
Chapter-6 : Scientific Revolution and the Age of Enlightenment Emergence of Scientific View of the World – Promotion of Science – The work of Early Scientists – Growth of Chemistry, Geology and Biology. The Age of Enlightenment – Major Events of Enlightenment – Classism and Romanticism – Humanitarianism – Nationalism – Enlightened Despotism	05
UNIT-III	**13/14**
Chapter-7 : The Growth of Liberalism and Democracy Basic Feature of Liberalism – Growth of Liberalism The Rise of Democracy – Democratic struggle in various countries public opinion and Polity	05
Chapter-8 : Industrial Revolution Scientific and Technological background to Industrialised Revolution – the Factory System – Stages and Effects of Industrial Revolution – Socialist Movement – Labour Movements	04
Chapter-9 : Consolidation of Large Nation States Unification of Italy – The Founding of the German Empire	04

- **No Historical Maps**

Suggested Readings:

19. Wells H.G. : An Outline History of the World
20. Wells H.G. : A Short History of the World
21. Hayes et.al : World History
22. Savelle Max (Ed.) : A History of World Civilisation (2 Vols)
23. Davies : World History
24. Ketelby C.D.M. : A History of Modern Time
25. Palmer R.R. and J.Colton : A History of Modern World
26. Grant and Temperley : Europe in the Nineteenth and Twentieth Century
27. Fisher HAL : A History of Europe
28. Thomson David : Europe since Napoleon
29. Hoskins H.L. : European Imperialism in Africa
30. EdwordMacNall Burns : World Civilization (3 Vols.)

Course Articulation Matrix - 221329

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	1	2	1	2	3	1	3	3	1	1	3
2	3	1	2	-	2	3	1	3	3	1	1	2
3	3	1	2	1	2	3	1	3	3	1	1	2
ghted rage	**3**	**1**	**2**	**1**	**2**	**3**	**1**	**3**	**3**	**1**	**1**	**2.33**

II BA – III Semester

DSC-6 History of Modern India 1757-1947 Course Code: 221330

Course Title: History of Modern India 1757-1947	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. The students will be able to trace the British colonial expansion in the political contacts of 18th century India. They will learn about the changes in society, politics, religion and economy during the period. They will also acquire knowledge about the freedom struggle.

CO2. The contents of the syllabus are designed to cover core issues pertaining to vast canvass of nationalist history so that the student at the under graduate level is equipped to focus upon the core ideas of national movement in its conceptuality. India's national movement has vast and divergent ideological base with inner contradictions.

CO3. Understand how the colonial rule was overthrown by the Indian nationalists. Identify the various phases of National Movement. Appreciate the ideals and values of Gandhi that resulted in freedom.

II BA – III Semester

DSC-6

Title of the Course: History of Modern India 1757-1947 Subject Code: 221330

Course-1		**Course-2**	
Number of Theory Credits	**Number of lecture hours/ semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3	39 or 42	3	39 or 42

Content of Course-1	39/42 Hrs
Unit-1	**13/14**
Chapter-1 : The Arrival of Europeans in India and Rise of British Supremacy The Portuguese – The Dutch – The English – The French – Pattern of European Trade- English East India Company: From Trading Company to Political Power – Anglo – French Struggle for Supremacy: The Carnatic Wars – British Conquest of Bengal – Plassey to Buxar (1757-1765)	03
Chapter-2 : British Expansion in South and North India – Beyond Indian Frontiers Conquest of Mysore and the Marathas, 1767-1818- Anglo – Mysore Wars (during 1767-1799) - Anglo – Maratha Wars (1775-1818) – British Expansion in North India – Conquest of Sindh, Punjab and Awadh, 1843-57.	04
Chapter-3 : British and their Impact on Indian Economy, Polity, Administration and Society Economy: Economic Model of British East India Company – Changes in Indian Agrarian Structure and Impact on Economy – New Land Revenue Setlements and their Impact – Permanent Settlement – Ryotwari System – Mahalwari System – Economic Impact of British Rule in India. Polity : Constitutional Development – Regulating Act 1773, Pitt's India Act 1784and Government of India Act 1858. Administration: Indian Administration under the British – Evolution of Government – The Financial and Revenue Administration - The Civil Services, the Army. The Police and Judicial System– Social and Cultural Policy – Spread of Modern Education.	06
Unit – II	**13/14**
Chapter-4 : Resistance to the British Rule: Early Uprisings and the Revolts of 1857 Revolts in Bengal and Eastern India - Munda Rising –Santhal Rebellion – Revolts in Western India – Bhil Uprsing – Waghera Rising –Revolts in Southern India – The Revolt of the Raja of Vizianagaram –Revolts in Northern India –Revolt of 1857 – Nature, Events and Failures – Causes of Failure – Significance – Impact of the Revolt.	05

Chapter-5 : Socio Religious Reform Movements The BrahmoSamaj–AryaSamaj -PrarthanaSamaj –Ramakrishna Mission and Swami Vivekananda,SatyashodakSamaj –Aligarh Movement – ShriNarayana Guru and SNDP Yogam	03
Chapter-6 : Administrative Changes After 1858 Administration – Changes in the Army – Public Services – Relation with the Princely States – Administrative Policies of Lord Lytton and Lord Ripon – Rise of Middle Class.	04
Unit-III	**13/14**
Chapter-7 : The Nationalist Movement, 1885-1919 Factors for the Rise and Growth of National Consciousness –The Foundation of the Indian National Congress – Moderate Phase (1885-1905) – The Rise of Neo-Nationalism or the Extremism (1905-19) – Lord Curzon and Partition of Bengal – Boycott and the Swadeshi Movement— Surath Split. -The Muslim League – The Hindu Mahasabha – LucknowPact (1916) Home Rule Movement	05
Chapter-8 : Struggle for Swaraj Phase – I (1919-1927) Beginning of the GandhianEra – The Rowlatt Bills and JallianwallaBaghIncident – Khilafat and Non-Co-operation Movement – The Swarajist Party.	03
Chapter-9 : Struggle for Swaraj Phase –II (1927-1947) Simon Commission and Indians Agitation –BardoliSathygragha - The Nehru Report and Jinnah's Fourteen Points – Lahore Session and resolution onPoornaSwaraj – Civil Disobedience Movement –Revolutionary Movement- Chandrashekar Azad-Bhagath Singh- Round Table Conferences -Ambedkarand Poona Pact –The Government of India Act 1935 –National Movement during the Second World War – The Cripps Mission – Quit India Movement – Subhash Chandra Bose and INA – Wavell Plan – Simla Conference – Cabinet Mission Plan – Attlee's Declaration - Mountbatten Plan – The Indian Independence Act, of 1947.	06
Historical Places 1. Calcutta, 2.Calicut 3.Pondichery 4. Bassein 5. Lahore 6. Plassey 7.Thiruchanapally 8.Hoogly 9.Surat 8. Dacca 9. Nagpur 10. Madras 11.Delhi 12.Bombay 13. Poona 14.Lucknow 15. Kanpur 16.Banaras 17.Wandiwash 18.Srirangapattna 19.Machalipattanam 20.Gwalior	02

Historical Maps:

1) Presidency States of British Empire.
2) Sikh Empire under Ranjith Singh
3) Partition of Bengal -1905.
4) Partition of India-1947

Suggested Readings:

1. Bipin Chandra	:	Indian Struggle for Independence
	:	Freedom Struggle
2. Majumdar R.C.	:	Struggle for Fredom
		British Paramountacy and Indian Renaissance (Part-I)
3. Bipin Chandra	:	Rise Growth of Nationalism
4. SekharBandopadya	:	Nationalist Movement in India
5. B.L.Grover	:	A New Look at Modern Indian History
6. SailendraNathSen	:	An Advanced History of Modern India
7. A.R.Desai	:	Social Background of Indian Nationalism
8. SumitSarkar	:	Modern India 1885-1947
9. M.N.gupta	:	History of the Revolutionary Movement in India
10. Tarachand	:	History of freedom movement in India Vol.03
11. S.R.Mahrotra	:	The Emergence of Indian National Congress
12. Stein Burton	:	The making of Agrarian Policy in British India 1770-1900
13. Thompson & garret	:	Rise and Fulfillment of British Rule in India
14. A.C.Banerjee	:	The new History of Modern India (1707-1900)
15. C.A. Bayle	:	An illustrated History of Modern India 1600-1947
16. Dr. Sreedhara H		History of Modern India & Indian National Movement.
17. ಡಾ.ಕೆ.ಸದಾಶಿವ	:	ಆಧುನಿಕಭಾರತದಇತಿಹಾಸ
		ಭಾರತದ ಸ್ವಾತಂತ್ರ್ಯ ಹೋರಾಟ
18. ಎಂ.ಅಬ್ದುಲ್‌ರೆಹಮಾನ್ ಪಾಷಾ	:	ರಾಷ್ಟ್ರೀಯಆಂದೋಲನ
19. ಸಿ.ಆರ್.ಕೃಷ್ಣರಾವ್	:	ಸ್ವತಂತ್ರ್ಯಾನಂತರದ ಭಾರತ
20. ಆರ್.ಪೂರ್ಣಿಮಾ	:	ಕ್ರಾಂತಿಕಾರಿ ಘಟನೆಗಳು

21. ಎನ್.ಪಿ.ಶಂಕರನಾರಾಯಣರಾವ್ : ಸ್ವಾತಂತ್ರ್ಯಗಂಗೆಯ ಸಾವಿರ ತೊರೆಗಳು
22. ಕೆ.ಎಸ್.ಪಾರ್ಥಸಾರಥಿ : ಭಾರತದ ಪ್ರಥಮ ಸ್ವಾತಂತ್ರ್ಯ ಸಂಗ್ರಾಮ
23. ಬಿಪಿನ್ ಚಂದ್ರ (ಕನ್ನಡಕ್ಕೆಅನುವಾದ) : ಎಚ್.ಎಸ್.ಗೋಪಾಲ್ : ಆಧುನಿಕ ಭಾರತಇತಿಹಾಸ
24. ಕೆ.ಎಸ್.ಪಾರ್ಥಸಾರಥಿ : ಭಾರತದರಾಷ್ಟ್ರೀಯತೆಯ ಪರಿಕಲ್ಪನೆ
25. ಸಿ.ಬಿ.ಕಮತಿ : ಸ್ವಾತಂತ್ರ್ಯೋತ್ತರ ಭಾರತ
26. ಸೂರ್ಯನಾಥಯು. ಕಾಮತ್ : ಸ್ವಾತಂತ್ರ್ಯ ಹೋರಾಟದ ಸ್ಮೃತಿಗಳು
27. ಬಿ.ಪರಮೇಶ್ವರ : ಭಾರತ ಸ್ವಾತಂತ್ರ್ಯ ಚಳುವಳಿ
28. https://dceclirsp.weebly.com
29. https://ndl.iitkgp.ac.in
30. https://www.doabooks.org
31 https://dceclirsp.weebly.com
32 https://ndl.iitkgp.ac.in
33 https://www.doabooks.org

Course Articulation Matrix - 221330

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	1	1	1	2	3	1	3	3	1	1	2
2	3	1	1	-	2	3	1	3	3	1	1	2
3	3	1	2	1	2	2	1	3	3	1	1	2
ghted rage	**3**	**1**	**1.33**	**1**	**2**	**2.66**	**1**	**3**	**3**	**1**	**1**	**2**

II BA – III Semester

OE.-3Freedom Struggle in India (1857-1947)

Course Code: 22OEHIS301

Course Title: Freedom Struggle in India (1857-1947)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. Identify the causes that led to the rise of nationalism in India. Understand the various stages of the National Movement in India.

CO2. Trace the emergence of Indian National Congress.

CO3. Realize the harmful effects of division and disintegration. Develop a sense of patriotism, cooperation and belongingness

II BA – III Semester

OE-3

Title of the Course: Freedom Struggle in India (1857-1947)

Course-1		**Course-2**	
Number of Theory Credits	**Number of lecture hours/ semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3	39 or 42	3	39 or 42

Content of Course-1	**39/42 Hrs**
Unit-1	**13/14**
Chapter-1 : The Rise and Growth of National Consciousness Factors Responsible for the Rise and Growth of Indian Nationalism	04
Chapter-2 : Emergence of Organized Nationalism	04

Political Associations before Indian National Congress – Background to the birth of Indian National Congress – Formation of the Indian National Congress– Safety Valve Theory.	
Chapter-3 : The Moderate Phase (1885-1905) The Programme and Policies of the Moderates – DadabaiNavaroji – Economic Critique ofImperialism – and Drain Theory.	03
Unit – II	**13/14**
Chapter-4 : Growth of Extremist Nationalism (1905-1919) The Surat Split- Causes for the Rise of the Extremists – LalBal Pal – The Partition of the Bengal – The Swadeshi and the Boycott –Home Rule Movement.	03
Chapter-5 : Emergence of Mahatma Gandhi in Indian Politics and his ideology Gandhi's Political Career in South Africa (1893-1914) – Gandhi's Entry into Indian Politics: Champaran, Ahmedabad and Kheda (1917-18)	04
Chapter-6 : Struggle for Swaraj Phase – I (1919-1927) The Montegue – Chelmsford Reforms – The Rowlatt Act – JallianwalaBagh Massacre – The Khilafat and Non-Cooperation Movement (1919-1922) – The Swarajists – Swarajist Party.	06
Unit-III	**13/14**
Chapter-7 : Rise and Growth of Communalism and Socialism in India Factors Responsible for the Rsie and Growth of Communalism and Socialism in Indiaand Muslim League - Formation of the Hindu Mahasabha-Lucknow Pact (1916) –Growth of Socialist and Labour Ideals in the Indian National.	05
Chapter-8 : Struggle of Swaraj Phase – II (1927-1947) Simon Commission – Nehru Report– The Lahore Session of the Congress – Declaration of PoornaSwaraj - Civil Disobedience Movement 1930-34 – Dandi March – Gandhi Irwin Pact – Round Table Conferences – Poona Pact and Ambedkar– The Individual Satyagrah, 1940-41- The Cripps Mission and Proposal Quit India Movement – Subash Chandra Bose and INA – Wavell Plan – Simla Conference- Cabinet Mission plan –Attlee's Declaration –Mountbatten Plan- The Indian Independence Act, of 1947.	05
Chapter-9 : Other Important Freedom Fighters SurendranathaBanerji –V.D. Savarkar, Ambedkar, VallabhaBhai Patel-Sarojini Naidu – Chandrashekhar Azad – Bhagat Singh– Madam BhikajiCama– BabuJagajivanram– Udam Singh, Jawaharalal Nehru – VallabaBhai Patel – KasturiBai.	04
Historical Places 1) Bombay 2) Madras 3) Kolkata 4) Dandi 5) Dhaka 6) Lahore 7) Poona 8) Delhi 9) Amritsar 10) Lucknow 11) Bardoli 12) Karachi 13) Kanpura 14) Gwalior 15) Surat 16) Belgaum 17) Noukhali 18) Cuttack 19) Allahabad 20)	02

Karawara.	

❖ Historical Maps

1. Partition of Bengal -1905.
2. Important Sathyagraha Places of Gandhiji-(1917-1948)
3. Important Places of Quit India Movement of 1942.
4. Partition of India-1947.

Suggested Readings:

1. Bipin Chandra : Indian Struggle for Independence
2. Majumdar R.C. : Struggle for Freedom
3. SekhBandopadhyaya : Nationalist Movement in India
4. B.L.Grover : A New look at Modern Indian History
5. Sailendranathsen : An advanced History of Modern India
6. A.R.Desai : Social background of Indian Nationalism
7. ಡಾ.ಕೆ.ಸದಾಶಿವ : ಆಧುನಿಕ ಭಾರತದಇತಿಹಾಸ
   ಭಾರತದ ಸ್ವಾತಂತ್ರ್ಯ ಹೋರಾಟ
8. ಎಂ.ಅಬ್ದುಲ್‌ರೆಹಮಾನ್ ಪಾಷಾ : ರಾಷ್ಟ್ರೀಯಆಂದೋಲನ
9. ಆರ್.ಪೂರ್ಣಿಮಾ : ಕ್ರಾಂತಿಕಾರಿ ಘಟನೆಗಳು
10. ಎನ್.ಪಿ.ಶಂಕರನಾರಾಯಣರಾವ್ : ಸ್ವಾತಂತ್ರ್ಯಗಂಗೆಯ ಸಾವಿರ ತೊರೆಗಳು
11. ಕೆ.ಎಸ್.ಪಾರ್ಥಸಾರಥಿ : ಭಾರತದ ಪ್ರಥಮ ಸ್ವಾತಂತ್ರ್ಯ ಸಂಗ್ರಾಮ
12. ಪರಮೇಶ್ವರ ಬಿ. : ಭಾರತದ ಸ್ವಾತಂತ್ರ್ಯ ಹೋರಾಟ
13. *https://dceclirsp.weebly.com*
14. *https://ndl.iitkgp.ac.in*
15. *https://www.doabooks.org*
16. *https://dceclirsp.weebly.com*
17. *https://ndl.iitkgp.ac.in*
18. *https://www.doabook s.org*

Course Articulation Matrix -22OEHIS301

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	1	2	1	1	2	1	3	2	1	1	2
2	2	1	-	1	1	1	1	2	2	1	-	2
3	3	1	1	-	1	1	-	2	2	1	1	2
ghted rage	**3**	**1**	**1.5**	**1**	**1**	**1.33**	**1**	**2.33**	**2**	**1**	**1**	**2**

II BA – III Semester

OE-3 Introduction to Epigraphy CourseCode: 22OEHIS302

Course Title: Introduction to Epigraphy	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. To understand the definition an importance of Palaeography, Brahmi, Kharosti scripts, dating and Erasand identify the writing materials – Engraving – forged records – Seals.

CO2. To understand the Evolution and Development of one of the scripts mentioned above with reference to estampages andunderstanding the differences and similarities of inscriptions of North and South India.

CO3. To learn about Practical Training in taking estampages of stone and copper plate inscriptions.

II BA – III Semester

OE-3

Title of the Course: Introduction to Epigraphy

Course-1		**Course-2**	
Number of Theory Credits	**Number of lecture hours/ semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3	39 or 42	3	39 or 42

Content of Course-1	**39/42 Hrs**
Unit-1	**13/14**
Chapter-1 : Introduction Definition and importance of Palaeography – origin and antiquity of writing in India.	04
Chapter-2 : Evolution and development of Scripts – Indus Valley Script – Kharosthi Script – Brahmi Script	04
Chapter-3 : Writing materials – Engraving – forged records – Seals	04
Unit – II	**13/14**
Chapter-4 : Introduction Nature – Scope – Importance of Epigraphy	05
Chapter-5 : Types of Inscriptions - the languages of Inscriptions – writing Materials – Stone, Copper, Palm Leaves, Terracotta	04

Chapter-6 : Study of Important North Indian Inscriptions 1) Ashoka's Rock Edict No.13 2) Hatigumpha Inscription of Kharavela 3) Nasik Cave Inscription of Nahapana 4) Mehrauli Pillar Inscription of Chandraguptha – II 5) Samudraguptha's Allahabad Pillar Inscription	05
Unit-III	**13/14**
Chapter-7 : Study of Important South Indian Inscriptions 1) Brahmagiri and Maski edicts of Ashoka 2) Halmidi Inscription 3) Aihole Inscription of Pulakeshi-II 4) Uttaramerur Inscription of ParantakaCholal-I 5) Shravanabelagola Inscription of Bukka-I	05
Chapter-8 : Contribution of Important Epigraphists – B.L.Rice – J.F.Fleet-D.L.Narasimhachar – M.H.Krishna	04
Chapter-9 : Visit to Local Inscription Sites Practical training in taking Estampages of stone or copper plate inscriptions – preparation of Field Study Report for assignment is mandatory.	04
Map for Study – Locate the Important Inscriptions and Its Importance 1.Besnagar 2.Hathigumpa 3.Junagada 4.Mathura 5.Banavasi 6.Badami 7.Arjunawada 8.Beluru 9.Kudiyanamalai 10.Nasik 11.Allahabad 12.Brahmagiri 13.Talagunda 14.Saranath 15.Maski 16.Sannathi 17.Gujarra 18.Nagarjunakonda 19.Halmidi 20.Shabazgarhi	02

Suggested Readings:

1. D.C.Sircar : Indian Epigraphy
2. R.B.Pandey : Indian Palaeography
3. Gai G.S. : Introduction to Indian Epigraphy
4. ನರಸಿಂಹಮೂರ್ತಿ ಎ.ವಿ. : ಕನ್ನಡ ಲಿಪಿಯ ಉಗಮ ಮತ್ತು ವಿಕಾಸ
5. ಅಣ್ಣಿಗೇರಿ ಎಂ.ಎಂ. : ಶಾಸನಗಳ ಸಂಗ್ರಹ
6. ಡಾ.ಚಿದಾನಂದಮೂರ್ತಿ : ಕನ್ನಡ ಶಾಸನಗಳ ಸಾಂಸ್ಕೃತಿಕಅಧ್ಯಯನ
7. ಸುಂದರ ಅ. : ಇತಿಹಾಸ ಮತ್ತು ಪುರಾತತ್ವ
8. ಹಿರೇಮಠಎಂ.ಎಸ್. : ಶಾಸನಾಧ್ಯಯನ
9. ಕೃಷ್ಣಮೂರ್ತಿ ಸಿ.ಪಿ. : ಶಾಸನಶಾಸ್ತ್ರ ಪ್ರವೇಶ
10. ರಮೇಶ ಕೆ.ವಿ. : ಕರ್ನಾಟಕ ಶಾಸನ ಸಮೀಕ್ಷೆ, ಬೆಂಗಳೂರು
11. ಶ್ರೀನಿವಾಸ ವಿ. ಪಾಡಿಗಾರ್ : ಭಾರತೀಯ ಶಾಸನ ಆಕರಗಳು

Course Articulation Matrix - Course Code: 22OEHIS302

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	2	2	1	2	1	1	3	3	2	1	2
2	3	2	2	1	2	1	1	3	2	2	-	2
3	2	2	1	1	2	1	1	2	2	1	1	2
ghted rage	**2.66**	**2**	**1.66**	**1**	**2**	**1**	**1**	**2.66**	**2.33**	**1.66**	**1**	**2**

II BA – IV Semester

Course Code: 221429

DSC-7 History of Karnataka (From Earliest times to 10th Century CE)

Course Title: History of Karnataka (From Earliest times to 10th Century CE)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. Develop a bird view on the historical development of Polity, economy and culture of Karnataka. Cultural transitions of Karnataka from earliest times to 10th century CE.

CO2. To understand how the different ruling powers develop a harmony in society through their religious policies.

CO3. Develop a strong cultural understanding of Karnataka's language, literature and different cultural aspects. To identify the makers of Karnataka and how they helped to preserve the continuity of long cultural heritage.

II BA – IV Semester

DSC-7 Subject Code: 221429

Content of Course-1	**39/42 Hrs**
Unit-1	**13/14**
Chapter-1 : Survey of Sources – Pre Historic Culture – Stages –Important Sites – Brahmagiri, Sanganakallu – T.Narasipura – Proto Historic Culture – Sannati – Rajaghatta.	05
Chapter-2 : The Maurya's in Karnataka – Ashoka – Mauryan influences on Polity of Karnataka – Inscriptions – Royal Edicts.	04
Chapter-3 : The Satavahanas – GautamiputraSatakarni – Polity and Administration	04

Unit – II : The Rise of Karnataka	13/14
Chapter-4 : The Kadambas of Banavasi Mayuravarma and Kakusthavarma – Polity – Administration –Land Grant Policy	04
Chapter-5 : The Gangas of Talakadu Konganivarma – Durvineeta – Sri Purusha – Chavundaraya –Polity – Administration – Land Grant Policy	05
Chapter-6 : The Chalukyas of Badami Pulakeshi-II, Vikramaditya-II, Polity – Administration – Land Grant Policy	05
Unit-III : The Ages of Empires	**13/14**
Chapter-7 : The Rastrakutas Krishna-I, Govinda-III, AmoghavarshaNrupatunga – Expansion Policy – Polity and Administration	05
Chapter-8 : The Chalukyas of Kalyana Tailapa –II, Vikramaditya-VI, Someshwara-III, Polity – Administration	04
Chapter-9 : Minor Dynasties of Anglent Karnataka The Punnatas –The Nolambas – The Banas	04
Map for Study Kadamba State during Kakustavarma Ganga State during Durvineeta BadamiChalukyan Empire during Pulikeshi II Rastrakuta Empire under AmoghavarshaNrupathunga	02
Important Historical Places: 1. Talakadu 2.T.Narasipura 3.Sanganakallu 4.Chandravalli 5.Siddapura 6.Jatingarameshwara 7.Manyakheta 8.Badami 9.Pattadakallu 10.Aihole 11.Banavaasi 12.Kalyana 13.Maski 14.Sannati 15.Shravanabelagola.	

Suggested Readings:

1. B.Sheik Ali : The Western Gangas
2. G.R.Rangaswamaiah : DakshinaBaratadaItihasa
3. A.Sundara (Ed.) : Kannada VishayaVishwakosha – ItihasamattuPuratatva
4. K.R.Basavaraju : History and Culture of Karnataka

5. P.B.Desai : A History of Karnataka
6. A. Sundara (Ed.) : Karnataka Charitre – Vol.I
7. B.SurendraRao (E.d) : Karnataka CharitreVol.II
8. K.A.NilakantaSastri : A History of South India
9. R.S.Mugali : The Heritage of Karnataka
10. Suryanath U. Kamath : Karnataka SankshiptaIthihasa

(1) https://www.k11news.com
(2) https://kn.m.wikipedia.org
(3) https://www.loc.gov
(4) https://m.youtube.com

Course Articulation Matrix - 221429

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	1	1	1	1	3	1	2	2	2	1	2
2	3	1	-	-	-	2	1	1	2	1	-	2
3	3	-	1	1	-	2	1	2	2	1	1	2
ghted rage	**3**	**1**	**1**	**1**	**1**	**2.33**	**1**	**1.66**	**2**	**1.33**	**1**	**2**

II BA – IV Semester

DSC-8 History of Modern Europe (1871-1945)Course Code: 221430

Course Title: History of Modern Europe (1871-1945)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. It provides a critical overview of the Europe from 1871 to 1945. It shall also trace the patterns and outcomes of social upheaval throughout Europe in the first half of 19th century. To understand the debates on the development and impact of industrial capitalism. The birth of new social movements, political ideas and structures shall be contextualized within developing capitalism of the nineteenth century. And investigates the political, social and economic developments that shaped and continue to shape the modern age.

CO2. Students would be expected to develop on her/his understanding of the social and economic dimensions of the Industrial revolution in eighteenth century Britain to compare and understand the specific case studies of France. Germany and Russia in the nineteenth century.

CO3. Examined changes since the 18th century in European social economic and political structure. Locating Europe's place in World history its development.

II BA – IV Semester

DSC-8

Title of the Course: History of Modern Europe (1871-1945)Course Code: 221430

Course-1		**Course-2**	
Number of Theory Credits	**Number of lecture hours/ semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3	39 or 42	3	39 or 42

Content of Course-1	39/42 Hrs
Unit-1 : Introduction	**13/14**
Chapter-1 : The German Empire from 1871-1914 German Constitution – Domestic and Foreign Policies of Bismark and William Kaiser II	04
Chapter-2 : III Republic of France **Domestic and Foreign Policies of France** **Colonialism and Imperialism in Asia and Africa in the 19th and 20th Century**	04
Chapter-3 : Eastern Question : Interests of Various Powers in Bolkan States **Stages:** 1. Serbian Independence to Treaty of Paris 2. Paris Treaty to Treaty of Berlin 3. Berlin Treaty of Bucharest 4. Congress of Berlin 5. Balkan Crisis and Wars – Causes – Failures- Consequences – Results	06
Unit – II	**13/14**
Chapter-4 : International Diplomacy Before the First World War Power Block and Alliances : Expansion of European Empires from 1870-1914 - Three Emperors League– Relations between England and France – Anglo- Russian Alliance of 1907.	04
Chapter-5 : First World War Causes – Course – Results – The Paris Peace Conference and the Treaty of Paris – Treaty of Versailles – Fourteen Points of Woodrow Wilson.	04
Chapter-6 : League of Nations The assembly – The Council – Organisations – Achievements and Failures	03
Unit-III	**13/14**
Chapter-7 : Rise of Totalitarianism in Europe Russian Revolution, 1917 – Causes and Its results Rise of Totalitarianism in Russia under Leninand andStalin.	04
Chapter-8 : Failure of Welmar Republic and Rise of Nazism in Germany	05

Adolf Hitler – Home and Foreign Policies – Formation of the Greater Germany – Fascism in Italy – Benito Mussoloni – Home and Foreign Policies	
Chapter-9 : Quest for Security and Read to Second World War International Issues leading to Second World War – Causes – Course – Results and Treaties Formation of UNO – itsOrganisation – Achievements ans Failures.	05
❖ **No Historical Maps**	

Suggested Readings:

1. C.D.Hazen : Modern Europe Since 1789
2. E.H.Carr : International Relations between to World Wars (1919-1939)
3. R.D.Cornwall : World History in 20th Century
4. A.J.P. Taylor : Struggle for Mastery of Europe 1848-1918
5. A.J.Grant& Templeton : Europe in 19th and 20th Century
6. C.D.M.Ketelby : A History of Modern Times from 1789
7. C.J.H. Hayes : Cultural and Political History of Europe Vol.1 (1500-1830)
8. George Lichtheim : A Short History of Socialism
9. Peter Mathias : First Industrial Revolution
10. Alec Nove : An Economic History of the USSR
11. Andrew Porter : European Imperialism 1870-1914 (1994)
12. Clyde and Beer : History of the far East
13. Hayes (ed.) : World History
14. Durant, Will : Lesson of History
15. Palmer, R.R. and J.Cotton : A History of the modern world
16. Fisher HAL : A History of Europe
17. Hays C.J.H : Contemporary Europe since 1870
18. Grosvenor, Edwin : Contemporary History of the world.

Course Articulation Matrix - 221430

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	1	1	1	1	2	1	2	2	1	-	2
2	2	1	-	-	-	1	1	2	2	1	1	2
3	2	1	1	1	-	1	1	2	2	1	1	2

ghted rage	**2.33**	**1**	**1**	**1**	**1**	**1.33**	**1**	**2**	**2**	**1**	**1**	**2**

II BA – IV Semester

Course Code: 22OEHIS401

OE-4 Freedom Movements in Karnataka (1800-1947)

Course Title: Freedom Movements in Karnataka (1800-1947)	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. Understand nature of freedom struggle in Karnataka and analyses the different stages of freedom struggle in Karnataka

CO2. To know the Swadeshi and Non-Cooperation Movement in Karnataka

CO3. To know the influence of Gandhi on freedom struggle and understand the prominent freedom fighters of Karnataka

II BA – IV Semester

OE-4

Title of the Course: Freedom Movements in Karnataka (1800-1947)

Course-1		**Course-2**	
Number of Theory Credits	**Number of lecture hours/ semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3	39 or 42	3	39 or 42

Content of Course-1	**39/42 Hrs**
Unit-1	**13/14**
Introduction : Introduction to Historical Background	**02**
Chapter-1 : The disintegration of Karnataka and absorption of Karnataka areas into	04

Madras, Bombay Provinces and Hyderabad State – Economic Background to Karnataka National Movement.	
Chapter-2 : Armed Resistances against the British Rule in Karnataka Rani of Kittur (1824) – SangolliRayann(1829-30) – Nagar Revolt (1830-31)Resistance in Kodagu.	04
Chapter-3 : The Impact of the Rebellion of 1857 on Karnataka Against anti – Arms Act – Bedas of Halagali – 1857 – VenkatappaNayaka of Surapura – Baba Saheb of Naragunda – Bhimarao of Mundaragi –Effects of the Struggle.	04
Unit – II	**13/14**
Chapter-4 : The National Movement in Bombay Karnataka Rise of Nationalism in Karnataka – Early activities – Influence of BalagangadharTilak – The response to Swadeshi Movement – Home Rule Movement – Influence of Mahatma Gandhi- Non Cooperation Movement – Belgaum Congress Session of 1924 – Civil Disobedience Movement.	05
Chapter-5 : The National Movement in Hyderabad Karnataka Early activities – The response to Swadeshi and Non-Cooperation Movement-Influence of Mahatma Gandhi and SwamyRamanandaTheertha – Razakar Movement	04
Chapter-6 : National Movement in Princely Mysore Early activities – Influence of Tilak and the Response to Swadeshi Movement – Establishment of Indian National Congress in Mysore – Civil Disobedience Movement – Forest Satyagraha and No Tax campaign	05
Unit-III	**13/14**
Chapter-7 : Foundation of Mysore Congress Shivapura Congress Session – Vidhurashwatha Tragedy –Quit India Movement – Esuru Tragedy – Mysore Chalo Movement	05
Chapter-8 : Congress Constructive Programmers in Karnataka Propogation of Khadi – Rejuvenation of Village Industries –Removal of Untouchability – Prohibition of Liquor.	04
Chapter-9 : Prominent Freedom Fighters of Karnataka HardikarManjappa – GanghadharaRaoDeshpande – Kamala Devi Chattopadhyaya –	04

TagaduruRamachandraRao – Nijalingappa S. – T.Siddalingaiah – K.C.Reddy – YashodharaDasappa – AluruVenkataraya.	
❖ **No Historical Maps.**	

Suggested Readings:

1.	S.Chandrashekhar	:	ದಕ್ಷಿಣ ಭಾರತ: ವಸಾಹತುಶಾಹಿ ಮತ್ತು ಸಂಘರ್ಷ ಆಧುನಿಕಕರ್ನಾಟಕದಆಂದೋಲನಗಳು
2.	R.R.Diwakar	:	Karnataka through the ages
3.	P.B.Desai	:	History of Karnataka
4.	K.Veerathappa	:	Studies in Karnataka History and Culture
5.	James Manor	:	Political changes in an Indian State Mysore 1917-1955
6.	M.Shamarao	:	Modern Mysore (2 Vols.)
7.	Sunanath U. Kamath	:	A Concise History of Karnataka ಕರ್ನಾಟಕದ ಸಂಕ್ಷಿಪ್ತಇತಿಹಾಸ
8.	ಷೇಕ್ ಅಲಿ ಬಿ. (ಪ್ರ.ಸಂ.)	:	ಕರ್ನಾಟಕಚರಿತ್ರೆ ಸಂಪುಟ–6 ಮತ್ತು 7
9.	ಎಚ್.ಎಸ್.ಗೋಪಾಲರಾವ್	:	ಕರ್ನಾಟಕಏಕೀಕರಣದಇತಿಹಾಸ
10.	ದೊರೆಸ್ವಾಮಿಎಚ್.ಎಸ್.	:	ಸ್ವಾತಂತ್ರ್ಯ ಚಳವಳಿ: ಕರ್ನಾಟಕ
11.	ದಿವಾಕರ್ಆರ್.ಆರ್.	:	ಕರ್ನಾಟಕದ ಪರಂಪರೆ, ಸಂಪುಟ–2

Course Articulation Matrix - Course Code: 22OEHIS401

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	-	-	1	-	2	2	2	2	1	1	2
2	2	-	-	-	-	2	2	2	2	1	-	2
3	3	1	1	1	-	2	1	2	2	1	1	2
ghted rage	**2.66**	**1**	**1**	**1**	**-**	**2**	**1.66**	**2**	**2**	**1**	**1**	**2**

II BA – IV Semester

OE.-4 Principles and Practice of Museology

Course Code: 22OEHIS402

Course Title: Principles and Practice of Museology	
Total Contact Hours: 39 to 42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Syllabus Authors: BOS (UG)	Summative Assessment Marks: 100

Course Outcomes (Cos):

CO1. Understand the concepts of Museum, Museology, Museographer. Learn how to make museum and cultural center as a destination of cultural tourism

CO2. To identify properly both Cultural and Natural Heritage objects and other cultural organizations as resource center for local communities. To know the acquisition methods, proper collection of objects for cultural centers

CO3. Documentation of Tangible, Intangible and Natural Heritage objects

II BA – IV Semester

OE-4

Title of the Course: Principles and Practice of Museology

Course-1		**Course-2**	
Number of Theory Credits	**Number of lecture hours/ semester**	**Number of Theory Credits**	**Number of lecture hours/semester**
3	39 or 42	3	39 or 42

Content of Course-1	**39/42 Hrs**
Unit-1	**13/14**
Introduction	
Chapter-1 : Definition and concepts of Museology and Museum	04
Chapter-2 : Origin and development of Museology and Museography	04
Chapter-3 : Functions of Museum Collection, Documentation – Index and Catalogue – Numbering the objects	04

Unit – II	13/14
Chapter-4 : A brief History of Museum Movement in India and Abroad	05
Chapter-5 : Types of Museums – Archaeology Museums – Art Museums – History Museums – Maritime Museums – Military and war Museums – Open air Museum – Industrial Museums, Science Museums.	04
Chapter-6 :Indian Legislative Measures Relating to Museums – Treasure Trove Act, Antiquity Registration Act. **Role of Professional Organizations** – Museums Association of India UNESCO – ICOM – ICOMOS	05
Unit-III	**13/14**
Chapter-7 : Important National Museums of India National Museum, New Delhi- Salarjung Museum Hyderabad – Calcutta Museum – Mathura Museum – Government Museum Chennai	05
Chapter-8 : Regional Museums – Natural History Museum – Mysore Government Museum, Hassan Government Museum Bangalore – Manjusha Museum, Dharmasthala – Suttur Museum	04
Chapter-9 : Exhibition Equipment's in Museum Showcase – Pedestals – Audio Visual Equipment – Labeling. Visit to nearest Museums or Preparation project report on Museums for assignment is mandatory	04
Historical Places : 1.New Delhi 2.Calcutta 3.Hyderabad 4.Mumbai 5.Chennai 6.Bengaluru 7.Bhuvaneshwar 8.Patna 9.Kochi 10.Ahmadabad 11.Poona 12.Mysuru 13.Dharmasthala 14.Hassan 15.Amritsar 16.Jaipur 17.Madras 18.Dakshina Chitra (Muttukad) 19.Indore 20.Goa	

Suggested Readings:

1. Grace Morley : Museums To-day, Department of Museology, M.S.University of Baroda, 1968
2. Diwadi V.P. (Ed.) : Museums and Museology : New Horizons
3. VasantHariBedkar : New Museology for India, National Museum Institute of History of Art, Conservation and Museology, 1985
4. ShivaramMurti C. : Directory of Museums, Museology and New

Museology, New Delhi, 1985
5. Nigam M.L. : Fundamentals of Museology, NavhindPrakashan, 1966.
6. AgrawalUsha Museum in India – a brief directory
7. Seth, Manvi Communication and Education in Indian Museums
8. Roy. Shilpi Museum documentation : A Potent tool for collection Management
9. Smith Bautista, Susana Museums in the Digital Age: Changing Meaning of Places, Community and Culture.
10. Nigam M.L. Museums in India
11. Nigam M.L. Fundamentals of Museology
12. Ghosh D.P. A Studies in Museology
13. ಸಣ್ಣಯ್ಯ ಬಿ.ಎಸ್. (ಅನುವಾದ) : ವಸ್ತುಸಂಗ್ರಹಾಲಯ ಮೂಲತತ್ವ

Course Articulation Matrix - Course Code: 22OEHIS402

POS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	2	2	2	1	1	2	1	2	3	1	1	2
2	2	2	2	1	1	2	1	2	3	1	1	2
3	2	-	1	-	-	1	-	1	2	1	-	2
ghted rage	**2**	**2**	**1.66**	**1**	**1**	**1.66**	**1**	**1.66**	**2.66**	**1**	**1**	**2**

Pedagogy

- Lecture Method – Class Room Teaching,
- Learning Through Project work
- Collaborative learning strategies
- Use of Resources like Audio- Visual aids, Films, Documentaries
- Visit to Historical Sites, Museums etc.
- ICT Supplemented Teaching
- Seminars/ Guest/ Special Lectures
- Group Discussions

Modes of Assignment

- Individual Assignments
- Project work
- Written Test
- Documentaries

Assessment:

Weightage for assessments (in percentage)

<table>
<tr><th colspan="3">Formative Assessment</th></tr>
<tr><th colspan="2">Internal Assessment</th><th>Theory Part Semester End Examination</th></tr>
<tr><td>Internal Test</td><td>10</td><td rowspan="6">60</td></tr>
<tr><td>Assignment / Book Review</td><td>10</td></tr>
<tr><td>Seminar with Group Discussion</td><td>10</td></tr>
<tr><td>Viva Voice</td><td>10</td></tr>
<tr><td>Total</td><td>40</td></tr>
<tr><td colspan="2">Grand Total</td><td>100</td></tr>
</table>

PATTERN OF QUESTION PAPER FOR III AND IV SEMESTER EXAMINATION

SCHEME OF EXAMINATION
B.A- History (NEP)
(DSCC With 3 Credits- (No. of Papers- 2)
III and IV Semester of B.A., (C1-20, C2-20, C3-60 Total=100 Marks)

SCHEME OF EXAMINATION for 100 Marks

(Each paper shall have two components)

III.	Internal Assessment	-	**40** Marks
IV.	Theory Component	-	**60** Marks
	Total	-	**100** Marks

II. Internal Assessment in Each paper shall have the following sub components.

E)	Internal Test	-	**10** Marks
F)	Assignment/Book Review	-	**10** Marks
G)	Seminar with Group Discussion	-	**10** Marks
H)	Viva Voice	-	**10** Marks
	Total - **40 Marks**		

III. Theory Component

The theory question paper shall have **Three** parts and the maximum duration of the theory part shall be $2\frac{1}{2}$ **Hours**

NOTE:

Question papers shall have one Extralong Answer Question Carrying 10 marks exclusively for the **Visually impaired candidates**, provided such candidates are enrolled in the course. In that case the extra Question should be printed at the end of the question paper super scribed with "Note".

The theory question paper shall have THREE parts and the maximum duration of the theory part shall be $2\frac{1}{2}$ Hours and it shall be as follows:

PATTERN OF QUESTION PAPER FOR 3rd& 4th SEMESTERS
HISTORY – DSC

Max Marks: 60

Time: $2\frac{1}{2}$Hours

Instructions: All PARTS are Mandatory. (ಎಲ್ಲಾ ಭಾಗಗಳು ಕಡ್ಡಾಯ)

PART – A / ಭಾಗ – ಎ

Answer ALL the following Questions in ONE Sentence each. 10x1=10

ಕೆಳಕಂಡ ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೂ ಒಂದು ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿ.

1. a.
   b.
   c.
   d
   e.
   f.
   g.
   h.
   i.
   j.

PART – B / ಭಾಗ – ಬಿ

Answer any FOUR of the following Questions 4x5=20

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

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7

PART – C / ಭಾಗ – ಸಿ

Answer any THREE of the following Questions 3x10=30

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

8
9
10
11
12

NOTE: Attending MAP Question is Mandatory.(ಭೂಪಟದ ಪ್ರಶ್ನೆಯುಕಡ್ಡಾಯವಾಗಿರುತ್ತದೆ.)

Questionsmustbepreparedsuchthatallunitsarecovered.

PATTERN OF QUESTION PAPER 3rd& 4th SEMESTER
HISTORY - OPEN ELECTIVE

Max Marks: 60

Time$2\frac{1}{2}$Hours

Instructions: All PARTS are Mandatory.

Instructions: All PARTS are Mandatory. (ಎಲ್ಲಾ ಭಾಗಗಳು ಕಡ್ಡಾಯ)

PART – A / ಭಾಗ – ಎ

Answer ALL the following Questions in ONE Sentence each. 10x1=10

ಕೆಳಕಂಡ ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೂ ಒಂದು ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿ.

1. a.
   b.
   c.
   d
   e.
   f.
   g.
   h.
   i.
   j.

PART – B / ಭಾಗ – ಬಿ

Answer any FOUR of the following Questions 4x5=20

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

2
3
4
5
6
7

PART – C / ಭಾಗ – ಸಿ

Answer any THREE of the following Questions 3x10=30

ಕೆಳಕಂಡ ಯಾವುದಾದರೂ ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ.

8
9
10
11
12

NOTE: Attending MAP Question is Mandatory.(ಭೂಪಟದ ಪ್ರಶ್ನೆಯುಕಡ್ಡಾಯವಾಗಿರುತ್ತದೆ.)

Questionsmustbepreparedsuchthatallunitsarecovered.

Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Affiliated to University of Mysore &Accredited by NAAC with A Grade
College with potential for excellence
Jayalakshmipuram, Mysuru - 570 012

Department of History

Motto:

History for future

Vision:

Orienting the students to imbibe
Indian Culture and values through History

Mission:

- To organize field visits to Historical places, Historical monuments, Excavation Sites, History museums, Conservation laboratory etc, which provides experiential learning.
- To take up special projects like conservation of monuments, heritage buildings etc.
- To organize exhibitions related to numismatics and philately
- To organize special lectures remembering National leaders, Martyrs and renowned personalities.

B.A. Program in History (CBCS SEMESTER SCHEME)

FINAL YEAR (V & VI SEMESTERS)

	DSE - DISCIPLINE SPECIFIC ELECTIVE - V & VI Semesters							
m	**Sub code**	**Paper No.**	**Title of the Paper**	**L-T-P**	**Total Credit**	**IA Marks C1 +C2**	**Theory Exam**	**Total Marks**
	211514	**5.1**	**History and Culture of South India Upto 1026 CE**	**5-1-0**	**6**	**10+10**	**80**	**100**
	211524	**5.2**	**History and Culture of Karnataka (1026 - 1761 CE)**	**5-1-0**	**6**	**10+10**	**80**	**100**
	211534	**5.3**	**Development of Tourism**	**5-1-0**	**6**	**10+10**	**80**	**100**
I	**211644**	**6.1**	**History of Modern Karnataka (1761 to 1956 CE)**	**5-1-0**	**6**	**10+10**	**80**	**100**
	211654	**6.2**	**India after Independence (1947 to 1991 CE)**	**5-1-0**	**6**	**10+10**	**80**	**100**
	211664	**6.3**	**History of Modern Europe (1789 to 1945 CE)**	**5-1-0**	**6**	**10+10**	**80**	**100**
	Generic Elective (GE) - V & VI Semesters							
	211584	**-**	**Indian Freedom Movement (1885-1947 CE)**	**1-1-0**	**2**	**5+5**	**40**	**50**
I	**211694**	**-**	**Freedom Movement in Karnataka (1885-1947 CE)**	**1-1-0**	**2**	**5+5**	**40**	**50**

B.A – HISTORY
V SEMESTER- CBCS SYLLABUS
DSE (Discipline Specific Elective) Paper-5.1

HISTORY AND CULTURE OF SOUTH INDIA UPTO 1026 CE

Sub. Code- **211514**
QP Code: 61145 Exam Marks -80
Course Duration- 16 Weeks IA Marks -20
Per week-6 Hours (L-5: T-1: P-0) 6 Credits Exam Duration-03Hrs
Total Hours- 80

Course Objectives:

- To orient the students to **Imbibe History and Cultureof South India**
- The empirical knowledge of **Archaeological Field Survey** will be imparted to the students.

Course/ Learning Outcomes:

- The students will be equipped with ability to take up various **Competitive Examinations.**
- The students have an opportunity to get an experience about doing field work this would lead towards **research oriented activities.**
- To develop the knowledge of ancient Karnataka history including different dynasties and their contributions.

UNIT – I **20 Hrs**

Sources –Sangam age –Polity – Literature-Kadambas of Banavasi-MayuraVarma- Gangas of Talakadu-Durveenitha –Shatavahanas – GautamipuraShatakarni. .

UNIT – II **15 Hrs**

Chalukyas of Badami – Pulakeshi – II Cultural Contributions – The Rashtrakutas – AmoghavarshaNrupatunga – Cultural Contributions.

UNIT – III **25 Hrs**

Pallavas of Kanchi – NarasimhaVarma – I and his achievements – The Cholas of Tanjore – RajendraChola – I – RajarajaChola – I – Administration – Art and Architecture. Chalukyas of Kalyana – Vikramaditya – VI and Someshwara – III.

UNIT – IV **10 Hrs**

South India- Society–Economy– Guild System- Land Grants – Brahmadeya and Devadaya.

UNIT – V **10Hrs**

South India- Bhakti Movement Alwars and Nayanars– Shankaracharya – Ramanujacharya – Madhvacharya – Basaveshwara.

HISTORICAL MAPS:

(1) Chalukya Empire under Pulakeshi II
(2) Rashtrakuta Empire under AmoghaVarshaNrupatunga
(3) Chola Empire under RajarajaChola – I
(4) Pallava Empire under Narasimhavarma – I
(5) Important Arts and Architectural Centers of South India

PLACES OF HISTORICAL IMPORTANCE:

(1) Badami (2) Pattadakallu (3)Banavasi (4) Kanchi (5) Tanjore (6) Kalyana (7) Manyakheta (8) Kalati (9) Koodalasangama (10) Mahabalipuram (11) Aihole (12) Nasik (13) Udupi (14) Shravanabelagola (15) Peramburu (16) Talakadu (17) Somanathapura (18) Kolar (19) Uraiyur (20) Madhuri

BOOKS FOR STUDY & REFERENCE

(1) T.V.Mahalingam : *South Indian Politics*
(2) Dr. K.A.NeelakantaShastri – *A History of South India, Oxford University Publication, 2004.*
(3) R.G.Bhandarkar– *History of Deccan*
(4) Deret J.D.M. – *The Hoysalas*
(5) Gupta K.M. – *Land System in South India 800-1200 A.D.*
(6) R.R.Diwakar – *Karnataka through the Ages.*
(7) S.Mugali – *South Indian Studies,B.R., publishing, New Delhi*
(8) M.N.Venkataramanappa – *South Indian History*
(9) Dr. H.N.Thipperudraswamy – *Karnataka SamskrutiSameekshe, D.V.K.Murthy Publication, Mysore, 2003.**(KAN)***
(10) Prof. G.R.Rangaswamaiah& Prof. B.Sheik Ali- *DakshinaBharatadaIthihaasa, Chetana Book House Publication, Mysore, 2001* ***(KAN)***
(11) Dr. S.N.Shivarudraswamy- *DakshinaBharatadaIthihaasa, Pourastya Publication, Tipaturu - 2008.**(KAN)***
(12) KNA –*DakshinaBhaaratadaIthihaasMattuSamskruthi* ***(KAN)***
(13) Dr. SuryanathKamat- *Karnataka SankshiptaCharitre, MCC Publication, Bangalore, 2008.**(KAN)***
(14) Prof B Sheik Ali- Western Gangas
(15) MaliniAdiga- The Making of Southern Karnataka-Society, Polity and Culture in Early Medieval period - 400 AD to 1030 AD
(16) S Shetter – Shangam –Tamilagam, Kannada Nadu NudiAdhyana

(17) *https://www.k11news.com*
(18) *https://kn.m.wikipedia.org*
(19) *https://www.loc.gov*
(20) *https://m.youtube.com*

B.A – HISTORY
V SEMESTER - CBCS SYLLABUS
DSE (Discipline Specific Elective) Paper-5.2

HISTORY AND CULTURE OF KARNATAKA (1026-1761 CE)

Sub. Code- **211524**
QP Code: 61146 Exam Marks -80
Course Duration- 16 Weeks IA Marks -20
Per week-6 Hours (L-5: T-1: P-0) 6 Credits Exam Duration-03Hrs
Total Hours- 80

Course Objectives:

- To orient the students to **Imbibe Karnataka History and Culture**.
- The empirical knowledge of **Archaeological Field Survey** will be imparted to the students.

Course/ Learning Outcomes:

- The students will be equipped with ability to take up various **Competitive Examinations.**
- The students have an opportunity to get an experience about doing field work, this would lead towards **research oriented activities.**
- To develop the knowledge of Medieval Karnataka History including different dynasties and their contributions.

UNIT – I **10 Hrs**

Sources – Literary Sources and Archaeological Sources.

UNIT – II **25 Hrs**

The Hoysala Dynasty – Vishnuvardhana – Administration –Art and Architecture-Vijayanagara Empire – Origin Theories – Sangama Dynasty – Devaraya – II – Tuluva Dynasty – Krishnadevaraya – Aliyaramaraya and Battle of Talikote (1565) – Administation and Cultural Contributions.

UNIT – III **15 Hrs**

Bahamani Kingdom – MohamadGawan-Conquests and Administrative Reforms – AdilShahis of Bijapura – Ibrahim AdilSha – II, Cultural Contributions of Adilshais.

UNIT – IV **20 Hrs**

Wodeyars of Mysore – Early Wodeyars – Raja Wodeyar -ChikkadevarajaWodeyar – Administration and Literature –Palegers of Karnataka-Nayakas of Keladi- Shivappanayaka – Land Revenue Reforms – Palegars of Chitradurga - MadakariNayaka–V.

UNIT – V **10 Hrs**

Socio -Religious Movement – Purandaradasa – Kanakadasa – Spread of Christianity and Islam- Sufism – Quaja – Bande – Nawaz.

HISTORICAL MAPS:

(1) Hoysala Empire under Vishnuvardhana.
(2) Vijayanagara Empire under Krishnadevaraya
(3) Bahamani Kingdom under Gawan
(4) Mysore State under ChikkadevarajaWodeyar

PLACES OF HISTORICAL IMPORTANCE:

(1) Talikote	(2) Hampi	(13) Halebedu
(3) Bijapura	(4) Gulbarga	(14) Bidar
(5) Keladi	(6) Mysore	(15) Goa
(7) Kaginele	(8) Srirangapatna	(16)Somanathapura
(9) Chitradurga	(10) Mangaluru	(17)Chikkamagaluru
(11) Ikkeri	(12) Belur	(18) Hosapete
(19) penugonda	(20) Udupi	

BOOKS FOR STUDY & REFERENCE

(1) R.Ramakrishnan and H.V.Srinivasamurthy- *A History of Karnataka (New Delhi, 1978)*
(2) R.S.Mugali- *The Heritage of Karnataka,Bengaluru, 1976*.
(3) R.R.Diwakara- *Karnataka* through the Ages*, Bengaluru, 1968*.
(4) Burton Stein, *The New Cambridge History of India, 1.2 Vijayanagara,* Cambridge, 1989.
(5) B.A.Salatore – *Political Life in Vijayanagara Empire – 2Volumes.*
(6) K.R.Basavaraja, *History and Culture of Karnataka,* (*Dharwad, 1984)*
(7) Sheik Ali,B -*: Karnataka CharithreVol 1-7, Hampi University*
(8) S.Rajashekara, *Karnataka Architecture*, *Dharawad, 1985.*
(9) Robert Sewel- *A Forgotton Empire, Asian Educational Services, NewDelhi.*
(10) G.S.Dixit - Krishnadevaraya – *Life and Achievements, Directorate of Archaeology & Museum, Mysore.*
(11) Prof. B.Parameshwara – *Karnataka IthihaasaParichaya**(KAN)***
(12) Dr. K.Sadashiva- *DakshinaBharatadaIthihaasa**.(KAN)***
(13) KNA – *Madyakaalina Karnataka Ithihaasa**(KAN)***
(14) Dr. SuryanathKamat- Karnataka SankshiptaCharitre, MCC Publication, Bengaluru, 2008**.(KAN)**

(15) R Gopal -International Seminar Proceedings, Published by Directorate of Archaeology and Museum, Govt. of Karnataka.
(16) *https://www.k11news.com*
(17) *https://kn.m.wikipedia.org*
(18) *https://www.loc.gov*
(19) *https://m.youtube.com*

B.A – HISTORY

V SEMESTER - CBCS SYLLABUS
DSE (Discipline Specific Elective) Paper-5.3

DEVELOPMENT OF TOURISM

Sub. Code- **211534** Exam Marks -80
Course Duration- 16 Weeks IA Marks -20
Per week-6 Hours (L-5: T-1: P-0) 6 Credits Exam Duration-03Hrs
Total Hours- 80

Course Objectives:

- To develop and impart the proper understanding of **Indian tourism**
- It Offers people **Jobs** and **Career Prospects**

Course/ Learning Outcomes:

- The students have equal **opportunities for self-employment in the field of Tourism.**
- The students have an opportunity to get an experience about doing field work; this would lead towards **research oriented activities.**

Unit - I - CONCEPTS OF TOURISM — 10 Hrs

Nature -Scope – Definition-Tourists and Excursionists-Domestic Tourists and International Tourists.

Unit - II - HISTORY OF TOURISM — 20 Hrs

Early period - Greek –Megastanis -Roman –Chinese-Huien-Tsang and NalandaMahavehara - Indian conception ofTourism.

Medieval period - Grand Tour -Italy, Arab and European Travelers-Alberuni, Marcho Polo – Ibna-batuta Al – Masudietc,.

Modern period- Rise of Organized tour in Europe and India-Thomas Cook company etc,.

UNIT - III- TYPES OF TOURISM — 10 Hrs

Heritage Tourism-Archaeological Sites –Sannati and Kanaganahalli -Recreation Tourism-Advance Tourism-Health Tourism– Manipal Health Center – Dharmastala Naturopathy – UjireEco tourism- Problems and Challenges-Package Tourism

Unit -IV –PERSPECTIVE OF TOURISM — 10 Hrs

Tourism Policies: Govt. of India: Govt. of Karnataka- UNESCO Guidelines

UNIT – V - TOURIST PLACES — 20 Hrs

ChamarajanagaraDistrict : B.R. Hills , MM Hills, Hassan District-Shravanabelagola-Beluru–Halebedu, MandyaDistrict :Hosaholalu, Kambadahalli, Srirangapatana, Mysore District -Nanjangudu, Mysore, Somanathapura, Talakadu.

Maps

Historical Places

1.Belur 6. Srirangapatana 11.Mahabalipuram 16.Pattadakalu

2. Halebedu 7. Mysore 12.Madras17.Kanchi

3. Hampi8.Chitradurga13. Tiruvananthapuram18.Pondichery

4. Badami9. Tanjore 14.Kanyakumari19.Bijapur

5. Aihole10. Madurai 15.Hyderabad20.Rameshwara 21.Banavasi
22.Manipal23.Ujire24.Sannati25.Nanjangudu.

BOOKSFORSTUDYANDREFERENCE

1. Bhatia A.K.-Tourism Development

2. Clare, Gunn- Tourism Planning

3. Tourism Department publications and Folders

4. Khan, Nafees A- DevelopmentTourisminIndia

5. Krishna K Karama - Basics of Tourism

6. KSTDC Publication Individual Folders

7. KSTDC Publication, Karnataka Traveler Bangalore

8. Vijayalakshmi K.S.-History and Tourism

9. K.N.A - PravaasodyamadaMoolatatvagalu, Swapna Book House Publication.,Bengaluru,2016**.(KAN)**

10. B.M.Nagaraju–PravaasodyamadaMoolatatvagaluMahima Publication, Mysore, 2013**. (KAN)**

11. RaghottamaTeertha-Pravaasi Karnataka Darshana, BharatiBaiPublication, Mysore, 2008.**(KAN)**

12 Dr. JayaramShettigear- Tourism in India, Prodigi Printing Canara Towers Mission Hospital Road –Udupi-576101.

12. https://www.karnatakatourism.org

13. https://en.m.wikipedia.org

14. https://www.karnataka.com

15. https://www.kstdc.com

16. www.karnatakatravel.com

B.A – HISTORY
VI SEMESTER - CBCS SYLLABUS
DSE (Discipline Specific Elective) Paper-6.1

HISTORY OF MODERN KARNATAKA (1761-1956 CE)

Sub. Code- **211644** Exam Marks -80
Course Duration- 16 Weeks IA Marks -20
Per week-6 Hours (L-5: T-1: P-0) 6 Credits Exam Duration-03Hrs
Total Hours- 80

Course Objectives:

- To orient the students to **Imbibe Modern Karnataka History and freedom movement.**
- The empirical knowledge of **Archaeological Field Survey** will be imparted to the students.

Course/ Learning Outcomes:

- The students will be equipped with ability to take up various **Competitive Examinations.**
- The students have an opportunity to get an experience about doing field work, this would lead towards **research oriented activities.**
- To develop the knowledge of Modern Karnataka history including different dynasties and their contributions.

UNIT – I **20 Hrs**

Rise of Hyder Ali And Tipu- Anglo Mysore Wars Administrative and Economic Reforms - Restoration of Mysore State – KrishnarajaWodeyar III -Subsidiary Alliance – DewanPurnaiah and his Administrative Reforms –Cultural Contributions – Nagara uprising of 1830- 1831.

UNIT – II **15 Hrs**

Colonial Rule in Mysore - The Rule of Commissioners – Mark Cubbon – LB Bowring – Re-organisation of Administration- Economy-Development of Transportation-Railway- Plantation.

UNIT – III **15 Hrs**

Rendition of Mysore– Process of Modernisation of Mysore –ChamarajaWodeyar – X -Dewanship of C.Rangacharlu and K.SheshadriIyer.

UNIT – IV **10 Hrs**

The Regime of KrishnarajaWodeyar IV – Dewanship of Sir M.Vishweshwaraiah-DewanKantharajaUrs – Backward class Movement - Sir Mirza Ismail-JayachamarajaWodeyar.

UNIT – V **20 Hrs**

Emergence of Nationalism – National Movement in Mysore State– Non-Cooperation Movement – Civil Disobedience Movement-Ankola Salt March-ShivapuraSathyagraha-Vidhuraswatha Incident-Esuru Tragedy - Mysore Chalo Movement – Unification Movement in Karnataka.

HISTORICAL MAPS:

(1) Mysore under Tipu 1792
(2) Extent of Princely Mysore in 1800.
(3) Industrial Centres under Dewan Sir M.Vishweshwaraiah and Sir Mirza Ismail.
(4) Mysore State in 1956.

PLACES OF HISTORICAL IMPORTANCE:

(1) Mysore (2) Ankola (11) Nanjanagudu (16) Budikote
(3) Shivapura (4) Vidhurashwatha (12) Dharawada (17) Devanalli
(5) Bidanooru (6) Belagola (13) Mangalor (18) Dindigallu
(7) Belagaum (8) Esuru (14) Kolara (19) Tiruchanapalli
(9) Bhadravathi (10) Mandya (15)Srirangapatna (20) Bengaluru

BOOKS FOR STUDY & REFERENCE

1. James Manor – *Political Changes in an Indian State (Mysore 1831-1920) Rawal Publication, Jaipura, 1996*
2. Veerathappa K – *Readings of Modern History of Mysore, S.Chand and Co. Delhi, 1985.*
3. I.M.Muttanna – *History of Modern Karnataka – Sterling Publication, Delhi, 1986.*
4. HayavadanaRao - *Mysore Gazetteers Vol. 1 to 5, Bengaluru, 1929.*
5. G.S.Halappa- *History of Freedom Movement in Karnataka, Vol. 1 & 2, Bangalore, 1964.*
6. B Sheik Ali - *Karnataka Charitre, Vol. 5-7, Kannada University,Hampi*
7. Hettne B- *The Political Economy of Indirect Rule; Mysore 1881-1947, New Delhi, 1978.*
8. R.R.Diwakara - *Karnataka through the Ages, Bengalore, 1968.*
9. S.N.Shivarudraswamy–*KarnatakadaProudaIthihaasaMattuSamskruthiPourasty Publication, Tipaturu, 2010.**(KAN)***
10. Prof. T.G.Chandrashekarappa–*SamagraKarnatakadaIthihaasa, Poorna Publication, Shimoga, 2015.**(KAN)***
11. Dr. H.S.GopalaRao - *Karnataka EkikaranaIthihaasa, NavakarnatakaPublicaiton, Bangalore, 1996.**(KAN)***
12. Dr. K.Sadashiva–*BharatadaSwatantryaChaluvali. **(KAN)***
13. Prof. C.N.Lokappagowda - *Adhunika Karnataka Ithihaasa. **(KAN)***
14. *R Gopal- Life and Achievements of Tipu Sultan-Published by Directorate of Archeology and Museum, Govt. of Karnataka.*
15. *https://karnataka.pscnotes.com*
16. *https://unacademy.com*
17. *https://en.m.wikipedia.org*
18. *https://www.britanica.com*

VI SEMESTER - CBCS SYLLABUS
DSE (Discipline Specific Elective) Paper-6.2

INDIA AFTER INDEPENDENCE (1947-1991 CE)

Sub. Code- **211654** Exam Marks -80
Course Duration- 16 Weeks IA Marks -20
Per week-6 Hours (L-5: T-1: P-0) 6 Credits Exam Duration-03Hrs
Total Hours- 80

Course Objectives:

- To orient the students about history of Post Independent India and contemporary world.
- To study the relationship of India with other countries.
- To inspire students and communities to transform themselves and their society.

Course/ Learning Outcomes:

- The students will be educated about the problems of contemporary world in the light of its background history.
- The students will understand the relation between modernity, nationalism and its implication**.**
- The students will understand the necessity of universal brotherhood.

UNIT – I 20 Hrs

Partition and Independence -Problems of India –Migration- Framing of Constitution –Kashmir Issues – Border Disputes –India and Pakistan-India and China Integration of India and Vallababhai Patel – Liberation of Pondichery and Goa – Re-organization of States.

UNIT-II 20 Hrs

Nehru Period – Economic Development – Mixed Economy –Five Year Plans – Development of Agriculture - Industry –Education –Kothari Commission -Radhakrishnan Commission- Foreign Policy-Indo-China war.

UNIT-III 20 Hrs

LalBahadurShasthri –Domestic and Foreign Policy-Indo Pak war and Taskent Treaty- Indira Gandhi-Domestic Policy-White Revolution-Green Revolution- GareebiHatao-Nationalization of Banks-Abolition of Privy Purse-First Atomic Explosion at Pokhran-Declaration of Emergency –Operation Blue Star – Foreign Policy- Liberation of Bangladesh.

UNIT-IV 10 Hrs

J.P Movement- Rise of Non-Congress Political Parties- Janatha Party-Punjab Akali dal- Tamilnadu DMK-AndhraPradesh TDP-Maharastra Shiv Sena.

UNIT-V **10 Hrs**

Rajiv Gandhi –Problems - Domestic Policy and New Education Policy of 1986 –Foreign Policy–India and Srilanka – PKF- P. V.NarasimhaRao – Introduction of LPG.

***NO HISTORICAL MAPS.**

BOOKS FOR STUDY & REFERENCE

1. Bipin Chandra - *India after Independence : 1947-2000", New Delhi, 2000*
2. RamachandraGuha - *India after Gandhi, The History of the Worlds Largest Democracy, London, 2007*
3. W.H.Mornis Jones - *The Government and Politics of India, London, 1964*
4. ShobhaKapoor - *History of Modern India and Contemporary World*
5. G.John Gilbert - *Contemporary History of India, New Delhi, 2006*
6. Bisweshwara Prasad - *Contemporary Africa Asia Pub., House, Bombay, 1960*
7. B.R.Nanda(ed) - *India's Foreign Policy*
8. HiranmayKarlekar - *Independent India, the First Fifty years", Delhi, 1998*
9. KNA, SamakaalinaPrapancha - *Subhas Stores Pub., Bangalore, 2009* ***(KAN)***
10. Steven Quadral–*SamakaalinaVishwa, Lakshmi Pub., Mysore, 2006* ***(KAN)***
11. D.T.Joshi- *PrapanchadaIthihasa, Vidyanidhi Pub., Gadaga, 2014* ***(KAN)***
12. https://en.wikipedia.org
13. https://ncert.nic.in
14. https://chahalacademy.com
15. https://www.nelsonmandela.org
16. https://www.britanica.com

B.A – HISTORY
VI SEMESTER - CBCS SYLLABUS
DSE (Discipline Specific Elective) Paper-6.3

HISTORY OF MODERN EUROPE (1789-1945 CE)

Sub. Code- **211664** Exam Marks -80
Course Duration- 16 Weeks IA Marks -20
Per week-6 Hours (L-5: T-1: P-0) 6 Credits Exam Duration-03Hrs
Total Hours- 80

Course Objectives:

- The students will learn to evaluate the historical importance of modern Europe.
- Appraise the historical significance of modern Europe in the global arena.

Course/ Learning Outcomes:

- The study will create a deep and intense knowledge of the concept and development of democracy and also unification in Europe.

UNIT – I **25 Hrs**

French Revolution (1789): Causes and Consequences – Work of National Assembly – Nepolean Bonaparte – Conquests and Administrative Reforms – Fall of Nepoleon and Administrative Reforms. Age of Metternich – Congress of Vienna – Territorial Re-distribution.

UNIT-II **15 Hrs**

Rise of Unification – Unification of Italy (1870) – Unification of Germany (1871)

UNIT-III **15 Hrs**

German Empire after 1871 – I World War – Russian Revolution of 1917.

UNIT-IV **15 Hrs**

League of Nations – Rise of Fascism and Benetto Mussolini – Nazism and Adolf Hitler

UNIT-V **10 Hrs**

II World War – United Nations Organization–Aims and Achievements.

HISTORICAL MAPS:

1. Europe after Congress of Vienna
2. Unification of Italy
3. Unification of Germany
4. Europe after 1919
5. Partition of Germany in 1945

PLACES OF HISTORICAL IMPORTANCE

(1) Vienna	(2) Rome	(3) Genova	(13) Ajjacio
(4) Moscow	(5) Hague	(6) Berlin	(14) Cremea
(7) Paris	(8) London	(9) Varsilles	(15) Water Loo
(10) Athens	(11) Frank fart	(12) Marcopolo	

BOOKS FOR STUDY & REFERENCE:

1. C.D.M. Ketel - *A Short History of Modern Europe, Oxford University Press, Calcutta, 2000*
2. C.D. Hezen – *Europe since 1815*
3. I Colins- *Age of Progress 'A Study of European History from 1789-1870, London, 1970*
4. SailendraSen - *Europe and the world (1789-1945), New Delhi, 1998*
5. Grant and Temperley- *"Europe in the 19th and 20th Centuries" 1789-1950, London, 1974*
6. J.P.Taylor- *The Struggle for Mastery in Europe in 19th and 20th Century*
7. Dr. Hansraj - *Europe in the 19th & 20th Centuries, Surjeet Publication, Delhi, 2008*
8. S.P.Nanda – *History of Modern World, Anmol Publication Pvt. Ltd., New Delhi, 2001*
9. K.L.Khurana - *Modern Europe(1453-1815), Lakshmi Narain Pub, Agra, 2010*
10. D.T.Joshi–*AdhunikaEuropinaIthihasa, Vidyanidhi Pub., Gadaga, 2012* ***(KAN)***
11. Dr. S.N.Shivarudraswamy–*AdhunikaEuropinaIthihasa, Pourastya Pub., Tipaturu, 2006* ***(KAN)***
12. Dr. K.Sadashiva–*AdhunikaEuropinaIthihaasa****.(KAN)***
13. *https://link.springer.com*
14. *https://www.britanica.com*
15. *https://en.m.wikipedia.org*
16. *https://www.bbc.co.uk*
17. *https://www.drishtiias.com*

Generic Elective (GE)

V SEMESTER B.A– HISTORY

INDIAN FREEDOM MOVEMENT (1885-1947 CE)

Sub. Code- **211584**

QP Code : 61147 **Total Marks-50**

Exam Marks -40 IA Marks -10

Course Duration- 16 Weeks Marks-C1-5, C2-5

Per week-2Hours (L-1: T-1) **2 Credits** Exam Duration-02 Hrs

Total Hours- 32

Course Objectives:

- To Develop political agitations within the limits of law and by constitutional methods.
- To Buildup public opinion in the country amongst people.

Course/ Learning Outcomes:

- The study will create a deep and intense feelings of nationalism and love for the country.
- The study will give in-depth knowledge of the paper which is useful for all competitive exams.

UNIT – I **12 Hrs**

Indian National Congress – Era of Moderates – Gopal Krishna Ghokale-DadabaiNaoroji and S.N.Benerjee – Rise of Extremists– Lalalajpath Roy –BalagangadharaTilak – Partition of Bengal.

UNIT – II **08 Hrs**

Lucknow pact – 1916 – Home Rule Movement – 1916 – RowlathAct and JallianWalabagh Tragedy 1919.

UNIT – III **12 Hrs**

Gandhian Era – Non-cooperation Movement (1920), Dandi March (1930), Bhagath Singh – Chandrashekar Azad – Subhash Chandra Bose- Quit India Movement (1942), Independence Act - 1947.

BOOKS FOR STUDY AND REFERENCE:

1. *Bipinchandra - India's Struggle for Independence*
2. *Grover and Grover – A New Out Look on Modern Indian History*
3. *L.P.Sharma – Indian National Movement*
4. *V.D.Mahajana - Modern Indian History*
5. *Dr. K.Sadashiva – BharatadaSwatantryaChaluvali (KAN)*
6. *Prof. C.N.LokappaGowda–BharatadaSwatantryaChaluvali(KAN)*
7. *KNA – BharatadaSwatantryaChaluvali (KAN)*
8. *Prof. ChandraShekarappa–AdhunikaBharatadaIthihaasa. (KAN)*
9. *https://dceclirsp.weebly.com*
10. *https://ndl.iitkgp.ac.in*
11. *https://www.doabooks.org*

Generic Elective (GE)

VI SEMESTER B.A– **HISTORY**

FREEDOM MOVEMENT IN KARNATAKA (1885-1947 CE)

Sub. Code-**211694** **Total Marks-50**
Exam Marks -40 IA Marks -10
Course Duration- **16 Weeks** Marks-C1-5, C2-5
Per week-2Hours (L-1: T-1) **2 Credits** Total Hours- 32
Exam Duration-02 Hrs

Course Objectives:

- To develop political agitations within the limits of law and by constitutional methods.
- To buildup public opinion in the country amongst people.

Course/ Learning Outcomes:

- The study will create deep and intense feelings of nationalism.
- The study will give in-depth knowledge of the paper which is useful for all competitive exams.

UNIT – I **10 Hrs**

Rise of Nationalism –Indian National Congress and Mysuru Samstana Congress– Tilak and his Influence – Home Rule Movement.

UNIT – II **10 Hrs**

Non-Coperation Movement- Belaguam Congress Session of 1924 – Civil Disobediance Movement- Ankola Salt March.

UNIT – III **12 Hrs**

Establishment of Mysore Congress Party – Shivapura Satyagraha – Vidhurashwatta Tragedy – Esuru Tragedy – MysuruChalo Movement.

BOOKS FOR STUDY AND REFERENCE:

1. Grover and Grower- *A New Outlook on Modern Indian History.*
2. Bipinchandra- *India's Struggle for Independence.*
3. L.P.Sharma- *Indian National Movement.*
4. Prof. T.G.Chandrashekarappa- *Samagra Karnataka Ethihaasa, PoornaprakashanaPublicaion- Shivamogga, 2015.(KAN)*
5. Dr. S.N.Shivarudraswamy–*KarnatakadaProudaEthihaasaMattuSamskruthi, Pourastya Publication, Tipaturu, 2010 (KAN).*
6. Dr. K.Sadashiva- *Adhunika Karnataka Ethiaasa (KAN).*
7. Prof. B.Parameshwara- *Karnataka IthihaasaParichaya, Mysore Book House Publication, Mysore- 2016 (KAN).*
8. *https://karnataka.pscnotes.com*
9. *https://unacademy.com*
10. *https://en.m.wikipedia.org*
11. *https://www.britanica.com*

PATTERN OF QUESTION PAPER FOR V AND VI SEMESTER EXAMINATION

SCHEME OF EXAMINATION
B.A- History (CBCS)
(DSE With 6 Credits)
V and VI Semester of B.A.,(C1-10, C-10, C3-80 Total=100 Marks)

SCHEME OF EXAMINATION for 100 Marks

(Each paper shall have two components)

I. Internal Assessment - **20** Marks

II. Theory Component - **80** Marks

Total - **100** Marks

I. Internal Assessment in Each paper shall have the following sub components.

A) Test - **10** Marks
B) Assignment/Seminar- **05** Marks
C) Skill Development - **05** Marks
Total - **20** Marks

II. Theory Component

The theory question paper shall have four parts and the maximum duration of the theory part shall be **3 Hours** and it shall be as follows:

PART – 'A'

I. **Long Answer Questions** :

(1) _____ **2 x 15 = 30**

OR

_____

(2) _____

OR

_____

PART – 'B'

II. Answer any two the following Questions Each Question Carries 10 Marks.

(3) _____ **2 x 10 = 20**

_____**OR**_____

(4) _____

_____**OR**_____

PART – 'C'

III. **5. Write Short note on any four of the following. Each Carries 5 marks**.

(a)_____ **4x 5 = 20**

(b) _____

(c)_____

(d)_____

(e)_____

(f) _____

PART – 'D'

IV. **6. Map Question for 10 Marks** **10 Marks**

(i) Extent - **4**Marks
(ii) Locating the Places - **6** marks

NOTE:

Question papers shall have one Extra long Answer Question Carrying 10 marks exclusively for the **Visually impaired candidates**, provided such candidates are enrolled in the course. In that case the extra Question should be printed at the end of the question paper super scribed with "Note".

SCHEME OF EXAMINATION

Generic Electives (GE) in History With 2 Credits

V & VI Semester of B.A.

SCHEME OF EXAMINATION for 50 Marks

(C1-05, C-05, C3-40 Total= 50 Marks)

(Each paper shall have two components)

I.	Internal Assessment	-	**10** Marks
II.	Theory Component	-	**40** Marks
	Total	-	**50** Marks

I. Internal Assessment in Each paper shall have the following sub components.

Test	-	**05**Marks
Assignment/Seminar	-	**05**Marks
Total	-	**10** Marks

II. Theory Component

The theory question paper shall have Three parts and the maximum duration of the theory part shall be **2 Hours** and it shall be as follows:

PART – 'A'

I. Answer any five of the following. Each Question Carries 2 Marks:

1. _____ **5 x 2 = 10**
2. _____
3. _____
4. _____
5. _____
6. _____

PART – 'B'

II.Answer any Four of the following.Each Question Carries 5 Marks

1. _____ **4 x 5 = 20**
2. _____
3. _____
4. _____
5. _____

PART – 'C'

III. Answerany One of the Following. Each Question Carries 10 Marks

1. _____ **1x10 = 10**
2. _____

List of BOS Members

Members present **Signature**

1.**Dr. Sreedhara H.**

Chairman & HOD
SBRR Mahajana First Grade College (A)
Jayalakshmipuram, Mysore-12

2.**Dr.Dharmesha A.G.**

Asst. Professor
SBRR Mahajana First Grade College (A)
Jayalakshmipuram, Mysore-12

3.**Dr.KSadashiva**

Professor & Chairman
DOS in History, UOM, Mysore

4. Prof. Shashidhar B.R

Asst.Professor,
Govt First Grade College
Madikeri, Kodagu

5. Prof. ShashikalaA.S

Asst.Professor,
Govt First Grade College
Channapatna, Ramanagara

Dept of HISTORY -Proposed List of Examiners

Sl No.	Name and Address	Phone No. & Email ID
1.	**Dr. Sreedhara H.** Chairman & HOD, Dept. of History SBRR Mahajana First Grade College (A)	: 9901041470 ✉ : sreedharah79@gmail.com

	Jayalakshmipuram, Mysore-12	
2.	**Dr.Dharmesha A.G.** Asst. Professor ,Dept. of History SBRR Mahajana First Grade College (A) Jayalakshmipuram, Mysore-12	: 9538245434 ✉ : dharmasourave@gmail.com
3.	**Sri. Nandeesha A.R.** Guest Faculty, Dept. of History SBRR Mahajana First Grade College (A) Jayalakshmipuram, Mysore-12	: 9113060911 ✉ : nandeeshar7@gmail.com
4.	**Dr. Ramadasa Reddy** Associate Professor, Dept. of History Govt. First Grade College, Kuvempunagar, Mysore	: 9845309081 ✉ : ramadasareddysg@yahoo.com
5.	**Sri. Rajashekaran** Associate Professor, Dept. of History Maharani's Women Arts College, JLB Road, Mysore	: 9986440621 rajurajashekararaju@gmail.com
6.	**Dr. Basavegowda** Asst. Professor, Dept. of History Govt. Arts Commerce & PG College Hassan	: 9480377999 ✉ : drbasavegowda@gmail.com
7.	**Dr.Venkategowda** Asst. Professor, Dept. of History Vijaya First Grade College, Pandavapura (Tq) Mandya (Dist)	: 9964635022 ✉ : nkvgowda@gmail.com
8.	**Dr.Lingaraju** Asst. Professor, Dept. of History GFGC, K.R.Pete (Tq) Mandya (Dist)	: 9900567531 ✉ : gopichandlakshmiling@gmail.com
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10.	**Dr. SavithaKumari** Asst. Professor, Dept. of History Govt. First Grade College, Bilikere, Mysore (Dist)	: 9972555009 ✉ : savithakumari.dm@gmail.com
11.	**Sri. Prakash N.** Asst. Professor, Dept. of History Govt. First Grade College Srirangapattana, Mandya (Dist)	: 8970343912 ✉ : swetha.pra1012@gmail.com
12.	**Dr. Rajagopal**	: 9741201403

	Asst. Professor, Dept. of History Govt. First Grade College Periyapattana, Mysore (Dist)	✉ : rajagopalraj2014@gmail.com
13.	**Sri.RajeshKhanna** Asst. Professor, Dept. of History Govt. First Grade College Arasikere, Hassan (Dist)	📱 : 9449887312 ✉ : rajeshkhanna062@gmail.com
14.	**Sri. Mahadevaiah K.** Lecturer, Dept. of History Govt. First Grade College Gundlupete, Chamarajanagara (Dist)	📱 : 8147997626 ✉ : mahadevhura@gmail.com
15.	**Dr. Sunil Kumar** Lecturer, Dept. of History Marimallappa First Grade College Mysore	📱 : 9986389286 ✉ : sunilmdu3006@gmail.com
16.	**Dr. Prakash K.** Lecturer, Dept. of History Govt. First Grade College Nanjangudu, Mysore (Dist)	📱 : 9741019367 ✉ : drprakashsh@gmail.com
17.	**Dr. Ravindra J.C.** Lecturer, Dept. of History University Evening College, UoM Mysore	📱 : 9342970670 ✉ : icrleehis@gmail.com
18.	**Dr. PrakashArulappa** Asst. Professor & HOD, Dept. of History St. Philomina's College (A) Bannimantap, Mysore	📱 : 8050023814 ✉ : prakash3604@gmai.com
19.	**B.Yogendra** Lecturer, Dept. of History Vidyodaya First Grade College T.Narasipura, Mysore (Dist)	📱 : 8050959611
20.	**Dr. Namitha P.** Lecturer, Dept. of History Govt. Womens First Grade College (A) Mandya	📱 : 9611556236
21.	**Sri. M.R.Ramachandra** Lecturer, Dept. of History Sri. Adichunchanagiri First Grade College, H.D.Kote (Tq) Mysore (Dist)	📱 : 9844357257 ✉ : ramachandramr03247@gmail.com
22.	**Dr. La.Na.Swamy** Asst. Professor, Dept. of History PRM Vijaya Govt. First Grade College	📱 : 8095760926 ✉ : lanaswamy62@gmail.com

	T.Narasipura, Mysore (Dist)	
23.	**Dr. Dileep S.** Asst. Professor, Dept. of History Nisarga College of Management Kollegala, Chamarajanagara (Dist)	📱 : 9902311234 ✉ : dileepaishu1985@gmail.com
24.	**Smt. K.S.Savitha** Asst. Professor, Dept. of History Vidyavardaka First Grade College Mysore	📱 : 7795476949
25.	**Dr. Divakara** Lecturer, Dept. of History Govt. Women's First Grade College Hunasuru, Mysore (Dist)	📱 : 9945046693 ✉ : divakarkrn@gmail.com

Approved by the following BOS members

1. **Dr. Sreedhara H.**
2. **Dr.Dharmesha A.G.**
3. **Dr. K.Sadashiva**
4. **Prof. Shashidhar B.R**
5. **Prof. Shashikala A.S**

Proceedings of the BOS Meeting

1. Discussion about the papers for 5th and 6thsem B.A and the syllabus for it (DSE)
2. Discussion about Generic Elective paper for 5th and 6thsem B.A
3. Approval for proposed list of BOE members.
4. Approval for question paper pattern for DSE and GE.
5. Other discussions.

Members present

1. **Dr. Sreedhara H.**

2. **Dr. Dharmesha A.G.**

3. **Dr. K.Sadashiva**

4. **Prof. Shashidhar B.R**

5. **Prof. Shashikala A.S**

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

AGENDA & PROCEEDINGS

BOARD OF STUDIES (BoS)

UG ☑

PG ☐

NEP Syllabus for I and II Semester B.A.
Journalism & Mass Communication

2021-22

JOURNALISM & MASS COMMUNICATION BoS - PROCEEDINGS

Academic Year: 2021-22

Name: BoS – 1st Meeting through Online (NEP-Implementation of OBE)

Date: 24th November 2021, Wednesday

Time: 11:00 AM

Place: Media Studio Center, SBRR Mahajana First Grade College (A), Mysuru.

Total Number of Members: 05

AGENDA

Preparation, Consideration, Verification, and Recommendation and Approval of the 1st and 2nd Semester (CBCS – NEP : OBE Implementation) syllabus for UG Journalism and Mass Communication Course for the year 2021-22.

RESOLUTION

Members of the BoS have unanimously agreed and approved the following Resolutions:

The BoS Members met on November 24th, Wednesday, 2021, at 11.00 am through Online in Audio Visual Media Center to prepare, consider, verify and include with minor changes in the existing University of Mysore (Journalism) syllabus and approved the same to adopt the 1st and 2nd Semester CBCS-NEP Syllabus for SBRR Mahajana First Grade College (Autonomous) for the academic year 2021-22. (OBE Implemented)

The Committee members unanimously approved all the same and pass the new NEP – CBCS syllabus for the academic year 2021-22.

6. Discussed about the papers for 1st and 2nd semester B.A (Journalism and Mass Communication) and the syllabus as per NEP Regulations-2020 (DSC) according to Regulations of BoS in Journalism and Mass Communication, UoM, Mysuru. (OBE Implemented)
7. Discussed about Open Elective paper for 1st and 2nd Sem across the Faculty and Programmes as per NEP Regulations-2020 and Implemented according to Regulatio (OBE Implemented) ns of BoS in Journalism and Mass Communication, UoM, Mysuru. (OBE Implemented)
8. OE paper for 1st semester Discussed about Number of Credits for DSC and OE Papers as per NEP Regulations-2020. (OBE Implemented)

9. Approval for Examination pattern for **Theory Components as IA-C1:20+C2:20=40** and **C3 Component:60.** Total marks for **Theory paper is 100** and **Practical Components as IA-C1:10+C2:15** and **C3 Component:25.** Total marks for **Practical paper is 50** as per NEP Regulations-2020.

10. Other discussions.

11. **Recommendations/Decisions:** BoS approved and recommended the UG Syllabus on NEP CBCS pattern framed by University of Mysore and agreed to retain with small changes and follow the same NEP Syllabus for BA Degree with Journalism and Mass Communication as a cognate subject in UG - Autonomous Board, for the academic year 2021-22. Syllabus-Theory and Practical, Open Elective, Credit Points, Scheme of Examination, Allotment of Marks, Question paper pattern is approved and is appended in the Appendix- 1. (OBE Implemented)

Chairperson-BOS

Approved List of Examiners 2021-22

(Above 3 Years of Experience)

Sl. No.	Name	Designation	Address for Communication
14.	Mr. L. Ravi	HoD & Assistant Professor Dept. Journalism & Mass Communication	SBRR Mahajana First Grade College, Mysuru
15.	Dr. Pramila Kunnur	Associate Professor & HOD. Dept. Journalism & Mass Communication	Maharaja's College, University of Mysore, Mysuru
16.	Sri. Mahadevaswamy K N	HOD & Associate Professor, Dept. of Journalism	Sahyadri Arts College Kuvempu University, BH Road, Shivamogga – 577303
17.	Dr. Vagdevi H.S.	Asst. Professor, Dept. of Journalism & Mass Communication	St. Philomena's College, Mysuru
18.	Dr. Ragavendra S. G.	Asst. Professor and HOD. Dept. Journalism & Mass Communication	Maharani Arts College, Mysuru
19.	Mr. Keshava Murthy	Guest Faculty Dept. Journalism & Mass Communication	Maharaja College, University of Mysore, Mysuru.
20.	Dr. R. Raghavendra	Guest Faculty Dept. Journalism & Mass	Govt. Women's First Grade College, K. R. Pate.

		Communication	
21.	Dr. Kumara Swamy	Guest Faculty Dept. Journalism & Mass Communication	Govt. Women's First Grade College, K. R. Pate.
22.	Dr. Gopal	Guest Faculty Dept. Journalism & Mass Communication	Maharaja's College, University of Mysore, Mysuru
23.	Dr. Venugopala Gowda	Asst. Professor, Dept. of Journalism & Mass Communication	St. Philomena's College, Mysuru
24.	Dr. Swetha Hans	Asst. Professor Dept. Journalism & Mass Communication	Maharaja's College, University of Mysore, Mysuru

List of BoS

Members

Sl.No.	Name	Designation	Signature
	Mr. L. Ravi HoD & Assistant Professor SBRR Mahajana First Grade College (Autonomous) Jayalakshmipuram, Mysuru Email: raviiyermysore@gmail.com **Cell: +91 9380934470**	**Chirperson**	
2	**Dr. Sapna M.S** DOS in Commn. & Journalism Dept. Communication & Journalism Manasagangothri, Mysore splashsapna@gmail.com **Mobile : +91-821-2419510**	**Member**	

03	**Mr. Mahadevaswamy KN** HOD & Assistant Professor Dept. of Journalism Sahyadri Arts College Kuvempu University, BH Road, Shivamogga – 577303 knmswamy@gmail.com **Mobile : +91 9483796169**	**Member**	
4	**Dr. C.M. Vinaya Kumar** Assistant Professor Dept. of Journalism and Mass Communication, Andhra University, Visakhapatnam – 530003 drcmvinayakumar@gmail.com **Mobile : 9985085530**	**Member**	
5	**Mr. Keshava Murthy** Guest Lecturer Maharaja College, University of Mysore, Mysuru Keshavasnemrc@gmail.com, **Mobile : 9449271480**	**Member**	
6	**Dr. Preethi Kapoor** HOD of Photography and Photo Journalism Chamarajendra Government College of Visual Art, CAVA, Siddhartha Nagar, Mysore-570 011 drpritikapur@yahoo.com **Mobile : 9845113339**	**Member**	**ABSENT**
7	**Mr. Nikhil Maruthi** Senior Account Manager Landmark Tower, Plot No. 2,	**Member**	**ABSENT**

	2nd Floor, Ashok Marg, South City I, Sector 41 Gurugram, Haryana 122001 Nikhilmaruthi26@gmail.com/ nikhilmaruthi.cmo@gmail.com **Mobile : 9650266082**		

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

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Department of Journalism & Mass Communication

BA – III & IV SEMESTER (NEP) SYLLABUS

BOARD OF STUDIES

III & IV Semester

(As per NEP-2020 Regulations)

UGPG

2022-23

Education Society (R)Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
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NEP (CBCS) Syllabus for III & IV Semester

(Effective from Academic Year 2022-22)

SEPTEMBER 2022

BA Honours Degree (NEP) Programme in Journalism and Mass Communication

Programme: Four year Integrated Degree Programme in Journalism and Mass Communication tobe introduced under NEP

Programme Objectives:

1. Four-year Integrated Degree Course in Journalism and Mass Communication would aim to familiarize students with all aspects of the field of Journalism and Mass Communication. They become more proficient in both theory and practical skills of the media in general.

2. The programme would prepare the students 'ready-to-be recruited by media, advertising, PR & corporate houses'. The content of the programme is designed to be dynamic and incorporate changes to meet requirements of the industry.

Learning Outcome:

1. The programme aims to churn out responsible media professionals who would contributepositively to the society.

2. The programme aims to facilitate better career opportunities for all those students of this courseand get them ready to tackle challenges in the professional setup.

3. The programme aims to strike a balance between the dynamic working environment andprofessional ethics in the field of journalism and mass communication.

Need for Curriculum Development:

NEP 2020 initiative is intended to formulate a curriculum to bring about uniformity among the students studying in different Universities/Institutes. The need for the curriculum development in Journalism and Mass Communication emerges due to the following reasons:

Changing Media Scenario: The curriculum has been designed keeping with the industry requirements and includes subjects such as Multimedia, Photojournalism, Short Film Making, Creating Blogs and Vlogs, Mobile Journalism, Writing for Media, Producing News Bulletins for Radio and TV, Advertising and Corporate Communications, among several others. The rapid growth in media industry demands highly skilled human resource.

Credit transfer: Credit transfer is approved by the UGC and the Government that allows the students to transfer course from their existing university to a new UGC approved university. The same number of credits in all the Universities in Karnataka is the first step to towards the credit transfer from University to University.

Skill Enhancement: The new curriculum focuses more on hands on training, internship and thereby enhancing the skills of the students. It not only aims at producing responsible communication professionals but also citizens with a humane approach in day to day life. The papers like Writing for Media, Photo journalism, Computer Applications for Media etc., further helps in skill development of students.

Pedagogy:

The goal of Journalism and Mass Communication pedagogy is offered with an objective to train and prepareprofessionally skilled media persons and communication experts. It lends exposure to a wide range of meticulously framed syllabi.

Importance to Theory and Practical's and its application: The Journalism and Mass Communication curriculum focuses on innovative components in theory and practice, which in turn equips students to be full-fledged media men.

Utilization of ICT: The global media industry is in anticipation of ICT trained communication experts. To enhance critical and creative thinking amongst students, ICT tools are incorporated into the teaching methods which include research-led teaching, via presentations through smart classrooms, and practical productions.

Research-based and Research-led teaching: The Research Projects are introduced in the curriculum to strengthen the research concepts among the budding researchers. The students are introduced to various facets of Journalism and Mass Communication research such as print,

electronic and new media research, global, health and political communication research, folk media, intercultural communication and research on development issues and so on in accordance to the relevance of the profession. The

Students will be required to do research project on a topic of their choice under the supervision of a researchguide.

Brain Storming Approach: Students will be involved in groups and individual discussions. This will help the students to develop and involve in the process of critical thinking and analysing. It further helps them in decision making and crisis management and also boosts self confidence.

Exit Options and Credit Requirements:

A Certificate / Diploma/ Bachelor Degree or Bachelor Degree with Honours in Journalism and MassCommunication is awarded at the completion of every progressive year.

Exit Option with	Certificate/Diploma/Degree/ Honours
Successful completion of First year (two semesters) of the Four years multidisciplinary undergraduate Degree programme.	Certificate in Journalism and Mass Communication
Successful completion of Second year(four semesters)of the four years multidisciplinary undergraduate Degree programme	Diploma in Journalism and Mass Communication
Successful completion of Three year (six semesters) of the four years multidisciplinary undergraduate degree Programme	Bachelor of Arts Degree in Journalism and Mass Communication
Successful completion of Four year (eight semesters) of the four years multidisciplinary undergraduate degree Programme	Bachelor of Arts Degree with Honours n Journalism and Mass Communication

A student will be allowed to enter/re-enter only after the odd semester and they can only exit after even semester. Re-entry at various as lateral academic programmes based on the above mentioned earned proficiency test records. The validity of the eared credit will be for a maximum period year or as specified by the academic bank of credits (ABC).

Acronyms Expanded	
AECC	Ability Enhancement Compulsory Course
DSCC	Discipline Specific Core Course
SEC/SB/VB	Skill Enhancement Course- Skill Based/Value Based
OEC	Open Elective Course
DSE	Discipline Specific Elective

Continuous Internal Evaluation and Semester End Examination:

Total marks for each course shall be based on continuous assessments and term end examinations. As per the decision of the Karnataka State Higher Education Council, it is necessary to have uniform pattern of Class Internal Assessment and Semester End examinations respectively, among all the Universities, their affiliated and autonomous colleges. The state level committee deliberated on the same and suggested the following pattern for the CIE Marks. The BOS has also

approved to follow the same pattern.

B.A. Program in Journalism and Mass Communication

Semester with National Education Policy (NEP-2020)

Appendix- 1

NEW CBCS SYLLABUS APPROVED BY THE BOS

Semester	Course Code	Subject Code	Course Title	Credits	L	T	P
III	DSCC-3		News Reporting and Analysis (with Practical)	6	4	0	2
	OE-3		Feature Writing and Freelancing	3	3	0	0
IV	DSCC-4		News Processing and Editing (with Practical)	6	4	0	2
	OE-4		Translation for Media	3	3	0	0

Pattern of Examination – Distribution of Marks

Semester	Course Code	Course Title	Total Marks	THEORY			PRACTICAL		
				Test IA Blue Book/ Record **C1**	Test IA Blue Book/ Record **C2**	Exam **C3**	**Lab Test Assignment C1**	**Record C2**	**Exam C3**
I	DSCC-3	News Reporting and Analysis (with Practical)	150	20	20	60	10	15	25
	OE-3	Feature Writing and Freelancing	100	20	20	60	-		-
II	DSCC-4	News Processing and Editing (with Practical)	150	20	20	60	10	15	25
	OE-4	Translation for Media	100	20	20	60	-	-	-

COURSE PATTERN AND SCHEME OF EXAMINATION FOR BA AS PER NEP (2022-23 AND ONWARDS)

Semester	Course Code	Paper Title	Teaching Hours	Hours/Week			Examination Pattern Max. & Min. Marks/Paper								Total Marks /Paper	Duration of Examination (Hours)		Credits		
							Theory				Practical									
				Theory	Practical	Total Hrs	Max	Min	IA	Total	Max	Pral-Exm	IA	Total		Theory	Practical	Theory	Practical	Total
III	DSCC 3	NEWS REPORTING AND ANALYSIS	60	04	04	**08**	60	24	20+20 = 40	**100**	50	25	10 + 15 = 25	**50**	**150**	2.30 hrs	3 hrs	04	02	**06**
	OE 3	FEATURE WRITING AND FREELANCING	30	03	00	**03**	60	24	20+20 = 40	**100**	-	-	-	-	**100**	2.30 hrs	---	03	--	**03**
IV	DSCC 4	NEWS PROCESSING AND EDITING	60	04	04	**08**	60	24	20+20 = 40	**100**	50	25	10 + 15 = 25	**50**	**150**	2.30 hrs	3 hrs	04	02	**06**
	OE 4	TRANSLATION FOR MEDIA	30	03	00	**03**	60	24	20+20 = 40	**100**	-	-	-	-	**100**	2.30 hrs	---	03	---	**03**

BA Journalism and Mass Communication Programme Structure Having Practical Core Courses

Semester	Course Code	Paper Title	Teaching Hours	Hours/ Week			Examination Pattern Max. & Min. Marks/Paper								Total Marks /Paper	Duration of Examination (Hours)		Credits		
							Theory				Practical									
				Theory	Practical	Total Hrs	Max	Min	IA	Total	Max	Pral-Exm	IA	Total		Theory	Practical	Theory	Practical	Total
III	DSCC3	NEWS REPORTING AND ANALYSIS	60	04	04	**08**	60	24	40	**100**	50	25	25	**50**	**150**	2.30hrs	2hrs	04	02	**06**
	OE 3	FEATURE WRITING AND FREELANCING	30	03	00	**03**	60	24	40	**100**	-	-	-	-	**100**	2.30hrs	---	03	--	**03**
IV	DSCC 4	NEWS PROCESSING AND EDITING	60	04	04	**08**	60	24	40	**100**	50	25	25	**50**	**150**	2.30hrs	2hrs	04	02	**06**
	OE 4	TRANSLATION FOR MEDIA	30	03	00	**03**	60	24	40	**100**	-	-	-	-	**100**	2.30hrs	---	03	---	**03**

EXIT OPTION WITH DIPLOMO (48 CREDITS)

NOTE: 1. Two Hours of Practical = Two Hours, **2.** Students per batch = Nineteen (in case of students above 20 -35 make two batches). **3.** Geography, Psychology, Criminology and other subjects to follow the GOK norms. **4.** IA means Assignment, Seminar, Class Room Presentation, Case studies, Participatory and Industry Integrated learning/Industrial visits , Practical activities/Academic events/Symposia, for Test, Group Discussion, Quiz, Workshop etc.

5. OE paper – Minimum intake of the students for OE is at the discretion of the principal or as per the government norms.

6. IA=C1-20, C2-20(40)

(Structure for the remaining semesters will be formulated in the upcoming BOS meetings.)

DSC 1: INTRODUCTION TO JOURNALISM

Course Title and Code	DSCC 3- NEWS REPORTING AND ANALYSIS (With Practical) Subject Code :		
Programme Title	Bachelor of Arts in Journalism and Mass Communication		
Credits	06	Semester	III
Course Type	Core	Academic Year	2022-23

Pedagogy: Theory: 4 hrs / Week

Total Number of Working Hours : 64 Hours

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks C3	IA C1+C2 Marks	Duration of Practical Exam	Practical Exam C3	Practical IA C1+C2 Marks	Total	Credits - 6		
										L	**T**	**P**
DSCC 3	NEWS REPORTING AND ANALYSIS (With Practical)	06	2½ hrs	60	20 +20	3 hrs	25	10 + 15	150	4	0	2

Practical: 2 hrs / week (2 +2 = 4 hrs)

Course Objectives:

- To introduce the concept News.
- To familiarize the students with Reporting Methods in General and Reporting for Print & Electronic Media.
- To educate the students about the Types and Techniques of Reporting.

Learning Outcome:

- To Identify events and issues and turn them into news.
- To events and issues and turn them into news.
- To make use of career opportunities in reporting.
- To upgrade the students with the current skill and practices in Media.

Unit – I:

News : Definitions, nature, concepts, elements and values. **Sources of news:** *Types of sources:* News agencies and internet as a source. Techniques of news gathering; Wire service and news flow; Structure and components of news story; News writing skills; Finding story ideas; Inverted pyramid and other styles; Leads and types of Leads in news story.

Unit –II:

Reporter: Organisation of reporting section, Principles of reporting, functions, qualities, and responsibilities. Professional norms and ethics. Cultivation of news sources. Kinds of reporting: investigative, interpretative, in-depth, and narrative. Classification of reporting: Civic, political, crime,sports, business, court reporting, International reporting, mofussil, beat and weather reporting.

Unit – III:

Types of news events: Speeches, seminars & conferences,

press conferences, demonstrations, ralliesand agitations. Reporting governmental and non-governmental communications; Covering communalriots and crimes. Interviewing: principles, importance, techniques and types of news interviews, difference between print, television and broadcast interviews. 16 hrs.

16 hrs.

16 hrs.

Unit – IV:

Specialized reporting: Legislative, court, science and technology, defence, human rights, women andchild, health, sports, tourism, education, financial reporting, agriculture, lifestyle, cinema and culture.

DSCC3 - NEWS REPORTING AND ANALYSIS (PRACTICAL COMPONENT)

1. Preparing the events news reports -05
   (Events are held in your college/Campus/university)
2. Collect five different lead types from different newspapers-05
3. Revise and rewriting special news stories-05
4. Analyze the news stories appeared in newspaper with special interest-05
5. Preparation of press notes & press release-05
6. Press conference reports- 05
   (Students is attending the press conference in your place and preparing the news reports)
7. Photographs and Captions-05
   (Students have shooting any events in your college and given captions)
8. Features article: 02
   (Students have to write a feature article their own choice topic)
9. Write an editorial on a current issue-02

Assignments

1. Analyze at least 5 newsworthy events for news elements
2. Interview any personalities of your choice
3. Write at least 5 news scripts of different types
4. 2 assignments of specialized reporting
5. 2 assignments each of crime, sports and political

newsBooks for Reference:

1. **Bill Kovach and Tom Rosenstiel,** (2001) The Elements of Journalism, Three Rivers Press.
2. **Brooks, B. S., Pinson, J. L., & Wilson, J. G.** (2013). "Writing as a Journalist," chapter 11 in Working with Words: A handbook for media writers and editors. Boston; New York: Bedford / St. Martin's.
3. **Deborah Potter**, (2006) Handbook of Independent Journalism, Bureau of International-Information Programs, U.S. Department of State.
4. **Brooks, B. S., Kennedy, G., Moen, D. R., &Ranly, D**. (2014). The inverted pyramid. In News reporting and writing (11th edition). Boston; New York: Bedford / St. Martin's.
5. **Lorenz, Alfred L, and John Vivian.** (1995) News: Reporting and Writing Pearson Education POD.
6. **Izard, Ralph S.** (1994) Fundamentals of News Reporting, 6th edition. Dubuque, Iowa: Kendall/Hunt.
7. **Melvin Mencher**, (2010), News Reporting and Writing, 12th Ed McGraw-Hill, New York.
8. **The Missouri Group**. (2014) News Reporting and Writing, 11th edition, Bedford-St. Martin.
9. **Steward, Charles J., and William B. Cash, Jr.** (2003) Interviewing: Principles and Practices; Boston: McGraw-Hill.
10. **Tompkins, A**. (2012). The art of the interview. In Aim for the heart: Write, shoot, report and

produce for TV and multimedia (pp. 77-96). Washington

, D.C.: CQ Press.

16 hrs.

OE 3 – FEATURE WRITING AND FREELANCING

Course Title and Code	OE 3- Feature Writing & Freelancing : Subject Code :		
Programme Title	Bachelor of Arts in Journalism and Mass Communication		
Credits	03	Semester	III
Course Type	Core	Academic Year	2022-23

Pedagogy:
Theory: 3 hrs / week

Total Number of Working Hours : 48 Hours

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA C1+C2 Marks	Practical Exam	IA C1+C2 Marks	Total	Credits - 3		
									L	T	P
OE-3	Feature Writing & Freelancing	03	2½ hrs	60	20 +20	-	-	**100**	3	0	0

Course Objectives:

- To introduce various aspects of Feature Writing.
- To familiarize with trends in Feature Writing and Freelancing.
- To impart skills in news / feature writing.

Learning Outcome:

- To write features for print media.
- To use professional skills in structuring and presenting features.
- To write with social concern.

Unit I:

Introduction Feature: Definition and Characteristics – Structure of a Feature Difference between news, features, articles and columns– Process and techniques of feature writing, feature headlines,Sources of Feature, Feature Syndicates.

Unit-II:

Types of features: Different feature articles – science feature, news feature, cultural feature, environmental feature, lifestyle feature; Modern trends in feature writing; Reviews and its Types –Film, Theatre and Book.

Unit-III:

Freelancing – Meaning, Definition and Scope of Freelancing, Freelancing as a profession, Qualities of a Freelancer, Trends in Freelancing, Legal and ethical aspects of freelancing, Scopeof freelancing in print and electronic media, freelancing in online media

IA / Assignments

1. Letters to the Editor to be published in any registered newspaper.
2. Write an Article on any Features.
3. Write an Review on Film / Theatre

/ Book.

	Allotted Hours
	16 hrs.
	16 hrs.

Books for Reference:

1. History How to Criticize books- O Hinkle and J Henry
2. Effective Feature Writing – C A Sheenfeld
3. Modern Feature Writing – H F Harrington and Elmer Scott Watson
4. Writing Feature Articles – A Practical Guide to methods and Markets –Hennessey
5. Before My Eyes: Film Criticism and Comment –Kauffmann
6. Beyond the Facts – A Guide to the Art of Feature Writing
7. Freelancing – R K Murthy
8. Suddiyashte Alla – Niranjana Vanalli

DSCC 4: NEWS PROCESSING AND EDITING

Course Title and Code	DSE 4- News Processing & Editing : Subject Code :		
Programme Title	Bachelor of Arts in Journalism and Mass Communication		
Credits	06	Semester	IV
Course Type	Core	Academic Year	2022-23

Pedagogy: Theory: 4 hrs / week
Practical: 2 hrs/ week (2 hrs+2 hrs = 4 hrs)

Total Number of Working Hours : 64 Hours

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks C3	IA C1+C2 Marks	Duration of Practical Exam	Practical Exam C3	Practical IA C1+C2 Marks	Total	Credits - 6		
										L	**T**	**P**
DSCC 4	News Processing & Editing	06	2½ hrs	60	20 +20	3 hrs	25	10 + 15	150	4	0	2

Course Objectives:

- To introduce the basics of editing and publication
- To provide an overview of the editing process
- To train in writing and editing techniques

Learning Outcome:

- To understand editing and publication process
- To write and edit news stories.
- To design newspaper / magazine pages.

Unit I:

Introduction: Editing- Definitions, importance, principles, functions and techniques of editing.Types of editing; Editing in the age of convergence and software application; Importance of design in print media, Visualizing a page; Types of designs; Designing special supplements; Data and Information graphics; Editing and ethics; Style sheet.

Unit II:

Techniques of Editing: Editorial Page; Editorial writing and its significance; Types of Editorials;,Op-ed Page, Letters to the Editor, Middles; Headlines – functions and types; Photo Editing and Caption Writing; Column writing and types of columns; Ethical Aspects of Editing

Unit III:

Concept of Newspaper Design: Types of Newspaper Layouts, Principles of Designing, Style SheeDummy; Front Page Design, Pagination software; Trends in pagination; Translation - Meaning, Principles, Techniques and Types.

Unit IV:

News room Setup: Organizational structure and functions of a typical newsroom; Editor; Role and responsibilities of

an Editor; Executive Editor; News Editor; Chief Sub-editor, Sub-editor, Sections in editorial. Editing supplements

	Allotted Hours
	16 hrs.
	16 hrs.
	16 hrs.
	16 hrs.

Practical Component:

1. Write an editorial on any current issue.
2. Write a letter to the editor about any civic issues.
3. Translate a news report from a Source Language to Target Language.
4. Choose 5 news stories and provide suitable headlines.
5. Capture 5 photographs & caption them.

Assignments:

1) Editing at least 5 stories
2) Rewriting at least 5 poorly written stories
3) Headline writing and caption writing exercises
4) Designing news paper and magazine pages
5) Editing at least 5 wire service stories; Rewriting poorly drafted copies

Books for Reference:

1. The Elements of Editing: a modern guide for editors and journalists by Arthur Plotnik: Collier Macmillan
2. Outline of Editing by K M Joseph: Anmol Publication
3. Advanced Journalism by Adarsh Kumar Varma: Har-Anand Publications Ltd
4. Words on Words by John M Bremner: Columbia University Press
5. The Glamour of Grammar: A Guide to Magic and Mystery of Practical English by Roy Peter Clark: Little, Brown company
6. Editing and Design by Harold Evans:William Heinemann Ltd
7. News Reporting and Editing by K M Shrivastva: Sterling Publishers Private Limited
8. Computer Application for Journalism by Rahul Singhai: EssEss Publication
9. Editing: A handbook for Journalists by T J S George; IIMC Publication
10. Editing by B N Ahuja and S SChhabra: Surjeet Publication

OE 4: TRANSLATION FOR MEDIA

Course Title and Code	OE-4 Translation for Media :		Subject Code :
Programme Title	Bachelor of Arts in Journalism and Mass Communication		
Credits	03	Semester	IV
Course Type	Core	Academic Year	2022-23

Pedagogy:

Theory: 3 hrs / week

Total Number of Working Hours : 48 Hours

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA C1+C2 Marks	Practical Exam	IA C1+C2 Marks	Total	**Credits - 3**		
									L	**T**	**P**
OE-4	Translation for Media	03	2½ hrs	60	20 +20	-	-	100	3	0	0

Course Objectives:

- To examine journalistic discourse.
- To focus on differences in language use in print media.
- follow current print media and practice translating media texts and build journalisticterminology

Learning Outcome:

- Students will be able to translate print media news items.
- Differentiate different text types in media such as news, articles, andadvertisements.
- To compare the various discourses in different types of media texts.

Unit-I

Translation: Meaning, Definition, Nature, Scope and Significance; Principles and Techniquesof Translation; Difference between literary translation and translation for media; Tools for translation

Machine translators

Unit-II

Process of Translation: Source language, Target Language, Co-ordination, Guidelines for Translation; Free, Paraphrasing, Summarized, Semantic and Word to Word Translation. Machinetranslators

Unit-III

Process of Translation: Source language, Target Language, Co-ordination, Guidelines forTranslation; Free, Paraphrasing, Summarized, Semantic and Word to Word Translation.

16 hrs.

16 hrs.

16 hrs.

IA / Assignment Component:

1. Translate a Report from one Source Language to Destination Language.

Books for Reference:

1. Understanding Media: Marshall Mchuhan – Pub: Rantidge Classics.
2. Language the Basics: R. L. Tansk
3. Semiotics: The Basics: Divid Chandar – Pub: Foundation Books, New Delhi.
4. Aspects of Language and Translation: Steiner G – Pub: Oxford University Press
5. The Scandals of Translation: Lawrence Venuti
6. Media and Translation – Christina Schaeffineo – Pub: Cambridge Scholars Publishing
7. Good Writing for Journalist – Angela Phillips – Sage Publications.

Sri L. Ravi
Chairman- BoS
Journalism & Mass Communication
University of Mysore, Mysuru

Mahajana Education Society (R)
Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA Affiliated to University of Mysore, Re-Accredited by NAAC with 'A' Grade,

College with Potential for Excellence

Department of Journalism & Mass Communication

Board of Studies Meeting (NEP) held on 7th September 2022, Wednesday

MEMBERS PRESENT :

Sl.No.	Name	Designation	Signature
1	**Mr. L. Ravi** HoD & Assistant Professor SBRR Mahajana First Grade College (Autonomous) Jayalakshmipuram, Mysuru Email: raviiyermysore@gmail.com **Cell: +91 9380934470**	**Chirperson**	
2	**Dr. Sapna M.S** DOS in Commn. & Journalism Dept. Communication & Journalism Manasagangothri, Mysore splashsapna@gmail.com **Mobile : +91-821-2419510**	**Member**	
03	**Mr. Mahadevaswamy KN** HOD & Assistant Professor Dept. of Journalism Sahyadri Arts College Kuvempu University, BH Road, Shivamogga – 577303 knmswamy@gmail.com **Mobile : +91 9483796169**	**Member**	

4	**Dr. Shailesh Raj Urs G.B.** Assistant Professor Dept. of Journalism and Mass Communication, Karnataka State Open University, Mysore shaileshrajurs@gmail.com **Mobile : 9448672473**	**Member**	

5	**Mr. Keshava Murthy** Guest Lecturer Maharaja College, University of Mysore, Mysuru Keshavasnemrc@gmail.com, **Mobile : 9449271480**	**Member**	
6	**Dr. Mahendra C. K.** Editor-in-Chief 'Prathinidhi' Kannada Daily Kuvempunagar, Mysore- cvgudi@gmail.com **Mobile : 8884432032**	**Member**	
7	**Ms. Sindhu Nagaraj** Sub-Editor, 'The Hindu' No.859 & 860, Kasturi Buildings Anna Salai, Mount Road Chennai - 600002 Sindhu0411@gmail.com **Mobile : 9916595072**	**Member**	

MEMBERS ABSENT :

QUESTION
PAPER
PATTERN

DSC THEORY:

Time: 3 hours Marks: 60

Instructions:
All PARTS are mandatory.

PART - A

Answer any FIVE of the following: 1. 5x2=10

1.
2.
3.
4.
5.
6.
7.

PART - B

Answer any FOUR of the following: 4x5=20

8.
9.
10.
11.
12.
13.

PART - C

Answer any THREE of the following: 3x10=30

14.
15.
16.
17.
18.

NOTE: Questions must be prepared such that all units are covered.

DSC PRACTICAL

Time: 3 hours **Marks: 25**

NOTE: 1. Questions for practical examination should be in the form of applied knowledge of thetheory part. The question paper should be prepared by BoE for 25 marks. 2. A practical record should be evaluated by both internal and external

examiner for the remaining 10+15 marks.

Mahajana Education Society (R)
Education to Excel

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Department of Journalism & Mass Communication

Syllabus Under Graduate – CBCS (BA)

V & VI SEMESTERS

BOARD of STUDIES

UG ☑

PG ☐

2021-22

Mahajana Education Society (R)
Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

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Department of Journalism & Mass Communication

Board of Studies Meeting held on Saturday, 24th July 2021

Sl.No.	Name	Designation	Signature
1	**Mr. L. Ravi** HoD & Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru Email: raviiyermysore@gmail.com **Cell: +91 9483901990**	**Chirperson**	
2	**Mr. Keshava Murthy** Assistant Professor SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru Keshavasnemrc@gmail.com, **Mobile : 9449271480**	**Member**	
3	**Mr. Mahadevaswamy KN** HOD & Assistant Professor Dept. of Journalism, Sahyadri Arts College Kuvempu University, BH road, Shivamogga – 577303 knmswamy@gmail.com **Mobile : +91 9483796169**	**Member**	
4	**Dr. C.M. Vinaya Kumar** Dept. of Journalism and Mass communication, Krishna University, Machilipatnam – 521001 drcmvinayakumar@gmail.com **Mobile : 9985085530**	**Member**	
5	**Dr. Sapna M.S** DOS in Communication & Journalism Dept. Communication & Journalism, Manasagangothri, Mysore splashsapna@gmail.com	**Member**	

	Mobile : +91-821-2419510		
6	**Dr. Preethi Kapoor** HOD of Photography and Photo Journalism Chamarajendra Government College of Visual Art, CAVA, Siddhartha Nagar, Mysore-5700011 drpritikapur@yahoo.com **Mobile : 9845113339**	**Member**	
7	**Mr. Nikhil Maruthi** Social Media Strategist**,** Vidana Soudha, Banglore #25, Shridevekrupa, 11th block, Madhuvanalayout, Srirampura 2nd Stage, Mysore – 570023 Nikhilmaruthi26@gmail.com/ nikhilmaruthi.cmo@gmail.com **Mobile : 9650266082**	**Member**	

Department of Journalism & Mass Communication

List of Examiners

Sl. No.	Name	Designation	Address for Communication
25.	Mr. L. Ravi	HoD and Assistant Professor	SBRR Mahajana First Grade College, Mysuru
26.	Dr. Pramila Kunnur	HOD. Dept. Journalism & Mass Communication	Maharaja's College, University of Mysore, Mysuru
27.	Sri. Mahadevaswamy	HOD & Associate	Sahyadri Arts College

	K N	Professor, Dept. of Journalism	Kuvempu University, BH Road, Shivamogga – 577303
28.	Dr. Preethi Kapoor	HOD of Photography and Photojournalism	Chamarajendra Government College of Visual Art, CAVA, Siddhartha Nagar, Mysuru
29.	Dr. Sukanya	HOD. Dept. Journalsim & Mass Communication	St. Philomena's college, Mysuru
30.	Dr. Ragavendra S. G	HOD. Dept. Journalsim & Mass Communication	Maharani College, Mysuru
31.	Dr. K.M. Halaswamy	HOD. Dept. Journalsim & Mass Communication	HKES, Sri Veerendra patile degree college, Sadashivanagar, Bangaluru
32.	Sri. D. Mahesha	HOD. Dept. Journalsim & Mass Communication	Govt. Arts College, Bangaluru
33.	Dr. Kumara Swamy	Guest Faculty	Dept. Journalsim & Mass Communication, Govt. Women's First Grade College, K. R. Pate.
34.	Dr. Gopal	Guest Faculty	Maharaja's College, University of Mysore, Mysuru

Proceedings of BoS in Journalism & Mass Communication held on Saturday, 24th July 2021 at Studio Media Centre, SBRR First Grade College (Autonomous)

MEMBERS PRESENT

Mr. L. Ravi
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AGENDA

Preparation, Consideration, Verification, and Recommendation of CBCS BA Syllabus for V and VI Semester in Journalism and Mass Communication (UG).

RESOLUTION

Members of the BoS are unanimously agreed and approved the following Resolutions:

The Panel of BoS members prepared and approved the 5th and 6th Semester (CBCS) syllabus for UG Journalism and Mass Communication Course for the year 2021-22, and approved BoE Panel Members.

Decision: BoS approved and Recommended the UG Syllabus on CBCS pattern for BA Degree with Journalism and Mass Communication as a cognate subject in UG for implementation in the colleges

affiliated to the University of Mysore, Autonomous Board, during academic year 2021-22. Syllabus, Scheme of Examination, Question paper pattern is appended in the Appendix- 1.

Syllabus of CBCS : Journalism & Mass Communication

Moto:

'Feed the watchdog, build the safe society'
To groom the students as Media Professionals with knowledge and skills to excel

Vision:

To inspire successive generations of talented Individuals to become dedicated Journalists.

Preamble:

Journalism and mass communication programs exist today in universities and colleges where scientific and technological advances have altered our lives, our culture and our economy; where, increasingly, "departments and their faculty members are expected to find their own financial support for programs" and where individual access to technology has made everyone an instant communicator to a global, a local or a global audience.

Journalism and mass communication programs asserts:

- The value of their programs curricula to the academic, the professional and the lay communities
- Promote and publicize their professional and academic worth to the local, national and international communities;
- Take a leadership role in defending the trust they hold in the education of the citizenry, in articulating the value of a free, unfettered press to a democracy, and in securing the partnerships (academic, professional, technological and fiscal) they need to realize the objectives of their programs.

Mission:

Provides students with the intellectual, interpretive and Practical skills they need to function as professionals. With state-of-the-art technology. We have created an environment for hands-on teaching and learning. Internships are vital to the educational experience and students may choose from a wide range of opportunities in print, television, radio and Internet media from around the region.

Mission Statement:

The organization seeks to extend collectively on a national and even an international level the individual leadership its members practice on their campuses. This organization will work to ensure that its constituents innovate, manage and lead in a media marketplace undergoing fundamental change. It will work to ensure that the programs broaden, deepen and invigorate the professions they serve, working with them to innovate and lead.

Goals:

Provide national leadership for the advancement of journalism/mass communications education:

Articulate the role of J&MC education to a variety of constituencies – academic, professional, industrial, and public constituencies.

Foster excellence in the leadership, administration and management of J&MC units.

Strategies:

Organize convention programs and encourage publication of articles (delivered through various means) that explore and define the purposes of liberal arts and sciences and technology in various J&MC programs. A special annual issue of Insights would cover these topics.

Promote inquiry into the changing nature of higher education and into the role therein of J&MC education. Expand such inquiry to conversation about the changing nature of society.

To collaborate with relevant organizations – academic, professional, industrial – to discuss basic and applied research in the discipline.

Work with the Council of Communication Associations and other relevant organizations to disseminate J&MC research to the relevant professionals.

To promote J&MC education as the desired education and training for professional communicators.

Collaborate with J&MC regarding industry and professional trends, job placement and internships for J&MC students and publicize success stories in the academy, the media and other relevant constituencies.

Provide forums to discuss excellence in J&MC units and the leadership, administration and management of those units.

Work with the Council for the Advancement and Support of Education, for example, to hold special conventions, Seminars, Special Lectures, and Orientation programs, workshops.

Aims:

Due to the changing environment in mass media, in which the boundaries of each traditional medium such as newspaper, radio and television have been integrated online, this program will prepare students to enter the field of new media in the new globalized world. The program aims to produce graduates with the necessary and advanced knowledge in communication, preparing them to be the leaders in mass communication with morality, creativity, insightful attitudes and other necessary related skills, particularly, English language skills. Focusing on concepts, theories and professional practices in digital lab and studio, students are taught to think and analyze issues critically, and gain a comprehensive understanding in their field. The goal is for graduates to apply their knowledge and contribute to helping develop society in a positive way.

Objectives:

1. To produce scholar graduates with strong academic knowledge and professional skills so they are prepared to join a media related profession.
2. To produce graduates who will contribute positively to society.
3. To produce graduates to be leaders of the society with a sense of high morality, advanced skills and insightful attitudes.
4. To produce graduates to be leaders in mass communication and social development.

A Global Reputation for Excellence Earned Every Day

From day one to graduation, the Department of Journalism and Mass Communications focuses on student success through academic achievements. Inspired by our long-time motto, "**Feed the watchdog, build the safe society" & "To groom the students as Media Professionals with knowledge and skills to excel"** all

students in our three years undergraduate Bachelor of Arts degree programs: Communication, Advertising, Convergence Journalism, Public Relations, and Skilled based programmes involved applications like PageMaker, InDesign, Adobe Photoshop, Coreldraw, and Video Editing Softwares, Field Work, Internship Training and Media Visits are challenged and encouraged every day to prepare for high expectations and demanding global competition for professional media careers.

Facilities provided for JMC Three Years Degree Course for Journalism:

(a) State of art all facilities in Laboratories with Air-conditioned;

(b) One Lab Assistant / Computer Teacher, having suitable experiences in Practical classes and computer operation, Video and Audio editing, short film making; Pagination and Layout; releasing the departmental newsletter.

(c) Sound-proof studio

(e) Recording System (Audio & Video);

(f) Hi-speed Internet connection;

(g) Necessary Software installed: PageMaker, Indesign, Adobe Photoshop, Adobe Premier Pro Softwares; Photo Editing Software; Video Editing Software; Audio Editing Software; Nudi Kannada Software (Unicode).

The Pedagogy:

The teaching-learning of the programme would be organized through lectures, tutorials, practical's, projects, presentations, workshops, seminars and hands-on training using ICT extensively. Practical sessions are incorporated as an important component in most of the papers, with hands-on training in the use of various equipment, such as Computers, Cameras, Editing Machines etc.

Learning Outcomes

The fundamental premise underlying the learning outcomes-based approach to curriculum planning and development is that higher education qualification such as B.A (Journalism & Mass Communication) are awarded on the basis of demonstrated achievement of outcomes (in terms of knowledge, understanding skills, attitudes and values) and academic qualities expected from a graduate of professional programme such as B.A. in Journalism and Mass communication. The learning outcomes specify what exactly graduates after successfully completing Mass communication & Journalism degree programme of study are expected to know, understand and able to practice on the professional level .

Programme Educational Objectives (PEOs):

The overall objectives of the Learning Outcomes-based Curriculum Framework (LOCF) for Journalism and Mass communication degree are:

1. To impart the basic knowledge of Mass communication & Journalism and related areas of studies.
2. To develop the learner into competent and efficient Media & Entertainment Industry- ready professionals.
3. To empower learners by communication, professional and life skills.
4. To impart Information Communication Technologies (ICTs) skills, including digital and media literacy and competencies.
5. To imbibe the culture of research, innovation, entrepreneurship and incubation.
6. To inculcate professional ethics, values of Indian and global culture.

7. To prepare socially responsible media academicians, researchers, professionals with global vision.

Any graduate of Journalism and Mass communication should be media literate with the understanding of the core concepts of communication, the knowledge of new communication technologies and responsibility towards the society.

Graduate Attributes include:-

1. Disciplinary Knowledge: Knowledge of communication concept and theories. Acquiring knowledge of different dimensions of communication, historical perspectives and other related areas of studies.
2. Understanding the Role of Press: The press in democratic society, importance of freedom of press and impact of media in general.
3. Skilled and Industry-ready Professionals: Strengthening the abilities of a learner by skills, gaining knowledge of the present scenario of M & E industry including advertising, public relations, corporate communication, digital communication, media management.
4. Influential and effective communication: Influential and effective communication ability to share thoughts, ideas and applied skills of communication in its various perspectives like written communication, speech communication etc.

The key outcomes planned in this undergraduate programme in Journalism and Mass communication & Journalism are underpinned as follows:

After completing this undergraduate programme, a learner:

1. Shall acquire fundamental knowledge of Mass communication & Journalism and related study area.
2. Shall acquire the knowledge related to media and its impact.
3. Shall be competent enough to undertake professional job as per demands and requirements of M & E Industry.
4. Shall empower themselves by communication, professional and life skills.
5. Shall be able to enhance the ability of leadership.
6. Shall become socially responsible citizen with global vision
7. Shall be equipped with ICTs competencies including digital literacy.
8. Shall become ethically committed media professionals and entrepreneurs adhering to the human values, the Indian culture and the Global culture.
9. Shall have an understanding of acquiring knowledge throughout life.
10. Shall acquire the primary research skills, understand the importance of innovation, entrepreneurship and incubation abilities.
11. Shall acquire the understanding of importance of cooperation and teamwork.

Appendix- 1

CBCS Syllabus for BA in Journalism and Mass Communication

NEW CBCS SYLLABUS APPROVED BY THE BOS

Programme: B.A.

Subject: Journalism & Mass Communication (JMC)

Semester	Course Code	Subject Code	Course Title	Credits	L	T	P
V	DSE-1A	211518	Media Laws & Ethics	6	6	0	0
	DSE-2A	211528	Media Management	6	6	0	0
	DSE-3A	211538	Freelancing & Feature Writing	6	4	0	2
	GE-1	211588	Mass Media & Society	2	2	0	0
VI	DSE-1B	211648	Advertising & Public Relations	6	4	0	2
	DSE-2B	211658	New Media	6	4	0	2
	DSE-3B	211668	Audio-Visual Media	6	4	0	2
	GE-2	211698	Inter-Cultural Communication	2	2	0	0

Journalism & Mass Communication

V Semester BA

DSE-1A : MEDIA LAWS AND ETHICS – SUBJECT CODE: 211518

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA C1+C2 Marks	Practical Exam	IA C1+C2 Marks	Total	Credits - 6		
									L	T	P
DSC-1A	Media Laws & Ethics	06	3 hrs	80	10 + 10	-	-	100	6	0	0

Course Objectives:

1. Introducing the essence and purpose of law and ethics of Journalism.
2. Define law and ethics and understand their purpose in society.
3. To familiarize the students with different types of Media.
4. To create understanding Philosophical foundations of Media Law and Ethics.
5. To know the code of ethics of the Indian Journalism.
6. To be acquainted with some ethical case studies in Journalism.

Learning Outcome:

1. Discuss media laws in India and the world.
2. Discuss the Right of Freedom of Speech and reasonable restrictions applicable.
3. Discuss media regulation in India.
4. Demonstrate an understanding of the nature of ethics and morality in Journalism.
5. Determine the ethical issues of media with case studies
6. Determine the provision provided to the journalist
7. To create understanding Philosophical foundations of Media Law and Ethics.
8. Acquainting the students with essential legal and ethical provisions to guide the Indian Journalist's conduct as a professional.

SYLLABUS – DSE-1A : MEDIA LAWS AND ETHICS

UNIT - I **Allotted Hours**

Concept of Freedom of Press: Press as a Fourth Estate; Press during Emergencey-1975; Role of Press in democracy; Fundamental rights and duties - Press freedom in Indian Constitutio **14 hrs.**
Freedom of Speech and expression: Article 19(1) (a) and Article 19(2) – Case studies.

UNIT - II

Media Laws: Defamation-Libel and Slander, Censorship, Sedition, Obscenity, Law of Parliamentary Privileges, Case studies. **Contempt of Court:** Civil and Criminal; Cyber Law **14 hrs.**

UNIT - III

Right to information Act; The Press and Registration of Book Act; Copyrights Act – Intellectual Property Rights. Working Journalist Act, Prasara Bharathi Act, Cyber law; Cable television network (regulation) Act; Film censorship. **14 hrs.**

UNIT - IV

Press Commission Reports: I and II Press Commission, Major recommendations of the I and II Press Commissions; **Press Council of India Act**: Structure, Functions and Significance. **14 hrs.**

UNIT - V

Ethics: Media's ethical problems- Sting operation, Right to privacy, sensationalism and yellow journalism, paid news, Media self-regulation: BCCC, Ombudsman. **14 hrs.**

Books for reference:

1. Basu, Durga Das. (2010). *Law of the press*. New Delhi: Prentice Hall of India.
2. Myneni, S.R. (2015). *Media law*. Hyderabad: Asia Law House.
3. Pathak, Juhi P. (2014). *Introduction to mass media laws and ethics*. Delhi: Shipra Publication.
4. Neelamalar, M. (2009). *Media law and ethics*. Delhi: PHI Learning Private Limited.
5. Prasad, Kiran. (2011). *Media law in India*. Delhi: Kluwer Law International.
6. Divan, Madhavi Goradia. (2018). *Facets of Medial Law*. New Delhi: Eastern Book Company.
7. Laws of the press in India – Durga DasBasu
8. Media and Ethics – S KAggarwal
9. Mass Media Laws and Regulations in India – K SVenkataramaiah
10. Press and the Law – AN Grover
11. Freedom of the Press – Some Recent Incidents – K S Venkataramaiah
12. Mass Media and Freedom of Press in India – K S Padhy
13. The Press Council – T NTrekha
14. Journalism: Ethics, codes and the Law – Someshwara RaoB.
15. Reports of First and Second Press Commission
16. Lakshamana Rekha – N.S.Ashok Kumar
17. Patrika Kanunu – Arjun Deva
18. Madhyama Nirvahane Mattu Madhyama Kanunu –K.J.Joseph
19. Media Ethics, Thakurta, Paranjoy Guha, Oxford University Press, 2009.
20. Media Ethics, Barrie Mc Donald and Michel Petheran, Mansell, 1998.
21. Where Law Meets Popular Culture (ed.), Austin Sarat, The University of Alabama Press, 2011.
22. Communication Law in India, Vikram Raghvan, Lexis Nexis Publication, 2007.
23. Mass Media Laws and Regulations in India, Iyer Vekat, Published by AMIC, 2000.
24. Censorium: Cinema and the Open Edge of Mass Publicity, William Mazzarella.
25. Censorship in South Asia: Cultural Regulation from Sedition to Seduction by Raminder Kaur and William Mazzarella,
26. Hard Core: Power, Pleasure, and the "Frenzy of the Visible" by Linda Williams.
27. Law of the Press D. D Basu
28. Press and Democracy Kaushal N
29. Mass Media Laws and Regulations in India K.S Venkateshwaran
30. Journalism and Ethics Phijip Seib and Kathy Fitzpatrick
31. Cyber Laws Justice Yatindara Singh
32. Media and the Law Martha A Fireman and Matha T Mecluskey
33. Mass Communication in India Keval J. Kumar
34. ಸಂಸತ್ ಕಲಾಪಗಳ ವರದಿಗಾರಿಕೆ – ಈಶ್ವರ ದೈತೋಟ
35. Laws of the Press in India DURGADA BASU
36. Communication Law RAYUDU C.S.
37. Journalists and the law UMRIGAR D.M.
38. The law and the Press PII
39. Indian Constitution DURGADA BASU
40. Journalism: Ethics, Codes and the Law SOMESHWAR RAO B
41. First and Second Press Commission Report, Press Council Act- REPORTS

Journalism & Mass Communication

V Semester BA

DSE-2A : MEDIA MANAGEMENT– SUBJECT CODE: 211528

Sem Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA C1+C2 Marks	Practical Exam	IA C1+C2 Marks	Total	Credits - 6		
									L	T	P
DSC-2A	Media Management	06	3 hrs	80	10 + 10	-	-	100	6	0	0

Course Objectives:

1. Understanding the structure and functioning of Print Media.
2. To examine the most important issues facing media.
3. To familiarize the students with organizational structure of different kinds of Media – Print, Broadcast and Audio-Visual.
4. Examining newspaper as a business enterprise and its public service role with reference to the Indian Media.
5. Understanding circulation of newspapers and the various factors involved with circulation of newspapers, newspaper's policy, role of the Circulation department.
6. Students would be able to throw light on the present status of various mass media.

Learning Outcome:

1. Various factors associated with ownership of newspapers, the different types of ownership and source of revenue of a newspaper.
2. Students would be able to gain conceptual and theoretical knowledge of Media.
3. Students would be able to relate to the emerging trends & developments in the field of Journalism.
4. To prepare socially responsible media academicians, researchers, professionals with global vision.
5. Skilled and Industry-ready Professionals: Strengthening the abilities of a learner by skills, gaining knowledge of the present scenario of M & E industry including advertising, public relations, corporate communication, digital communication, media management.
6. Students would be able to inculcate the knowledge of growth of print, Broadcast and Television media.

SYLLABUS – DSE-2A : MEDIA MANAGEMENT

Allotted Hours

UNIT - I

Starting of a Newspaper: Newspaper Registration (RNI); Structure of a Newspaper Organization and Its Operations. Principles of Newspaper Business: Planning, Staff Organization, Directing, Types of Newspaper Organization. **16 hrs.**

UNIT - II

Newspaper Ownership: Types of Newspaper Ownership in India and its Operations. Role of Circulation and Promotion and Problems. Public Relations for Newspaper Organization. **16 hrs.**

UNIT - III

Role of Newspaper Industry in India, Merits and Demerits of Small Newspaper - Problems Prospects. **16 hrs.**

UNIT - IV

Managing Electronic Media: Organizational Structure of Radio and TV Studios. Akashv and Doordarshan. Starting of a Private Radio and TV channels. **16 hrs.**

Books for Reference:

1. Newspaper Management in the New Multi-Media Age –Mehre
2. Managing Electronic Media – Czech Beckerman
3. Newspaper Organization and Management – Herbert Lee Williams
4. Electronic Media Management – Mocavatt and Pringle
5. Media and Communication Management – C R Rayudu
6. Management Principles and Practice – S B Banerjee
7. Management: An Integrated Approach – Edited by R S Dwivedi, Nahal Publishing House
8. Management Principles and Practice – Dalton E Mac Forland
9. Communication and Management – Nataraja Kumar, Gyan Publishing House

Journalism & Mass Communication

V Semester BA

DSE-3A : Freelancing & Feature Writing– SUBJECT CODE: 211538

Sem / Code		Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA C1+C2 Marks	Practical Exam	IA C1+C2 Marks	Total	Credits - 6		
										L	T	P
DSC-3A		Freelancing and Feature Writing	06	3 hrs	80	10 + 10	80	10 + 10	200	4	0	2

Course Objectives:

1. Know the functioning of media in development coverage.
2. To understand the need, role, important functions of photographer & Pictures in Journalism.

3. To develop the knowledge of photography.
4. Students would have the knowledge of writing on national & global issues.
5. Analyzing special articles published on the editorial or op-ed pages and then chalking out it striking points for better understanding of contemporary activities.

Learning Outcome:

1. Students will be able to identify the back regions problems and write Features, Columns and Articles on recent issues of the society.
2. Students would be able to inculcate the knowledge of current socio-cultural issues.
3. Students would be able to create understanding of specialized features, columns and articles.
4. Students would be able to enhance understanding of the technical terms and jargons of journalism.
5. Students would be able to know about Photo Editing, caption writing and photo presentations in journalism.

SYLLABUS – DSE-3A : FREELANCING & FEATURE WRITING

Allotted Hours

UNIT - I

Feature: Definition and Characteristics – Structure of a Feature – Types of Feature. **16 hrs.**

UNIT - II

Writing Feature – Sources of Ideas – Collection of materials; Presentations; Market for features; Feature Syndicates. Columns: Characteristics, Techniques of Writing Columns, Type Column, Columnists. **16 hrs.**

UNIT - III

Freelancing – Illustrations – Illustrating the write-ups with photographs, drawings, r caricatures. Channels of News Pictures – viz., Wire, Satellite, Agency, Stock, Picture Lib Freelancer. **16 hrs.**

UNIT - IV

Photo Journalism: Definition, Nature, Scope and Functions of Photo Journalism: Qualification and Responsibilities of Photo Journalists, News Photographers: Selection, Criteria for N Photographs –Photo Editing, Caption Writing, Photo –presentation. **16 hrs.**

Books for Reference:

1. How to Criticize books- O Hinkle and J Henry
2. Effective Feature Writing – C A Sheenfeld
3. Modern Feature Writing – H F Harrington and Elmer Scott Watson
4. Writing Feature Articles – A Practical Guide to methods and Markets –Hennessey

5. Before My Eyes: Film Criticism and Comment –Kauffmann
6. Beyond the Facts – A Guide to the Art of Feature Writing
7. Freelancing – R K Murthy
8. Suddiyashte Alla – Niranjana Vanalli
9. Friedlander, Jay & Lee, John (eds.). (2010). *Feature writing for newspapers and magazines: The pursuit of excellence* (7th Ed). London: Allyn & Bacon
10. Rao, Meera Raghavendra. (2009). *Feature writing*. New Delhi: Prentice Hall of India.
11. Pape, Susan & Featherstone, Susan. (2006). *Feature writing: A practical introduction*. New Delhi: Sage.
12. Phillips, Angela. (2007). *Good Writing for Journalists*. New Delhi: Sage
13. Ricketson, Matthew. (2004). *Writing feature stories: How to research & write newspaper & magazine articles.* London: Allen & Unwin
14. Sharma, Diwakar. (2005). *Modern journalism*: *Reporting and writing*. New Delhi: Deep & Deep.

Journalism & Mass Communication

V Semester BA

GE-1 : MASS MEDIA AND SOCIETY– SUBJECT CODE: 211588

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA Marks	Practical	Total	Credits - 2		
								L	T	P
GE-1	MASS MEDIA AND SOCIETY	02	2 hrs	40	5 + 5	-	50	02	0	0

Course Objectives:

1. Know the functioning of Mass Media in Society.
2. To understand the role, important functions of Mass Media – Print, Broadcast and Audio-visual Media.
3. Media as a watch dog. Role of Media in Democracy.
4. Media Censorship and government control.
5. Media diversity and pluralism.

Learning Outcome:

1. Students would be able to understand the basics of journalism.
2. Students would be able to acquaint them with important aspects of the process of journalism.
3. Students would be able to throw light on the present status of various mass media.
4. Students would able to understand the working pattern of various Mass Media platform
5. Students have an overview of recent changes and future challenges of media regulation.

SYLLABUS – GE-1 : MASS MEDIA AND SOCIETY

Allotted Hours

UNIT - I

Media and Society: Introduction to Mass Media and Society; Importance of the Media, **8 hrs.**
Communication: Characteristics of Mass Media– Newspaper, Radio, Television & Cinema as mass media. Responsibilities of Media.

UNIT - II

Mass Media and Democracy: Role of Mass Media in democracy and the effect of poli**8 hrs.**
economic, cultural and technological factors on the operation of the media. Media As A W
Dog, Mass media and social change.

UNIT - III

Media Censorship and government control, Media diversity and pluralism, issues of s**8 hrs.**
class, poverty, development, and public health, advertising, and trends such as cele
journalism.

Books for Reference:

1. How to Criticize books- O Hinkle and J Henry
2. Effective Feature Writing – C A Sheenfeld
3. Modern Feature Writing – H F Harrington and Elmer Scott Watson
4. Writing Feature Articles – A Practical Guide to methods and Markets –Hennessey
5. Before My Eyes: Film Criticism and Comment –Kauffmann
6. Beyond the Facts – A Guide to the Art of Feature Writing
7. Freelancing – R K Murthy
8. Suddiyashte Alla – Niranjana Vanalli
9. Law and the Media – An Everyday Guide for Professionals – Crone
10. Mass Media Laws and Regulations in India – K S Venkataramaiah
11. Press and the Law – An Grover
12. Press in Chains – ZamirNaizi
13. Freedom of the Press – Some Recent Incidents – K S Venkataramaiah
14. Mass Media and Freedom of Press in India – K S Padhy
15. Battle for Freedom of Press in India – K S Padhy
16. Laws of Press in India – B Basu

Journalism & Mass Communication

VI Semester BA

DSE-1B : ADVERTISING & PUBLIC RELATIONS–SUBJECT CODE: 211648

Sem / Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA C1+C2 Marks	Practical Exam	IA C1+C2 Marks	Total	Credits - 6		
									L	T	P

DSC-1B	Advertising and Public Relations	06	3 hrs	80	10 + 10	80	10 + 10	200	4	0	2

Course Objectives:

1. Impart basic concepts of advertising and its development in Media.
2. To familiarize the students with different types of Media Advertising.
3. Knowledge of the functioning of advertising agencies.
4. To provide knowledge about the definitions and concepts of public relations, publicity, propaganda, advertising and e-PR.
5. To understand the basic tools of public relations and impart the fundamentals of PR Writings.
6. To learn the ethics and laws of public relations.

Learning Outcome:

1. Students would learn development of advertising and basic concepts.
2. Students would be able to know about role and importance of advertising in media
3. Students would know about the advertising industry and its functioning.
4. Students would gain knowledge about the basic ethics and laws of public relations.
5. Students would gain knowledge about the tools of public relations.
6. Students would know the difference between public relations and corporate communications, public relations and advertising, public relations and propaganda, public relations and publicity, propaganda and publicity.

SYLLABUS – DSE-1B : ADVERTISING & PUBLIC RELATIONS

Allotted Hours

UNIT – I

Advertising – Meaning, Nature and Scope, Origin and Development of Advertising; Types of Advertising. Role of Advertisements in Society. Advertisement and Ethics. **16 hrs.**

UNIT – II

Advertising agency, Structure and Functions of Advertising agency.
Copy writing, Slogan writing, Writing advertisement copies for Print media, Radio, Televisi Visualization-Layout, Illustration, color-Elements of advertisement copy-Headlines, Sub-headlines, Text, Slogan, Logo and Trademark. **16 hrs.**

Unit-III

Public Relations : Meaning, Definition, Nature and Scope of Public Relations, Elements of Public Relations, Qualification and responsibilities of a Public Relations Officer, Difference between Publicity, Public Opinion, Propaganda and Public Relations. **16 hrs.**

Unit-IV

Qualities of a Public Relations Officer (PRO) : Writing for PR : Press Release; Press note; Handout; Speech Writing; Agenda and Minutes of the Meeting, Scheduling and handling the Press Conference; Press Meet. New Trends in Public Relations, Laws and ethics in PR, P code, Crisis Management, Corporate Social Responsibility (CSR), House Journals, Corporate Communication, Professional Bodies of Public Relations. **16 hrs.**

Books for Reference:

1. Advertising In India; Keval.J.Kumar
2. Advertising Theory And Practices, Sandage And Others
3. Advertising Principals And Practices, Sethia And Chunawala
4. Effective Public Relations, Cutlip And Center
5. Hand Book of Public Relations, Ravindran
6. Public Relations, Ahuja And Chabra
7. Practical Public Relations, Sam Black
8. Advertising Procedure, Otto Klenppner
9. Advertising, Ahuja & Chandra
10. Advertising, David Ogilvy Ogilvy
11. *Advertising Management,* New Delhi: Atlantic Publishers, C L Tyagi and Arun Kumar (2004).
12. *Advertising and Sales Management,* New Delhi: VK, Mukesh Trehan and Ranju Trehan (2007), India.
13. *Foundation of Advertising,* SA Chunawalla and KC Sethia (2002), New Delhi, Himalaya Publishing House.
14. *Mass Communication in India* (4th edn), Keval J Kumar (2012), Mumbai: Jaico Publishing House.
15. *Public Relations,* Jaishri N. Jethwaney and Narendra Nath Sarkar (2002), New Delhi: Sterling Publishers Private Limited.
16 Encyclopaedia of Public Relations, Robert L. Heath (2005), London, Thousand Oaks, New Delhi: Sage Publications.
17. *The Public Relations handbook,* Alison Theaker (2001), London and New York: Routledge.
18. *Handbook of advertising media and public relations,* Deepak Gupta (2005), New Delhi: Mittal Publications.
19. *Handbook of Journalism & Mass Communication*, Vir Bala Aggarwal and VS Gupta (2002), New Delhi: Concept Publication Company.

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VI Semester BA

DSE-2B : NEW MEDIA – SUBJECT CODE: 211658

Sem / Code		Paper Title	Week/ hour	Duration of Examination	Exam Marks	IA C1+C2 Marks	Practical Exam	IA C1+C2 Marks	Total	Credits - 6		
										L	T	P
DSC-2B		New Media	06	3 hrs	80	10 + 10	80	10 + 10	200	4	0	2

Course Objectives:

1. To enhance understanding of the origin and development and technological advancement of New Electronic Media, Online Media and Web Media.
2. To throw light on the present status of various New media.
3. To develop the knowledge of basic elements of Online Journalism.
4. To understand the working pattern of electronic media platform.
5. To inculcate the knowledge of Cyber crime, Cyber law and ethics.

Learning Outcome:

To understand the concept of News, Reporting and Techniques, Media Conference, Press Release and different types of Reporting.

1. Students would be able to enhance understanding of the origin and of the New electronic Media, Online Media and web media.
2. Students would be able to acquaint themselves with technological advancements in new media and able to throw light on the present status of various platforms in electronic media.
3. Students will be having the knowledge of script writing in Online Journalism.
4. Engage students in new trends in online journalism.
5. Understand New Media in journalism while practicing in the studios how to handle and use various New media instruments and the mixers.

SYLLABUS – DSE-2B : NEW MEDIA

Allotted Hours

UNIT – I

Online Communication: Meaning and definition, Features of Online Communication; Internet: Characteristics, Networking, ISP and browsers, Types of websites, Video conferenc **16 hrs.** Webcasting.

UNIT – II

Digital media and communication, ICT and digital divide, Information Society, New World: Information Order and E-governance, NWICO: New World Information and Communica **16 hrs.** Order, Convergence: Need, nature and future of convergence, Emerging Trends: Mobile Technology, Social Media & Web 2.0

UNIT – III

Traditional vs Online Journalism: Difference in news consumption, Presentation and U **16 hrs.** Online Writing & Editing: Do's and Don'ts, Blogs - Wikis – Wikipedia vs Britannica; P Sharing - Podcasting - Video Podcasts – Screen casts.

UNIT – IV

Cyber Crimes & Security: Types and Dimension, Cyber Laws & Ethics and the difficult **16 hrs.** enforcing them, Elements & Principles of Web Designing

Suggested Reading

1. New Media: A Critical Introduction, Martin Lister, Taylor & Francis,2009
2. The Internet: An Introduction to New Media, Lelia Green, Berg, 2010
3. Leah A. Lievrouw, Sonia Livingstone (ed.), *The Handbook of New Media*, SAGE, 2002
4. Logan, Robert K. (2010) Understanding New Media: Extending Marshall McLuhan, New York: Peter Lang Publishing
5. Castells, Manuel, (1996) Rise of the Network Society, The Information Age: Economy, Society and Culture volume 1, Massachusetts, Blackwell Publishing
6. Cyber Law of Information Technology and Internet, Anirudh Rastogi, 2014
7. Samachar lekhan aur web patrakarita: A.Kulshreshtha, Sri Natraj Publications
8. *The Internet: An introduction to new media,* Lelia Green (2010), Oxford and New York: Berg.
9. *The Network Society: Social Aspects of New Media* (2nd end), Jan A.G.M. van Dijk (2006), London. Thousand Oaks and New Delhi: Sage Publications.
10. *New media: A critical,* Martin Lister, Jon Dovey, Seth Giddings, Iain Grant and Kieran Kelly (2009). *introduction* (2nd end), London and New York: Routledge
11 *New media: The key concepts,* Nicholas Gane and David Beer (2008), Oxford and New York: Berg.
12 *Digital cultures,* Glen Creeber and Royston Martin (2009), New York: Open University Press.
13 *Public Relations,* Jaishri Jethwaney and Narendra Nath Sarkar (2002), New Delhi: Sterling Publishers Private Limited.
14. Robert L. Heath (2005). Encyclopaedia of Public Relations, London, Thousand Oaks, New Delhi: Sage Publications.
15 Alison Theaker (2001). *The Public Relations handbook,* London and New York: Routledge.
16 Deepak Gupta (2005). *Handbook of advertising media and public relations,* New Delhi: Mittal Publications.
17 Vir Bala Aggarwal and VS Gupta (2002). *Handbook of Journalism & Mass Communication*, New Delhi: Concept Publication Company.

18. *Convergent journalism: An introduction,* Stephen Quinn and Vincent F. Filak (2005), Focal Press.
19 *Journalism Online,* Mike Ward (2002).Focal Press.
20. Journalism and New Media, John V. Pavlik (2001). New York: Columbia University Press.
21 *Journalism 2.0: How to survive and thrive,* Mark Briggs (2007). J-Lab (Available online: http://www.kcnn.org/images/uploads/Journalism_20.pdf).
22. Craig, Richard. (2004). *Online journalism: reporting, writing and editing for new media*. Belmont: Thomson/Wadsworth.
23. Gupta, O., & Jasra, A. S. (2002). *Information Technology in Journalism.* New Delhi: Kanishka Publishers.
24. Nath, S. (2002). *Assessing the State of Web Journalism.* Delhi: Authors Press.
25. Nick, Heap Ray & Thomas Geoff (1995). *Information technology & society.* New Delhi: Sage Publications.
26. Polonsky, Brett. (1999). *Official Microsoft Frontpage 2000 book.* Washington: Microsoft Press
27. Rajan, N. (2011). *21st Century Journalism in India.* London: SAGE Publications.
28. Ray, T. (2006). *Online Journalism.* New Delhi: Foundation Books Pvt Ltd
29. Singh, A. (2011). *Global Journalist in 21st Century.* Jaipur: Prateeksha Publications.
30. Snellned, Temple Bob & Clork T.Michoel (2003). *Internet and web basics all in one.* Indianapolis: Pearson Educations.
31. Srivastava, Chetan. (2003). *Fundamentals of information technology.* New Delhi: Kalyani Publishers.

Journalism & Mass Communication

VI Semester BA

DSE-2C : AUDIO-VISUAL MEDIA– SUBJECT CODE: 211668

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	Exam Marks	IA Marks	Practical Exam	IA C1+C2 Marks	Total	Credits - 6		
									L	T	P
DSC-2C	Audio-Visual Media	06	3 hrs	80	10 + 10	80	10 + 10	200	4	0	2

Course Objectives:

1. Engage students in new trends in Radio Journalism.
2. To introduce students to the presentation, interviewing and advertising skills for radio.
3. Visit AIR and Commercial Radio Studios.
4. To acquaint students with the real world of radio programme and transmission.
5. To inculcate the knowledge of crime reporting.
6. Students will understand new trends in television journalism.
7. Understand Television journalism while practicing in the studios how to handle and use various television gadgets.

8. To introduce student's techniques and skills for presentation, anchoring for television programme production.
9. Students will know the procedure and techniques of different programme formats of television news and news based programme such as Field Report, Special Report, Election Report, Ground Report and walk and talk programme.

Learning Outcome:

To understand the concept of News, Reporting and Techniques, Media Conference, Press Release and different types of Reporting.

1. Students will be able to cover events using mobile phones and right radio news stories
2. Students can produce radio news bulletin and advertisement.
3. Students will be able to interview, make radio promos and jingles
4. Students will be able to undertake radio programme production in different formats.
5. Students will be able to write scripts of television news stories, special stories and on the spot reporting.
6. Students will anchor, present and able to produce television news bulletin
7. Students will be able to do the editing both offline and online programme of television with using the softwares.
8. Students will acquire skills and techniques of television media production.
9. Students will be able to cover events and news based stories using mobile phones, video cameras.

SYLLABUS – DSE-2C : AUDIO-VISUAL MEDIA

Allotted Hours

UNIT – I

History & Growth of Radio:
Radio an Introduction; Evolution and development of Radio in India.
Characteristics of Radio; Essential Radio Production Techniques.
Challenge to Radio from Television and other Media;
Educational radio, Farm radio, Growth of FM Radio - Commercial Radio Broadcasting in India.

16 hrs.

UNIT – II

History & Growth of Television:
Television an Introduction; Evolution, growth and development of Television in India. TV as an Audio-Visual Medium. Characteristics of TV, Advent of Private channels, Cable Satellite TV; Television as an educational Medium. Recent trends in Television Broadcasting in India. T.V. reporting techniques.

16 hrs.

UNIT – III

History & Development of Cinema:
A Brief history of Indian Cinema; New Trends in Indian Cinema; Kannada Cinema; Censorship in India –CBFC & NFDC.

16 hrs.

UNIT – IV

Production Process & Techniques of Radio, TV & Cinema:
Essential production techniques; principles of writing for radio;
Radio Programming Formats : Fictional programmes and non-fictional programmes: News, Talk-shows, Commentary, Feature, Interview, Phone in Programme, Radio Bridges, Spots, Sponsored Programmes. Radio Jockey.

16 hrs.

Basic Production Techniques of TV, TV Programme Formats; Essentials of Television writing; TV anchoring – Qualities, language, skills. Disc Jockey.

Principles, Process and Techniques of Film Production. Script Writing for Film.

Books for Reference:

1. Broadcasting and the people _ Mehra Masani
2. Writing for TV and radio – Robert Hellard.
3. Modern radio production – O'Donnell Lewis B., Philip Benoit and Carl. Hausman
4. A guide to scripting for TV, Radio and Film – Ronald wolfe.
5. A guide to scripting for TV, Radio and Film – Ronald wolfe.
6. Techniques to TV Production – Rudy Bretz (McGraw Hill)
7. Video Production Handbook – Miller (Focal Press)
8. Techniques of TV Production – Gerald Millerson
9. TV Production Handbook – H Zettel
10. Audio – Visual Journalism – B N Ahuja
11. Radio and guide to broadcasting techniques –Evans

12. Bhatt, S.C. (2007). *Broadcast journalism: Basic principles*. *New* Delhi: Har-Anand.
13. Chatterji , Shoma A (2014) *100 Years of jump-cuts and fade-outs : Tracking change in Indian cinema.* New Delhi: Rupa Publ.
14. Chatterji, P C. (1991). *Broadcasting In India*, 2nd Edition. New Delhi: Sage Publications.
15. Dijk, Jan van. (2006). *The network society: Social aspects of new media*. New Delhi: Sage.
16. Saran R (2012) *History of Indian cinema*. New Delhi: Diamod Pocket Books.
17. Sari, Anil. (2011). *Indian cinema: The faces behind the masks*. New Delhi: Oxford University Press.
18. Shrivastava, K M. (2005). *Broadcast journalism: in the 21st century.* New Delhi: Sterling.
19. Usharani, N. (2006). *Educational Television in India*. New Delhi: Discovery.
20. ಚಂದ್ರಶೇಖರ್, ಬಿ.ಎಸ್. (2003). *ಸಂವಹನ ಮಾಧ್ಯಮಗಳು.* ಪ್ರಸಾರಾಂಗ. ಹಂಪಿ: ಪ್ರಸಾರಾಂಗ, ಕನ್ನಡ ವಿವಿ.
21. ರಾವ್, ಜಿ.ಎನ್. ರಂಗನಾಥ್ (2006). *ಪತ್ರಿಕೋದ್ಯಮ ಸಮಗ್ರ ಸಂಪುಟ.* ಬೆಂಗಳೂರು: ಕಾಮಧೇನು ಪ್ರಕಾಶನ

Journalism & Mass Communication

V Semester BA

GE-2 : INTER-CULTURAL COMMUNICATION–SUBJECT CODE: 211698

Sem/ Code	Paper Title	Week/ hour	Duration of Exami-nation	IA Marks	Exam Marks	Practical	Total	Credits - 2		
								L	T	P
GE-2	INTER-CULTURAL COMMUNICATION	02	2 hrs	5 + 5	40	-	50	02	0	0

Course Objectives:

1. Know the functioning of Mass Media in Society.
2. To understand the role, important functions of Mass Media – Print, Broadcast and Audio-visual Media.
3. Media as a watch dog. Role of Media in Democracy.

4. Media Censorship and government control.
5. Media diversity and pluralism.

Learning Outcome:

1. Students would be able to understand the basics of journalism.
2. Students would be able to acquaint them with important aspects of the process of journalism.
3. Students would be able to throw light on the present status of various mass media.
4. Students would able to understand the working pattern of various Mass Media platform
5. Students have an overview of recent changes and future challenges of media regulation.

SYLLABUS – GE-2 : INTER-CULTURAL COMMUNICATION

Allotted Hours

UNIT - I

Culture: Definition, Culture as a Social Institution − Value Systems; Primary & Secondary, Easter & Western cultural perspectives. **8 hrs.**

UNIT - II

Inter-Cultural Communication: Definition, Process; Philosophical & Functional Dimens **8 hrs.**
− Cultural Symbols in Verbal & Non-Verbal Communication.

UNIT - III

Mass Media A Changing Global Culture: What Is Globalization? The Global Media Indu **8 hrs.**
Modern Mass Media as Vehicles of Inter-Cultural Communication; Impact of New-Technologies on Mass Media and Culture.

Books for Reference:

1. Culture & Communication − A World View - K S Sitaram
2. Hand of Inter-Cultural Communication -Asante
3. An Outlines of Indian Philosophy -Hiriyanna
4. Culture, Communication & Social Change - PJoshi
5. The Effects if Mass Communication − Joseph Klapper
6. Mass Culture, Language & Arts in India - M L Apte
7. Media, Culture & Communication − S Banerjee
8. Media, Culture & Society − A Critical Reader − R Collins
9. Folk Music & Mass Media − Shayam Parmer
10. Mass Media and Society (5th Ed). Curran, James. (2010). London: Hodder Education.

11. *Media and Society*, Graeme, Burton. (2009). New York: McGraw-Hill
12. Mediamaking: Mass media in a popular culture (2nd Ed). Grossberg, Lawrence. (2006). New Delhi: Sage.
13. Mass media in modern society. Jacobs, Norman. (1992). New Burswick: Transaction
14. *The Indian media business*. Kohli-Khandelkar Vanitha. (2013). New Delhi: Sage.
15. *Mass communication in India.* Kumar, Keval J. (2004). New Delhi: Jaico.
16. *Mass media and society*. Wells, Alan & Hakanen, Ernest, A. (1997). London: JAI Press.

B.A. Syllabus for Practicals

Journalism and Mass Communication

V Semester

DSE-3A: Freelancing and Feature Writing

1. Personality Feature
2. Heritage / Historical Feature
3. Environmental Story
4. Select or shoot a photograph and caption it.
5. All the students have to create a photo feature with at least 04 photographs of size 12x15 inches and submit the print out of the same in the concerned Department.
6. Internship Training in any recognized newspaper/Audio Visual Media industry.
7. All the students have to design two pages of Newspaper in A3 size using PageMaker /InDesign software. PowerPoint: At least one presentation of not less than 10 slides on any topic assigned. All assignment should be submitted in a C.D format to the concerned Department. Newsletter should be submitted in colour printout.

VI Semester

DSE-1B: Advertising and Public Relations

1. Prepare a Copy for a new product to be launched.
2. Collect 30 different types of ads.
3. Prepare any two press note on the event held at your organization.
4. Collect 20 slogans of different products ads.
5 Arrange for Moke Press Conference.
6. All the students have to make a poster on a social issue and create a slogan for the same of A3 size. **All the students have to place their name and photograph on the poster on the right hand bottom side.**

DSE-2B: Audio-Visual Media

1. Designing and Formatting Individual Newsletter by using PageMaker Application.
2. All the students have to write **02** articles on current social issue and make a separate file and submit it to the concerned Department.
3. One translation
4. Headlines and Select or shoot a photograph and caption it.
5 Internship Training in any recognized newspaper/Audio Visual Media industry.

DSE-3B: New Media

1. Create a blog account & contribute.
2. All the students have to Prepare- News, Talk, and Script for Radio Play, Radio Feature, Radio Interview. (Any Two)
3. All the students have to make their blogs, social media presence by writing two (2) stories on their blogs and social media platform submit the printout to the concern
   Department blog should be identified with their name and photograph including articles, Photographs, and stories etc.

Mahajana Education Society (R)
Education to Excel
SBRR Mahajana First Grade College (Autonomous)
Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

Affiliated to University of Mysore,
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Model Question Paper : Journalism (for all semesters)

Paper Name & Code of the Paper:
Time : 3 Hrs. **Max Marks : 80**

Instructions:

1) Answer TEN questions from **Part –A**
2) Any FOUR from **Part – B**
3) Any FOUR from **Part – C**

Part – A

Answer ALL questions: **2 x 10 = 20**

1)
2)
3)
4)
5)
6)
7)
8)
9)
10)

Part – B

Answer any FOUR questions: **5 x 4 = 20**

1)
2)
3)
4)
5)

Part – C

Answer any FOUR questions: **10 x 4 = 40**

1)
2)
3)
4)
5)

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: Model Question Paper :
GENERIC ELECTIVE (GE) –Journalism & Mass Communication

Paper Name & Code of the Paper:
Time : 2 Hrs. **Max Marks : 40**

Instructions:

1) Answer FIVE questions from **Part –A**
4) Any TWO from **Part – B**
5) Any TWO from **Part – C**

Part – A

Answer ALL questions: **2 x 5 = 10**

1)
2)
3)
4)
5)

Part – B

Answer any TWO questions: **5 x 2 = 10**

1)
2)
3)

Part – C

Answer any TWO questions: **10 x 2 = 20**

1)
2)
3)

Pattern of Examination – Distribution of Marks

Semester	Course Code	Course Title		Theory			Practical		
			Total Marks	Exam **C3**	IA Test **C1**	IA Blue Book/ Record **C2**	**Exam C3**	**Lab Test Assignment C1**	**Record C2**
V	DSE-1A	Media Laws and Ethics	100	80	10	10	-	-	
	DSE-2A	Media Management	100	80	10	10	-	-	
	DSE-3A	Freelancing and Feature Writing	200	80	10	10	80	10	10
	GE-1	Mass Media and Society	50	40	05	05	-	-	
VI	DSE-1B	Advertising & Public Relations	200	80	10	10	80	10	10
	DSE-2B	New Media	200	80	10	10	80	10	10
	DSE-3B	Audio-Visual Media	200	80	10	10	80	10	10
	GE-2	Inter-cultural Communication	50	40	05	05	-	-	

Format of Examination Paper

Theory Papers – Total Marks – 80 (3 Hours)

Part A
Answer any TEN Questions (Two Marks each) = 2 x 10 = 20 (No Choice)
Part B
Answer any FOUR Questions (Five Marks each) = 5 x 4 = 20 (1 Choice)
Part C
Answer any FOUR Questions (Ten Marks each) = 10 x 4 = 40 (1 Choice)

Theory : IA Marks Allotment – Total Marks = 20 (1 Hour)

C1 :	IA Test	= 10
	Assignment (Bluebook)	= 5
	Record/Scrapbook	= 5
	Total	**= 20**

Theory: Exam 80 + IA 20 = 100 Marks

Practical Paper – Total Marks – 100 (3 Hours)

C1 :	Lab Test	= 10
C2 :	Record / Viva/Seminar	= 10
C3 :	Practical Exam	= 80
	Total	**= 100**

Format of Generic Elective (GE) Examination Paper

Theory Papers – Total Marks – 40 (2 Hours)

Part A
Answer any 5 Questions (Two Marks each) = 2 x 5 = 10 (No Choice)
Part B
Answer any TWO Questions (Five Marks each) = 5 x 2 = 10 (1 Choice)
Part C
Answer any TWO Questions (Ten Marks each) = 10 x 2 = 20 (1 Choice)

Theory : IA Marks Allotment – Total Marks = 10 (1 Hour)

C1 :	IA Test	= 5
	Assignment (Bluebook)	= 5
	Total	**= 10**

Theory: Exam 40 + IA 10 = 50 Marks

Guidelines

1. Colleges must show practical and tutorial classes in the timetable.
2. 4 Copies of the Practical Exam Time Table should be sending to Controller of Examinations.
3. For Practical Exam each External Faculty for each batch is mandatory.
4. In practical exam make batches of up to 15 students.
5. In papers having credits for practical's, End Semester Examination in Practical's like Theory is mandatory.
6. In Practical's C1 / C2 and C3 is mandatory.
7. Practical IA Marks Entry should be done through the website : https://cims.mastersofterp.in
8. Code No. for Practical Exam is : Exam Code : **JOU1013** AND Record Code: **JOU1014**.
9. BoE Member/HoD has to set papers for practical examination based on practical syllabus.
10. Establishment of computer lab and AV Studio with Journalism related software in the college is mandatory.

Shri. L. Ravi
Chairman- BoS
HoD & Asst. Professor
Dept. of Journalism and Mass Communication
SBRR Mahajana First Grade College
Jayalakshmipuram, Mysuru – 570 012

DEPARTMENT OF KANNADA

MOTTO

Refine Cultural Values in Students

VISION

Imbibe Values for Promotion of Kannada Language and Literature

MISSION

Awareness of Richness of Kannada Language and Literature through the Age.

Involve Students Actively in Literary and Cultural activities to Orient them towards Society.

Program Outcome (PO) Attributes

PO 1: Domain Knowledge

PO 2: Problem Analysis

PO 3: Design and Development of Solutions

PO 4: Investigation

PO 5: Use of Modern Techniques/Tools

PO 6: Impact on Society

PO 7: Environment and Sustainability

PO 8: Moral and Ethical Values

PO 9: Individual and Team Work

PO 10: Communication

PO 11: Project Management and Finance

PO 12: Life-long Learning

List of BoS Members

Sl. No.	Category	Name and Designation	Address for Communication	E-mail and Mobile No.
1.	Chairperson	Dr. H R Thimmegowda Associated Professor	SBRR Mahajana First Grade College (Autonomous) Mysuru	thimmegowdahr.fgc@mahajana.edu.in **9972798708**
2.	Member	Dr. Vinodamma Assistant Professor	SBRR Mahajana First Grade College (Autonomous) Mysuru	vinodamma123@gmail.com **9964581858**
3.	Nominee by the Vice Chancellor	Dr. Lolakshi N K Professor	Kuvempu Kannada AdhyayanaSamstheMysore University, Mysore	nklolakshi@gmail.com 9480157279
4.	Two experts from other University/ Colleges	Dr. Lingarajaiah Assistant Professor	Vivekananda First Grade College, Rajajinagara, Bengaluru	drblingaraj@gmail.com **9008779997**
		Prof. Honnaganahalli Kariyanna Professor	University Arts College Tumkuru-572103	kariyannatumkuruniversity@gmail.com **6362854252**
5.	Alumnus	Sri Rajeeva K J Assistant Professor	Government Women First Grade College Vijayanagara, Mysuru	hellorajeeva@gmail.com **9481187919**

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¨sÁµÁ ¥ÀoÀåUÀ¼À£ÀÄß £Á®Ä Ì¸É«Ä¸ÀÖgïUÀ¼À°è ¥ÀæxÀªÀÄ ¨sÁµÉAiÀiÁV ¨ÉÆÃ¢ü¸ÀvÀPÀÌzÀÄÝ, ¥Àæw ¸É«Ä¸ÀÖgïUÀÆ 3 PÉærmïUÀ¼ÀÄ ºÁUÀÆ £Á®Ä Ì UÀAmÉ ¨ÉÆÃzsÀ£Á CªÀ¢ü EgÀÄvÀÛzÉ. ªÀÄÄPÀÛ DAiÉÄÌ PÀ£ÀßqÀ ¥ÀwæPÉUÀ¼À£ÀÄß J®è CzsÀåAiÀÄ£À ²¸ÀÄÛUÀ¼À «zÁåyðUÀ¼ÀÆ £Á®Ä Ì ¸É«Ä¸ÀÖgïUÀ½UÀÆ DAiÉÄÌ ªÀiÁrPÉÆ¼Àî®Ä CªÀPÁ±À«zÉ.

¥ÀzÀ« PÀ£ÀßqÀ ¨sÁµÁ ¥ÀoÀåUÀ¼ÀÄ

1) PÀ¯ÁUÀAUÉÆÃwæ (©.J. 1 ªÀÄvÀÄÛ 2£ÉÃ ¸ÉªÀiï PÀ£ÀßqÀ ¥ÀoÀå)
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COURSE STRUCTURE (NEP)

J.E.[1].[1]. (A.E.C.C – Ability Enhancement Compulsory Course)

I Year

Course Type, Code and Title		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L: T:P	C1	C2	C3		
Kannada – I Sem									
AECC(1)	PÀ£ÀßqÀ ¨sÁµÉ ¥ÀwæPÉ-1 **BA:** 22KAN101 **BSc:** 22KAN102 **BCom:** 22KAN103 **BBA (All):** 22KAN104 **BCA:** 22KAN105	2	2	2:1:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100
OE(1)	PÀ£ÀßqÀªÁåPÀgÀt **22OEKAN101**	3	-	3:0:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100
Kannada – II Sem									
AECC(2)	PÀ£ÀßqÀ ¨sÁµÉ ¥ÀwæPÉ-2 **BA:** 22KAN201 **BSc:** 22KAN202 **BCom:** 22KAN203 **BBA (All):** 22KAN204 **BCA:** 22KAN205	2	2	2:1:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100

OE(2)	DqÀ½vÁvÀäPÀ PÀ£ÀßqÀ **22OEKAN201**	3	-	3:0:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100

C£ÀÄ§AzsÀ

gÁ¶ÖçÃAiÀÄ ²PÀët ¤Ãw-2020

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¥ÉÆæÃUÁæAªÁgÀÄ PÀ£ÀßqÀ ¨sÁµÁ ¥ÀoÀåPÀæªÀÄ :

±ÉÊPÀëtÂPÀ ªÀåªÀ¸ÉÜAiÀÄ°è ¨sÁµÁ ¥ÀoÀåUÀ¼ÀÄ ªÀÄvÀÄÛ ¨sÁµÁ CzsÁå¥ÀPÀgÀ dªÁ¨ÁÝj J®èjUÀÆ UÉÆwÛgÀÄªÀÅzÉÃ DVzÉ. ºÀ®ªÀÅ §UÉAiÀÄ ©PÀÌlÄÖUÀ¼ÀÄ ªÀÄvÀÄÛ «µÀªÀÄvÉUÀ¼ÀÄ ºÉZÀÄÑwÛgÀÄªÀ F PÁ®WÀlÖzÀ°è «zÁåyðUÀ¼ÀÄß ¥ÀæeÁÕªÀAvÀgÀ£ÁßV, ¸ÀAªÉÃzÀ£Á²Ã®gÀ£ÁßV ªÀiÁqÀÄªÀ CªÀPÁ±À ¨sÁµÁ ¥ÀoÀåUÀ¼À°è EgÀÄvÀÛzÉ. D CªÀPÁ±ÀªÀ£ÀÄß JA¢¤AzÀ®Æ ¨sÁµÁ ¥ÀoÀå ªÀÄAqÀ½UÀ¼ÀÄ D¸ÉÜ¬ÄAzÀ ¤¨sÁ¬Ä¸ÀÄvÀÛ¯ÉÃ §A¢ªÉ.

ºÉÆ¸À ²PÀët ¤ÃwAiÀÄ C£ÀÄµÁ×£ÀzÀ »£Éß¯ÉAiÀÄ°è gÀa¸À¯ÁzÀ ¸À«ÄwAiÀÄÄ EzÀ£ÉßÃ §Ä£Á¢AiÀiÁV¹PÉÆAqÀÄ ¥ÀoÀåPÀæªÀÄªÀ£ÀÄß PÀÄjvÀ £ÀPÁ±ÉAiÀÄ£ÀÄß gÀa¹zÉ. PÀ£ÀßqÀªÀ£ÀÄß ‘eÁÕ£ÀzÀ ¨sÁµÉ’AiÀiÁV «zÁåyðUÀ½UÉ ¤ÃqÀ¨ÉÃPÉ£ÀÄßªÀÅzÀÄ ¸À«ÄwAiÀÄ D±ÀAiÀÄ. ºÉÆ¸À gÁ¶ÖçÃAiÀÄ ²PÀët ¤ÃwAiÀÄÄ F CA±ÀªÀ£ÉßÃ GzÉÆåÃUÀ ªÀÄvÀÄÛ PË±À®åUÀ¼ÀÄ ²PÀëtzÀ ªÀÄÄRå UÀÄj JAzÀÄ ºÉÃ½zÉ. »ÃUÁV vÁ¬Ä ¨sÁµÉ PÀ£ÀßqÀzÀ ªÀÄÆ®PÀ «zÁåyðUÀ¼ÀÄ ¸ÀÜ½ÃAiÀÄ, gÁ¶ÖçÃAiÀÄ ªÀÄvÀÄÛ eÁUÀwÃAiÀÄ ¸À®Á®ÄUÀ¼À£ÀÄß ¸À£ÀßzÀÞgÁUÀÄªÀ §UÉAiÀÄ°è ¥ÀoÀåPÀæªÀÄzÀ «£Áå¸À®À£ÀÄß gÀÆ¦¸À¯ÁVzÉ. eÁUÀwÃPÀgÀtªÀÇ ¸ÉÃjzÀAvÉ ºÀ®ªÀÅ «zÀåªÀiÁ£ÀUÀ¼ÀÄ £À®ÀÄä ¸Á®ÀiÁfPÀ ªÀÄvÀÄÛ ¸ÁA¸ÀÌøwPÀ ¸À¤ß®ÉÃ±ÀUÀ¼À£ÀÄß ¸À«ÄÃPÀgÀtUÀ¼À£ÀÄß, UÀæ»PÉUÀ¼À£ÀÄß D¼À®ÁV ¥Àæ¨sÁ«¸ÀÄwÛªÉ. E®ÀÅ £À®ÀÄä AiÀÄÄ®À vÀ¯É®ÀiÁgÀÄUÀ¼À£ÀÄß vÀªÀÄä ¨ÉÃgÀÄUÀ½AzÀ¯ÉÃ zÀÆgÀ ªÀiÁqÀÄvÁÛ CªÀgÀ£ÀÄß ¥ÀgÀQÃAiÀÄgÀ£ÁßV¸ÀÄwÛzÉ J£ÀÄß®À DvÀAPÀ CzsÁå¥ÀPÀgÀ£ÀÄß PÁqÀÄwÛzÉ. F »£Éß¯ÉAiÀÄ°è £ÁqÀÄ-£ÀÄr, d®, ¨sÀÆ«Ä, ¸À®ÀÄPÁ°Ã£À ¸À®Á®ÄUÀ¼À£ÀÄß PÀ£ÀßqÀzÀ CvÀÄåvÀÛªÀÄ ¥ÀoÀåUÀ¼À ªÀÄÄSÁAvÀgÀ PÀ°¸À§ºÀÄzÉ£ÀÄß®À £ÀA©PÉ F ¸À«ÄwAiÀÄzÀÄÝ. «zÁåyðUÀ¼À°è ¸Á»vÀåPÀ C©ügÀÄaAiÀÄ£ÀÄß ºÉaÑ¸À¨ÉÃPÀÄ, ¨sÁµÉ ªÀÄvÀÄÛ ¸Á»vÀåUÀ¼À£ÀÄß PÀÄjvÀ ¦æÃwAiÀÄ£ÀÄß ºÉaÑ¸À¨ÉÃPÀÄ J£ÀÄß®ÀÅzÀÄ ¥ÀoÀåUÀ¼À MAzÀÄ DAiÀiÁ®ÀÄªÁzÀgÉ, ªÀÄvÉÆÛAzÀÄ DAiÀiÁ®ÀÄªÀÅ £À®ÀÄä ¸À®ÀÄÈzÀÞ ¸ÁA¸ÀÌøwPÀ, ¸Á»vÀåPÀ ¥ÀgÀA¥ÀgÉAiÀÄ CjªÀÇ CªÀgÀ°è ªÀÄÆqÀ¨ÉÃPÉ£ÀÄßªÀÅzÀÄ. JgÀqÀÄ ªÀµÀðUÀ¼À ¥ÀoÀåUÀ¼À訰 CªÀgÀ°è £ÁUÀjPÀ ªÀåQÛvÀézÀ zsÁvÀÄUÀ¼À£ÀÄß vÀÄA§¨ÉÃPÀÄ. ¸Á»vÀåzÀ CAvÀBPÀgÀt ªÀÄvÀÄÛ ¸Á®ÀiÁfPÀ ªÀåQÛvÀézÀ ¨Ë¢ÞPÀ CjªÀÅ CªÀgÀ°è ¸À®ÀÄ£ÁV ¨É¼ÉAiÀÄÄvÁÛ ºÉÆÃUÀ¨ÉÃPÀÄ. E®ÀÅUÀ¼À®èzÉ PÀ£ÀßqÀªÀÅ CªÀgÀ ªÀÈwÛAiÀÄ zÁjAiÀÄÆ DUÀ¨ÉÃPÀÄ. ºÀ®ªÀÅ ªÀÈwÛUÀ¼À£ÀÄß CªÀgÀÄ Cj¹PÉÆ¼Àî®Ä C£ÀÄªÁUÀÄªÀ ¥ÀoÀåPÀæªÀÄªÀÇ ¸ÉÃgÀ¨ÉÃPÀÄ. F J®è CA±ÀUÀ¼À£ÀÄß UÀªÀÄ£ÀzÀ°èlÄÖPÉÆAqÀÄ ¸À«ÄwAiÀÄÄ ‘«µÀAiÀiÁzsÁjvÀ ¥ÀoÀå’ªÀ£ÀÄß gÀÆ¦¹zÉ.

¸É«Ä¸ÀÖgï-1

Course Code: 22KAN101	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 1
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: PÀ£ÀßqÀ¨sÁµÉ ªÀÄvÀÄÛ ¸Á»vÀåzÀ ²æÃªÀÄAwPÉAiÀÄ£ÀÄß CjvÀÄ PÀ£ÀßqÀ £ÁqÀÄ-£ÀÄrAiÀÄ gÀPÀëuÉUÉ ¸ÀzÁ ¹zÀÞgÁVgÀÄvÁÛgÉ.

CO 2: ¨Á®åzÀ C£ÀÄ¨sÀªÀUÀ¼À£ÀÄß ªÉÄ®ÄPÀÄºÁPÀÄªÀÅzÀgÉÆA¢UÉ ¸ÀzÀÈqsÀ ¨Ë¢ÞPÀ ªÀÄvÀÄÛ ªÀiÁ£À«ÃAiÀÄ ªÀåQÛvÀé ¤«Äð¹PÉÆ¼ÀÄîªÀgÀÄ.

CO 3: ªÀiÁ£ÀªÀ ªÀÄvÀÄÛ ¥ÀæPÀÈw £ÀqÀÄ«£À C«£Á¨sÁªÀ ¸ÀA§AzsÀªÀ£ÀÄß CjvÀÄ, ¥ÀæPÀÈw ¸ÀAgÀPÀëuÉAiÀÄ°è ¨sÁVAiÀiÁUÀÄvÁÛgÉ.

CO 4: °AUÀ¸ÀªÀiÁ£ÀvÉ ªÀÄ£ÉÆÃ¨sÁªÀªÀ£ÀÄß ¨É¼É¹PÉÆ¼ÀÄîvÁÛgÉ.

WÀlPÀ-1 PÀ£ÀßqÀ £ÁqÀÄ - £ÀÄr aAvÀ£É **14 UÀAmÉUÀ¼ÀÄ**

1. PÀ£ÀßqÀªÉÄ¤¥Áà £ÁqÀÄ ZÉ¯ÁéAiÀÄÄÛ («zsÀ PÁªÀåUÀ½AzÀ DAiÀÄÝ ¥ÀzÀåUÀ¼ÀÄ)
2. ºÉÆ¬Ä¸À¼À£À zÀ¼À¥Àw - ªÀiÁ¹Û ªÉAPÀmÉÃ±À CAiÀÄåAUÁgï
3. vÀ£Àß£ÀÄß w½zÀÄPÉÆ¼Àî¨ÉÃPÁzÀ PÀ£ÁðlPÀ - ¥ÁnÃ® ¥ÀÄlÖ¥Àà

WÀlPÀ-2 ¨Á®å **14 UÀAmÉUÀ¼ÀÄ**

1. IÄvÀÄ¸ÀAºÁgÀ - qÁ. §AdUÉgÉ dAiÀÄ¥ÀæPÁ±À
2. ¦Vä KeÉAmï ªÀÄvÀÄÛ UÁA¢ü eÉÆÃUÀw - ªÀÄAdªÀÄä eÉÆÃUÀw

(¤gÀÆ¥ÀuÉ : CgÀÄuï eÉÆÃ¼ÀzÀ PÀÆrèV)

3. PÉÃ¼ÀzÀ PÁtzÀ ¸ÀAUÀwUÀ¼ÀÄ - ¹zÀÝ°AUÀAiÀÄå

WÀlPÀ-3 ¥ÀæPÀÈw **14 UÀAmÉUÀ¼ÀÄ**

1. ªÀÄ°èUÉ - f.J¸ï. ²ªÀgÀÄzÀæ¥Àà
2. AiÀÄzÀÄVjAiÀÄ ªÀiË£À «PÁ¸À - ¥ÀÄ.w.£À
3. £ËgÀÄ ¢éÃ¥ÀzÀ zÀÄgÀAvÀ - PÉ.¦.¥ÀÆtðZÀAzÀæ vÉÃd¹é

WÀlPÀ-4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. UÁªÉÄðAmï ºÀÄqÀÄV ºÉÆ°zÀ ZÉAzÀzÀ ¥ÉÆÃµÁPÀÄ - qÁ. ¸À©vÁ §£Áßr
2. £À«®ÄUÀ¼ÀÄ - AiÀÄÄ.Dgï.C£ÀAvÀªÀÄÆwð
3. MªÉÄä ºÉuÁÚUÀÄ ¥Àæ¨sÀÄªÉÃ - ¨Á£ÀÄ ªÀÄÄµÁÛPï

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : PÀ¯ÁUÀAUÉÆÃwæ - 1

Course Articulation Matrix – 22KAN101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	3	2	3	2	3	3	3	2	2
CO 2	3	3	3	2	-	3	-	3	2	3	2	2
CO 3	3	3	3	2	3	3	3	2	2	2	2	2
CO 4	3	3	3	2	2	2	1	3	2	2	1	2
Weighted Average	**3**	**3**	**3**	**2.25**	**2.33**	**2.75**	**2**	**2.75**	**2.25**	**2.5**	**1.75**	**2**

©.J.

¸É«Ä¸ÀÖgï-2

Course Code: 22KAN201	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 2
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1. vÀªÀÄä §zÀÄQ£À°è zÉÃ²AiÀÄvÉUÉ ¥ÁæzsÁå£ÀvÉAiÀÄ£ÀÄß ¤ÃqÀÄvÁÛgÉ.

CO 2. dªÁ¨ÁÝjAiÀÄÄvÀ £ÁUÀjÃPÀgÁUÀÄvÁÛgÉ.

CO 3. §zÀÄQ£À°è ¦æÃw¸ÀÄªÀ UÀÄtªÀ£ÀÄß ¨É¼É¹PÉÆ¼ÀÄîªÀgÀÄ

CO 4. ¸ÁªÀiÁfPÀ ¸ÁªÀÄgÀ¸Åå ªÀ£ÀÄß PÀ°vÀÄ, ¥ÀgÀA¥ÀgÉAiÀÄ ¥ÉÆÃµÀPÀgÁUÀÄvÁÛgÉ.

WÀlPÀ-1 eÁUÀwÃPÀgÀt **14 UÀAmÉUÀ¼ÀÄ**

1. PÀÄAmÉÆÃ©¯Éè - J.PÉ.gÁªÀiÁ£ÀÄd£ï
2. ©qÀÄUÀqÉ - ZÀAzÀæPÁAvÀ ªÀqÀÄØ
3. ±ÀºÀgÀzÀ PÉÆA¨ÉUÀ¼À°è ºÀ¼À¢ J¯ÉUÀ¼ÀÄ - dAiÀÄAvÀ PÁ¬ÄÌtÂ

WÀlPÀ-2 ¸ÀªÀiÁd **14 UÀAmÉUÀ¼ÀÄ**

1. gÉÆnÖ ªÀÄvÀÄÛ PÉÆÃ« - ¸ÀÄ.gÀA.JPÀÄÌAr
2. §aÑÃ¸ÀÄ - zÀÄ.¸ÀgÀ¸Àéw
3. £Á£ÁåjUÀ®èzÀªÀ¼ÀÄ - f.«.D£ÀAzÀªÀÄÆwð

WÀlPÀ-3 ¦æÃw **14 UÀAmÉUÀ¼ÀÄ**

1. ¨ÁgÉ, £À£Àß ±ÁgÀzÉ - PÉ.J¸ï.£ÀgÀ¹AºÀ¸Áé«Ä
2. CªÀé - ¨É¸ÀUÀgÀºÀ½î gÁªÀÄtÚ
3. ªÉAPÀnUÀ£À ºÉAqÀw - ªÀiÁ¹Û

WÀlPÀ-4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. ©ü£Àß ¨sÉÃzÀªÀ ªÀiÁqÀ¨ÁårgÉÆ _ CeÁÕvÀ vÀvÀé¥ÀzÀPÁgÀ
2. ¥ÀgÀA¥ÀgÉ - qÁ.«dAiÀiÁ zÀ¨Éâ

3. ¸ÀA§¼ÀPÉÌ ¹QÌPÉÆAqÀ zÉªÀé - ¥ÀÇtðZÀAzÀæ vÉÃd¹é

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : PÀ¯ÁUÀAUÉÆÃwæ - 2

Course Articulation Matrix – 22KAN201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	2	1	3	2	3	2	2	2	2
CO 2	3	3	3	2	2	3	3	3	2	2	2	2
CO 3	3	3	2	2	1	3	3	3	2	2	2	2
CO 4	3	3	3	2	2	3	1	3	3	3	3	2
Weighted Average	**3**	**3**	**2.5**	**2**	**1.5**	**3**	**2.25**	**3**	**2.25**	**2.25**	**2.25**	**2**

©.J¹ì

¸É«Ä¸ÀÖgï-1

Course Code: 22KAN102	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 1
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1.PÀ£ÀßqÀ¨sÁµÉ ªÀÄvÀÄÛ ¸Á»vÀåzÀ ²æÃªÀÄAwPÉAiÀÄ£ÀÄß CjvÀÄ PÀ£ÀßqÀ £ÁqÀÄ-£ÀÄrAiÀÄ §UÉÎ C©üªÀiÁ£À ºÉÆAzÀÄªÀgÀÄ.

CO 2.¨sÀÆ«ÄAiÀÄ ªÀÄºÀvÀé w½zÀÄ, ¨sÀÆ«ÄAiÀÄ ¸ÀAgÀPÀëuÉAiÀÄ°è vÉÆqÀUÀÄvÁÛgÉ.

CO 3.fÃªÀ£ÀzÀ°è ªÀiËqsÀåvÉAiÀÄ£ÀÄß PÀ¼ÉzÀÄPÉÆAqÀÄ, ªÉÊZÁjPÀ §zÀÄQUÉ DzÀåvÉ ¤ÃqÀÄvÁÛgÉ.

CO 4.ªÀiÁ£À«ÃAiÀÄ ªÀiË®åUÀ¼À£ÀÄß ªÉÄÊUÀÆr¹PÉÆ¼ÀÄîvÁÛgÉ.

WÀlPÀ : 1 PÀ£ÀßqÀ £ÁqÀÄ £ÀÄr aAvÀ£É UÀAmÉUÀ¼ÀÄ **14**

1. PÀ£ÀßqÀ ¥ÀzÀUÉÆ¼ï - f.¦. gÁdgÀvÀßA
2. ¨ÉAQ ©¢ÝzÉ ªÀÄ£ÉUÉ - PÀAiÀiÁågÀ QkÕtÚ gÉÊ
3. ºÉÆ¬Ä¸À¼À£À zÀ¼À¥Àw - ªÀiÁ¹Û ªÉAPÀmÉÃ±À CAiÀÄåAUÁgï

WÀlPÀ : 2 ¨sÀÆ«Ä **14 UÀAmÉUÀ¼ÀÄ**

1. ºÉÆ£Àß ©vÉÛÃªÀÅ ºÉÆ®PÉÌ®è - d£À¥ÀzÀ
2. aUÀjUÀAUÀ¼À ZÉ®Ä« - zÀ.gÁ. ¨ÉÃAzÉæ
3. §Ä¯ÉÆØÃdgï ¸ÀA¸Àløw - £ÁUÉÃ±ï ºÉUÀqÉ

WÀlPÀ : 3 ªÉÊeÁÕ¤PÀ ªÀÄ£ÉÆÃzsÀªÀÄð UÀAmÉUÀ¼ÀÄ **14**

1. MAzÉÃ MAzÀÄ ¨Áj ºÉÆgÀ§¤ß - ©.n. ®°vÁ £ÁAiÀÄPï
2. PÀvÉÛ ªÀÄvÀÄÛ zsÀªÀÄð - ¹zÀÝ°AUÀAiÀÄå
3. «ZÁgÀ PÁæAwUÉ DºÁé£À - PÀÄªÉA¥ÀÄ

WÀlPÀ : 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. ZÀjvÉæAiÉÄAzÀgÉ... - JZï.J¸ï. C£ÀÄ¥ÀªÀÄ

2. ‘E°è AiÀiÁgÀÆ ªÀÄÄRågÀ®è, AiÀiÁgÀÆ CªÀÄÄRågÀ®è' - PÀÈ¥ÁPÀgÀ ¸ÉÃ£Á¤

3. CAUÀÄ°ªÀiÁ® ¥ÀÄuÁåPÀë£ÁzÀzÀÄÝ - ¥Àæ¨sÀÄ±ÀAPÀgÀ

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : «eÁÕ£ÀUÀAUÉÆÃwæ - 1

Course Articulation Matrix – 22KAN102

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	2	2	3	2	3	2	2	2	2
CO 2	3	2	3	2	2	3	2	3	2	2	2	2
CO 3	3	3	3	2	2	3	2	3	1	1	1	2
CO 4	3	3	2	2	-	3	2	3	2	2	2	2
Weighted Average	**3**	**2.75**	**2.5**	**2**	**2**	**3**	**2**	**3**	**1.75**	**1.75**	**1.75**	**2**

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¸É«Ä¸ÀÖgï-2

Course Code: 22KAN202	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 2
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1.§zÀÄQ£À°è §gÀ§ºÀÄzÁzÀ AiÀiÁªÀÅzÉÃ PÀµÀÖ-¸ÀÄRUÀ¼À£ÀÄß ¸ÀªÀiÁ£ÀªÁV ¹éÃPÀj¸ÀÄªÀ ªÀÄ£ÉÆÃzsÀªÀÄð ¨É¼É¹PÉÆ¼ÀÄîªÀgÀÄ.

CO 2.fÃªÀ£ÀzÀ°è GvÀÛªÀÄ PÀ£À¸ÀÄUÀ¼À£ÀÄß PÁtÄªÀÅzÀgÉÆAzÀÄUÉ CªÀÅUÀ¼À£ÀÄß ¸ÁPÁgÀUÉÆ½¸ÀÄ PÀqÉ ¸ÀzÁ PÁAiÀÄð¥ÀæªÀÈvÀÛgÁVgÀÄvÁÛgÉ.

CO 3.¥ÀæPÀÈwAiÀÄ fÃªÀ¸ÀAPÀÄ®zÀ §ºÀÄªÀÄÄRå ¨sÁUÀªÁzÀ ªÀÄ¼ÉAiÀÄ ªÀÄºÀvÀéªÀ£ÀÄß CjAiÀÄÄvÁÛgÉ.

CO 4.ªÀiÁ»w vÀAvÀæeÁÕ£À PÉëÃvÀæzÀ°è PÀ£ÀßqÀ¨sÁµÉ ªÀÄvÀÄÛ ¸Á»vÀåzÀ §¼ÀPÉAiÀÄ£ÀÄß PÀ°AiÀÄÄvÁÛgÉ.

WÀlPÀ : 1 fÃªÀ£À PÀ¯É **14 UÀAmÉUÀ¼ÀÄ**

1. ¸ÀA§¼ÀzÀ ¸ÀAeÉ - PÉ.J¸ï. £ÀgÀ¹AºÀ¸Áé«Ä
2. CªÀé - ¦. ®APÉÃ±ï
3. ZÀAzÀæ£À ¨ÉÆA¨É ¥ÁoÀUÀ¼ÀÄ - £ÀlgÁeï ºÀÄ½AiÀiÁgï

('PÁªÀÄ£À ºÀÄtÂÚªÉÄ' PÁzÀA§jAiÀÄ DAiÀÄÝ ¨sÁUÀ)

WÀlPÀ : 2 PÀ£À¸ÀÄ **14 UÀAmÉUÀ¼ÀÄ**

1. wgÀÄPÀ£À PÀ£À¸ÀÄ - ªÀÄÄ¦à£À µÀqÀPÀëj
2. MAzÀÄ ºÀÄqÀÄUÀ¤UÉ ©zÀÝ PÀ£À¸ÀÄ - ¨É¸ÀUÀgÀºÀ½î gÁªÀÄtÚ
3. PÀ£À¸ÀÄ PÁtÂj- PÀ£À¸ÀÄUÀ¼À ±ÀQÛ - J.¦.eÉ. C§ÄÝ¯ï PÀ¯ÁA

WÀlPÀ : 3 ªÀÄ¼É **14 UÀAmÉUÀ¼ÀÄ**

1. vÉAPÀtUÁ½AiÀiÁl - ¥ÀAeÉ ªÀÄAUÉÃ±ÀgÁAiÀÄ
2. §gÀ - AiÀÄÄ.Dgï. C£ÀAvÀªÀÄÆwð
3. ªÉÆÃqÀ ©vÀÛ£É ªÀÄvÀÄÛ PÀÈvÀPÀ ªÀÄ¼É - ¥ÉÆæ.PÉ.¨sÉÊgÀ¥Àà

WÀlPÀ : 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. UÀÆ£À³ÀÄä£À ³ÉÄr¸À£ï - PÉÃ±À³ÀgÉrØ ºÀAzÁæ¼À
2. ³ÀiÁ»w vÀAvÀæeÁÕ£À ³ÀÄvÀÄÛ PÀ£ÀßqÀ - n.f. ²æÃ¤¢ü
3. QÃl¢AzÀ PÉÆÃn £Á±À - ²³Á£ÀAzÀ PÀ¼À³É

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : «eÁÕ£ÀUÀAUÉÆÃwæ - 2

Course Articulation Matrix - 22KAN202

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	2	2	3	-	3	2	2	2	2
CO 2	3	3	3	3	2	3	1	3	-	2	2	2
CO 3	3	3	2	2	2	3	3	3	2	2	2	2
CO 4	3	3	2	2	3	3	1	3	2	2	2	2
Weighted Average	**3**	**3**	**2.25**	**2.25**	**2.25**	**3**	**1.66**	**3**	**2**	**2**	**2**	**2**

¸É«Ä¸ÀÖgï-1

Course Code: 22KAN103	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 1
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1.PÀ£ÀßqÀ £ÁqÀÄ-£ÀÄrAiÀÄ K½UÉUÁV ±Àæ«Ä¸ÀÄvÁÛgÉ.

CO 2.§zÀÄQ£À°è ¸À»µÀÄÚvÁ UÀÄtªÀ£ÀÄß ¨É¼É¹PÉÆ¼ÀÄîªÀgÀÄ.

CO 3.zÉÃ² §zÀÄQ£ÉqÉUÉ ªÀÄÄR ªÀiÁqÀÄvÁÛgÉ.

CO 4.¤¸ÁéxÀðUÀÄtªÀ£ÀÄß ªÉÄÊUÀÆr¹PÉÆ¼ÀÄîvÁÛgÉ.

WÀlPÀ-1 PÀ£ÀßqÀ £ÁqÀÄ - £ÀÄr aAvÀ£É **14 UÀAmÉUÀ¼ÀÄ**

1. PÀ£ÀßqÁA¨ÉAiÀÄ »jªÉÄ	-	¨É£ÀUÀ¯ï gÁªÀÄgÁªï
2. PÀlÄÖªÉªÀÅ £ÁªÀÅ	-	UÉÆÃ¥Á®PÀÈµÀÚ CrUÀ
3. qÁ. gÁeïPÀÄªÀiÁgï JA§ ¨ÉªÀj£À ªÀÄ£ÀÄµÀå	-	§gÀUÀÆgÀÄ gÁªÀÄZÀAzÀæ¥Àà

WÀlPÀ-2 ¸ÀA¸Àløw **14 UÀAmÉUÀ¼ÀÄ**

1. CªÀÄä, DZÁgÀ £Á£ÀÄ	-	PÉ.J¸ï. ¤¸Ágï CºÀªÀÄzï
2. «ÃgÀªÀiÁ£Åå	-	¨ÉlUÉÃj PÀÈµÀÚ±ÀªÀÄð
3. d®UÁgÀ £ÁlPÀzÀ DAiÀÄÝ¨sÁUÀ (ªÉÆzÀ® zÀÈ±Åå)	-	PÀÄªÉA¥ÀÄ

WÀlPÀ-3 eÁUÀwÃPÀgÀt **14 UÀAmÉUÀ¼ÀÄ**

1. VgÀtÂ «¸ÁÛgÀ £ÉÆÃqÀªÀÄä	-	²±ÀÄ£Á¼À ±ÀjÃ¥sÀ
2. ºÀÄ° ¸ÀªÁj	-	«ªÉÃPÀ±Á£À¨sÁUÀ
3. £Á£ÁåjUÀ®èzÀªÀ¼ÀÄ	-	f.«. D£ÀAzÀªÀÄÆwð

WÀlPÀ – 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. ¢Qì®èzÀ ºÁqÀÄ	-	qÁ. ZÉ£ÀßtÚªÁ°ÃPÁgÀ
2. ¥ÀÆtðvÉAiÀÄ ¥ÀgÀªÀÄ PÀ¯É	-	PÉ.¹. ²ªÀ¥Àà
3. PÀÄtÂAiÀÄÄªÀ PÀÄgÀÄqÀ PÁAZÁt	-	¥ÉÆæ.f. ZÀAzÀæ±ÉÃRgÀ

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : ªÁtÂdåUÀAUÉÆÃwæ - 1

Course Articulation Matrix – 22KAN103

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	2	2	3	2	3	2	3	2	3
CO 2	3	3	2	2	1	3	2	3	-	-	-	2
CO 3	3	3	2	2	2	3	2	3	2	2	2	2
CO 4	3	3	3	2	2	3	3	3	1	1	1	2
Weighted Average	**3**	**3**	**2.25**	**2**	**1.75**	**3**	**2.25**	**3**	**1.66**	**2**	**1.66**	**2.25**

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¸É«Ä¸ÀÖgï-2

Course Code: 22KAN203	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 2
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1.¥ÀæPÀÈw ¸ËAzÀAiÀÄðzÀ DgÁzsÀPÀgÁUÀÄvÁÛgÉ.

CO 2.ªÉÊeÁÕ¤PÀ ªÀÄ£ÉÆÃ¨sÁªÀ ¨É¼É¹PÉÆ¼ÀÄîvÁÛgÉ.

CO 3.¥Àj¸ÀgÀzÀ §UÉÎ PÁ¼Àf ºÉÆAzÀÄªÀgÀÄ.

CO 4.ªÁtÂdå¥ÀvÀæ ºÁUÀÆ ªÀgÀ¢ vÀAiÀiÁj¸ÀÄªÀÅzÀ£ÀÄß PÀ°AiÀÄÄvÁÛgÉ.

WÀlPÀ : 1 ¸ËAzÀAiÀÄð **14 UÀAmÉUÀ¼ÀÄ**

1. E§â¤AiÀÄ CªÀvÁgÀ! - PÀÄªÉA¥ÀÅ
2. ªÀÄAPÀÄwªÀÄä£À PÀUÀÎ (DAiÀÄÝ¨sÁUÀ) - r«f
3. vÉÆ¼ÉzÀ ªÀÄÄvÀÄÛ - PÉgÀÆgÀÄ ªÁ¸ÀÄzÉÃªÁZÁAiÀÄð

WÀlPÀ : 2 ¨sÀQÛ UÀAmÉUÀ¼ÀÄ **14**

1. ¨sÀQÛAiÉÄA§ ¥ÀÈyéAiÀÄ ªÉÄÃ¯É.. (ªÀZÀ£ÀUÀ¼ÀÄ) - §¸ÀªÉÃ±ÀégÀ
2. ºÀgÀPÉUÀ¼ÀÄ (¥Àæ§AzsÀ) - J.J£ï. ªÀÄÆwðgÁªï
3. ºÀ§â ªÀÄvÀÄÛ §° - ©.n. ®°vÁ£ÁAiÀÄPï

WÀlPÀ : 3 zÉÃ¹AiÀÄvÉ **14 UÀAmÉUÀ¼ÀÄ**

1. UÁæªÀÄzÉÃªÀvÉ - qÁ. ¹zÀÝ°AUÀAiÀÄå
2. PÀxÉ ºÉÃ¼ÀÄ UÀÄ§âaÑ ¤£Àß ªÀåxÉAiÀÄ PÀxÉ ºÉÃ¼ÀÄ - PÉ.J¸ï. ¤¸Ágï CºÀªÀÄzï
3. §PÁ¸ÀÄgÀ£À£ÀÄß PÉÆAzÀ ¥ÀªÀð - qÁ.¦.PÉ.gÁd±ÉÃRgÀ

   (d£À¥ÀzÀ ªÀÄºÁ¨sÁgÀvÀ)

WÀlPÀ : 4. ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. C) ªÁtÂdå ¥ÀvÀæUÀ¼ÀÄ

   D) ªÀgÀ¢UÀ¼ÀÄ

2. ªÀiÁgÀÄPÀmÉÖ ¤ªÀðºÀuÉAiÀÄ°è eÁ»ÃgÁvÀÄUÀ¼À ¥ÁvÀæ

3. GzÀåªÀÄ ¯ÉÆÃPÀzÀ ¸ÁzsÀPÀgÀÄ (eÉ.Dgï,r mÁmÁ, qÁ.ªÀVð¸ï PÀÄjAiÀÄ£ï, J£ï.Dgï. £ÁgÁAiÀÄt ªÀÄÆwð ªÀÄvÀÄÛ gË£ÀPï ¹AUï)

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : ªÁtÂdåUÀAUÉÆÃwæ - 2

Course Articulation Matrix – 22KAN203

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	3	3	2	2	2	2
CO 2	3	3	3	2	2	3	3	3	2	1	2	3
CO 3	3	3	3	2	1	3	3	3	2	2	3	2
CO 4	3	3	2	3	2	2	3	3	2	2	3	2
Weighted Average	**3**	**3**	**2.75**	**2.25**	**1.75**	**2.75**	**3**	**3**	**2**	**1.75**	**2.5**	**2.25**

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¸É«Ä¸ÀÖgï – 1

Course Code: 22KAN104	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 1
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1. PÀ£ÀßqÀ £ÁqÀÄ-£ÀÄrAiÀÄ C¹ÛvÀéPÁÌV ºÉÆÃgÁqÀÄvÁÛgÉ.

CO 2. zÉÃ² §zÀÄQ£À PÀqÉUÉ ªÀÄÄR ªÀiÁqÀÄvÁÛgÉ.

CO 3. ¨sÁªÉÊPÀåvÉ¬ÄAzÀ §zÀÄPÀÄªÀÅzÀ£ÀÄß PÀ°AiÀÄÄvÁÛgÉ.

CO 4. °AUÀ¸ÀªÀiÁ£ÀvÉUÉ MvÀÄÛ ¤ÃqÀÄvÁÛgÉ.

WÀlPÀ : 1 PÀ£ÀßqÀ £ÁqÀÄ - £ÀÄr aAvÀ£É **14 UÀAmÉUÀ¼ÀÄ**

1. ¸ÁAiÀÄÄwzÉ ¤ªÀÄä £ÀÄr - PÀÄªÉA¥ÀÅ
2. ¤dUÀ°è£À gÁtÂ - ²æÃ¤ªÁ¸À
3. £À£Àß PÀ£ÀßqÀ dUÀvÀÄÛ - PÉ.«. ¸ÀÄ§âtÚ

WÀlPÀ : 2 DzsÀÄ¤PÀvÉ **14 UÀAmÉUÀ¼ÀÄ**

1. gÀAUÉÆÃ° ªÀÄvÀÄÛ ªÀÄUÀ - PÉ.J¸ï. ¤¸Ágï CºÀªÀÄzï
2. PÀ¼ÀZÀ¨ÉÃPÁzÀ EvÀgÀ AiÀÄÄAvÀæUÀ¼ÀÄ - ¥Àæ¸À£Àß
3. qÁA§gÀÄ §AzÀÄzÀÄ - zÉÃªÀ£ÀÆgÀÄ ªÀÄºÁzÉÃªÀ

WÀlPÀ : 3 PÀÄlÄA§ **14 UÀAmÉUÀ¼ÀÄ**

1. ¨Á½£À ºÀA§®Ä - ¥ÀÅ.w.£À
2. CªÀé - J¯ï. ºÀ£ÀÄªÀÄAvÀAiÀÄå
3. vÀÄA©zÀ PÉÆqÀ - wæªÉÃtÂ

WÀlPÀ : 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. ²ªÀ£À «ÄÃ¸ÀÄªÀ ºÁqÀÄ - ªÉÊzÉÃ»

2. AiÀÄÄzÀÞ - ¸À«vÁ £ÁUÀ¨sÀÆµÀt

3. zsÀªÀÄð§¯É ©Ã¹zÁUÀ - ¸Á.gÁ. C§Æ§PÀgï

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : ¤ªÀðºÀuÁUÀAUÉÆÃwæ - 1

Course Articulation Matrix – 22KAN104

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	3	3	3	3	3	2	3	2	2
CO 2	3	3	3	2	3	3	3	3	2	3	3	2
CO 3	3	3	3	3	1	3	1	3	2	3	2	2
CO 4	3	3	3	2	3	3	-	3	2	2	2	2
Weighted Average	**3**	**3**	**2.75**	**2.5**	**2.5**	**3**	**2.33**	**3**	**2**	**2.75**	**2.25**	**2**

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¸É«Ä¸ÀÖgï – 2

Course Code: 22KAN204	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 2
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1. ±ÀæªÀÄ¸ÀA¸ÀÌøwAiÀÄ£ÀÄß ¨É¼É¹PÉÆ¼ÀÄîªÀgÀÄ.

CO 2. eÁvÁåwÃvÀ ªÀÄ£ÉÆÃ¨sÁªÀ gÀÆrü¹PÉÆ¼ÀÄîªÀgÀÄ.

CO 3. fÃªÀ£ÀzÀ°è vÁåUÀ, DzÀ±ÀðUÀ¼À£ÀÄß ¨É¼É¹PÉÆ¼ÀÄîªÀgÀÄ.

CO 4. PÀ£ÀßqÀ ¸Á»vÀåzÀ ««zsÀ ¥ÀæPÁgÀUÀ¼À£ÀÄß NzÀÄvÁÛgÉ.

WÀlPÀ : 1 PÁAiÀÄPÀ **14 UÀAmÉUÀ¼ÀÄ**

1. ªÀZÀ£ÀUÀ¼ÀÄ - (DAiÀÄÝ LzÀÄ ªÀZÀ£ÀPÁgÀgÀÄ)
2. ªÉÆÃa - ¨sÁgÀwÃ¦æAiÀÄ
3. gÀAUÀzÀ ªÉÄÃ¯É EgÀ° £À£Àß PÉÆ£É - ©. dAiÀÄ²æÃ

WÀlPÀ : 2 ¸ÁªÀÄgÀ¸Åå **14 UÀAmÉUÀ¼ÀÄ**

1. £ÁªÉ®ègÀÆ MAzÉÃ - JA. UÉÆÃ¥Á®PÀÈµÀÚ CrUÀ
2. ªÀÄUÀÄ ªÀÄvÀÄÛ ºÀtÄÚUÀ¼ÀÄ - JZï.J¸ï. ²ªÀ¥ÀæPÁ±ï
3. VjdªÀé£À gÉÆnÖ - C£ÀPÀÈ

WÀlPÀ : 3 CAvÀBPÀgÀt **14 UÀAmÉUÀ¼ÀÄ**

1. ¤Ã »ÃAUÀ £ÉÆÃqÀ¨ÁåqÀ £À£Àß - CA©PÁvÀ£ÀAiÀÄzÀvÀÛ
2. ¤lÄÖ¹j£À° £ÀÄAVzÀ£ÀÄ ªÀÄ£ÀzÀ C£ÀÄ¨sÁªÀªÀ£ÀÄ - ¸ÀÄd£Á
2. CªÀé – VÃvÁ £ÁUÀ¨sÀÆµÀt

WÀlPÀ : 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. PÀ®Äè¸ÀPÀÌgÉ PÉÆ½îgÉÆ - ¥ÀÄgÀAzÀgÀ zÁ¸ÀgÀÄ
2. ¸ÁªÀiÁ£Àå ªÀÄ£ÀÄµÀå£ÀÄ ¨Á£ÀAUÀ¼ÀzÀ°è «ºÀj¸À° - PÁå¥ÀÖ£ï UÉÆÃ¦£Áxï
3. zÉÃªÀgÀ ºÉt - PÀÄA. «ÃgÀ¨sÀzÀæ¥Àà

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : ¤ªÀðºÀuÁUÀAUÉÆÃwæ - 2

Course Articulation Matrix – 22KAN204

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	3	3	2	2	1	2
CO 2	3	3	3	2	2	3	-	3	2	2	1	2
CO 3	3	3	3	3	2	3	1	3	2	2	2	2
CO 4	3	3	3	3	2	3	2	2	2	2	3	2
Weighted Average	**3**	**3**	**3**	**2.5**	**2**	**3**	**2**	**2.75**	**2**	**2**	**1.75**	**2**

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¸É«Ä¸ÀÖgï – 1

Course Code: 22KAN105	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 1
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1.PÀ£ÀßqÀ £ÁqÀÄ-£ÀÄrAiÀÄ K½UÉUÁV ±Àæ«Ä¸ÀÄvÁÛgÉ.

CO 2.¥Àj¸ÀgÀªÀiÁ°£ÀåªÀ£ÀÄß vÀqÉAiÀÄÄªÀ°è PÁAiÀÄð¥ÀæªÀÈvÀÛgÁUÀÄvÁÛgÉ.

CO 3.ºÀgÉAiÀÄzÀ ªÀÄºÀvÀé CjvÀÄ, GvÀÛªÀÄ ªÀåQÛvÀé gÀÆ¦¹PÉÆ¼ÀÄîªÀgÀÄ.

CO 4.vÀAvÀæeÁÕ£ÀzÀ°è PÀ£ÀßqÀ¨sÁµÉ C¼ÀªÀr¹PÉÆ¼ÀÄîvÁÛgÉ.

WÀlPÀ - 1 PÀ£ÀßqÀ £ÁqÀÄ-£ÀÄr-aAvÀ£É **14 UÀAmÉUÀ¼ÀÄ**

1. PÀ£ÀßrUÀgÀ vÁ¬Ä - JA. UÉÆÃ«AzÀ ¥ÉÊ

2. PÁtÂPÉ - ©.JA.²æÃ

3. PÀ£ÀßqÀ ªÀÄ£À¸ÀÄì - ºÁ.ªÀiÁ. £ÁAiÀÄPÀ

WÀlPÀ - 2 DPÁ±À **14 UÀAmÉUÀ¼ÀÄ**

1 ZÀAzÀæ£À£ÀÄß PÀgÉ¬Äj ¨sÀÆ«ÄUÉ - ¸À«vÁ £ÁUÀ¨sÀÆµÀt

2. ªÉÆÃqÀUÀ¼À ¸ÁªÀÅ - CUÀæºÁgÀ PÀÈµÀÚªÀÄÆwð

3. DPÁ±ÀPÉÌ ¤Ã° ¥ÀgÀzÉ - ¨ÉÆ¼ÀÄªÁgÀÄ ªÀÄºÀªÀÄzï PÀÄAkÂ

WÀlPÀ - 3 vÁgÀÄtå **14 UÀAmÉUÀ¼ÀÄ**

1. J®èªÀ¼É®èªÀ¼É®èªÀ¼ÀÄ - ¥ÀÄ. w. £À

2. MAzÀÄ SÁ¸ÀV ¥ÀvÀæ - «£ÀAiÀiÁ MPÀÄÌAzÀ

3. ºÀ¢ºÀgÉAiÀÄzÀªÀgÀ CªÀ±ÀåPÀvÉUÀ¼ÀÄ - ¹. Dgï. ZÀAzÀæ±ÉÃRgï

WÀlPÀ - 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. E°è K£ÁzÀgÀÆ §gÉ¬Äj - JA. Dgï. PÀªÀÄ®

2. PÀ£ÀßqÀ ªÀÄvÀÄÛ PÀA¥ÀÆålgï - n. f. ²æÃ¤¢ü

3. C. PÀ£ÀßqÀzÀ°è UÀtPÀzÀ §¼ÀPÉAiÀÄ EwºÁ¸À, ¨É¼ÀªÀtÂUÉ ªÀÄvÀÄÛ ºÉÆ¸À ¸ÁzsÀåvÉUÀ¼ÀÄ.

D. PÀ£ÀßqÀ ¨sÁµÉ ªÀÄvÀÄÛ vÀAvÁæA±ÀUÀ¼ÀÄ.

E. PÀ£ÀßqÀzÀ°è UÀtPÀzÀ §¼ÀPÉUÉ ±Àæ«Ä¹zÀ vÀAvÀædÕgÀÄUÀ¼À ¥ÀjZÀAiÀÄ.

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : UÀtPÀUÀAUÉÆÃwæ - 1

Course Articulation Matrix – 22KAN105

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	2	3	2	2	2	2
CO 2	3	2	3	2	2	3	3	3	2	2	1	2
CO 3	3	3	2	2	2	3	-	-	2	1	-	2
CO 4	3	2	2	2	3	3	-	2	2	2	2	2
Weighted Average	**3**	**2.5**	**2.5**	**2**	**2.25**	**3**	**2.5**	**2.66**	**2**	**1.75**	**1.66**	**2**

©.¹.J.

¸É«Ä¸ÀÖgï-2

Course Code: 22KAN205	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 2
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1.eÁUÀwÃPÀgÀtzÀ ¥Àæ¨sÁªÀUÀ¼À£ÀÄß CjvÀÄ ªÀwð¸ÀÄvÁÛgÉ.

CO 2.vÀAvÀæeÁÕ£ÀzÀ CUÀvÀåvÉAiÀÄ£ÀÄß CjvÀÄ, PÀ£ÀßqÀ¨sÁµÉ ªÀÄvÀÄÛ ¸Á»vÀåªÀ£ÀÄß vÀAvÀæeÁÕ£ÀzÀ°è C¼ÀªÀr¸ÀÄªÀÅzÀPÉÌ ªÀÄÄAzÁUÀÄvÁÛgÉ.

CO 3.fÃªÀ£ÀzÀ°è ¸ÀÄRªÀÄAiÀÄªÁzÀ zÁA¥ÀvÀåªÀ£ÀÄß ¤«Äð¹PÉÆ¼ÀÄîvÁÛgÉ.

CO 4.vÀAvÀæeÁÕ£ÀzÀ°è PÀ£ÀßqÀ ¨É¼ÀªÀtÂUÉAiÀÄ EwºÁ¸ÀªÀ£ÀÄß CjAiÀÄÄvÁÛgÉ.

WÀlPÀ- 1 ªÁtÂdå **14 UÀAmÉUÀ¼ÀÄ**

1. ªÀÄ£É¬ÄAzÀ ªÀÄ£ÉUÉ - PÉ.J¸ï. £ÀgÀ¹AºÀ¸Áé«Ä
2. PÀlÖqÀzÀ PÉ®¸ÀUÁgÀgÀÄ - JZï.J¸ï. ²ªÀ¥ÀæPÁ±ï

3. eÁUÀwÃPÀgÀt ªÀÄvÀÄÛ ¸ÀA¸Àløw - gÁeÉÃAzÀæ ZÉ¤ß

WÀlPÀ - 2 vÀAvÀæeÁÕ£À UÀAmÉUÀ¼ÀÄ **14**

1. VgÀtÂAiÀÄ «¸ÁÛgÀ £ÉÆÃqÀªÀÄä - ²±ÀÄ£Á¼À µÀjÃ¥sÀ

2. ¢PÀÄÌ - ¥Àæw¨sÁ £ÀAzÀPÀÄªÀiÁgï

3. gÁV§ævÀä - ®PÀëöätAiÀÄå

WÀlPÀ - 3 zÁA¥ÀvÀå **14 UÀAmÉUÀ¼ÀÄ**

1. ªÀÄ£ÀzÀ£Éß - zÀ. gÁ. ¨ÉÃAzÉæ
2. vÀÄPÉÆÌÃf - PÉ.¦.¥ÀÆtðZÀAzÀæ vÉÃd¹é

3. ªÀÄgÀ½ §zÀÄQUÉ F ¥ÀAiÀÄt - £ÉÃ«ÄZÀAzÀæ

WÀlPÀ - 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1. ªÀÄvÉÛ ¨sÀÆætªÁUÀ¨ÉÃPÀÄ - ¸ÀÄPÀ£Áå ªÀiÁgÀÄw
2. UÀtPÁ¸ÀÄgÀ - qÁ. ªÉÊ.ªÉÊ. PÉÆPÀÌ£ÀªÀgÀ
3. Cj«£À eÁ®vÁt ªÀÄvÀÄÛ ¸ÁªÀiÁfPÀ eÁ®vÁtUÀ¼À°è PÀ£ÀßqÀ.

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : UÀtPÀUÀAUÉÆÃwæ - 2

Course Articulation Matrix – 22KAN205

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	2	3	2	3	2	3	2
CO 2	3	3	2	2	2	3	-	3	2	2	3	2
CO 3	3	3	3	2	2	3	-	3	3	2	-	2
CO 4	3	3	3	2	3	3	3	3	2	2	3	2
Weighted Average	**3**	**3**	**2**	**2**	**2.25**	**2.75**	**3**	**2.75**	**2.5**	**2**	**3**	**2**

PÀ£ÀßqÀ ªÀÄÄPÀÛ DAiÉÄÌ (OE)

¸É«Ä¸ÀÖgï - 1

Course Code: 22OEKAN101	**Course Title:** PÀ£ÀßqÀªÁåPÀgÀt
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 03 (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1. PÀ£ÀßqÀ ¸ÀA¢ü, ¸ÀªÀiÁ¸ÀUÀ¼À ¥ÀæAiÉÆÃUÀUÀ¼À£ÀÄß PÀ°AiÀÄÄvÁÛgÉ.

CO 2. PÀ£ÀßqÀªÀ£ÀÄß ±ÀÄzÀÞªÁV §gÉAiÀÄ®Ä ªÀÄvÀÄÛ ªÀiÁvÀ£ÁqÀ®Ä PÀ°AiÀÄÄvÁÛgÉ.

CO 3. PÀ£ÀßqÀ §¼ÀPÉAiÀÄ°è °AUÀ, ªÀZÀ£ÀUÀ¼À §¼ÀPÉAiÀÄ£ÀÄß PÀ°AiÀÄÄªÀgÀÄ.

CO 4. PÀ£ÀßqÀ ¢égÀÄQÛ ¥ÀzÀUÀ¼À ¥ÀjZÀAiÀÄªÁUÀÄvÀÛzÉ.

WÀlPÀ – 1 : ¸ÀA¢ü-¸ÀªÀiÁ¸ÀUÀ¼ÀÄ **20 UÀAmÉUÀ¼ÀÄ**

- **¸ÀA¢ü : «zsÀUÀ¼ÀÄ : PÀ£ÀßqÀ ¸ÀA¢üUÀ¼ÀÄ :** ¯ÉÆÃ¥À, DUÀªÀÄ, DzÉÃ±À,
- **¸ÀA¸ÀÌøvÀ ¸ÀA¢üUÀ¼ÀÄ :** ¸ÀªÀtð¢ÃWÀð ¸ÀA¢ü, UÀÄt¸ÀA¢ü, ªÀÈ¢Þ ¸ÀA¢ü, AiÀÄuï ¸ÀA¢ü, d¸ÀÛ÷é, ±ÀÄÑvÀé, C£ÀÄ£Á¹PÀ
- **¸ÀªÀiÁ¸À : «zsÀUÀ¼ÀÄ :** vÀvÀÄàgÀÄµÀ, PÀªÀÄðzsÁgÀAiÀÄ, ¢éUÀÄ, §ºÀÄ«æÃ», CA², zÀéAzÀé, QæAiÀiÁ, UÀªÀÄPÀÀ, Cj¸ÀªÀiÁ¸À

WÀlPÀ – 2 : £ÁªÀÄ¥ÀzÀ ºÁUÀÆ E¤ßvÀgÀ «ZÁgÀUÀ¼ÀÄ **10 UÀAmÉUÀ¼ÀÄ**

- £ÁªÀÄ¥ÀzÀ, «¨sÀQÛ¥ÀævÀåAiÀÄ, UÀÄtªÁZÀPÀUÀ¼ÀÄ, QæAiÀiÁ¥ÀzÀUÀ¼ÀÄ,

WÀlPÀ – 3 : °AUÀ, ªÀZÀ£À, vÀvÀìªÀÄ-vÀzÀãªÀUÀ¼ÀÄ **06 UÀAmÉUÀ¼ÀÄ**

WÀlPÀ – 4 : ¢égÀÄQÛ, eÉÆÃqÀÄ£ÀÄr **06 UÀAmÉUÀ¼ÀÄ**

¥ÀgÁªÀÄ±Àð£À UÀæAxÀUÀ¼ÀÄ

1. PÀ£ÀßqÀ PÉÊ¦r – PÀÄªÉA¥ÀÄ PÀ£ÀßqÀ CzsÀåAiÀÄ£À ¸ÀA¸ÉÜ
2. PÀ£ÀßqÀ bÀAzÀ¹ì£À ZÀjvÉæ - PÀÄªÉA¥ÀÄ PÀ£ÀßqÀ CzsÀåAiÀÄ£À ¸ÀA¸ÉÜ
3. PÀ£ÀßqÀ ªÀÄzsÀåªÀÄ ªÁåPÀgÀt – wÃ.£ÀA.²æÃ.
4. ºÉÆ¸ÀUÀ£ÀßqÀ ¸ÀªÀÄUÀæ ªÁåPÀgÀt - ¥ÉÆæ. CgÀ¼ÀUÀÄ¦à
5. PÀ£ÀßqÀzÀ C®APÁgÀ±Á¸ÀÛç – PÉ. PÀÈµÀÚªÀÄÆwð
6. ºÉÆ¸ÀUÀ£ÀßqÀ bÀAzÀ¸ÀÄì bÀAzÀB ¸ÀégÀÆ¥À - ¥ÉÆæ. n.«. ªÉAPÀmÁZÀ®±Á¹Ûç
7. bÀAzÀB¸ÀìA¥ÀÄl – qÁ. J¯ï. §¸ÀªÀgÁdÄ
8. ¨sÁgÀwÃAiÀÄ PÁªÀå«ÄÃªÀiÁA¸É – wÃ.£ÀA.²æÃ.
9. ¨sÁgÀwÃAiÀÄ ªÀÄvÀÄÛ ¥Á±ÁÑvÀå PÁªÀå«ÄÃªÀiÁA¸É – C§ÄÝ¯ï §¶Ãgï
10. C®APÁgÀ ¸ÀAUÁw – qÁ. VjeÁ¥Àw JA.
11. bÀAzÉÆÃ«ÄvÀæ - C.gÁ. «ÄvÀæ

Course Articulation Matrix - 22OEKAN101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	2	1	1	1	3	2	2
CO 2	3	2	3	2	2	2	1	2	2	3	2	2
CO 3	3	2	1	2	1	2	1	2	2	1	2	2
CO 4	3	2	1	2	1	2	2	1	2	1	2	2
Weighted Average	**3**	**2.25**	**2**	**2**	**1.5**	**2**	**1**	**1.25**	**1.75**	**2**	**2**	**2**

PÀ£ÀßqÀ ªÀÄÄPÀÛ DAiÉÄÌ (OE)

¸É«Ä¸ÀÖgï - 2

Course Code : 22OEKAN201	**Course Title:** DqÀ½vÁvÀäPÀ PÀ£ÀßqÀ
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 03 (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1. AiÀiÁªÀÅzÉÃ §UÉAiÀÄ ªÀgÀ¢ ªÀiÁqÀÄªÀÅzÀ£ÀÄß PÀ°AiÀÄÄvÁÛgÉ.

CO 2. J®è jÃwAiÀÄ ¥ÀvÀæUÀ¼À£ÀÄß §gÉAiÀÄÄªÀÅzÀ£ÀÄß PÀ°AiÀÄÄªÀgÀÄ.

CO 3. DqÀ½vÀzÀ°è PÀ£ÀßqÀ §¼ÀPÉAiÀÄ£ÀÄß PÀ°AiÀÄÄvÁÛgÉ.

CO 4.PÀ£ÀßqÀ UÁzÉUÀ¼ÀÄ, MUÀqÀÄUÀ¼ÀÄ, £ÀÄrUÀlÄÖUÀ¼À §¼ÀPÉAiÀÄ£ÀÄß gÀÆrü¹PÉÆ¼ÀÄîªÀgÀÄ.

WÀlPÀ – 1 : ¸ÀAQë¥ÀÛ ¯ÉÃR£À **11 UÀAmÉUÀ¼ÀÄ**

WÀlPÀ – 2 : ¥ÀvÀæ¯ÉÃR£À, ¥Àæ§AzsÀgÀZÀ£É **10 UÀAmÉUÀ¼ÀÄ**

WÀlPÀ – 3 : DqÀ½vÁvÀäPÀ ¥ÀzÀPÉÆÃ±À - ¥ÀjPÀ®à£ÉUÀ¼ÀÄ **11 UÀAmÉUÀ¼ÀÄ**

WÀlPÀ – 4 : UÁzÉUÀ¼ÀÄ, £ÀÄrUÀlÄÖUÀ¼ÀÄ, MUÀlÄUÀ¼ÀÄ **10 UÀAmÉUÀ¼ÀÄ**

¥ÀgÁªÀÄ±Àð£À UÀæAxÀUÀ¼ÀÄ

1 PÀbÉÃj PÉÊ¦r – PÀÄªÉA¥ÀÄ PÀ£ÀßqÀ CzsÀåAiÀÄ£À ¸ÀA¸ÉÜ, ªÉÄÊ¸ÀÆgÀÄ

2 DqÀ½vÀ PÀ£ÀßqÀ – JZÉÑ¸ÉÌ

3 ªÁtÂdå PÀ£ÀßqÀ - JZÉÑ¸ÉÌ

4 ªÁtÂdå PÀ£ÀßqÀ ¥ÀjZÀAiÀÄ - ¥ÉÆæ.JA.J£ï. ®QëöäÃzÉÃ«, ¥ÉÆæ.f. C§ÄÝ¯ï §¶Ãgï

5 DqÀ½vÀ PÀ£ÀßqÀ - ¸ÀA. qÁ. C±ÉÆÃPï PÀÄªÀiÁgï gÀAeÉÃgÀ ªÀÄvÀÄÛ EvÀgÀgÀÄ

6 ªÀÄÄwÛ£À PÀtd – qÁ.¦.PÉ. gÁd±ÉÃRgÀ

7 ¨sÀÆ«ÄvÀÆPÀzÀ ªÀiÁvÀÄ - qÁ.¦.PÉ. gÁd±ÉÃRgÀ

Course Articulation Matrix - 22OEKAN201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	3	2	2	2	1	1	2	3	2	2
CO 2	3	2	3	2	2	2	1	1	2	3	2	2
CO 3	3	1	2	1	2	1	2	2	1	1	2	2
CO 4	3	1	2	1	2	1	2	1	2	2	1	2
Weighted Average	**3**	**1.5**	**2.5**	**1.5**	**2**	**1.5**	**1.5**	**1.25**	**1.75**	**2.25**	**1.75**	**2**

¤gÀAvÀgÀ DAvÀjPÀ ªÀiË®åªÀiÁ¥À£À ªÀÄvÀÄÛ ¸É«Ä¸ÀÖgï CAwªÀÄ ¥ÀjÃPÉëUÉ ¸ÀÆa¸ÀÄªÀ ªÀiÁUÀð¸ÀÆaUÀ¼ÀÄ

¥Àæw ¥ÀwæPÉAiÀÄ MlÄÖ ¥ÁoÀ WÀlPÀUÀ¼ÀÄ - 04 WÀlPÀUÀ¼ÀÄ

(¥ÁæxÀ«ÄPÀ ¥ÀjZÀAiÀÄ, ¸ÉÊzÁÞAwPÀ «ªÀgÀuÉ ¸ÉÃjzÀAvÉ)

UÀªÀÄ¤¹ : ¥ÀjÃPÉëAiÀÄ CAPÀUÀ¼ÀÄ (§gÀªÀtÂUÉ) : 60 CAPÀUÀ¼ÀÄ

DAvÀjPÀ ªÀiË®åªÀiÁ¥À£À : 40 CAPÀUÀ¼ÀÄ

¥Àæw ¥ÀwæPÉUÉ UÀjµÀ× CAPÀUÀ¼ÀÄ : 100 CAPÀUÀ¼ÀÄ

DAvÀjPÀ ªÀiË®åªÀiÁ¥À£ÀzÀ «ªÀgÀUÀ¼ÀÄ :

J¯Áè ¸É«Ä¸ÀÖgïUÀ½UÉ ¥Àæw ¥ÀwæPÉUÉ DAvÀjPÀ ªÀiË®åªÀiÁ¥À£ÀªÀ£ÀÄß F PÉ¼ÀV£ÀAvÉ ªÀiÁqÀ¯ÁUÀÄvÀÛzÉ

¥ÀjÃPÉë	«ªÀgÀ	CAPÀUÀ¼ÀÄ
C-1	¥Àæw ¸É«Ä¸ÀÖgï£À ¥ÀÆªÁðzsÀðzÀ PÉÆ£ÉUÉ 7-8£ÉÃ ªÁgÀUÀ¼À°è QgÀÄ¥ÀjÃPÉë	20
C-2	¤AiÉÆÃfvÀ ¥Àæ§AzsÀ	20
	MlÄÖ CAPÀUÀ¼ÀÄ	40
C-3	¥Àæw ¸É«Ä¸ÀÖgï£À CAwªÀÄ ¥ÀjÃPÉë ¸ÀªÀÄAiÀÄ 2 1/2 UÀAmÉUÀ¼ÀÄ 60 CAPÀUÀ¼ÀÄ	60
	MlÄÖ CAPÀUÀ¼ÀÄ	**100**

ºÉÆ¸À ²PÀët ¤Ãw

ªÀiÁzÀj ¥Àæ±Éß ¥ÀwæPÉ - ¥ÀæxÀªÀÄ ªÀÄvÀÄÛ ¢éwÃAiÀÄ ¸É«Ä¸ÀÖgï

(AECC & OE)

CªÀ¢ü : $2\frac{1}{2}$ Hours **CAPÀUÀ¼ÀÄ : 60**

1. MAzÀÄ ¥Àæ±ÉßUÉ GvÀÛj¹. 1 x 10 = 10

   (WÀlPÀ 1 jAzÀ 2 ¥Àæ±ÉßUÀ¼À£ÀÄß PÉÃ¼À¯ÁUÀÄvÀÛzÉ)
2. MAzÀÄ ¥Àæ±ÉßUÉ GvÀÛj¹. 1 x 10 = 10

   (WÀlPÀ 2 jAzÀ 2 ¥Àæ±ÉßUÀ¼À£ÀÄß PÉÃ¼À¯ÁUÀÄvÀÛzÉ)
3. MAzÀÄ ¥Àæ±ÉßUÉ GvÀÛj¹ 1 x 10 = 10

   (WÀlPÀ 3 jAzÀ 2 ¥Àæ±ÉßUÀ¼À£ÀÄß PÉÃ¼À¯ÁUÀÄvÀÛzÉ)
4. MAzÀÄ ¥Àæ±ÉßUÉ GvÀÛj¹. 1 x 10 = 10

   (WÀlPÀ 4 jAzÀ 2 ¥Àæ±ÉßUÀ¼À£ÀÄß PÉÃ¼À¯ÁUÀÄvÀÛzÉ)
5. JgÀqÀÄ ¥Àæ±ÉßUÀ½UÉ GvÀÛj¹. 2 x 5 = 10

   (WÀlPÀ 1, 2, 3, 4 jAzÀ ¥ÀzÀå CxÀªÁ ¥ÁoÀ¢AzÀ £Á®ÄÌ ¸ÀAzÀ¨sÀð ªÁPÀåUÀ¼À£ÀÄß PÉÃ¼À¯ÁUÀÄvÀÛzÉ)
6. MAzÀÄ «µÀAiÀÄ PÀÄjvÀÄ n¥ÀàtÂ §gÉ¬Äj. 1 x 5 = 5

   (£Á®ÄÌ WÀlPÀUÀ¼À ¥ÀoÀåzÀ°è£À MAzÀÄ «µÀAiÀÄ PÀÄjvÀÄ «zÁåyðUÀ¼À ¸ÀéAvÀ C£ÀÄ¨sÀªÀ, D¯ÉÆÃZÀ£É, C©ü¥ÁæAiÀÄ PÀÄjvÀÄ §gÉAiÀÄ®Ä JgÀqÀÄ ¥Àæ±ÉßUÀ¼À£ÀÄß PÉÃ¼À¯ÁUÀÄvÀÛzÉ)
7. MAzÀÄ ¥ÀzÀ CxÀªÁ ªÁPÀåzÀ°è GvÀÛj¹. 5 x 1 = 5

   (£Á®ÄÌ WÀlPÀUÀ¼À°è ¨sÁµÁ¨sÁå¸ÀPÉÌ ¸ÀA§A¢ü¹zÀAvÉ LzÀÄ ¥Àæ±ÉßUÀ¼À£ÀÄß PÉÃ¼À¯ÁUÀÄvÀÛzÉ)

DEPARTMENT OF KANNADA

MOTTO

Refine Cultural Values in Students

VISION

Imbibe Values for Promotion of Kannada Language and Literature

MISSION

Awareness of Richness of Kannada Language and Literature through the Age.

Involve Students Actively in Literary and Cultural activities to Orient them towards Society.

Program Outcome (PO) Attributes

PO 1: Domain Knowledge

PO 2: Problem Analysis

PO 3: Design and Development of Solutions

PO 4: Investigation

PO 5: Use of Modern Techniques/Tools

PO 6: Impact on Society

PO 7: Environment and Sustainability

PO 8: Moral and Ethical Values

PO 9: Individual and Team Work

PO 10: Communication

PO 11: Project Management and Finance

PO 12: Life-long Learning

List of BoS Members

Sl. No.	Category	Name and Designation	Address for Communication	E-mail and Mobile No.
1.	Chairperson	Dr. H R Thimmegowda Associated Professor	SBRR Mahajana First Grade College (Autonomous) Mysuru	thimmegowdahr.fgc@mahajana.edu.in **9972798708**
2.	Member	Dr. Vinodamma Assistant Professor	SBRR Mahajana First Grade College (Autonomous) Mysuru	vinodamma123@gmail.com **9964581858**
3.	Nominee by the Vice Chancellor	Dr. Lolakshi N K Professor	Kuvempu Kannada AdhyayanaSamstheMysore University, Mysore	nklolakshi@gmail.com 9480157279
4.	Two experts from other University/ Colleges	Dr. Lingarajaiah Assistant Professor	Vivekananda First Grade College, Rajajinagara, Bengaluru	drblingaraj@gmail.com **9008779997**
		Prof. Honnaganahalli Kariyanna Professor	University Arts College Tumkuru-572103	kariyannatumkuruniversity@gmail.com **6362854252**
5.	Alumnus	Sri Rajeeva K J Assistant Professor	Government Women First Grade College Vijayanagara, Mysuru	hellorajeeva@gmail.com **9481187919**

PÀ£ÀßqÀ ¥ÀoÀåPÀæªÀÄ «£Áå¸ÀzÀ D±ÀAiÀÄUÀ¼ÀÄ

ºÉÆ¸À gÁ¶ÖçÃAiÀÄ ²PÀët ¤ÃwAiÀÄ D±ÀAiÀÄUÀ½UÉ C£ÀÄUÀÄtªÁV PÀ£ÀßqÀ ¨sÁµÁ, ªÀÄÄPÀÛ DAiÉÄÌ PÀ£ÀßqÀ ¥ÀoÀå PÀæªÀÄUÀ¼À «£Áå¸ÀªÀ£ÀÄß gÀÆ¦¸À¯ÁVzÉ. PÀ£ÁðlPÀzÁzÀåAvÀ ««zsÀ «±Àé«zÁå®AiÀÄUÀ¼ÀÄ FvÀ£ÀPÀ CxÀð¥ÀÆtðªÁzÀ ºÁUÀÆ ªÊ«zsÀåªÀÄAiÀÄ ¥ÀoÀåPÀæªÀÄUÀ¼À£ÀÄß C£ÀÄ¸Àj¸ÀÄvÁÛ §A¢ªÉ. ¸Á»vÀåzÀ ªÀÄÆ®UÀÄtªÁzÀ ¤vÀå£ÀÆvÀ£ÀvÉUÉ C£ÀÄUÀÄtªÁV ºÉÆ¸ÀvÀ£ÀªÀ£ÀÄß vÀgÀ®Ä ¥ÀæAiÀÄwß¸À¯ÁVzÉ. FUÀ ºÉÆ¸À ¥ÀoÀåPÀæªÀÄzÀ ¥ÀæPÁgÀ ¥ÀæAiÉÆÃV¸À®àlÄÖ AiÀÄ±À¹éAiÀiÁVgÀÄªÀ ªÀÄÊ¸ÀÆgÀÄ «±Àé«zÁå¤®AiÀÄªÀÅ "«µÀAiÀiÁzsÁjvÀ ¥ÀoÀåPÀæªÀÄ" (Theme Based)ªÀ£ÀÄß C¼ÀªÀr¸À®Ä GzÀÄåPÀÛªÁVzÉ. F ªÀÄÆ®PÀ PÀ°PÉ ªÀÄvÀÄÛ ¥sÀ°vÀUÀ¼À £ÀqÀÄ«£À ¸ÀªÀÄvÉÆÃ®£ÀªÀ£ÀÄß ¸Á¢ü¸ÀÄªÀÅzÀÄ ¸ÁzsÀåªÁUÀÄvÀÛzÉ. ²PÀëtªÀÅ «zÁåyðUÀ½UÉ ¨sÁµÁ PÉ±À®å, ¸Á»vÀåzÀ ªÀiÁ£À«ÃAiÀÄ ¸ÀAªÉÃzÀ£É, ¸ÀªÀÄPÁ°Ã£À «zÁåªÀiÁ£ÀUÀ¼À CjªÀÅ, ¸ÀA¸ÀÌøwAiÀÄ ¨É¼ÀPÀÄ ªÀÄvÀÄÛ gÁ¶ÖçÃAiÀÄvÉAiÀÄ ªÀÄ£ÉÆÃ¨sÁªÀªÀ£ÀÄß PÀnÖPÉÆqÀÄªÀÅzÀgÀ°è AiÀÄ±À¹éAiÀiÁUÀ¨ÉÃPÀÄ J£ÀÄßªÀ ºÉÆ¸À ²PÀët ¤ÃwAiÀÄ D±ÀAiÀÄªÀ£ÀÄß «µÀAiÀiÁzsÁjvÀ ¥ÀoÀåPÀæªÀÄzÀ ªÀÄÆ®PÀ ¸Á¢ü¹PÉÆ¼ÀÄîªÀÅzÀÄ ¸ÁzsÀåªÁUÀÄvÀÛzÉ. GzÁºÀgÀuÉUÉ '£ÁqÀÄ-£À¸r-aÀvÀ£É'. '¸ÁªÀÄgÀ¸Àå', `¥Àj¸ÀgÀ eÁUÀwÃPÀgÀt' ªÉÆzÀ¯ÁzÀªÀÅ «zÁåyðUÀ¼À°è GzÉÝÃ²vÀ ¥sÀ°vÀUÀ¼À£ÀÄß ¤ÃqÀÄvÀÛªÉ. ºÁUÉAiÉÄÃ DAiÀiÁ CzsÀåAiÀÄ£À ²¸ÀÄÛUÀ¼À ¸ÀégÀÆ¥ÀPÀÌ£ÀÄUÀÄtªÁV MAzÀÄ WÀlPÀªÀ£ÀÄß ¸ÁßvÀPÀ CzsÀåAiÀÄ£À ªÀÄAqÀ½AiÀÄ°è ¥Àj²Ã°¹gÀÆ¦¹¹zÀÞ¥Àr¸À¯ÁVzÉ.

¨sÁµÁ ¥ÀoÀåUÀ¼À£ÀÄß £Á®ÄÌ ¸É«Ä¸ÀÖgïUÀ¼À°è ¥ÀæxÀªÀÄ ¨sÁµÉAiÀiÁV ¨ÉÆÃ¢ü¸ÀvÀPÀÌzÀÄÝ, ¥Àæw ¸É«Ä¸ÀÖgïUÀÆ B PÉærmïUÀ¼ÀÄ ºÁUÀÆ £Á®ÄÌ UÀAmÉ ¨ÉÆÃzsÀ£Á C¤À¢ü EgÀÄvÀÛzÉ. ªÀÄÄPÀÛ DAiÉÄÌ PÀ£ÀßqÀ ¥ÀwæPÉUÀ¼À£ÀÄß J®è CtsÀåAiÀÄ£À ²¸ÀÄÛUÀ¼À «zÁåyðUÀ¼ÀÆ £Á®ÄÌ ¸É«Ä¸ÀÖgïUÀ½UÀÆ DAiÉÄÌ ªÀiÁrPÉÆ¼Àî®Ä C¤ÀPÁ±À«zÉ.

¥ÀzÀ« PÀ£ÀßqÀ ¨sÁµÁ ¥ÀoÀåUÀ¼ÀÄ

6) PÀ¯ÁUÀAUÉÆÃwæ (©.J. 3 ªÀÄvÀÄÛ 4£ÉÃ ¸ÉªÀiï PÀ£ÀßqÀ ¥ÀoÀå)
7) «eÁÕ£ÀUÀAUÉÆÃwæ (©J¹ì 3 ªÀÄvÀÄÛ 4£ÉÃ ¸ÉªÀiï PÀ£ÀßqÀ ¥ÀoÀå)
8) UÀtPÀUÀAUÉÆÃwæ (©¹J 3 ªÀÄvÀÄÛ 4£ÉÃ ¸ÉªÀiï PÀ£ÀßqÀ ¥ÀoÀå)
9) ªÁtÂdåUÀAUÉÆÃwæ (©PÁA 3 ªÀÄvÀÄÛ 4£ÉÃ ¸ÉªÀiï PÀ£ÀßqÀ ¥ÀoÀå)
10) ªÀåªÀºÁgÀ ¤ªÀðºÀtUÀAUÉÆÃwæ (©©J 3 ªÀÄvÀÄÛ 4£ÉÃ ¸ÉªÀiï PÀ£ÀßqÀ ¥ÀoÀå)

COURSE STRUCTURE (NEP)

J.E.¹.¹. (A.E.C.C – Ability Enhancement Compulsory Course)

II Year

Course Type, Code and Title		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L: T:P	C1	C2	C3		
Kannada – III Sem									
AECC(3)	PÀ£ÀßqÀ ¨sÁµÉ ¥ÀwæPÉ-3 **BA:** 22KAN301 **BSc:** 22KAN302 **BCom:** 22KAN303 **BBA (All):** 22KAN304 **BCA:** 22KAN305	2	2	2:1:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100
OE(3)	DzsÀÄ¤PÀ ¥ÀÆªÀð PÀ£ÀßqÀ ¸Á»vÀå ¥ÀjZÀAiÀÄ ªÀÄvÀÄÛ ¥ÀoÀå **22OEKAN301**	3	-	3:0:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100
Kannada – IV Sem									
AECC(4)	PÀ£ÀßqÀ ¨sÁµÉ ¥ÀwæPÉ-4 **BA:** 22KAN401 **BSc:** 22KAN402 **BCom:** 22KAN403 **BBA (All):** 22KAN404 **BCA:** 22KAN405	2	2	2:1:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100
OE(4)	DzsÀÄ¤PÀ PÀ£ÀßqÀ ¸Á»vÀå ¥ÀjZÀAiÀÄ ªÀÄvÀÄÛ ¥ÀoÀå **22OEKAN401**	3	-	3:0:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100

C£ÀÄ§AzsÀ

gÁ¶ÖçÃAiÀÄ ²PÀët ¤Ãw-2020

PÀ£ÀßqÀ ¨sÁµÁ ¥ÀoÀå ¸ÀégÀÆ¥À

¥ÉÆæÃUÁæAªÁgÀÄ PÀ£ÀßqÀ ¨sÁµÁ ¥ÀoÀåPÀæªÀÄ :

±ÉÊPÀëtÂPÀ ªÀåªÀ¸ÉÜAiÀÄ°è ¨sÁµÁ ¥ÀoÀåUÀ¼ÀÄ ªÀÄvÀÄÛ ¨sÁµÁ CzsÁå¥ÀPÀgÀ dªÁ¨ÁÝj J®èjUÀÆ UÉÆwÛgÀÄªÀÅzÉÃ DVzÉ. ºÀ®ªÀÅ §UÉAiÀÄ ©PÀÌlÄÖUÀ¼ÀÄ ªÀÄvÀÄÛ «µÀªÀÄvÉUÀ¼ÀÄ ºÉZÀÄÑwÛgÀÄªÀ F PÁ®WÀlÖzÀ°è «ÁåyðUÀ¼ÀÄß ¥ÀæeÁÕªÀAvÀgÀ£ÁßV, ¸ÀAªÉÃzÀ£Á²Ã®gÀ£ÁßV ªÀiÁqÀÄªÀ CªÀPÁ±À ¨sÁµÁ ¥ÀoÀåUÀ¼À°è EgÀÄvÀÛzÉ. D CªÀPÁ±ÀªÀ£ÀÄß JA¢¤AzÀ®Æ ¨sÁµÁ ¥ÀoÀå ªÀÄAqÀ½UÀ¼ÀÄ D¸ÉÜ¬ÄAzÀ ¤¨sÁ¬Ä¸ÀÄvÀÛ¯ÉÃ §A¢ªÉ.

ºÉÆ¸À ²PÀët ¤ÃwAiÀÄ C£ÀÄµÁ×£ÀzÀ »£ÉÃ¯ÉAiÀÄ°è gÀa¸À¯ÁzÀ ¸À«ÄwAiÀÄÄ EzÀ£ÉßÃ §Ä£Á¢AiÀiÁV¹PÉÆAqÀÄ ¥ÀoÀåPÀæªÀÄªÀ£ÀÄß PÀÄjvÀ £ÀPÁ±ÉAiÀÄ£ÀÄß gÀa¹zÉ. PÀ£ÀßqÀªÀ£ÀÄß 'eÁÕ£ÀzÀ ¨sÁµÉ'AiÀiÁV «zÁåyðUÀ½UÉ ¤ÃqÀ¨ÉÃPÉ£ÀÄßªÀÅzÀÄ ¸À«ÄwAiÀÄ D±ÀAiÀÄ. ºÉÆ¸À gÁ¶ÖçÃAiÀÄ ²PÀët ¤ÃwAiÀÄÄ F CA±ÀªÀ£ÉßÃ GzÉÆåÃUÀ ªÀÄvÀÄÛ P£±À®åUÀ¼ÀÄ ²PÀëtzÀ ªÀÄÄRå UÀÄj JAzÀÄ ºÉÃ½zÉ. »ÃUÁV vÁ¬Ä ¨sÁµÉ PÀ£ÀßqÀzÀ ªÀÄÆ®PÀ «zÁåyðUÀ¼ÀÄ ¸ÀÜ½ÃAiÀÄ gÁ¶ÖçÃAiÀÄ ªÀÄvÀÄÛ eÁUÀwÃAiÀÄ ¸ÀªÁ®ÄUÀ¼À£ÀÄß ¸À£ÀßzÀÞgÁUÀÄªÀ §UÉAiÀÄ°è ¥ÀoÀåPÀæªÀÄzÀ «£Áå¸ÀªÀ£ÀÄß gÀÆ¦¸À¯ÁVzÉ. eÁUÀwÃPÀgÀtªÀÇ ¸ÉÃjzÀAvÉ ºÀ®ªÀÅ «zÀåªÀiÁ£ÀUÀ¼ÀÄ £ÀªÀÄä ¸ÁªÀiÁfPÀ ªÀÄvÀÄÛ ¸ÁA¸ÀÌøwPÀ ¸À¤ßªÉÃ±ÀUÀ¼À£ÀÄß ¸À«ÄÃPÀgÀtUÀ¼À£ÀÄß, UÀæ»PÉUÀ¼À£ÀÄß D¼ÀªÁV ¥Àæ¨sÁ«¸ÀÄwÛªÉ. EªÀÅ £ÀªÀÄä AiÀÄÄªÀ vÀ¯ÉªÀiÁgÀÄUÀ¼À£ÀÄß vÀªÀÄä ¨ÉÃgÀÄUÀ½AzÀ¯ÉÃ zÀÆgÀ ªÀiÁqÀÄvÁÛ CªÀgÀ£ÀÄß ¥ÀgÀQÃAiÀÄgÀ£ÁßV¸ÀÄwÛzÉ J¯ÄÄßªÀ DvÀAPÀ CzsÁå¥ÀPÀgÀ£ÀÄß PÁqÀÄwÛzÉ. F »£ÉÃ¯ÉAiÀÄ°è £ÁqÀÄ-£ÀÄr, d®, ¨sÀÆ«Ä, ¸ÀªÀÄPÁ°Ã£À ¸ÁªÁ®ÄUÀ¼À£ÀÄß PÀ£ÀßqÀzÀ CvÀÄåvÀÛªÀÄ ¥ÀoÀåUÀ¼À ªÀÄÄSÁAvÀgÀ PÀ°¸À§ºÀÄzÉ£ÀÄßªÀ £ÀA©PÉ F ¸À«ÄwAiÀÄzÀÄ «ÁåyðUÀ¼À°è ¸Á»vÀåPÀ C©ügÀÄaAiÀÄ£ÀÄß ºÉaÑ¸À¨ÉÃPÀÄ, ¨sÁµÉ ªÀÄvÀÄÛ ¸Á»vÀåUÀ¼À£ÀÄß PÀÄjvÀ ¦æÃwAiÀÄ£ÀÄß ºÉaÑ¸À¨ÉÃPÀÄ J£ÀÄßªÀÅzÀÄ ¥ÀoÀåUÀ¼À MAzÀÄ DAiÀiÁªÀÄªÁzÀgÉ, ªÀÄvÉÆÛAzÀÄ DAiÀiÁªÀÄªÀÅ £ÀªÀÄä ¸ÀªÀÄÈzÀÞ ¸ÁA¸ÀÌøwPÀ, ¸Á»vÀåPÀ ¥ÀgÀA¥ÀgÉAiÀÄ CjªÀÇ CªÀgÀ°è ªÀÄÆqÀ¨ÉÃPÉ£ÀÄßªÀÅzÀÄ. JgÀqÀÄ ªÀµÀðUÀ¼À ¥ÀoÀåUÀ¼À°è CªÀgÀ°è £ÁUÀjPÀ ªÀåQÛvÀézÀ zsÁvÀÄUÀ¼À£ÀÄß vÀÄA§¨ÉÃPÀÄ. ¸Á»vÀåzÀ CAvÀBPÀgÀt ªÀÄvÀÄÛ ¸ÁªÀiÁfPÀ ªÀåQÛvÀézÀ ¨¢ÞPÀ CjªÀÅ CªÀgÀ°è ¸ÀªÀÄ£ÁV ¨É¼ÉAiÀÄÄvÁÛ ºÉÆÃUÀ¨ÉÃPÀÄ. EªÀÅUÀ¼À®èzÉ PÀ£ÀßqÀªÀÅ CªÀgÀ ªÀÈwÛAiÀÄ zÀjAiÀÄÆ DUÀ¨ÉÃPÀÄ. ºÀ®ªÀÅ ªÀÈwÛUÀ¼À£ÀÄß CªÀgÀÄ Cj¹PÉÆ¼Àî®Ä C£ÀÄªÁUÀÄªÀ ¥ÀoÀåPÀæªÀÄªÀÇ ¸ÉÃgÀ¨ÉÃPÀÄ. J¥è CA±ÀUÀ¼À£ÀÄß UÀªÀÄ£ÀzÀ°èlÄÖPÉÆAqÀÄ ¸À«ÄwAiÀÄÄ '«µÀAiÀiÁzsÁjvÀ ¥ÀoÀå'ªÀ£ÀÄß gÀÆ¦¹zÉ.

¸Á«Ä¸ÀÖgï-3

Course Code: 22KAN301	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 3
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1:. gÁµÀÖç¥ÉæÃªÀÄªÀ£ÀÄß ºÉÆA¢zÀ GvÀÛªÀÄ ¨sÁgÀwÃAiÀÄ £ÁUÀjÃPÀgÁUÀÄvÁÛgÉ.

CO 2: PÀÈ¶AiÀÄ ªÀÄºÀvÀéªÀ£ÀÄß CjvÀÄ, PÀÈ¶AiÀÄ°è vÉÆqÀV¹PÉÆ¼ÀÄîvÁÛgÉ.

CO 3: ¸Á»vÀå ªÀÄvÀÄÛ QæÃqÉAiÀÄ ªÀÄºÀvÀé CjvÀÄ, ««zsÀ QæÃqÁ¥ÀlÄUÀ¼À fÃªÀ£ÀZÀjvÉæ ªÀÄvÀÄÛ DvÀäZÀjvÉæUÀ¼À£ÀÄß N¢PÉÆ¼ÀÄîvÁÛgÉ.

CO 4: ªÀZÀ£À ¸Á»vÀåzÀ ¸ÀªÀÄPÁ°Ã£ÀvÉAiÀÄ£ÀÄß CjvÀÄ, ªÉÄÊUÀÆr¹PÉÆ¼ÀÄîvÁÛgÉ.

MODULE - 1 gÁ¶ÖçÃAiÀÄvÉ **14 UÀAmÉUÀ¼ÀÄ**

1	«±Àé¨sÁgÀwUÉ PÀ£ÀßqÀzÁgÀw	-	ZÀ£ÀÃ«ÃgÀ PÀt«
2	DUÀ¸ïÖ «ÃgÀ	-	¹PÀAzÀgï PÁ¥ÀÄ
3	FUÀ JAxÀ gÁ¶ÖçÃAiÀÄvÉ ¨ÉÃPÀÄ?	-	ªÀ¸ÀAvï ±ÉnÖ

MODULE - 2 PÀÈ¶ **14 UÀAmÉUÀ¼ÀÄ**

1	G¼ÀÄªÀ MPÀÌ®Ä ªÀÄUÀ£À vÀ¥Àà £ÉÆÃqÀzÉ M¥ÀàUÉÆ¼ÀîAiÀÄå-		MPÀÌ°UÀ ªÀÄÄzÀÝtÚ
2	'CªÀgÀ ¥ÉÊQ £Á£ÀÆ M§â'	-	CZÀðPÀ © £ÀAdÄAqÀ¸Áé«Ä
3	zsÀ£ÀéAvÀj aQvÉì	-	PÀÄªÉA¥ÀÄ

MODULE – 3 QæÃqÉ **14 UÀAmÉUÀ¼ÀÄ**

3	£ÉvÀÛªÀÄ£Ár ¨sÁ£ÀÄªÀÄw ¸ÉÆÃ¯ÉÆÛqÉ	-	¥ÀA¥À
2	ªÉÄÃj PÉÆÃªÀiï ¸ÀAvÀw ¸Á«gÀªÁUÀ°	-	VjeÁ±Á¹Ûç
3	»lègïUÉ ¥ÁoÀ PÀ°¹zÀ PÀ¥ÀÄà ¸ÀÄAzÀgÀ	-	¦. ®APÉÃ±ï

MODULE - 4 ¸ÀAQÃtð **14 UÀAmÉUÀ¼ÀÄ**

1	¨ÉlÖzÀ ªÉÄÃ¯ÉÆAzÀÄ ªÀÄ£ÉAiÀÄ ªÀiÁr	-	CPÀÌªÀÄºÁzÉÃ«
2	vÀgÀªÉ ©qÀÄ ¥ÀgÀ»A¸É zÉÆÃµÀªÀÅ	-	PÀ£ÀPÀzÁ¸ÀgÀÄ
3	PÀAUÁ¯ÁV PÀÄ½vÀÄ	-	J¸ï. vÀÄPÁgÁA

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : PÀ¯ÁUÀAUÉÆÃwæ - 3

Course Articulation Matrix – 22KAN301

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	1	3	2	2	2	3
CO 2	3	3	3	2	3	3	3	3	2	2	2	3
CO 3	3	3	3	2	2	3	1	3	3	3	3	3
CO 4	3	3	3	2	2	3	3	3	3	2	3	3
Weighted Average	**3**	**3**	**3**	**2**	**2.75**	**3**	**2**	**3**	**2.5**	**2.75**	**2.5**	**3**

¸ÀA«Ä¸ÀÖgï-4

Course Code: 22KAN401	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 4
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: AiÀiÁªÀÅzÉÃ PÉ®¸Àª£ÀÄß ¦æÃw¬ÄAzÀ ªÀiÁqÀÄªÀÅzÀ£ÀÄß PÀ°AiÀÄÄvÁÛgÉ.

CO 2: §qÀvÀ£ÀzÀ zsÁgÀÄt¹ÜwAiÀÄ ¥ÀjZÀAiÀÄªÁUÀÄªÀÅzÀjAzÀ, §qÀd£ÀgÀ §UÉÎ C£ÀÄPÀA¥À ªÀÄÆqÀÄvÀÛzÉ.

CO 3: PÁ®zÀ ªÀÄºÀvÀéªÀ£ÀÄß CjvÀÄ, ¸Àª£ÀÄAiÀÄzÀ ¸ÀzÀÄ¥ÀAiÉÆÃUÀªÀ£ÀÄß ¥ÀqÉzÀÄPÉÆ¼ÀÄîvÁÛgÉ.

CO 4: ºÀ¼ÀUÀ£ÀßqÀ PÁ®zÀ PÀ«UÀ¼ÀÄ ªÀÄvÀÄÛ PÁªÀåUÀ¼À£ÀÄß NzÀÄvÁÛgÉ.

ಘಟಕ – 1 ಕಾಯಕ **14 ಗಂಟೆಗಳು**

1. ಕಾಯಕಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ವಚನಗಳು – ಆಯ್ದ ವಚನಗಳು
2. ರಸ್ತೆ ನಕ್ಷತ್ರ ಕೃತಿಯ ಆಯ್ದ ಭಾಗ – ಟಿ.ಕೆ. ದಯಾನಂದ
3. ಮಹಿಳೆಯನು ಒಳಗೊಳ್ಳದೆ – ಕೆ.ಪಿ.ಸುರೇಶ

ಘಟಕ – 2 ಬಡತನ **14 ಗಂಟೆಗಳು**

1. ಕುಮಾರವ್ಯಾಸ ಭಾರತದ ಆಯ್ದ ಭಾಗ – ಕುಮಾರವ್ಯಾಸ
2. ಧನಿಯರ ಸತ್ಯನಾರಾಯಣ – ಕೊರಡ್ಕಲ್ ಶ್ರೀನಿವಾಸ ರಾವ್
3. ಬೂದಿಯಾಗದ ಕೆಂಡ ಕೃತಿಯ ಆಯ್ದ ಭಾಗ – ವಿಜಯಕುಮಾರ್ ಸಿಗರಹಳ್ಳಿ

ಘಟಕ – 3 ಕಾಲ **14 ಗಂಟೆಗಳು**

1. ದಡಿಗವೆಣಂಗಳನೆ ಮೆಟ್ಟಿ ಮೆಲ್ಲದೆ ನಡೆದಂ – ರನ್ನ
2. ಮಬ್ಬಿನಿಂದ ಮಬ್ಬಿಗೆ – ಜಿ.ಎಸ್.ಶಿವರುದ್ರಪ್ಪ
3. ಹಗಲು ಇರುಳುಗಳ ನಡುವೆ – ಕಾ.ತ. ಚಿಕ್ಕಣ್ಣ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

1. ಮುನ್ನೀರ್ ಬೆನ್ನೀರೆನೆ ಬೆರೆಸಲಣ್ಣ ತಣ್ಣೀರೊಳವೆ – ನಾಗಚಂದ್ರ
2. ಒಲವಾದೊಡೆ ರೂಪಿನ ಕೋಟಲೆಯೇವುದೊ – ಜನ್ನ
3. ನಮ್ಮ ಸಂಸ್ಕೃತಿಯ ಹೆಮ್ಮೆ ಸಾಲದು – ಶಿವರಾಮ ಕಾರಂತ

ಪಠ್ಯಪುಸ್ತಕ : ಕಲಾಗಂಗೋತ್ರಿ – 4

Course Articulation Matrix - 22KAN401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	3	3	3	3	2	2	3	3
CO 2	3	3	3	2	2	3	1	3	2	1	3	3
CO 3	3	3	3	2	2	3	-	3	1	2	2	3
CO 4	3	3	3	2	1	2	-	2	2	2	1	3
Weighted Average	**3**	**3**	**3**	**2**	**2**	**2.75**	**2**	**2.75**	**1.75**	**1.75**	**2.25**	**3**

Mahajana Education Society (R.)
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SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

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College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF LAW AND CONSTITUTION OF INDIA

UG ☑

PG ☐

NEP Syllabi for III/IV Semester (All Programs)

India and Indian Constitution

2023-24

Motto

Rights and Duties

Vision

Welfare in Different Fields of Life

Mission

- Facilitating Greatest Happiness of Greatest Members.
- Intense Participation.
- Enhance Prestige and Image of the Country.

Program Outcome (PO)Attributes

PO 1: **Domain Knowledge**

PO 2: **Problem Analysis**

PO 3: **DesignandDevelopmentofSolutions**

PO 4: **Investigation & Research**

PO 5: **Use of Modern Techniques/Tools**

PO 6: **Domain and Society**

PO 7: **Environment and Sustainability**

PO 8: **Moral and Ethical Values**

PO 9: **Individual and Team Work**

PO 10: **Communication**

PO 11: **Project Management and Finance**

PO 12: **Life-long Learning**

OBE: Implemented

List of BoS Members

Sl. No.	Category	Member Details
1	Chairperson	Divya S, HoD SBRR Mahajana First Grade College(A), Jayalakshmipuram, Mysuru divyasrijith14@gmail.com 9008926746
2	Nominee by the Vice Chancellor	Dr. Maruthi T R Assistant Professor Dept of studies and research in law,Manasagangothri, Mysuru mmaruthi_smg@yahoo.co.in 9986191962
3	Two Experts from Other University/ Institutions	Dr. Janhavi S S Assistant Professor &Special Officer to PhD Exam Section DoS& Research in Political Science, Karnataka State Open University, Mysuru. janhaviksou@gmail.com 9449806664
4		Vani C, Assistant Professor, Sarada Vilas Law College, Krishnamurthypuram, Mysuru vaniashith23@gmail.com 9900295889

Course Structure(NEP)

ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)

II Year(All Programs)

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
Constitution of India – III/IVSem									
AECC	India and Indian Constitution **22COIS23**	3	0	3:0:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100

AECCSyllabus for All Programs

Semester III/IV

Course Code:22COIS23	**Course Title:**AECC -**India and IndianConstitution**
Course Credits (L:T:P):03 (3:0:0)	**Hours of Teaching/Week:** 3Hours
Total Contact Hours:45 Hours	**Formative Assessment Marks:**40
Exam Duration:$2\frac{1}{2}$Hour	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Acquire knowledge on Indian Constitution, Preamble and Salient features of Indian Constitution and Fundamental Duties & Rights of an Indian Citizen. Also, inculcate the habit of practicing the same.

CO 2: Identify the Powers and Functions of Union Government (Indian), State Government(Indian) and its members.

CO 3: Analyze and implement roles and responsibility of the Indian Judiciary System and the Indian Election Commission.

Unit	ContentsofCourse:	45 Hours
Unit-I	BackgroundtothestudyofIndianConstitution** Chapter1:Philosophicaland PoliticalfoundationsofIndia:DharmaandDanda,Buddhist,liberal(RajaRammohunRoy)andSubaltern(RanajitGuha)*ColonialimpactonIndiansociety,**Nationalistperspective(SwamyVivekanandaandSriAurobindo). Chapter2:PoliticalvaluesandIdealsduringfreedomstruggle: NonViolence,Tolerance,SatyagrahaandSwadeshi(Gandhi),Swarajya(Tilak),IntegralHumanism(DeenDayalUpadhyay)andVolunt arism(VinobaBhave). Chapter3:PoliticalContributionofRegionalfreedomstruggle:KitturRaniChennamma,HardekarManjappa,MadikeriPeasants,	6Hours 5Hours

Unit-II	**ConstitutionalDevelopment anditsPhilosophy** Chapter-4: HistoricalbackgroundofConstitutionaldevelopmentinIndia-Developmentsbetween1857to1952(onlyActsduringthisperiodmustbetaught),CompositionanddebatesofConstituentAssembly(in brief), working ofcommittees. Chapter5:PhilosophyandfeaturesofIndianConstitution-Preamble*,Salientfeatures**,Constitutionalism,DrB.R.AmbedkarandNehru'scontributionin themakingofthe Constitution. Chapter-6:WorkingoftheConstitution-FundamentalRights,Union-StateandInter-State Relations (Art 263 Int	5Hours 5Hours
Unit-III	**ConstitutionalInstitutionsandCitizen'srole** Chapter7:ParliamentaryandConstitutionalInstitutions:Legislature*(UpperandLowerhouse),Executive(compositionandpowers),Judiciary(HighCourtandSupremeCourt,itscompositionandjurisdiction),ComptrollerandAuditorGeneral,Inter-StateCouncil,ElectionCommission. Chapter8:RoleandResponsibilitiesofCitizensunderIndianConstitution:ConceptofCitizenship,CitizenshipAmendmentAct,FundamentalDuties,RighttoInformationAct,CivilSociety.* Chapter9:GoalsandPoliciesofNationalDevelopmentenshrinedintheConstitution:Concept ofNationalDevelopment,UnityandIntegrityofthenation,GoalsofEducationalPolicies*	6Hours

(**Note-
Thisisacompulsory,foundationalandvalueadditionalcoursetobetaughttostudentsatthegraduatelevelunderNEP2020.Thepaperisexpectedtoimpartthestructureandfunctionalaspectsofconstitutionwhilegivingthemthebackgroundofadiversecountrylike Indiaandthenuancesofitssocialfabricandthewhyofsuchanelaborateconstitution.Theintroductorychapterthereforeisdesignedtofamiliarisestudentsabouttheircountryandculture beforetheyunderstandtheirconstitution).

(Pleasenote:Thequestionpaperpatternisindicativeofthewayateacherneedstoteachthispaper.Thepedagogicalchoiceofateacherhelpstomakeanimpactofhis/herteachingonthestudent.Activitybasedandexperientialteachingmethodshelpstudentcentriclearningprocess-thesearetipstomakethispapermoremeaningful-theultimatechoiceislefttotheteacher)

Exercise:

* DepartmentcandebateontheroleofConstitutioninthedevelopmentofIndia.

* Studentscanempiricallyevidencetheeffectivenessofconceptslike–Freedom,Equality,Justice

RightsandDutiesbyconductingempiricalstudies.

* Caninviteexpertstodeliverspeciallecturesonvariousprovisionsandamendmentsofthe

ConstitutionlikethefunctioningofElectionCommission,Article246,356etc.

ImportantNotes:

Chapter1

*Theseareintroductorycourses.Teachersshouldgiveabriefintroductiontotheseforabetterunderstandingofthephilosophicalandpoliticalfoundationsof Indiansocietytakingsuggestedthinkersasexamples(Max2hrs).

Chapter2

**Hereteachersshould brieflyteachaboutthe contributionsandimpactofBritishandArabsasinvaders,Mughalsassettlers(Max2hrs).

Chapter3

*Thesearetobetaughtbrieflyasconceptsagainstthebackdropoffreedomstruggle

Chapter4

*BOScanalterthischaptertobringin thepersonalitiesandmovementsintheirregionwhohavemadean impactonfreedomstruggle.

Chapter5

*Whileteachingthepreamblepleasecoversecularismanditscriticismkeepinginmindtheneutrality ofstateinmattersofreligionandbringinthediscussionregardingthedifferencesintheusageofthetermslikeReligion,
Dharma,Pantha(ಪಂಥ),Matha(ಮತ),Caste,Jatyathithateandthemeaningofscientificsecularismas expoundedbyNehru.

**Inthesalientfeaturestheteachersmustteachatleast10featuresoftheconstitutionlikeWrittenconstitution,Parliamentaryformofgovernment,Quasifederalism,DirectivePrinciplesofStatePolicy, AmendmentprocedureUniversaladultfranchise,Integratedcitizenship,Independentjudiciary,Judicial Review,EmergencyprovisionsandThreetiersystemofgovernanceetc.TheBOShasthediscretioninselectingthesalientfeatures.

Chapter6

*Inthecommitteestheyshouldteachthenatureofthesecommittees,theirtypes,categoriesandsubcategories.

**Inthistheteachershouldteachtheamendmentslike42nd,73rd,74th,101st,etcwhichhavemajorimpactontheworkingoftheConstitution.TheBOShas thediscretionin selectingtheamendmentsbutmustensurethat theyhaveaearringontheworkingoftheconstitution.

Chapter7

*Here teachers are expected to teach the institutions in general and contextualisethem to state and centralgovernments.

Chapter8

*Inthistheteachershoulddiscussissueslikepayingtaxes,exercisingvote,discouragingcorruption,Knowledgeoflawsthatgovernthem.

Chapter9

*TeacherscantouchuponKothariCommission,NEP(1986and2020whileteachingEducationalPolicies)

**Teacherscantouchupontheteachertaughtrelations(vedantictradition),teacherasarolemodel,studentasfuturecitizen,theneedforethicalandmoralresponsibilityamongthemetc.,

SuggestedReadings:

1. AiyangarK.R.1941.“AncientIndianPolity”.OrientalBokksAgency.Poona.

2. AltekarA.S.1949.“StateandGovernmentinAncientIndia”.MotilalBanarsidassChowk,Banaras

3. AndreBeteille,1965.Caste,class,andPower.Berkley:UniversityofCaliforniaPress.

4. Arora&Mukherji,Federalismin India,Origin and Developments,VikasPublishingHouse,NewDelhi,1992

5. BhandarkarD.D.1940.“SomeAspectsofAncientIndianculture”.UniversityofMadras.

6. ChandraBipan.1979.“NationalismandColonialisminIndia”.Orient, Lang.

7.Constitution of India (Full Text), India.gov.in., National Portal of India, https://www.India.gov.in/sites/upload_files/npi/files/coi_part_full.pdf

8. D.C.Gupta,IndianGovernmentandPolitics,VikaspublishingHouse,NewDelhi,1975.

9. Desai,AR. 2016. Social Backgroundof IndianNationalism. LosAngeles: PapularPrakashan.

10.DurgaDasBasu,IntroductiontotheConstitutionofIndia,Gurgaon;LexisNexis,2018(23rdedn.)

11.Gandhi,M.K."HindSwaraj",http://www.mkgandhi.org/ebks/hind_swaraj.pdf

12.GoshalU.N.1923.“HistoryofHinduPoliticalTheory”.OxfordUniversityPress,Culcutta.

13.GranvilleAustin,2000.TheIndianConstitution:CornerstoneofaNation.Melbourne:OxfordUniversityPress.

14.HansonandDouglas,1972.India`sDemocracy.NewYorkcity:WWNorton&CoInc.

15.HarishRamaswamyandS.S.Patagundi(Ed.)2007. Karnataka-GovernmentandPolitics.Delhi:ConceptPublishingCompany.

16.J.N.Pandey,TheConstitutionalLawofIndia,Allahabad;CentralLawAgency,2018(55thedn.)

17.JayaswalK.P.1943. “Hindu Polity”. Bangalore Printingand Publishing Co. LTD,Bengalore.

18.JohariJC1974.IndianGovernmentandPolitics.NewDelhi:VishalPublications.

19.K B Merunandan, Bharatada Samvidhana Ondu Parichaya, Bangalore, MeraguPublications,2015.

20.K.Sharma,IntroductiontotheConstitutionofIndia,PrenticeHallofIndia,NewDelhi,2002.

21.Kapoor,Kapil(Ed),2005,IndianKnowledgeSystem-Vol-1,NewDelhi:D>KPrintworld LTD.

22.Kapoor,Kapil,1994,TextsoftheOralTradition,Language,LinguisticsandLiterature: TheIndianPerspective.Delhi:AcademicFoundation.

23.KosambiD.D.1965.“TheCultureandCivilizationofAncientIndiaand HistoricalOutline”.VikasPublishingHousepvt.ltd,Noida.

24.KrishanaRao,M.&G.S.Halappa.1962.HistoryofFreedomMovementinKarnataka.Mysore:GovernmentofMysore.

25. M.V.Pylee,India’sConstitution,NewDelhi;S.ChandPub.,2017(16thedn.)

26.Nagel,Stuart,2017,India’sDevelopmentandPublicPolicy.UK:Routledge.

27.P.MBakshi,ConstitutionofIndia,UniversalLawPublishingHouse,NewDelhi,1999.

28.Patham and Thomas Patham. 1986. “Political Thought in Modern India.” SagePublications,UnitedState.

29.RajniKothari,1995.CasteinIndianPolitics.Telangana:OrientBlackswan.

30.RghavendraRao, K. 2000. Imagining UnimaginableCommunities. Hampi:Prasranga,KannadaUniversity.

31.Bhargava,Rajeev.ed.1998.SecularismandItsCritics,NewDelhi:OxfordUniversityPress.

32.S.N.Jha,IndianPoliticalSystem,:HistoricalDevelopments,GangaKaveriPublishingHouse,Varanasi,2005

33.SaidEdarard.1978."Orientalism".PantheonBooks,USA.

34.Sharma, R.S. 1991. "Early Indian Social andPoliticalThought and Institutions (Aspects ofthePoliticalIdeasandInstitutionsinAncientIndia".MotilalBanarsidass, Delhi.

35. ಎಂ. ಎಸ್. ಚೈತ್ರ (ಸಮ) 2022, 'ಪರಮಪರಾಗತಭ್ಯುದಯದರ್ಶನ: ಧರ್ಮಪಾಲ್‌ದೃಷ್ಟಿ 'ರಾಷ್ಟ್ರೋತ್ಥಾನ ಸಾಹಿತ್ಯ', ಬೆಂಗಳೂರು.

36. ಗಾಂಧಿ. ಎಮ್. ಕೆ. 2009, ಹಿಂದ್ಸ್ವರಾಜ್ಯ, ಬೆಂಗಳೂರು: ಕರ್ನಾಟಕಗಾಂಧೀ ಸ್ಮಾರಕ ನಿಧಿ.

37. ಧರ್ಮಪಾಲ್, 2011, "ಭಾರತಜಾಗೃತಿ" (ಅನು) ಎಸ್, ಆರ್. ರಾಮಸ್ವಾಮಿ, ಬೆಂಗಳೂರು: 'ರಾಷ್ಟ್ರೋತ್ಥಾನ ಸಾಹಿತ್ಯ',

38. ಧರ್ಮಪಾಲ್, 2003, 'ಸ್ವದೇಶಿ ಮತ್ತು ಭಾರತೀಯತೆ', (ಅನು) ಚಕ್ರವರ್ತಿ, ಬೆಂಗಳೂರು: ಸ್ವರಾಜಪ್ರಕಾಶನ ಸಮೂಹ.

39. ಧರ್ಮಪಾಲ್, 2009, ಬಾರತೀಯಚಿತ್ತ, ಮಾನಸಿಕತೆ, ಕಾಲ, (ಅನು) ಎಸ್‌ಆರ್‌ರಾಮಸ್ವಾಮಿ, ಬೆಂಗಳೂರು,'ರಾಷ್ಟ್ರೋತ್ಥಾನ ಸಾಹಿತ್ಯ',

40. ಬಾಲಗಂಗಾಧರ, ಎಸ್‌ಎನ್., 2010 ಪೂರ್ವಾವಲೋಕನ (ಸಂ). ಜೆಎಸ್ ಸದಾನಂದ ಮತ್ತುರಾಜಾರಾಮ ಹೆಗ್ಡೆ. ಬೆಂಗಳೂರು: ಅಭಿನವ ಪ್ರಕಾಶನ

41. ಬಾವೆ, ವಿನೋಬಾ, 1954. ಸ್ವರಾಜ್ಯಶಾಸ್ತ್ರ, ಬೆಂಗಳೂರು: ಬೆಂಗಳೂರು ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ

42. ಬಾವೆ, ವಿನೋಬಾ, 1958, ಭೂದಾನಗಂಗೆ, ಬೆಂಗಳೂರು: ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ.

43. ಬಾವೆ, ವಿನೋಬಾ, 1974, ಸ್ವರಾಜ್ಯಶಾಸ್ತ್ರ, ಬೆಂಗಳೂರು: ಬೆಂಗಳೂರು ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ

44. ಬಾವೆ, ಶಿವಾಜಿ, 1954, ಶ್ರಮದಾನ, ಬೆಂಗಳೂರು; ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ.

45. ರಾಜಾರಾಮ ಹೆಗ್ಡೆ. ಮತ್ತು ಸದಾನಂದಜೆಎಸ್ (ಸಂ) 2016 'ಪೂರ್ವಾವಲೋಕನ', ವಸಂತ ಪ್ರಕಾಶನ, ಬೆಂಗಳೂರು

ರಾಜಾರಾಮ ಹೆಗ್ಡೆ (ಸಂ) 2004, 'ಭಾರತೀಯಇತಿಹಾಸ, ಸಮಾಜ ಮತ್ತು ಸಂಸ್ಕೃತಿ', ಬೆಂಗಳೂರು; ಕರ್ನಾಟಕ ಸಾಹಿತ್ಯಅಕಾಡೆಮಿ

46. ರಾಮಚಂದ್ರನ್ ಸಿ ಎನ್, 2002, 'ವಸಾಹತೋತ್ತರಚಿಂತನೆ', ಬೆಂಗಳೂರು: ಕರ್ನಾಟಕ ಸಾಹಿತ್ಯಅಕಾಡೆಮಿ.

47. ಶಂಕರನಾರಾಯರಾವ್‌ಎನ್ ಪಿ (ಸಂ) 2020, 'ದೀನದಯಾಳ ಉಪದ್ಯಾಯ: ಏಕಾತ್ಮಮಾನವತೆ' 'ರಾಷ್ಟ್ರೋತ್ಥಾನ ಸಾಹಿತ್ಯ', ಬೆಂಗಳೂರು.

48. ಹೆಗಡೆ, ರಾಜಾರಾಮ, 2021, ಪಶ್ಚಿಮಾಯನ: ವಸಾಹತು ಹಿಸ್ಟರಿ ಮತ್ತುಕನ್ನಡಜಗತ್ತು, ಬೆಂಗಳೂರು: ಅಭಿನವ

ಪ್ರಕಾಶನ.

49. Weblinks:

https://www.india.gov.in/sites/upload_files/npi/files/coi_part_full.pdf.

Course Articulation Matrix – 22COIS23

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	3	3	2	3	3	3	3	1
CO 2	2	3	1	3	3	2	3	3	3	2	2	3
CO 3	3	1	1	3	3	2	2	3	3	1	3	3
Weighted Average	**2.33**	**2**	**1**	**2.33**	**3**	**2.33**	**2.33**	**3**	**3**	**2**	**2.66**	**2.33**

Pedagogy

Thecourseshallbetaughtthrough Lectures, Tutorials, demonstrations, discussions on court judgments, Self-guided Learning Materials, Open Educational Recourses (OER) as reference materials. Fieldwork Exercises to understand the concepts in practice, Assignments, Seminars, Group Discussions, open house debates and Week-end Counseling could also help in better and informed learning in these classes.

EVALUATION/ASSESSMENT PATTERN (AECC)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively.

	THEORY
Total Marks	100 Marks
Continuous Assessment – 1 (C1)	20 Marks
Continuous Assessment – 2 (C2)	20 Marks
Semester End Examination (C3)	60 Marks

Formative Assessment	
Assessment Occasion/type	Weightage in Marks
Assessment Test-1	10
Seminar/Presentation/Group Discussion	10
Assessment Test-2	10
Assignment	10
Total	40

I. Term End Examination for India and Indian Constitution (IIC)

Paper will be for maximum of 60 marks. The minimum marks to pass the examination is 40% (24 marks).

Note: Duration of Examination for India and Indian Constitution (IIC) is **2 hours.**

QuestionpaperpatternforIndiaandIndianConstitution–

SectionA:MultipleChoiceQuestionsSection B:ShortAnswerQuestionsSectionC:Medium

AnswerQuestionsSectionD:LongAnswerQuestions

SectionA:MultipleChoiceQuestions

AllQuestionsareCompulsory

(10x1=10)

1) a.
b.
c.
d.
e.
f.
g.
h.
i.
j.

Section B:ShortAnswerQuestions (5x5=25)

AnsweranyFivequestions.Answerthefollowingquestionsinnotmorethan3-5sentence.

2)
3)
4)
5)
6)
7)
8)

.SectionC:MediumAnswerQuestions (1x10=10)

AnsweranyOne question. Answerthe followingquestioninnotmore than500words

9)

10)

SectionD:LongAnswerQuestions (1x15=15)

AnsweranyOne question. Answerthe followingquestioninnotmore than800words

11)

12)

APPROVED BY THE FOLLOWING BoS MEMBERS

Mahajana Education Society (R)
Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
Affiliated to University of Mysore,
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

UG Board of Studies

Approved by The University of Mysore, Governing Council & Academic Council for the Academic Session: 2022-2023

Department of Law and Constitution of India

SL.NO	NAME AND ADDRESS	DESIGNATION	SIGNATURE
1.	Divya S, HoD Department of Law & Constitution of India SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru divyasrijith14@gmail.com 9008926746	Chairman	
2.	Dr. Maruthi T R ~~Assistant~~ Professor Vice Chancellor Nominee Dept of studies and research in law, Manasagangothri, Mysuru mmaruthi_smg@yahoo.co.in 9986191962, 6366189651	Member	
3.	Dr. Janhavi S S Assistant Professor &Spl. Officer to PhD Exam Section DoS& Research in Political Science Karnataka State Open University Mysuru. janhaviksou@gmail.com 9449806664	Member	
4.	Vani C, Assistant Professor Sarada Vilas Law College Krishnamurthypuram Mysuru vaniashith23@gmail.com Mob: 9900295889	Member	

Chairperson
BOS/BOE in Law & Constitution of India
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

ಬಿ.ಎಸ್ಸಿ

ಸೆಮಿಸ್ಟರ್–3

Course Code: 22KAN302	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 3
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: ಜೀವನದಲ್ಲಿ ಮಾನವೀಯ ಗುಣಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 2: ಪ್ರವಾಸಕಥನಗಳನ್ನು ಓದುವುದರಿಂದ ಹಲವು ಪ್ರಾದೇಶಿಕ ವಿಶೇಷತೆಗಳನ್ನು ಗುರುತಿಸುತ್ತಾರೆ.

CO 3: ಶರಣರ ವೈಚಾರಿಕ ಪ್ರಜ್ಞೆ, ಸಮಾಜ ಸುಧಾರಕರ ವಿಚಾರ ಸಾಹಿತ್ಯವನ್ನು ಅವಲೋಕಿಸುತ್ತಾರೆ.

CO 4: ಆರೋಗ್ಯಯುತ ಜೀವನವನ್ನು ರೂಢಿಸಿಕೊಳ್ಳುತ್ತಾರೆ.

ಘಟಕ – 1 ಮಾನವೀಯತೆ **14 ಗಂಟೆಗಳು**

3. ಚಂದ್ರಹಾಸನ ಪ್ರಸಂಗ – ಲಕ್ಷ್ಮೀಶ
4. ನನ್ನ ನಾಯಿ – ಪು.ತಿ.ನ
5. ಪ್ರೇಮಭಿಕ್ಷು (ಕಾದಂಬರಿಯ ಆಯ್ದ ಭಾಗ) – ಪ್ರಭುಶಂಕರ

ಘಟಕ – 2 ಪ್ರವಾಸ **14 ಗಂಟೆಗಳು**

3. ಜೋಗದ ಗುಂಡಿ – ಮೂಗೂರು ಮಲ್ಲಪ್ಪ
2. ಮಹಾನ್ ಗೋಡೆ – ಶೂದ್ರ ಶ್ರೀನಿವಾಸ್
3. ಅನಫಿಲ್ಲಮ್ ಮತ್ತು ಕದಂಬ – ಬಿ.ಜಿ.ಎಲ್. ಸ್ವಾಮಿ

ಘಟಕ – 3 ವಿಚಾರ ಕ್ರಾಂತಿ **14 ಗಂಟೆಗಳು**

1. ಯಜಮಾನರಿಗೊಂದು ಪತ್ರ – ಎನ್.ಕೆ. ಹನುಮಂತಯ್ಯ
2. ಮೈಮೇಲೆ ದೆವ್ವ ಬರುವುದೇ – ಡಾ. ಸಿ.ಆರ್. ಚಂದ್ರಶೇಖರ್
3. ಮಿಂಚಿನ ಅಕ್ಷರ ಮಾಲೆ – ಮೊಗಳ್ಳಿ ಗಣೇಶ್

ಘಟಕ : 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

4. ಗಂಡಾಗಿ ಹುಟ್ಟಬೇಕಿತ್ತು – ಶ್ರೀದೇವಿ ಕೆರೆಮನೆ
5. ಕುಸಿಯುತ್ತಿರುವ ಸಾಂಸ್ಕೃತಿಕ ಮೌಲ್ಯಗಳು – ರಂಜಾನ್ ದರ್ಗಾ
6. ಹೃದಯ ದುರ್ಬಲವಾಗುತ್ತಿದೆಯೇ ? – ಡಾ. ಆರ್.ಕೆ. ಸರೋಜ

ಪಠ್ಯಪುಸ್ತಕ : ವಿಜ್ಞಾನಗಂಗೋತ್ರಿ – 3

Course Articulation Matrix - 22KAN302

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	3	2	3	2	3	2	2	2	3
CO 2	3	3	3	2	2	3	2	3	3	3	2	3
CO 3	3	3	3	2	1	3	2	2	2	2	2	2
CO 4	3	3	2	2	2	3	2	3	2	3	1	3
Weighted Average	**3**	**3**	**2.75**	**2.25**	**1.75**	**3**	**2**	**2.75**	**2.25**	**2.5**	**1.75**	**2.75**

ಬಿ.ಎಸ್ಸಿ

ಸೆಮಿಸ್ಟರ್–4

Course Code: 22KAN402	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 4
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: ದಮನಿತರ ಕುರಿತಾದ ಅಧ್ಯಯನವು ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಹೊಸ ಸಂಶೋಧನೆಗೆ ದಾರಿ ಮಾಡಿಕೊಡುತ್ತದೆ.

CO 2: ಸಾಮಾಜಿಕ ಸಹಿಷ್ಣುತಾ ಮನೋಭಾವವನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುವರು

CO 3: ಸಾಮಾನ್ಯ ಜನರ ಶ್ರಮಸಂಸ್ಕೃತಿಯ ಪರಿಚಯವಾಗಿ, ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಶ್ರಮಿಕವರ್ಗದ ಪರವಾದ ಕಾಳಜಿ ಹೆಚ್ಚುತ್ತದೆ.

CO 4: ತಂದೆ–ತಾಯಿಯನ್ನು ಗೌರವದಿಂದ ಕಾಣುವ ಮನೋಭಾವ ರೂಢಿಸಿಕೊಳ್ಳುವರು.

ಘಟಕ – 1 ದಮನಿತ ಲೋಕ **14 ಗಂಟೆಗಳು**

2 ಕುಲಂ ಕುಲಮಲ್ತು – ಪಂಪ
3 ಅಲ್ಲೇ ಕುಂತವರೆ – ಸಿದ್ಧಲಿಂಗಯ್ಯ
3 ಮಾರಿಕೊಂಡವರು – ದೇವನೂರು ಮಹಾದೇವ

ಘಟಕ – 2 ಸಹಿಷ್ಣುತೆ **14 ಗಂಟೆಗಳು**

1 ಭಿನ್ನ ಭೇದವ ಮಾಡಬ್ಯಾಡಿರೋ – ಅಜ್ಞಾತ ತತ್ವಪದಕಾರ

2 ಕುಲ ಕುಲ ಕುಲವೆಂದು – ಕನಕದಾಸ

2 ನಮ್ಮ ನೆರೆಯಲ್ಲಿ ದೀಪಾವಳಿ – ಫಕೀರ್ ಮಹಮ್ಮದ್ ಕಟ್ಪಾಡಿ

ಘಟಕ – 3 ಶ್ರೀಸಾಮಾನ್ಯನ ಬದುಕು **14 ಗಂಟೆಗಳು**

4 ಶ್ರೀ ಸಾಮಾನ್ಯನ ದೀಕ್ಷಾ ಗೀತೆ – ಕುವೆಂಪು
5 ಅಮ್ಮನ ಸೀರೆ – ಬಾನು ಮುಷ್ತಾಕ್
6 ಮುಖ – ಕೃಷ್ಣಮೂರ್ತಿ ಹನೂರು

ಘಟಕ : 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

4 ಅಮ್ಮನಾಗುವುದೆಂದರೆ – ರೂಪ ಹಾಸನ
5 ಸೂರ್ಯಕಾಂತಿಯ ಕನಸು – ಎಚ್ ಆರ್ ಸುಜಾತ
6 ಹದಿಹರೆಯದ ವಿದ್ಯಾರ್ಥಿಗಳ ಸ್ಥಿತಿ–ಗತಿಗಳು – ಡಾ. ಕೆ.ಆರ್. ಶ್ರೀಧರ್

ಪಠ್ಯಪುಸ್ತಕ : ವಿಜ್ಞಾನಗಂಗೋತ್ರಿ – 4

Course Articulation Matrix - 22KAN402

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	-	3	2	2	2	3
CO 2	3	3	2	2	2	3	2	3	2	2	1	3
CO 3	3	3	2	2	2	3	3	3	2	2	1	2
CO 4	3	3	3	2	2	3	3	3	2	2	2	3
Weighted Average	**3**	**3**	**2.5**	**2**	**2**	**3**	**2.66**	**3**	**2**	**2**	**1.5**	**2.75**

ಬಿ.ಕಾಂ.

ಸೆಮಿಸ್ಟರ್–3

Course Code: 22KAN303	**Course Title:** PÀ£ÀßqÀ¨sÁµÉ - 3
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ಅತ್ಯಾಧುನಿಕ ತಂತ್ರಜ್ಞಾನದೊಂದಿಗೆ ಮನೋರಂಜನಾ ಮಾಧ್ಯಮದ ಮಹತ್ವವನ್ನು ಗುರುತಿಸುತ್ತಾರೆ

CO 2: ಲಾಭಕ್ಕಾಗಿ ಬದುಕುವುದನ್ನು ಬಿಟ್ಟು, ಮನುಷ್ಯ ಸಂಬಂಧಗಳಿಗಾಗಿ ಬದುಕುವುದನ್ನು ರೂಢಿಸಿಕೊಳ್ಳುವರು

CO 3: ಸಾಮಾಜಿಕ ಸಮಾನತೆ ಮತ್ತು ಸೌಹಾರ್ದಯುತ ಬದುಕನ್ನು ರೂಪಿಸಿಕೊಳ್ಳುವರು.

CO4: ಸಾಹಿತ್ಯದಲ್ಲಿ ಚರ್ಚಿತವಾದ ಪರಿಸರ, ತಂತ್ರಜ್ಞಾನ, ಜೀವನಚರಿತ್ರೆ, ಆತ್ಮಕತೆ, ಆಧುನಿಕತೆಯ ಪ್ರೇರಣೆ ಮತ್ತು ಪ್ರಭಾವಗಳನ್ನು ಗುರುತಿಸುತ್ತಾರೆ.

ಘಟಕ – 1 ಮನೋರಂಜನಾ ಮಾಧ್ಯಮ **14 ಗಂಟೆಗಳು**

1. ಕೌರವಸೇನೆ ಕೆಡೆದುದು ನಗೆಯ ಕಡಲೊಳಗೆ – ಕುಮಾರವ್ಯಾಸ
2. ಪೆದ್ದುಂಡೆ – ಪಿ.ಕೆ.ರಾಜಶೇಖರ
2. ಜೀವಕೇಂದ್ರಿತ – ಡಾ. ಚಕ್ಕೆರೆ ಶಿವಶಂಕರ

ಘಟಕ – 2 ಮಾರುಕಟ್ಟೆ **14 ಗಂಟೆಗಳು**

1. ಕೆಲಸವಿಲ್ಲದವರ ಹಾಡು – ದ.ರಾ. ಬೇಂದ್ರೆ
2. ಎಲ್ಲಾ ಮಾಯ – ಗೊಲ್ಲಹಳ್ಳಿ ಶಿವಶಂಕರ್
2. ಮೇದರಹಳ್ಳಿಯ ಅವಸಾನ – ಪೂ.ಚಂ.ತೇ

ಘಟಕ – 3 ಲಿಂಗಸಮಾನತೆ **14 ಗಂಟೆಗಳು**

1. ಆಯ್ದ ವಚನಗಳು –
2. ಬೆಂಕಿಮಳೆ – ಬಾನು ಮುಷ್ತಕ್
3. ಮನೆಕೆಲಸ – ಉಮಾರಾವ್

ಘಟಕ – 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

1. ಸಮಾಧಿಯ ಸತ್ವ – ಮಾಸ್ತಿ
2. ಅಳು – ಮನುಬಳಿಗಾರ್
3. ಹೈಟೆಕ್ ರಣವೈದ್ಯ – ನಾಗೇಶ್ ಹೆಗ್ಡೆ

ಪಠ್ಯಪುಸ್ತಕ : ವಾಣಿಜ್ಯಗಂಗೋತ್ರಿ – 3

Course Articulation Matrix - 22KAN303

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	3	3	-	3	2	3	3	3
CO 2	3	3	2	3	2	3	1	3	2	3	3	3
CO 3	3	3	2	3	1	3	1	3	3	3	3	3
CO 4	3	3	2	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**2.25**	**2.75**	**2.25**	**3**	**1.66**	**3**	**2.5**	**3**	**3**	**3**

ಬಿ.ಕಾಂ.

ಸೆಮಿಸ್ಟರ್–4

Course Code: 22KAN403	**Course Title:** ಕನ್ನಡಭಾಷೆ - 4
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ಭೂಮಿ ಮತ್ತು ಕಡಲಿನ ಮಹತ್ವವನ್ನು ಅರಿತು, ಕಾವ್ಯ ನಿರ್ಮಾಣದಲ್ಲಿ ತೊಡಗುತ್ತಾರೆ.

CO 2: ಸಹಬಾಳ್ವೆಯಿಂದ ಕೂಡಿದ ಬದುಕನ್ನು ರೂಢಿಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 3: ಆದರ್ಶ ಮತ್ತು ಮೌಲ್ಯಯುತ ಜೀವನವಿಧಾನವನ್ನು ಅನುಸರಿಸುತ್ತಾರೆ.

CO 4: ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ಓದುತ್ತಾರೆ.

ಘಟಕ – 1 ಕಡಲು **14 ಗಂಟೆಗಳು**

1. ಆಯ್ದ ಕಾವ್ಯಭಾಗಗಳು – ಪಂಪ, ಕುಮಾರವ್ಯಾಸ
2. ಸಾವಿನೆಡೆಗೆ ಸವಾರರು (ನಾಟಕ) – ಸಿಂಜ್.ಜೆ.ಎಂ (ಮೂಲ) ಬಸವರಾಜ್ ನಾಯ್ಕರ್ (ಅನುವಾದ)
2. ಪ್ರವಾಸ ಕಥನಗಳ ಆಯ್ದ ಭಾಗಗಳು – ಬಿ.ಜಿ.ಎಲ್ ಸ್ವಾಮಿ

ಘಟಕ – 2 ಸಹಬಾಳ್ವೆ **14 ಗಂಟೆಗಳು**

1. ಜನಪದ ತತ್ವಪದಗಳು – ಕೈವಾರ ತಾತಯ್ಯ
2. ಆಯ್ದ ಕೀರ್ತನೆ ಮತ್ತು ತ್ರಿಪದಿಗಳು – ಸರ್ವಜ್ಞ
3. ಸಹಬಾಳ್ವೆ, ಸಹಿಷ್ಣುತೆ ಒಂದು ವಿವೇಚನೆ – ವಿ. ಮುರಾರಿ

ಘಟಕ – 3 ಸಾವು **14 ಗಂಟೆಗಳು**

1. ತಿರುಕೊಳವಿನಾಚಿಯ ಪ್ರಸಂಗ – ಷಡಕ್ಷರ ದೇವ
2. ಚಂದ್ರಮತಿಯ ದುಃಖ – ರಾಘವಾಂಕ
2. ಸಾವು (ಲಲಿತ ಪ್ರಬಂಧ) – ವಿ. ಸೀತಾರಾಮಯ್ಯ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

1. ನಾಗವಲ್ಲಿ ಸ್ವಯಂವರನೆಂಬ ನಾಟ್ಯಶಾಸ್ತ್ರ – ಲಲಿತಾ ಸಿದ್ಧಬಸವಣ್ಣ
2. ಚಪ್ಪಲಿಗಳು – ಸಾ.ರಾ. ಅಬೂಬಕರ್
3. ನರಿಯಮಾತಂ ನಂಬಿ ಸತ್ತ ಬೆಳ್ಳಗತೆಯ ಕಥೆ – ದುರ್ಗಸಿಂಹ

ಪಠ್ಯಪುಸ್ತಕ : ವಾಣಿಜ್ಯಗಂಗೋತ್ರಿ – 4

Course Articulation Matrix – 22KAN403

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	3	2	3	3	3	2	1	-	3
CO 2	3	3	3	2	3	3	2	3	2	2	3	3
CO 3	3	3	3	2	2	3	2	3	2	2	1	3
CO 4	3	3	2	2	1	3	-	3	2	2	1	3
Weighted Average	**3**	**3**	**2.75**	**2.25**	**2**	**3**	**2.33**	**3**	**2**	**1.75**	**1.66**	**3**

ಬಿ.ಬಿ.ಎ

ಸೆಮಿಸ್ಟರ್ – 3

Course Code: 22KAN304	**Course Title:** ಕನ್ನಡಭಾಷೆ - 3
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ಸಾಮಾಜಿಕ ಸಾಮರಸ್ಯವನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುವರು.

CO 2: ಮೌಢ್ಯತೆ ಬಿಟ್ಟು, ವೈಚಾರಿಕ ದೃಷ್ಟಿಕೋನ ಬೆಳೆಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 3: ಸೃಜನಶೀಲ, ಕೌಶಲ್ಯಯುತ, ಸುಸಂಸ್ಕೃತ ಬದುಕನ್ನು ರೂಢಿಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 4: ಅಹಿಂಸೆ, ಭ್ರಾತೃತ್ವ, ಸಹಬಾಳ್ವೆಯನ್ನು ಕಲಿಯುತ್ತಾರೆ.

ಘಟಕ – 1 ಸಮಾಜ **14 ಗಂಟೆಗಳು**

1. ಮಾದಾರಾ ಚನ್ನಯ್ಯನ ರಗಳೆ – ಹರಿಹರ
2. ಪುರಂದರದಾಸರ ಕೀರ್ತನೆಗಳು – ಪುರಂದರದಾಸರು
3. ಔದಾರ್ಯಕ್ಕೆ ಕೊನೆಯಂತೆ – ತ.ಸು. ಶಾಮರಾವ್

VÀlPÀ - 2 ªÉÊZÁjPÀvÉ **14 UÀAmÉUÀ¼ÀÄ**

1. zsÀgÉUÉ M§â£ÉÃ zÁ£À±ÀÆgÀ PÀtð - ¦.PÉ. gÁd±ÉÃRgÀ
2. Cw»vÀzÀ° ¤Ã«»zÀÄ - PÀ£ÀPÀzÁ¸ÀgÀÄ
3. CPÀÄÌ - ªÉÊzÉÃ»

ಘಟಕ – 3 ಜೀವನ ಮತ್ತು ಕಲೆ **14 ಗಂಟೆಗಳು**

1. ನಾಟಕ ರತ್ನ ಗುಬ್ಬಿವೀರಣ್ಣನವರ್ – ಅನಕೃ
2. ಪರಮಕಲೆ ಜೀವನದ ಲಲಿತ ಕಲೆ – ಡಿ.ವಿ. ಗುಂಡಪ್ಪ
3. ಡಾ. ರಾಜ್‌ಕುಮಾರ್ : ನಾಡಿನ ನುಡಿ – ದೊಡ್ಡಹುಲ್ಲೂರ ರುಕ್ಕೂಜಿ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

1. ಪರಹಿಂಸೆಯ ಮಾಡಿ ಮಾನವಂ ಬಾಳ್ದಪನೇ – ಲಕ್ಷ್ಮೀಶ

2. ಕೋಪಪೈಸರಿಸಿತು ಹೃದಯ ತಂಪಾಯ್ತು – ರತ್ನಾಕರವರ್ಣಿ

3. ಶೂದ್ರತಪಸ್ವಿ ನಾಟಕದ ಭಾಗ (ದೃಶ್ಯ 2) – ಕುವೆಂಪು

¥ÀoÀå¥ÀÄ¸ÀÛPÀ : ¤ªÀðºÀuÁUÀAUÉÆÃwæ - 3

Course Articulation Matrix - 22KAN304

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	2	3	3	3	2	3
CO 2	3	3	3	3	2	3	3	3	2	2	1	3
CO 3	3	3	3	3	3	3	-	3	2	2	3	3
CO 4	3	3	3	2	2	3	3	3	2	2	2	3
Weighted Average	**3**	**3**	**3**	**2.5**	**2.25**	**3**	**2.66**	**3**	**2.25**	**2.25**	**2**	**3**

ಬಿ.ಬಿ.ಎ

ಸೆಮಿಸ್ಟರ್ – 4

Course Code: 22KAN404	**Course Title:** ಕನ್ನಡಭಾಷೆ - 4
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ಯುದ್ಧವಿರೋಧಿ ಮನೋಭಾವವನ್ನು ರೂಢಿಸಿಕೊಳ್ಳತ್ತಾರೆ.

CO 2: ದೇಶಪ್ರೇಮವನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 3: ನೆಮ್ಮದಿಯುತ ಬದುಕನ್ನು ರೂಢಿಸಿಕೊಳ್ಳುವರು.

CO 4: ವಿಜ್ಞಾನ, ಸಂಶೋಧನೆ, ತಂತ್ರಜ್ಞಾನದ ಅರಿವನ್ನು ಪಡೆಯುತ್ತಾರೆ.

ಘಟಕ – 1 ಯುದ್ಧ **14 ಗಂಟೆಗಳು**

1. ಇವರ ಯುದ್ಧವೆಂಬುದತಿ ಕ್ರೂರಗ್ರಹ ಯುದ್ಧದಂತೆ – ಪಂಪ
2. 'ಶ್ಮಶಾನ ಕುರುಕ್ಷೇತ್ರಂ' (ಆಯ್ದಭಾಗ) – ಕುವೆಂಪು
3. ಅಣ್ವಸ್ತ್ರಯುದ್ಧ – ಜೆ. ಬಾಲಕೃಷ್ಣ

ಘಟಕ – 2 ರಾಷ್ಟ್ರೀಯತೆ **14 ಗಂಟೆಗಳು**

1. ತಾಯ್ನಾಡು – ಮಹಮ್ಮದ್ ಧರ್ಮೇಶ್
   ಅನುವಾದ (ಶ್ರೀವಿಜಯ ವಾಮನ)
2. ಕಿತ್ತೂರ ಚೆನ್ನಮ್ಮ – ಜನಪದ ಕವಿ
3. ಸೆರೆಯಿಂದ ಹೊರಗೆ – ಬಸವರಾಜಕಟ್ಟಿಮನೆ

ಘಟಕ – 3 ಶಾಂತಿ **14 ಗಂಟೆಗಳು**

1. ಶ್ರೀ ಕೃಷ್ಣ ರಾಯಭಾರ ಪ್ರಸಂಗ – ಕುಮಾರವ್ಯಾಸ
2. ಗೋಲ್ಗೊಥಾ – ಎಂ. ಗೋವಿಂದಪೈ
3. ಶ್ವೇತಭವನದ ಮುಂದೆ – ನೇಮಿಚಂದ್ರ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

1. ಮಗಳು ಕಂಡ ಕುವೆಂಪು (ಆಯ್ದಭಾಗ) – ತಾರಿಣಿ ಚಿದಾನಂದ
2. ಅಗ್ನಿರೇಖೆಗಳು – ಎ.ಪಿ.ಜೆ. ಅಬ್ದುಲ್ ಕಲಾಂ

3. ನ್ಯಾನೋ ತಂತ್ರಜ್ಞಾನ – ಜೆ.ಆರ್. ಲಕ್ಷ್ಮಣರಾವ್

ಪಠ್ಯಪುಸ್ತಕ : ನಿರ್ವಹಣಾಗಂಗೋತ್ರಿ – 4

Course Articulation Matrix - 22KAN404

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	3	3	2	3	-	3
CO 2	3	3	3	2	2	3	2	3	2	3	2	3
CO 3	3	3	3	3	3	3	-	3	2	3	1	3
CO 4	3	3	3	2	3	3	-	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**2.25**	**2.5**	**3**	**2.5**	**3**	**2.25**	**3**	**2**	**3**

ಬಿ.ಸಿ.ಎ.

ಸೆಮಿಸ್ಟರ್ – 3

Course Code: 22KAN305	**Course Title:** ಕನ್ನಡಭಾಷೆ - 3
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ದೈನಂದಿನ ಜೀವನದಲ್ಲಿ ಶಾಂತಿಯುತ ನೆಮ್ಮದಿಯ ಬದುಕನ್ನು ರೂಪಿಸಿಕೊಳ್ಳುವರು.

CO 2: ಸೌಹಾರ್ದಯುತ ಸಾಮಾಜಿಕ ಜೀವನ ವಿಧಾನವನ್ನು ರೂಢಿಸಿಕೊಳ್ಳುತ್ತಾರೆ.

CO 3: ಸ್ವಾತಂತ್ರ್ಯ ಪದದ ಅರ್ಥವ್ಯಾಪ್ತಿಯನ್ನು ಅರಿತು, ಸ್ವಾತಂತ್ರ್ಯದ ಆಶೋತ್ತರಗಳನ್ನು ಪಾಲಿಸುತ್ತಾರೆ.

CO 4: ಹಳಗನ್ನಡ ಮತ್ತು ನಡುಗನ್ನಡ ಕಾಲದ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯವನ್ನು ಓದುವರು.

ಘಟಕ – 1 ದೈನಂದಿನ ಲಯ **14 ಗಂಟೆಗಳು**

1. ಜನಪದ ತ್ರಿಪದಿಗಳು – ಅಜ್ಞಾತ ಕವಿ
2. ರಾಮನ್ ಸತ್ತ ಸುದ್ದಿ – ಕೆ.ಎಸ್. ನಿಸಾರ್ ಅಹಮದ್
2. ತಟ್ಟೆಯ ಕೊನೆ ಅಗುಳು – ಸುನಂದಾ ಕಡಮೆ

ಘಟಕ – 2 ಸೌಹಾರ್ದ **14 ಗಂಟೆಗಳು**

1. ರೊಟ್ಟಿ ಮತ್ತು ಕೋವಿ – ಸು.ರಂ. ಎಕ್ಕುಂಡಿ
2. ಎಲುಬಿನ ಹಂದರದೊಳಗೆ – ಮೂಡ್ನಾಕೂಡು ಚಿನ್ನಸ್ವಾಮಿ
2. ಭಾರತೀಯ ಸಮಾಜ, ಸಂಸ್ಕೃತಿ, ಮಹಿಳೆ – ಸಾ.ರಾ. ಅಬೂಬಕ್ಕರ್

ಘಟಕ – 3 ಸ್ವಾತಂತ್ರ್ಯ **14 ಗಂಟೆಗಳು**

1. ನಲವತ್ತೇಳರ ಸ್ವಾತಂತ್ರ್ಯ – ಸಿದ್ಧಲಿಂಗಯ್ಯ
2. ಮಾಡಿ ಮಡಿದವರು(ಕಾದಂಬರಿಯ ಆಯ್ದ ಭಾಗ) – ಬಸವರಾಜ ಕಟ್ಟೀಮನಿ
3. ಗಿರಿಜವ್ವನ ರೊಟ್ಟಿ – ಅನಕೃ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

1. ಸಾರಥಿಯಾಗು ನಡೆ – ಕುಮಾರವ್ಯಾಸ
2. ಸೋಮೇಶ್ವರ ಶತಕ – ಸೋಮೇಶ್ವರ
3. ನಿಷಿದ್ಧ ಗಡಿಗಳ ದಾಟಿದ ಡಾ. ರುಕ್ಮಾಬಾಯಿ – ಡಾ. ಎಚ್.ಎಸ್. ಅನುಪಮ

ಪಠ್ಯಪುಸ್ತಕ : ಗಣಕಗಂಗೋತ್ರಿ – 3

Course Articulation Matrix - 22KAN305

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	3	3	1	1	1	3
CO 2	3	3	3	2	2	3	-	3	2	2	2	3
CO 3	3	3	3	2	3	3	3	3	2	3	3	3
CO 4	3	3	3	2	2	3	3	3	2	2	3	3
Weighted Average	**3**	**3**	**3**	**2**	**2.25**	**3**	**3**	**3**	**1.75**	**2**	**2.25**	**3**

ಬಿ.ಸಿ.ಎ.

ಸೆಮಿಸ್ಟರ್–4

Course Code: 22KAN405	**Course Title:** ಕನ್ನಡಭಾಷೆ - 4
Course Credits (L:T:P): 03 (2:1:0)	**Hours of Teaching/Week:** 02 (Theory) + 02 (Tutorials)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ಉತ್ತಮ ನಾಗರೀಕರಾಗಿ ತಮ್ಮ ಕರ್ತವ್ಯಗಳನ್ನು ಪಾಲಿಸುತ್ತಾರೆ.

CO 2: ಮನುಕುಲದ ಅಭಿವೃದ್ಧಿಗೆ ಒತ್ತು ನೀಡುವರು.

CO 3: ಕರುಣಾಮಯಿ ಗುಣವನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುವರು.

CO 4: ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ.

ಘಟಕ– 1 ನಾಗರಿಕತೆ **14 ಗಂಟೆಗಳು**

2. ಇಟ್ಟಿಗೆಯ ಪಟ್ಟಣ – ಚಂದ್ರಶೇಖರ ಕಂಬಾರ
2. ಒಂದು ಸರೀ ಕಡ್ಡಿಗಾಗಿ – ಜಯಂತ್ ಕಾಯ್ಕಿಣಿ
3. ಸಂಸ್ಕೃತಿ ಮತ್ತು ನಾಗರಿಕತೆ – ಬಾನುಮುಷ್ತಾಕ್

ಘಟಕ – 2 ಅಭಿವೃದ್ಧಿ **14 ಗಂಟೆಗಳು**

1. ಪರದೆ ಸರಿದಂತೆ – ಡಿ.ಬಿ. ರಜಿಯಾ
2. ಡಾಂಬರು ಬಂದುದು – ದೇವನೂರು ಮಹಾದೇವ
3. ಲೂಟಿಯ ಹೆದ್ದಾರಿಗಳು – ನಾಗೇಶ ಹೆಗಡೆ

ಘಟಕ – 3 ಕರುಣೆ **14 ಗಂಟೆಗಳು**

1. ಶಿವಭೂತಿಯ ಕಥೆ – ಪಂಚತಂತ್ರ
2. ಕೊನೆಯ ಗಿರಾಕಿ – ನಿರಂಜನ
3. ಹಿಂಸೆಯ ಸ್ವರೂಪಗಳು ಬಲಿ–ಬಲಿದಾನ – ಮುರಾರಿ ಬಲ್ಲಾಳ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ **14 ಗಂಟೆಗಳು**

4. ಬಾಹುಬಲಿಯ ವೈರಾಗ್ಯ – ಪಂಪ
5. ಚಾಪ್ಲಿನ್ – ಕುಂ. ವೀರಭದ್ರಪ್ಪ
3. ಚಿಗುರೊಡೆಯುತ್ತಿರುವ ಗಿಡದ ತನ್ಮಯತೆ – ಕ್ಷೀರಸಾಗರ

ಪಠ್ಯಪುಸ್ತಕ : ಗಣಕಗಂಗೋತ್ರಿ - **4**

Course Articulation Matrix - 22KAN405

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	2	3	2	3	2	2	2	3
CO 2	3	3	3	2	2	3	3	3	2	2	1	3
CO 3	3	3	3	2	-	3	3	3	2	2	2	3
CO 4	3	3	3	2	1	3	3	3	2	2	1	3
Weighted Average	**3**	**3**	**3**	**2**	**1.66**	**3**	**2.75**	**3**	**2**	**2**	**1.5**	**3**

ಕನ್ನಡ ಮುಕ್ತ ಆಯ್ಕೆ (OE)

ಸೆಮಿಸ್ಟರ್ - 3

Course Code: 22OEKAN301	**Course Title:** ಆಧುನಿಕ ಪೂರ್ವ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಚಯ ಮತ್ತು ಪಠ್ಯ
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 03 (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಾಚೀನತೆಯ ಪರಿಚಯವಾಗುತ್ತದೆ.

CO 2: ಪ್ರಾಚೀನ ಕನ್ನಡ ಕವಿಗಳ ಕಾವ್ಯಗಳನ್ನು ಓದುವನ್ನು ಕಲಿಯುತ್ತಾರೆ.

CO 3: ವಚನ ಸಾಹಿತ್ಯದ ಮಹತ್ವವನ್ನು ತಿಳಿಯುತ್ತಾರೆ.

CO 4: ಭಾಗವತ ಸಾಹಿತ್ಯದ ಮಹತ್ವವನ್ನು ತಿಳಿಯುತ್ತಾರೆ.

ಭಾಗ 1 – ಆಧುನಿಕ ಪೂರ್ವಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಚಯ

ಘಟಕ 1 – ಪೂರ್ವದ ಹಳಗನ್ನಡ : ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ಸ್ವರೂಪ , ಶಾಸನ ಸಾಹಿತ್ಯ, ಕವಿರಾಜಮಾರ್ಗ, ವಡ್ಡಾರಾಧನೆ **08 ಗಂಟೆಗಳು**

ಘಟಕ 2 – ಹಳಗನ್ನಡ : ಪಂಪ, ರನ್ನ, ಜನ್ನ, ನಾಗಚಂದ್ರ, ಆಂಡಯ್ಯ **07 ಗಂಟೆಗಳು**

ಘಟಕ 3 – ನಡುಗನ್ನಡ : ಜೇಡರ ದಾಸಿಮಯ್ಯ, ಬಸವಣ್ಣ, ಅಲ್ಲಮಪ್ರಭು, ಅಕ್ಕಮಹಾದೇವಿ, ಹರಿಹರ. **08 ಗಂಟೆಗಳು**

ಘಟಕ 4 – ಕುಮಾರವ್ಯಾಸ, ಲಕ್ಷ್ಮೀಶ, ರತ್ನಾಕರವರ್ಣಿ **07 ಗಂಟೆಗಳು**

ಭಾಗ 2: ಪಠ್ಯ

1.	ಮೊಸಳೆಯಂ ಕಪಿ ವಂಚಿಸಿದ ಕಥೆ	– ದುರ್ಗಸಿಂಹ	**03 ಗಂಟೆಗಳು**
2	ನಿನ್ನ ಕುಲವಳಿದಲ್ಲದಳಿಯದು	– ರಾಘವಾಂಕ	**03 ಗಂಟೆಗಳು**
3.	ಅ. ಪಾಪಿ ಬಲ್ಲನೆ ಪರರ ಸುಖದುಃಖವ	– ಪುರಂದರದಾಸ	**03 ಗಂಟೆಗಳು**
	ಆ. ಸ್ನಾನವ ಮಾಡಿರೋ ಜ್ಞಾನತೀರ್ಥದಲ್ಲಿ	– ಕನಕದಾಸ	
4	ಗಂಡ ಹೆಂಡರ ಜಗಳ ಗಂಧ ತೀಡಿದ್ಯಾಂಗ	– ಸಂ. ಸೋಮಶೇಖರ ಇಮ್ರಾಪುರ	**03 ಗಂಟೆಗಳು**

ಪರಾಮರ್ಶನ ಗ್ರಂಥಗಳು

1. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ರಂ.ಶ್ರೀ ಮುಗಳಿ
2. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ ಸಂಪುಟಗಳು : ಕನ್ನಡ ಅಧ್ಯಯನ ಸಂಸ್ಥೆ ಪ್ರಕಟಣೆ

3. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಸಮಗ್ರ ಚರಿತ್ರೆ ಸಂಪುಟಗಳು : ಬೆಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ

4. ಸಾಮಾನ್ಯನಿಗೆ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ ಸಂಪುಟಗಳು : ಬೆಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ

5. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ಕೆ. ವೆಂಕಟರಾಮಪ್ಪ

6. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ತ.ಸು.ಶಾಮರಾಯ

Course Articulation Matrix - 22OEKAN301

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	3	3	2	3	3	3	3	3	2
CO 2	3	3	3	2	2	3	3	2	2	2	3	2
CO 3	3	1	1	2	2	1	1	2	1	1	1	2
CO 4	3	2	1	2	1	1	1	2	1	2	1	2
Weighted Average	**3**	**2.25**	**1.75**	**2.25**	**2**	**2**	**2**	**2.25**	**1.75**	**2**	**2**	**2**

ಕನ್ನಡ ಮುಕ್ತ ಆಯ್ಕೆ (OE)

ಸೆಮಿಸ್ಟರ್ - 4

Course Code: 22OEKAN401	**Course Title:** ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಚಯ ಮತ್ತು ಪಠ್ಯ
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 03(Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester End Examination Marks:** 60

Course Outcomes

CO 1: ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯದಲ್ಲಿ ನವೋದಯ ಸಾಹಿತ್ಯದ ವಿಶಿಷ್ಟತೆಯನ್ನು ಅರಿಯುವರು.

CO 2: ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯದಲ್ಲಿ ಪ್ರಗತಿಶೀಲ ಮತ್ತು ನವ್ಯ ಸಾಹಿತ್ಯದ ಪ್ರಭಾವದ ಪರಿಚಯವಾಗುತ್ತದೆ.

CO 3: ಕನ್ನಡ ದಲಿತ ಬಂಡಾಯ ಸಾಹಿತ್ಯದ ಧೋರಣೆಗಳನ್ನು ತಿಳಿದುಕೊಳ್ಳುವರು.

CO 4: ಕನ್ನಡ ಮಹಿಳಾ ಸಾಹಿತ್ಯದ ಮಹತ್ವವನ್ನು ಅರಿಯುತ್ತಾರೆ.

ಭಾಗ 1 : ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಚಯ

ಘಟಕ 1 ಅ. – ನವೋದಯಪೂರ್ವ ಸಾಹಿತ್ಯ : (1870 – 1920) ಮುದ್ದಣ, ಆರಂಭಿಕ ಅನುವಾದ ಸಾಹಿತ್ಯದ ಸಂಕ್ಷಿಪ್ತ ಪರಿಚಯ (ಚುರಮುರಿ ಶೇಷಗಿರಿರಾಯರು, ಬಸಪ್ಪಶಾಸ್ತ್ರಿ, ಬಿ.ವೆಂಕಟಾಚಾರ್ಯ, ಎಂ.ಎಲ್. ಶ್ರೀಕಂಠೇಶಗೌಡ, ಎಸ್.ಜಿ. ನರಸಿಂಹಾಚಾರ್ಯ) ಪಂಜೆ ಮಂಗೇಶರಾವ್, ಗೋವಿಂದ ಪೈ.

D. – ನವೋದಯ ಸಾಹಿತ್ಯ : ಪ್ರೇರಣೆ ಮತ್ತು ಹಿನ್ನೆಲೆ,

ಬಿ.ಎಂ.ಶ್ರೀ., ದ.ರಾ. ಬೇಂದ್ರೆ, ಕುವೆಂಪು, ಮಾಸ್ತಿ ವೆಂಕಟೇಶ ಐಯ್ಯಂಗಾರ್, ಶಿವರಾಮ ಕಾರಂತ, ಟಿ.ಪಿ. ಕೈಲಾಸಂ, ಶ್ರೀರಂಗ.

07 ಗಂಟೆಗಳು

ಘಟಕ 2 – ಪ್ರಗತಿಶೀಲ ಮತ್ತು ನವ್ಯ ಸಾಹಿತ್ಯ : ಪ್ರೇರಣೆ ಮತ್ತು ಹಿನ್ನೆಲೆ **07 ಗಂಟೆಗಳು**

ಪ್ರಗತಿಶೀಲ ಸಾಹಿತ್ಯ : ಅ.ನ. ಕೃಷ್ಣರಾಯ, ಚದುರಂಗ

ನವ್ಯ ಸಾಹಿತ್ಯ : ವಿ.ಕೃ. ಗೋಕಾಕ್, ಗೋಪಾಲ ಕೃಷ್ಣ ಅಡಿಗ, ಯಶವಂತ ಚಿತ್ತಾಲ,

ಯು.ಆರ್. ಅನಂತಮೂರ್ತಿ, ಗಿರೀಶ್ ಕಾರ್ನಾಡ, ಚಂದ್ರಶೇಖರ ಕಂಬಾರ

ಘಟಕ 3 – ದಲಿತ ಮತ್ತು ಬಂಡಾಯ ಸಾಹಿತ್ಯ : ಪ್ರೇರಣೆ ಮತ್ತು ಹಿನ್ನೆಲೆ. **08 ಗಂಟೆಗಳು**

ಸಿದ್ದಲಿಂಗಯ್ಯ, ಬರಗೂರು ರಾಮಚಂದ್ರಪ್ಪ, ದೇವನೂರು ಮಹಾದೇವ.

ಘಟಕ 4 – ಮಹಿಳಾ ಸಾಹಿತ್ಯ : ಪ್ರೇರಣೆ ಮತ್ತು ಹಿನ್ನೆಲೆ **07 ಗಂಟೆಗಳು**

ನಂಜನಗೂಡು ತಿರುಮಲಾಂಬ, ಗೀತಾನಾಗಭೂಷಣ, ವೈದೇಹಿ, ಸಾರಾ ಅಬೂಬಕರ್

ಭಾಗ 2 : ಪಠ್ಯ

1. ಅ. ನೆರಳು – ಪುತಿನ

   ಆ. ಸಂಕಲ್ಪ ಗೀತೆ – ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ **04 ಗಂಟೆಗಳು**

2. ರಂಗವ್ವ, ಭರ್ಮಣ್ಯನ ವಿರಸ : ಕರಿಯನಿಗೆ ಕೆಲಸ

(ಎ. ಲಂಕೇಶ್ ಅವರ 'ಮುಸ್ಸಂಜೆಯಕಥಾ ಪ್ರಸಂಗ'ದಿಂದ ಆಯ್ದ ಭಾಗ) **03 ಗಂಟೆಗಳು**

3. ಹೋಗಿಯೇ ಬಿಟ್ಟಿದ್ದ ! – ಕೊಡಗಿನ ಗೌರಮ್ಮ **03 ಗಂಟೆಗಳು**

4. ಮಾರ್ವೆಲಸ್ ಐಡಿಯಾ – ಕೆ.ಪಿ. ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ **03 ಗಂಟೆಗಳು**

ಪರಾಮರ್ಶನ ಗ್ರಂಥಗಳು

1. ಹೊಸಗನ್ನಡ ಕವಿತೆಯ ಮೇಲೆ ಇಂಗ್ಲಿಷ್ ಕಾವ್ಯದ ಪ್ರಭಾವ : ಎಸ್. ಅನಂತನಾರಾಯಣ
2. ಸಂಕ್ಷಿಪ್ತ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ಎಂ.ಮರಿಯಪ್ಪ ಭಟ್ಟ
3. ಯುಗಧರ್ಮ ಹಾಗೂ ಸಾಹಿತ್ಯ ದರ್ಶನ : ಕೀರ್ತಿನಾಥ ಕುರ್ತಕೋಟಿ
4. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಸಂಗಾತಿ : ಕೀರ್ತಿನಾಥ ಕುರ್ತಕೋಟಿ
5. ಹೊಸಗನ್ನಡದ ಅರುಣೋದಯ : ಶ್ರೀನಿವಾಸ ಹಾವನೂರ
6. ಸಾಲುದೀಪಗಳು : ಕರ್ನಾಟಕ ಸಾಹಿತ್ಯ ಕಾಡಮಿ
7. ಹೊಸಗನ್ನಡದ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ಎಲ್.ಎಸ್.ಶೇಷಗಿರಿರಾವ್
8. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ ಚಾರಿತ್ರಿಕ ಬೆಳವಣಿಗೆ : ಸಿ.ವೀರಣ್ಣ
9. ಮಹಿಳಾ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ : ಹೆಚ್.ಎಸ್.ಶ್ರೀಮತಿ
10. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಮೀಮಾಂಸೆ : ರಹಮತ್ ತರೀಕೆರೆ
11. ವಚನ ಚಿಂತನ ಮಾಲೆ ಸಂಪುಟಗಳು : ಬರಗೂರು ರಾಮಚಂದ್ರಪ್ಪ
12. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಕೋಶ : ರಾಜಪ್ಪ ದಳವಾಯಿ
13. ಕನ್ನಡ ರಾಷ್ಟ್ರೀಯತೆ : ಬಂಜಗೆರೆ ಜಯಪ್ರಕಾಶ
14. ಕರ್ನಾಟಕ ಸಮಗ್ರ ತತ್ವಪದಗಳ ಸಂಪುಟಗಳು : ಪ್ರ. ಸಂ. ಕಾ. ತ. ಚಿಕ್ಕಣ್ಣ

Course Articulation Matrix - 22OEKAN401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	3	2	3	2	3	3	3	2	2	2
CO 2	3	2	3	2	3	3	3	3	2	3	3	2
CO 3	3	2	1	2	1	2	1	2	1	2	1	2
CO 4	3	2	2	2	2	1	2	1	2	1	2	2
Weighted Average	**3**	**2.25**	**2.25**	**2**	**2.25**	**2**	**2.25**	**3**	**2**	**2**	**2**	**2**

ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ ಮತ್ತು ಸೆಮಿಸ್ಟರ್ ಅಂತಿಮ ಪರೀಕ್ಷೆಗೆ ಸೂಚಿಸುವ ಮಾರ್ಗಸೂಚಿಗಳು

ಪ್ರತಿ ಪತ್ರಿಕೆಯ ಒಟ್ಟು ಪಾಠ ಘಟಕಗಳು – 04 ಘಟಕಗಳು

(ಪ್ರಾಥಮಿಕ ಪರಿಚಯ, ಸೈದ್ಧಾಂತಿಕ ವಿವರಣೆ ಸೇರಿದಂತೆ)

ಗಮನಿಸಿ : ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು (ಬರವಣಿಗೆ) : 60 ಅಂಕಗಳು
ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : 40 ಅಂಕಗಳು

ಪ್ರತಿ ಪತ್ರಿಕೆಗೆ ಗರಿಷ್ಠ ಅಂಕಗಳು : 100 ಅಂಕಗಳು

ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ವಿವರಗಳು :

ಎಲ್ಲಾ ಸೆಮಿಸ್ಟರ್‌ಗಳಿಗೆ ಪ್ರತಿ ಪತ್ರಿಕೆಗೆ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನವನ್ನು ಈ ಕೆಳಗಿನಂತೆ ಮಾಡಲಾಗುತ್ತದೆ

¥ÀjÃPÉë	«ªÀgÀ	ಅಂಕಗಳು
C-1	ಪ್ರತಿ ಸೆಮಿಸ್ಟರ್‌ನ ಪೂರ್ವಾರ್ಧದ ಕೊನೆಗೆ 7–8ನೇ ವಾರಗಳಲ್ಲಿ ಕಿರುಪರೀಕ್ಷೆ	20
C-2	ನಿಯೋಜಿತ ಪ್ರಬಂಧ	20
	ಒಟ್ಟು ಅಂಕಗಳು	40
C-3	ಪ್ರತಿ ಸೆಮಿಸ್ಟರ್‌ನ ಅಂತಿಮ ಪರೀಕ್ಷೆ ಸಮಯ 2 1/2 ಗಂಟೆಗಳು 60 ಅಂಕಗಳು	60
	ಒಟ್ಟು ಅಂಕಗಳು	**100**

qÁ

ಹೊಸ ಶಿಕ್ಷಣ ನೀತಿ 2021–22

ಮಾದರಿ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ – ಮೂರನೇ ಮತ್ತು ನಾಲ್ಕನೇ ಸೆಮಿಸ್ಟರ್

(AECC & OE)

ಅವಧಿ : $2\frac{1}{2}$ Hours **ಅಂಕಗಳು : 60**

1. ಒಂದು ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ. 1 x 10 = 10

(ಘಟಕ 1 ರಿಂದ 2 ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ)

2. ಒಂದು ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ. 1 x 10 = 10

(ಘಟಕ 2 ರಿಂದ 2 ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ)

3. ಒಂದು ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ 1 x 10 = 10

(ಘಟಕ 3 ರಿಂದ 2 ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ)

4. ಒಂದು ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ. 1 x 10 = 10

(ಘಟಕ 4 ರಿಂದ 2 ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ)

5. ಎರಡು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ. 2 x 5 = 10

(ಘಟಕ 1, 2, 3, 4 ರಿಂದ ಪದ್ಯ ಅಥವಾ ಪಾಠದಿಂದ ನಾಲ್ಕು ಸಂದರ್ಭ ವಾಕ್ಯಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ)

6. ಒಂದು ವಿಷಯ ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ. 1 x 5 = 5

(ನಾಲ್ಕು ಘಟಕಗಳ ಪಠ್ಯದಲ್ಲಿನ ಒಂದು ವಿಷಯ ಕುರಿತು ವಿದ್ಯಾರ್ಥಿಗಳ ಸ್ವಂತ ಅನುಭವ, ಆಲೋಚನೆ, ಅಭಿಪ್ರಾಯ ಕುರಿತು ಬರೆಯಲು ಎರಡು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ)

7. ಒಂದು ಪದ ಅಥವಾ ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿ. 5 x 1 = 5

(ನಾಲ್ಕು ಘಟಕಗಳಲ್ಲಿ ಭಾಷಾಭ್ಯಾಸಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಐದು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ)

Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF LAW AND CONSTITUTION OF INDIA

UG ☑

PG ☐

NEP Syllabi for III/IV Semester (All Programs)

India and Indian Constitution

2023-24

Motto

Rights and Duties

Vision

Welfare in Different Fields of Life

Mission

- Facilitating Greatest Happiness of Greatest Members.
- Intense Participation.
- Enhance Prestige and Image of the Country.

Program Outcome (PO)Attributes

PO 1: **Domain Knowledge**

PO 2: **Problem Analysis**

PO 3: **DesignandDevelopmentofSolutions**

PO 4: **Investigation & Research**

PO 5: **Use of Modern Techniques/Tools**

PO 6: **Domain and Society**

PO 7: **Environment and Sustainability**

PO 8: **Moral and Ethical Values**

PO 9: **Individual and Team Work**

PO 10: **Communication**

PO 11: **Project Management and Finance**

PO 12: **Life-long Learning**

OBE: Implemented

List of BoS Members

Sl. No.	Category	Member Details
1	Chairperson	Divya S, HoD SBRR Mahajana First Grade College(A), Jayalakshmipuram, Mysuru divyasrijith14@gmail.com 9008926746
2	Nominee by the Vice Chancellor	Dr. Maruthi T R Assistant Professor Dept of studies and research in law,Manasagangothri, Mysuru mmaruthi_smg@yahoo.co.in 9986191962
3	Two Experts from Other University/ Institutions	Dr. Janhavi S S Assistant Professor &Special Officer to PhD Exam Section DoS& Research in Political Science, Karnataka State Open University, Mysuru. janhaviksou@gmail.com 9449806664
4		Vani C, Assistant Professor, Sarada Vilas Law College, Krishnamurthypuram, Mysuru vaniashith23@gmail.com 9900295889

Course Structure(NEP)

ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)

II Year(All Programs)

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
Constitution of India – III/IVSem									
AECC	India and Indian Constitution **22COIS23**	3	0	3:0:0 (3 Credits)	20	20	60	$2\frac{1}{2}$ Hour	100

AECCSyllabus for All Programs

Semester III/IV

Course Code:22COIS23	**Course Title:**AECC -**India and IndianConstitution**
Course Credits (L:T:P):03 (3:0:0)	**Hours of Teaching/Week:** 3Hours
Total Contact Hours:45 Hours	**Formative Assessment Marks:**40
Exam Duration:$2\frac{1}{2}$Hour	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Acquire knowledge on Indian Constitution, Preamble and Salient features of Indian Constitution and Fundamental Duties & Rights of an Indian Citizen. Also, inculcate the habit of practicing the same.

CO 2: Identify the Powers and Functions of Union Government (Indian), State Government(Indian) and its members.

CO 3: Analyze and implement roles and responsibility of the Indian Judiciary System and the Indian Election Commission.

Unit	ContentsofCourse:	45 Hours
Unit-I	BackgroundtothestudyofIndianConstitution** Chapter1:Philosophicaland PoliticalfoundationsofIndia:DharmaandDanda,Buddhist,liberal(RajaRammohunRoy)andSubaltern(RanajitGuha)*ColonialimpactonIndiansociety,**Nationalistperspective(SwamyVivekanandaandSriAurobindo). Chapter2:PoliticalvaluesandIdealsduringfreedomstruggle: NonViolence,Tolerance,SatyagrahaandSwadeshi(Gandhi),Swarajya(Tilak),IntegralHumanism(DeenDayalUpadhyay)andVolunt arism(VinobaBhave). Chapter3:PoliticalContributionofRegionalfreedomstruggle:KitturRaniChennamma,HardekarManjappa,MadikeriPeasants,	6Hours 5Hours

Unit-II	**ConstitutionalDevelopment anditsPhilosophy** Chapter-4: HistoricalbackgroundofConstitutionaldevelopmentinIndia-Developmentsbetween1857to1952(onlyActsduringthisperiodmustbetaught),CompositionanddebatesofConstituentAssembly(in brief), working ofcommittees. Chapter5:PhilosophyandfeaturesofIndianConstitution-Preamble*,Salientfeatures**,Constitutionalism,DrB.R.AmbedkarandNehru'scontributionin themakingofthe Constitution. Chapter-6:WorkingoftheConstitution-FundamentalRights,Union-StateandInter-State Relations (Art 263 Int	5Hours 5Hours
Unit-III	**ConstitutionalInstitutionsandCitizen'srole** Chapter7:ParliamentaryandConstitutionalInstitutions:Legislature*(UpperandLowerhouse),Executive(compositionandpowers),Judiciary(HighCourtandSupremeCourt,itscompositionandjurisdiction),ComptrollerandAuditorGeneral,Inter-StateCouncil,ElectionCommission. Chapter8:RoleandResponsibilitiesofCitizensunderIndianConstitution:ConceptofCitizenship,CitizenshipAmendmentAct,FundamentalDuties,RighttoInformationAct,CivilSociety.* Chapter9:GoalsandPoliciesofNationalDevelopmentenshrinedintheConstitution:Concept ofNationalDevelopment,UnityandIntegrityofthenation,GoalsofEducationalPolicies*	6Hours

(**Note-
Thisisacompulsory,foundationalandvalueadditionalcoursetobetaughttostudentsatthegraduatelevelunderNEP2020.Thepaperisexpectedtoimpartthestructureandfunctionalaspectsofconstitutionwhilegivingthemthebackgroundofadiversecountrylike Indiaandthenuancesofitssocialfabricandthewhyofsuchanelaborateconstitution.Theintroductorychapterthereforeisdesignedtofamiliarisestudentsabouttheircountryandculture beforetheyunderstandtheirconstitution).

(Pleasenote:Thequestionpaperpatternisindicativeofthewayateacherneedstoteachthispaper.Thepedagogicalchoiceofateacherhelpstomakeanimpactofhis/herteachingonthestudent.Activitybasedandexperientialteachingmethodshelpstudentcentriclearningprocess-thesearetipstomakethispapermoremeaningful-theultimatechoiceislefttotheteacher)

Exercise:

* DepartmentcandebateontheroleofConstitutioninthedevelopmentofIndia.

* Studentscanempiricallyevidencetheeffectivenessofconceptslike–Freedom,Equality,Justice,RightsandDutiesbyconductingempiricalstudies.

* Caninviteexpertstodeliverspeciallecturesonvariousprovisionsandamendmentsofthe Constitutionlikethefunctioningof ElectionCommission,Article246,356etc.

ImportantNotes:

Chapter1

*Theseareintroductorycourses.Teachersshouldgiveabriefintroductiontotheseforabetterunderstandingofthephilosophicalandpoliticalfoundationsof Indiansocietytakingsuggestedthinkersasexamples(Max2hrs).

Chapter2

**Hereteachersshould brieflyteachaboutthe contributionsandimpactofBritishandArabsasinvaders,Mughalsassettlers(Max2hrs).

Chapter3

*Thesearetobetaughtbrieflyasconceptsagainstthebackdropoffreedomstruggle

Chapter4

*BOScanalterthischaptertobringin thepersonalitiesandmovementsintheirregionwhohavemadean impactonfreedomstruggle.

Chapter5

*Whileteachingthepreamblepleasecoversecularismanditscriticismkeepinginmindtheneutrality ofstateinmattersofreligionandbringinthediscussionregardingthedifferencesintheusageofthetermslikeReligion, Dharma,Pantha(ಪಂಥ),Matha(ಮತ),Caste,Jatyathithateandthemeaningofscientificsecularismas expoundedbyNehru.

**Inthesalientfeaturestheteachersmustteachatleast10featuresoftheconstitutionlikeWrittenconstitution,Parliamentaryformofgovernment,Quasifederalism,DirectivePrinciplesofStatePolicy, Amendmentprocedure,Universaladultfranchise,Integratedcitizenship,Independentjudiciary,Judicial Review,EmergencyprovisionsandThreetiersystemofgovernanceetc.TheBOShasthediscretioninselectingthesalientfeatures.

Chapter6

*Inthecommitteestheyshouldteachthenatureofthesecommittees,theirtypes,categoriesandsubcategories.

**Inthistheteachershouldteachtheamendmentslike42nd,73rd,74th,101st,etcwhichhavemajorimpactontheworkingoftheConstitution.TheBOShas thediscretionin selectingtheamendmentsbutmustensurethat theyhaveaearringontheworkingoftheconstitution.

Chapter7

*Here teachers are expected to teach the institutions in general and contextualisethem to state and centralgovernments.

Chapter8

*Inthistheteachershoulddiscussissueslikepayingtaxes,exercisingvote,discouragingcorruption,Knowledgeoflawsthatgovernthem.

Chapter9

*TeacherscantouchuponKothariCommission,NEP(1986and2020whileteachingEducationalPolicies)

**Teacherscantouchupontheteachertaughtrelations(vedantictradition),teacherasarolemodel,studentasfuturecitizen,theneedforethicalandmoralresponsibilityamongthemetc.,

SuggestedReadings:

1. AiyangarK.R.1941.“AncientIndianPolity”.OrientalBokksAgency.Poona.

2. AltekarA.S.1949.“StateandGovernmentinAncientIndia”.MotilalBanarsidassChowk,Banaras

3. AndreBeteille,1965.Caste,class,andPower.Berkley:UniversityofCaliforniaPress.

4. Arora&Mukherji,Federalismin India,Origin and Developments,VikasPublishingHouse,NewDelhi,1992

5. BhandarkarD.D.1940.“SomeAspectsofAncientIndianculture”.UniversityofMadras.

6. ChandraBipan.1979.“NationalismandColonialisminIndia”.Orient, Lang.

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8. D.C.Gupta,IndianGovernmentandPolitics,VikaspublishingHouse,NewDelhi,1975.

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10.DurgaDasBasu,IntroductiontotheConstitutionofIndia,Gurgaon;LexisNexis,2018(23rdedn.)

11.Gandhi,M.K."HindSwaraj",http://www.mkgandhi.org/ebks/hind_swaraj.pdf

12.GoshalU.N.1923.“HistoryofHinduPoliticalTheory”.OxfordUniversityPress,Culcutta.

13.GranvilleAustin,2000.TheIndianConstitution:CornerstoneofaNation.Melbourne:OxfordUniversityPress.

14.HansonandDouglas,1972.India`sDemocracy.NewYorkcity:WWNorton&CoInc.

15.HarishRamaswamyandS.S.Patagundi(Ed.)2007. Karnataka-GovernmentandPolitics.Delhi:ConceptPublishingCompany.

16.J.N.Pandey,TheConstitutionalLawofIndia,Allahabad;CentralLawAgency,2018(55thedn.)

17.JayaswalK.P.1943. “Hindu Polity”. Bangalore Printingand Publishing Co. LTD,Bengalore.

18.JohariJC1974.IndianGovernmentandPolitics.NewDelhi:VishalPublications.

19.K B Merunandan, Bharatada Samvidhana Ondu Parichaya, Bangalore, MeraguPublications,2015.

20.K.Sharma,IntroductiontotheConstitutionofIndia,PrenticeHallofIndia,NewDelhi,2002.

21.Kapoor,Kapil(Ed),2005,IndianKnowledgeSystem-Vol-1,NewDelhi:D>KPrintworld LTD.

22.Kapoor,Kapil,1994,TextsoftheOralTradition,Language,LinguisticsandLiterature: TheIndianPerspective.Delhi:AcademicFoundation.

23.KosambiD.D.1965.“TheCultureandCivilizationofAncientIndiaand HistoricalOutline”.VikasPublishingHousepvt.ltd,Noida.

24.KrishanaRao,M.&G.S.Halappa.1962.HistoryofFreedomMovementinKarnataka.Mysore:GovernmentofMysore.

25. M.V.Pylee,India’sConstitution,NewDelhi;S.ChandPub.,2017(16thedn.)

26.Nagel,Stuart,2017,India’sDevelopmentandPublicPolicy.UK:Routledge.

27.P.MBakshi,ConstitutionofIndia,UniversalLawPublishingHouse,NewDelhi,1999.

28.Patham and Thomas Patham. 1986. “Political Thought in Modern India.” SagePublications,UnitedState.

29.RajniKothari,1995.CasteinIndianPolitics.Telangana:OrientBlackswan.

30.RghavendraRao, K. 2000. Imagining UnimaginableCommunities. Hampi:Prasranga,KannadaUniversity.

31.Bhargava,Rajeev.ed.1998.SecularismandItsCritics,NewDelhi:OxfordUniversityPress.

32.S.N.Jha,IndianPoliticalSystem,:HistoricalDevelopments,GangaKaveriPublishingHouse,Varanasi,2005

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34.Sharma, R.S. 1991. "Early Indian Social andPoliticalThought and Institutions (Aspects ofthePoliticalIdeasandInstitutionsinAncientIndia".MotilalBanarsidass, Delhi.

35. ಎಂ. ಎಸ್. ಚೈತ್ರ (ಸಮ) 2022, 'ಪರಮಪರಾಗತಭ್ಯುದಯದರ್ಶನ: ಧರ್ಮಪಾಲ್‌ದೃಷ್ಟಿ 'ರಾಷ್ಟ್ರೋತ್ಥಾನ ಸಾಹಿತ್ಯ', ಬೆಂಗಳೂರು.

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38. ಧರ್ಮಪಾಲ್, 2003, 'ಸ್ವದೇಶಿ ಮತ್ತು ಭಾರತೀಯತೆ', (ಅನು) ಚಕ್ರವರ್ತಿ, ಬೆಂಗಳೂರು: ಸ್ವರಾಜಪ್ರಕಾಶನ ಸಮೂಹ.

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40. ಬಾಲಗಂಗಾಧರ, ಎಸ್‌ಎನ್., 2010 ಪೂರ್ವಾವಲೋಕನ (ಸಂ). ಜೆಎಸ್ ಸದಾನಂದ ಮತ್ತುರಾಜಾರಾಮ ಹೆಗ್ಡೆ. ಬೆಂಗಳೂರು: ಅಭಿನವ ಪ್ರಕಾಶನ

41. ಬಾವೆ, ವಿನೋಬಾ, 1954. ಸ್ವರಾಜ್ಯಶಾಸ್ತ್ರ, ಬೆಂಗಳೂರು: ಬೆಂಗಳೂರು ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ

42. ಬಾವೆ, ವಿನೋಬಾ, 1958, ಭೂದಾನಗಂಗೆ, ಬೆಂಗಳೂರು: ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ.

43. ಬಾವೆ, ವಿನೋಬಾ, 1974, ಸ್ವರಾಜ್ಯಶಾಸ್ತ್ರ, ಬೆಂಗಳೂರು: ಬೆಂಗಳೂರು ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ

44. ಬಾವೆ, ಶಿವಾಜಿ, 1954, ಶ್ರಮದಾನ, ಬೆಂಗಳೂರು; ಸರ್ವಸೇವಾ ಸಂಘ ಪ್ರಕಾಶನ.

45. ರಾಜಾರಾಮ ಹೆಗ್ಡೆ. ಮತ್ತು ಸದಾನಂದಜೆಎಸ್ (ಸಂ) 2016 'ಪೂರ್ವಾವಲೋಕನ', ವಸಂತ ಪ್ರಕಾಶನ, ಬೆಂಗಳೂರು

ರಾಜಾರಾಮ ಹೆಗ್ಡೆ (ಸಂ) 2004, 'ಭಾರತೀಯಇತಿಹಾಸ, ಸಮಾಜ ಮತ್ತು ಸಂಸ್ಕೃತಿ', ಬೆಂಗಳೂರು; ಕರ್ನಾಟಕ ಸಾಹಿತ್ಯಅಕಾಡೆಮಿ

46. ರಾಮಚಂದ್ರನ್ ಸಿ ಎನ್, 2002, 'ವಸಾಹತೋತ್ತರಚಿಂತನೆ', ಬೆಂಗಳೂರು: ಕರ್ನಾಟಕ ಸಾಹಿತ್ಯಅಕಾಡೆಮಿ.

47. ಶಂಕರನಾರಾಯರಾವ್‌ಎನ್ ಪಿ (ಸಂ) 2020, 'ದೀನದಯಾಳ ಉಪದ್ಯಾಯ: ಏಕಾತ್ಮಮಾನವತೆ' 'ರಾಷ್ಟ್ರೋತ್ಥಾನ ಸಾಹಿತ್ಯ', ಬೆಂಗಳೂರು.

48. ಹೆಗಡೆ, ರಾಜಾರಾಮ, 2021, ಪಶ್ಚಿಮಾಯನ: ವಸಾಹತು ಹಿಸ್ಟರಿ ಮತ್ತುಕನ್ನಡಜಗತ್ತು, ಬೆಂಗಳೂರು: ಅಭಿನವ

ಪ್ರಕಾಶನ.

49. Weblinks:

https://www.india.gov.in/sites/upload_files/npi/files/coi_part_full.pdf.

Course Articulation Matrix – 22COIS23

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	3	3	2	3	3	3	3	1
CO 2	2	3	1	3	3	2	3	3	3	2	2	3
CO 3	3	1	1	3	3	2	2	3	3	1	3	3
Weighted Average	**2.33**	**2**	**1**	**2.33**	**3**	**2.33**	**2.33**	**3**	**3**	**2**	**2.66**	**2.33**

Pedagogy

Thecourseshallbetaughtthrough Lectures, Tutorials, demonstrations, discussions on court judgments, Self-guided Learning Materials, Open Educational Recourses (OER) as reference materials. Fieldwork Exercises to understand the concepts in practice, Assignments, Seminars, Group Discussions, open house debates and Week-end Counseling could also help in better and informed learning in these classes.

EVALUATION/ASSESSMENT PATTERN (AECC)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively.

	THEORY
Total Marks	100 Marks
Continuous Assessment – 1 (C1)	20 Marks
Continuous Assessment – 2 (C2)	20 Marks
Semester End Examination (C3)	60 Marks

FormativeAssessment	
AssessmentOccasion/type	WeightageinMarks
AssessmentTest-1	10
Seminar/Presentation/GroupDiscussion	10
AssessmentTest-2	10
Assignment	10
Total	40

I.TermEndExaminationforIndiaandIndianConstitution(IIC)

Paperwillbeformaximumof60marks.Theminimummarkstopasstheexaminationis40%(24 marks).

Note:DurationofExaminationforIndiaandIndianConstitution(IIC)is **2hours.**

QuestionpaperpatternforIndiaandIndianConstitution–

SectionA:MultipleChoiceQuestionsSection B:ShortAnswerQuestionsSectionC:Medium

AnswerQuestionsSectionD:LongAnswerQuestions

SectionA:MultipleChoiceQuestions

AllQuestionsareCompulsory

(10x1=10)

1) a.
b.
c.
d.
e.
f.
g.
h.
i.
j.

Section B:ShortAnswerQuestions (5x5=25)

AnsweranyFivequestions.Answerthefollowingquestionsinnotmorethan3-5sentence.

2)
3)
4)
5)
6)
7)
8)

.SectionC:MediumAnswerQuestions (1x10=10)

AnsweranyOne question. Answerthe followingquestioninnotmore than500words

9)

10)

SectionD:LongAnswerQuestions (1x15=15)

AnsweranyOne question. Answerthe followingquestioninnotmore than800words

11)

12)

APPROVED BY THE FOLLOWING BoS MEMBERS

Mahajana Education Society (R)
Education to Excel

SBRR Mahajana First Grade College (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
Affiliated to University of Mysore,
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

UG Board of Studies

Approved by The University of Mysore, Governing Council & Academic Council for the Academic Session: 2022-2023

Department of Law and Constitution of India

SL.NO	NAME AND ADDRESS	DESIGNATION	SIGNATURE
1.	Divya S, HoD Department of Law & Constitution of India SBRR Mahajana First Grade College, Jayalakshmipuram, Mysuru divyasrijith14@gmail.com 9008926746	Chairman	
2.	Dr. Maruthi T R ~~Assistant~~ Professor Vice Chancellor Nominee Dept of studies and research in law, Manasagangothri, Mysuru mmaruthi_smg@yahoo.co.in 9986191962, 6366189651	Member	
3.	Dr. Janhavi S S Assistant Professor &Spl. Officer to PhD Exam Section DoS& Research in Political Science Karnataka State Open University Mysuru. janhaviksou@gmail.com 9449806664	Member	
4.	Vani C, Assistant Professor Sarada Vilas Law College Krishnamurthypuram Mysuru vaniashith23@gmail.com Mob: 9900295889	Member	

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Education to Excel

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Jayalakshmipuram, Mysuru – 570 012
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College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF MATHEMATICS

UG ☑

PG ☐

NEP Syllabi for I and II Semester B.Sc. MATHEMATICS

2021-22

DEPARTMENT OF MATHEMATICS

Motto

Accuracy and Perfection

Vision

To Create a Mindset to apply Analytical Skills

Mission

Empower with Logic Enhance with Skills

Program Outcomes (POs) for Bachelor of Science

PO 1 **: Domain Knowledge -** Acquire and apply knowledge of science in relevant areas.

PO 2 **: Problem Analysis –** Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3 **: Design and Development of Solutions –** Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4 **: Investigation & Research** – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5 **: Use of Modern Techniques/Tools** – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6 **: Impact of Science on Society** – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7 **: Environment and Sustainability** – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8 **: Moral and Ethical Values** – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9 **: Individual and Team Work with Time Management** – Work productively in a team or as an individual while exhibiting time management skills.

PO 10 **: Communication** – Develop the caliber to convey various concepts of science effectively.

PO 11 **: Project Management and Finance** – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12 **: Life-long Learning** – Engage in the art of self-directed learning.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Dr. Sumathi M P Assistant Professor & HoD	Department of Mathematics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	sumathimp.fgc@mahajana.edu.in 9880810618
2	Member	Sri. Niranjan L Assistant Professor	Department of Mathematics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	niranjankavi.np@gmail.com 9108257072
3	Two Experts from Other University	Dr M C Mahesh Kumar Associate Professor	Department of Mathematics GFGC, KR Puram, Bangalore-36	Softmahe15@gmail.com 9844753730
4		Kemparaju R Assistant Professor	Department of Mathematics Government college for women, Chintamani-563125	kemps007@gmail.com 9844335388
5	Nominee by the Vice Chancellor	Dr.D D Somashekara Professor	DoS in Mathematics Manasagangotri, University of Mysore, Mysuru – 570006	somashekara@maths.uni-mysore.ac.in 9480057505
6	Alumnus	Harshavardhana C N Assistant Professor	Department of Mathematics Govt First Grade college for Women, Holenarasipura	cnhmaths@gmail.com 8971876885

Course Structure(NEP)

Discipline Specific Courses (DSC) and Open Elective (OE)

I Year

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
MATHEMATICS – I Sem									
DSC(1)	Algebra - I & Calculus – I **212139**	**4**	**0**	**4:0:2** **(6credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
DSC(1)-Lab	Theory based Practical's on Algebra - I and Calculus – I **212139**	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(1)	Optional Mathematics – I **21OEMAT101**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**
	Business Mathematics – I **21OEMAT102**								
	Mathematical Aptitude- I **21OEMAT103**								
	(Any one OE course to be opted)								

MATHEMATICS – II Sem									
DSC(2)	Algebra – II (Number Theory) and Calculus – II **212239**	**4**	**0**	**4:0:2** **(6 credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
DSC(2) Lab	Theory based Practical's on Algebra – II (Number Theory) and Calculus – II **212239**	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(2)	Optional Mathematics – II **21OEMAT201** Business Mathematics – II **21OEMAT202** Mathematical Aptitude- II **21OEMAT203** **(Any one OE course to be opted)**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**

DSC(1) Syllabus for B.Sc. Mathematics (Basic and Honors)

Semester I

Course Code: 212139	**Course Title:** DSC(1) : Algebra - I & Calculus - I DSC(1) Lab :Theory based Practical's on Algebra - I and Calculus – I
Course Credits:06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 : Design solutions and implement the elementary operation for matrices and system of linear equations.

CO2 : Examine and develop solution for polynomial equations using various methods.

CO 3 : Evaluation of Polar co-ordinates applying methods of differential calculus.

CO4 : Implementation of various technique of integration and differentiation for functions with real variables and to evaluate Reduction formulae.

Course Content

Content	Hours
UNIT – 1	
Matrix: Recapitulation of Symmetric and Skew Symmetric matrices, Algebra of Matrices; Row and column reduction to Echelon form. Rank of a matrix; Inverse of a matrix by elementary operations; Solution of system of linear equations; Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations. Cayley- Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof).	**14**
UNIT – 2	

Theory of equations : Euclid's algorithm, Polynomials with integral coefficients, Remainder theorem, Factor theorem, Fundamental theorem of algebra(statement only), Irrational and complex roots occurring in conjugate pairs, Relation between roots and coefficients of a polynomial equation, Symmetric functions, Transformation, Reciprocal equations, Descartes' rule of signs, Multiple roots, Solving cubic equations by Cardon's method, Solving quartic equations by Descarte's Method.	**14**
UNIT – 3	
Polar Co-ordinates : Polar coordinates, angle between the radius vector and tangent. Angle of intersection of two curves (polar forms), length of perpendicular from pole to the tangent, pedal equations. Derivative of an arc in Cartesian, parametric and polar forms, curvature of plane curve-radius of curvature formula in Cartesian, parametric and polar and pedal forms- center of curvature, circle of curvature.	**14**
UNIT – 4	
Successive Differentiation and Integral Calculus-I : nth Derivatives of Standard functions e^{ax+b} , a^x, $(ax+b)^n$, $\sin(ax+b)$, $\cos(ax+b)$, $\log(ax+b)$, $e^{ax}\sin(bx+c)$, $e^{ax}\cos(bx+c)$, Leibnitz theorem and its applications. Recapitulation of definite integrals and its properties. Reduction formulae for $\int \sin^n x\,dx$, $\int \cos^n x\,dx$, $\int \sin^n x \cos^m x\,dx$, $\int \tan^n x\,dx$, $\int \cot^n x\,dx$, $\int \sec^n x\,dx$, $\int \operatorname{cosec}^n x\,dx$, $\int x^n \sin x\,dx$, , $\int x^n \cos x\,dx$, , $\int x^n e^{ax}\,dx$ with definite limits	**14**

Books for References:

1. University Algebra - N.S. Gopala Krishnan, New Age International (P) Limited.
2. Algebra – Natarajan, Manicavasagam Pillay and Ganapathy.
3. Theory of Matrices - B S Vatsa, New Age International Publishers.
4. Matrices - A R Vasista, Krishna Prakashana Mandir.
5. Differential Calculus - Shanti Narayan, S. Chand & Company, New Delhi.
6. Applications of Calculus, Debasish Sengupta, Books and Allied (P) Ltd., 2019.
7. Calculus – Lipman Bers, Holt, Rinehart & Winston.
8. Calculus - S Narayanan & T. K. Manicavachogam Pillay, S. Viswanathan Pvt. Ltd.,vol. I & II.
9. Schaum's Outline of Calculus - Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc. Graw.
10. Shanthinarayan – Integral Calculus, New Delhi: S. Chand and Co. Pvt. Ltd.
11. Shanthinarayan and P K Mittal, Integral Calculus, Reprint. New Delhi: S.Chand and Co. Pvt. Ltd., 2013.

Mathematics Web links:

1. http://scienceworld.wolfram.com/biography/topics/Mathematicians.html
2. http://teachers.sduhsd.k12.ca.us/abrown/index2.html
3. http://www.maths.tcd.ie/pub/HistMath/People/RBallHist.html
4. http://www.geometry.net/math.html
5. http://www-history.mcs.st-andrews.ac.uk/history/Indexes/Full_Alph.html
6. http://mathforum.org
7. http://www.cut-the-knot.org
8. http://nrich.maths.org
9. http://archives.math.utk.edu/
10. http://www-groups.dcs.st-and.ac.uk/~history/
11. http://www.maa.org/
12. http://e-math.ams.org/
13. Website on Books in Mathematics

Practical/Lab Work to be performed in Mathematics Lab (FOSS) Suggested Software's:

Maxima/Scilab /Python/R.

Introduction to the software and commands related to the topic.

1. Getting Started.
2. Sets and Functions.
3. Algebra-Polynomials.
4. Algebra-Rational functions and other expressions.
5. Algebra-Matrices and Determinants.
6. Polar Coordinates.
7. Successive Differentiation.
8. Integral Calculus- Reduction Formulae.
9. Plotting 2D.
10. Plotting 3D.

Course Articulation Matrix - 212139

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	1	2	2	1	-	1	1	-	1
CO 2	3	3	2	1	1	1	-	1	-	1	-	1
CO 3	2	2	-	1	3	2	1	1	1	1	1	1
CO 4	3	3	2	2	2	3	1	1	2	2	2	2
Weighted Average	**2.75**	**2.75**	**2**	**1.25**	**2**	**2**	**1**	**1**	**1.33**	**1.25**	**1.5**	**1.25**

OE(1) Mathematics Syllabus for All Programs (Except Science)

Semester I

Course Code: 21OEMAT101	**Course Title:** OE(1) Optional Mathematics – I
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Design solutions and implement the elementary operations for matrices and system of linear equations.

CO 2: Examine and develop solution for polynomial equations using various methods.

CO 3: Evaluation of Polar co-ordinates applying methods of differential calculus.

Course Content

UNIT – 1	**Matrices**	**14 HOURS**
Recapitulation of Symmetric and Skew Symmetric matrices, Algebra of Matrices; Row and column reduction, Echelon form. Rank of a matrix; Inverse of a matrix by elementary operations; Solution of system of linear equations; Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations. Cayley- Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof).		
UNIT – 2	**Theory of equations**	**14 HOURS**
Euclid's algorithm, Polynomials with integral coefficients, Remainder theorem, Factor theorem, Fundamental theorem of algebra(statement only), Irrational and complex roots occurring in conjugate pairs, Relation between roots and coefficients of a polynomial equation, Symmetric functions, Transformation, Reciprocal equations, Descartes' rule of signs, Multiple roots, Solving cubic equations by Cardon's method, Solving quartic equations by Descarte's Method.		
UNIT – 3	**Polar Co-ordinates**	**14 HOURS**
Polar coordinates, angle between the radius vector and tangent. Angle of intersection of two curves (polar forms), length of perpendicular from pole to the tangent, pedal equations. Derivative of an arc in Cartesian, parametric and polar forms, curvature of plane curve-radius of curvature formula in Cartesian, parametric and polar and pedal forms- center of curvature, circle of curvature.		

Books for References:

1. University Algebra - N.S. Gopala Krishnan, New Age International (P) Limited.
2. Algebra – Natarajan, Manicavasagam Pillay and Ganapathy.
3. Theory of Matrices - B S Vatsa, New Age International Publishers.
4. Matrices - A R Vasista, Krishna Prakashana Mandir.
5. Differential Calculus - Shanti Narayan, S. Chand & Company, New Delhi.
6. Applications of Calculus, Debasish Sengupta, Books and Allied (P) Ltd., 2019.

7. Calculus – Lipman Bers, Holt, Rinehart & Winston.
8. Calculus - S Narayanan & T. K. Manicavachogam Pillay, S Viswanathan Pvt. Ltd.,vol. I & II.

Course Articulation Matrix – 21OEMAT101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	2	1	2	2	1	-	1	1	-	1
CO 2	3	3	2	1	1	1	-	1	-	1	-	1
CO 3	2	2	1	1	3	2	1	1	1	1	1	1
Weighted Average	**2.67**	**2.67**	**1.67**	**1**	**2**	**1.67**	**1**	**1**	**1**	**1**	**1**	**1**

OE(1) Mathematics Syllabus for All Programs (Except Science)

Semester I

Course Code: 21OEMAT102	**Course Title:** OE(1) Business Mathematics – I
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours:42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Illustration of Set theory, Relations, functions, indices, logarithms, permutation and combination and their applications.

CO 2: Classify and design solutions for matrices and system of linear equations applying elementary operations.

CO 3: Analyze and apply the knowledge of limits, continuity and differentiability in solving problems. Construct extremum values function of higher order derivatives using partial and total derivatives.

Course Content

UNIT – 1	**Algebra**	**14 HOURS**
Set theory and simple applications of Venn Diagram, relations, functions, indices, logarithms, permutations and combinations. Examples on commercial mathematics.		
UNIT – 2	**Matrices**	**14 HOURS**
Definition of a matrix; types of matrices; algebra of matrices. Properties of determinants; calculations of values of determinants up to third order; Adjoint of a matrix, elementary row and column operations; solution of a system of linear equations having unique solution and involving not more than three variables. Examples on commercial mathematics.		
UNIT – 3	**Differential Calculus**	**14 HOURS**
Constant and variables, functions, Limits & continuity. Differentiability and Differentiation, partial differentiation, rates as a measure, maxima, minima, Partial Derivatives up to second order; Homogeneity of functions and Euler's Theorem; Total Differentials; Differentiation of implicit function with the help of total differentials, Maxima and Minima; cases of one variable involving second or higher order derivatives; Cases of two variables involving not more than one constraint.		

Books for References:

1. Basic Mathematics, Allel R.G.A, Macmillan, New Delhi.

2 Mathematics for Economics, Dowling, E.T. , Schaum's Series, McGraw Hill, London.

3 Quantitative Techniques in Management, Vohra, N.D., Tata McGraw Hill, New Delhi.

4 Business Mathematics, Soni R.S., Pitamber Publishing House, Delhi.

Course Articulation Matrix – 21OEMAT102

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	1	-	1	2	1	1	1	1	1	1
CO 2	3	2	1	1	1	2	1	-	1	1	-	1
CO 3	3	3	2	2	1	2	1	1	1	1	1	1
Weighted Average	**3**	**2.67**	**1.33**	**1.5**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**

OE(1) Mathematics Syllabus for All Programs (Except Science)

Semester I

Course Code: 21OEMAT103	**Course Title:** **O**E(1) Mathematical Aptitude - I
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Evaluate problems on Number system, Series, divisibility, LCM, HCF, Fraction.

CO 2: Strategies to solve problems on Trains, Boats and Streams with Speed and Accuracy.

CO 3: Analyze and Evaluate problems on Time, Work and Wages, Pipes and Cistern, Problems on Clock and Calendar.

Course Content

UNIT – 1 **14 HOURS**
Number System, Types of Numbers, series (AP and GP), Algebraic operations BODMAS, Divisibility, LCM and HCF, Fraction, Simplification.
UNIT – 2 **14 HOURS**
Time and Distance, Problems based on Trains, Boats and Streams.
UNIT – 3 **14 HOURS**
Time, work and wages, Pipes and Cistern, Problems on Clock, Problems on Calendar.

Books for References:

1. R.S. Aggarwal, "Quantitative Aptitude for Competitive Examinations", Revised Edition, S. Chand and Co. Ltd, New Delhi, 2018.
2. Quantitative Aptitude and Reasoning by R V Praveen, PHI publishers.
3. Quantitative Aptitude : Numerical Ability (Fully Solved) Objective Questions, Kiran Prakashan, Pratogitaprakasan, Kic X, Kiran Prakasan publishers.
4. Quantitative Aptitude for Competitive Examination by Abhijit Guha, Tata Mc Graw hill publications.

Course Articulation Matrix – 21OEMAT103

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	3	1	2	1	3	1	1	-	-	1	3
CO 2	2	3	1	2	1	3	1	1	1	1	1	3
CO 3	2	3	1	2	1	3	1	1	1	1	1	3
Weighted Average	**2**	**3**	**1**	**2**	**1**	**3**	**1**	**1**	**1**	**1**	**1**	**3**

DSC(2) Syllabus for B.Sc. Mathematics (Basic and Honors)

Semester II

Course Code:212239	**Course Title:** DSC(2): Algebra – II (Number Theory) and Calculus - II DSC(2) Lab : Theory based Practical's on Algebra – II (Number Theory) and Calculus – II
Course Credits:06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 : Acquiring the basic knowledge of divisibility, congruency, GCD, Prime and prime factorization, applying the concept of Euler function, Fermat's and Wilson's Theorem, Evaluating the product of r consecutive integers is divisible.

CO2 : Applying the skills of fundamental theorems in solving problems.

CO3 : Construct extreme values of function of the variables using partial derivatives and total derivatives.

CO4 : Classification of line and multiple integrals in solving problems. Evaluation of surface Area and Volume of conic sections using multiple integrals.

Course Content

Content	Hours
UNIT – 1	
Number Theory : Division Algorithm, Divisibility, Prime and composite numbers, Euclidean algorithm, Fundamental theorem of Arithmetic, The greatest common divisor and least common multiple. Congruences, Linear congruences, Simultaneous congruences, Euler's Phi-function, Wilson's, Euler's and Fermat's Theorems and their applications.	**14**
UNIT – 2	

Differential Calculus-I : Limits, Continuity, Differentiability and properties. Properties of continuous functions. Intermediate value theorem, Rolle's Theorem, Lagrange's Mean Value theorem, Cauchy's Mean value theorem and examples. Taylor's theorem, Maclaurin's series, Indeterminate forms and evaluation of limits using L'Hospital rule.	**14**
UNIT – 3	
Partial Derivatives : Functions of two or more variables-explicit and implicit functions, partial derivatives. Homogeneous functions- Euler's theorem and extension of Euler's theorem, total derivatives, differentiation of implicit and composite functions, Jacobians and standard properties and illustrative examples. Taylor's and Maclaurin's series for functions of two variables, Maxima-Minima of functions of two variables.	**14**
UNIT – 4	
Integral Calculus-II : *Line integral*: Definition of line integral and basic properties, examples on evaluation of line integrals. *Double integral*: Definition of Double integrals and its conversion to iterated integrals. Evaluation of double integrals by changing the order of integration and change of variables. Computation of plane surface areas using double integrals. *Triple integral*: Definition of triple integrals and evaluation, change of variables, volume as triple integral.	**14**

Books for References:

1. Differential Calculus, Shantinarayan, S. Chand & Company, New Delhi.
2. Applications of Calculus, Debasish Sengupta, Books and Allied (P) Ltd., 2019.
3. Calculus – Lipman Bers, Holt, Rinehart & Winston.
4. Calculus - Shanthinarayanan & T. K. Manicavachogam Pillay, S. Viswanathan Pvt. Ltd., vol. I & II.
5. Schaum's Outline of Calculus - Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc. Graw Hill, 2008.
6. Integral Calculus, Shanthinarayan, New Delhi: S. Chand and Co. Pvt. Ltd.
7. Integral Calculus, Shantinarayan and P K Mittal, S. Chand and Co. Pvt. Ltd.
8. Text Book of B.Sc. Mathematics, G K Ranganath, S Chand & Company.
9. David M Burton, Elementary Number Theory, 6th edition, McCraw Hill, 2007.
10. Emil Grosswald, Topics from the Theory of Numbers, Modern Birhauser, 1984.

11. Ivan Niven, Herbert S. Zuckerman and Hugh L. Montgomery, An Introduction to the Theory of Numbers, John Willey (New York), 1991.

Mathematics Web links:

1. http://scienceworld.wolfram.com/biography/topics/Mathematicians.html
2. http://teachers.sduhsd.k12.ca.us/abrown/index2.html
3. http://www.maths.tcd.ie/pub/HistMath/People/RBallHist.html
4. http://www.geometry.net/math.html
5. http://www-history.mcs.st-andrews.ac.uk/history/Indexes/Full_Alph.html
6. http://mathforum.org
7. http://www.cut-the-knot.org
8. http://nrich.maths.org
9. http://archives.math.utk.edu/
10. http://www-groups.dcs.st-and.ac.uk/~history/
11. http://www.maa.org/
12. http://e-math.ams.org/
13. Website on Books in Mathematics

Practical/Lab Work to be performed in Computer Lab Suggested Software's:

Maxima/Scilab//Python/R.

1. Programs related to Number Theory.
2. Limits and Continuity.
3. Differentiability.
4. Program to verify Mean value theorems.
5. Program for finding the Taylor's and Maclaurin's expansions of the given functions.
6. Program to verify the Euler's theorem and its extension.
7. Programs to construct series using Maclaurin's expansion for functions of two variables.
8. Program to evaluate the line integrals with constant and variable limits.
9. Program to evaluate the Double integrals with constant and variable limits.
10. Program to evaluate the Triple integrals with constant and variable limits.

Course Articulation Matrix - 212239

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12

CO 1	3	2	1	1	1	1	-	1	-	1	-	1
CO 2	3	3	1	1	1	2	1	1	-	1	1	2
CO 3	3	3	1	2	1	-	-	1	1	1	-	1
CO 4	3	3	2	1	2	1	1	1	1	1	1	2
Weighted Average	**3**	**2.75**	**1.25**	**1.25**	**1.25**	**1.33**	**1**	**1**	**1**	**1**	**1**	**1.5**

OE(2) Mathematics Syllabus for All Programs (Except Science)

Semester II

Course Code: 21OEMAT201	**Course Title:** OE(2) Optional Mathematics – II
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours:42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Acquiring the basic knowledge of divisibility, congruency, GCD, Prime and prime factorization, applying the concept of Euler function, Fermat's and Wilson's Theorem, Evaluating the product of r consecutive integers is divisible.

CO 2: Applying the skills of fundamental theorems in solving problems.

CO 3: Construct extreme values of function of the variables using partial derivatives and total derivatives

Course Content

UNIT – 1	**Number Theory**	**14 HOURS**
Division Algorithm, Divisibility, Prime and composite numbers, Euclidean algorithm, Fundamental theorem of Arithmetic, The greatest common divisor and least common multiple. Congruence, Linear congruence, Simultaneous congruence, Euler's Phi-function, Wilson's, Euler's and Fermat's Theorems and their applications.		
UNIT – 2	**Partial Derivatives**	**14 HOURS**
Functions of two or more variables-explicit and implicit functions, partial derivatives. Homogeneous functions- Euler's theorem and extension of Euler's theorem, total derivatives, differentiation of implicit and composite functions, Jacobians and standard properties and illustrative examples. Taylor's and Maclaurin's series for functions of two variables, Maxima-Minima of functions of two variables.		
UNIT – 3	**Integral Calculus**	**14 HOURS**
Line integral: Definition of line integral and basic properties, examples on evaluation of line integrals. *Double integral*: Definition of Double integrals and its conversion to iterated integrals. Evaluation of double integrals by changing the order of integration and change of variables.		

Computation of plane surface areas, *Triple integral*: Definition of triple integrals and evaluation-change of variables, volume as triple integral.

Books for References:

1. Differential Calculus, Shanti Narayan, S. Chand & Company, New Delhi.
2. Applications of Calculus, Debasish Sengupta, Books and Allied (P) Ltd., 2019.
3. Calculus – Lipman Bers, Holt, Rinehart & Winston.
4. Calculus - Shanthinarayanan & T. K. Manicavachogam Pillay, S. Viswanathan Pvt. Ltd., vol. I & II.
5. Schaum's Outline of Calculus - Frank Ayres and Elliott Mendelson, 5th ed. USA: Mc. Graw Hill, 2008.
6. Integral Calculus, Shanthinarayan, S. Chand and Co. Pvt. Ltd.
7. Integral Calculus, Shantinarayan and P K Mittal, S. Chand and Co. Pvt. Ltd.
8. Text Book of B.Sc. Mathematics, G K Ranganath, S Chand & Company.
9. David M Burton, Elementary Number Theory, 6th edition, McCraw Hill, 2007.
10. Emil Grosswald, Topics from the Theory of Numbers, Modern Birhauser, 1984.
11. Ivan Niven, Herbert S. Zuckerman and Hugh L. Montgomery, An Introduction to the Theory of Numbers, John Willey (New York), 1991.

Course Articulation Matrix – 21OEMAT201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	1	1	1	-	1	-	1	-	1
CO 2	3	3	1	1	1	2	1	1	-	1	1	2
CO 3	3	3	1	2	1	-	-	1	1	1	-	1
Weighted Average	**3**	**2.67**	**1**	**1.33**	**1**	**1.5**	**1**	**1**	**1**	**1**	**1**	**1.33**

OE(2) Mathematics Syllabus for All Programs (Except Science)

Semester II

Course Code: 21OEMAT202	**Course Title:** OE(2) Business Mathematics – II
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours:42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Apply the concept of profit, loss, discount, marked price, simple and compound interest, Taxes, Ratio, Installments, Percentage, Interest of reducing balance and flat interest to evaluate problems in everyday life.

CO 2: Measure the central tendency, Describing median, mode, AM, GM, HM. Represents dispersion by range, deviation, variance, standard deviation and standard error.

CO 3: Analyze and interpret correlation and regression by various methods for ungrouped data. Evaluate correlation and regression applying their properties.

Course Content

UNIT – 1	**Commercial Arithmeti** **14 HOURS**
nterest**:** Concept of Present value and Future value, Simple interest, Compound interest, Nominal nd Effective rate of interest, Examples and Problems Annuity: Ordinary Annuity, Sinking Fund, Annuity due, Present Value and Future Value of Annuity, Equated Monthly Installments (EMI) by nterest of Reducing Balance and Flat Interest methods, Examples and Problems.	
UNIT – 2	**Measures of central Tendency and Dispersion** **14 HOURS**
Frequency distribution: Raw data, attributes and variables, Classification of data, frequency distribution, cumulative frequency distribution, Histogram and give curves. Requisites of ideal measures of central tendency, Arithmetic Mean, Median and Mode for ungrouped and grouped data. Combined mean, Merits and demerits of measures of central tendency, Geometric mean: definition, merits and demerits, Harmonic mean: definition, merits and demerits, Choice of A.M., G.M. and H.M. Concept of dispersion, Measures of dispersion: Range, Variance, Standard deviation (SD) for grouped and ungrouped data, combined SD, Measures of relative dispersion: Coefficient of range, coefficient of variation. Examples and problems.	
UNIT – 3	**Correlation and regression** **14 HOURS**
Concept and types of correlation, Scatter diagram, Interpretation with respect to magnitude and direction of relationship. Karl Pearson's coefficient of correlation for ungrouped data. Spearman's rank correlation coefficient. (with tie and without tie) Concept of regression, Lines of regression for ungrouped data, predictions using lines of regression. Regression coefficients and their	

properties (without proof). Examples and problems.

Books for References:

1. Practical Business Mathematics, S. A. Bari New Literature Publishing Company New Delhi
2. Mathematics for Commerce, K. Selvakumar Notion Press Chennai
3. Business Mathematics with Applications, Dinesh Khattar & S. R. Arora S. Chand Publishing New Delhi
4. Business Mathematics and Statistics, N.G. Das &Dr. J.K. Das McGraw Hill New Delhi
5. Fundamentals of Business Mathematics, M. K. Bhowal, Asian Books Pvt. Ltd New Delhi
6. Mathematics for Economics and Finance: Methods and Modelling, Martin Anthony and Norman, Biggs Cambridge University Press Cambridge
7. Financial Mathematics and its Applications, Ahmad Nazri Wahidudin Ventus Publishing APS Denmark
8. Fundamentals of Mathematical Statistics, Gupta S. C. and Kapoor V. K.:, Sultan Chand and Sons, New Delhi.
9. Statistical Methods, Gupta S. P.: Sultan Chand and Sons, New Delhi.
10. Applied Statistics, Mukhopadhya Parimal New Central Book Agency Pvt. Ltd. Calcutta.
11. Fundamentals of Statistics, Goon A. M., Gupta, M. K. and Dasgupta, B. World Press Calcutta
12. Fundamentals of Applied Statistics, Gupta S. C. and Kapoor V. K.:, Sultan Chand and Sons, New Delhi.

Course Articulation Matrix – 21OEMAT202

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	1	-	1	3	1	2	-	1	1	1
CO 2	3	2	1	1	-	1	1	-	-	1	-	1
CO 3	3	2	1	1	1	2	1	1	1	1	-	1
Weighted Average	**3**	**2.33**	**1**	**1**	**1**	**2**	**1**	**1.5**	**1**	**1**	**1**	**1**

OE(2) Mathematics Syllabus for All Programs (Except Science)

Semester II

Course Code: 21OEMAT203	**Course Title:** OE(2) Mathematical Aptitude - II
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours:42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Evaluate percentage, Average, Ratio & proportion, partnership, Mixture and Problems based on Ages.

CO 2: Imbibe the concept of profit, loss, discount, simple & compound interest, Shares and debentures in Everyday life.

CO 3: Execute various ways of particular assignments by the help of permutation and combination, probability, True and Banker's Discount.

Course Content

UNIT – 1	**14 HOURS**
Percentage, Average, Problems based on Ages, Ratio and Proportion, Partnership and share, Mixtures.	
UNIT – 2	**14 HOURS**
Profit, Loss and Discount, Simple Interest, Compound Interest, Shares and Debentures.	
UNIT – 3	**14 HOURS**
Permutations and Combinations, Probability, True discount and Banker's discount.	

Books for References:

1. R.S. Aggarwal, "Quantitative Aptitude for Competitive Examinations",Revised Edition, S. Chand and Co. Ltd, New Delhi, 2018.
2. Quantitative Aptitude and Reasoning by R V Praveen, PHI publishers.
3. Quantitative Aptitude : Numerical Ability (Fully Solved) Objective Questions, Kiran Prakashan Pratogitaprakasan, Kic X, Kiran Prakasan publishers.
4. Quantitative Aptitude for Competitive Examination by Abhijit Guha, Tata Mc Graw hill publications.

Course Articulation Matrix – 21OEMAT203

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	3	1	-	-	3	1	2	1	1	1	2
CO 2	3	3	1	-	-	3	1	2	1	1	1	2
CO 3	3	3	1	1	1	3	1	1	1	1	1	1
Weighted Average	**3**	**3**	**1**	**1**	**1**	**3**	**1**	**1.67**	**1**	**1**	**1**	**1.67**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance(the marks is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of manual work, programme and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

C1 Component: 10 Marks : This will be based on a practical test. This should be completed by the 8th week of the semester.

C2 Component : 15 Marks : This will be based on practical test / assignment for 10 marks and 5 marks for practical record. This should be completed by the 16th week of the semester.

C3 Component:

Main Examination of 3 hours duration : Max Marks: 25 (20 + 5)
Three experiments will be given out of which two experiments are to be executed, each carrying 10 marks and 5 marks for viva.

The student is evaluated for 25 marks in **C3** as per the following scheme:

Assessment Criteria	Marks
For each Experiment Manual work – 04 Marks Program writing – 04 Marks Execution – 02 Marks	10 × 2 = 20
Viva	05
Total	**25**

DSC Mathematics Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** 2 ½ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part - A and Part – B.
- Part – A: Should consist of **08 Questions** (2 Questions from each Unit). **6 Questions** to be answered.

- Part – B: Should consist of **4 Main** Questions (1 from Each Unit). **5 Sub Question** will be given, out of which **3 Questions** to be answer

Part A

Answer any six questions. Each Question carries 2 Marks. 6×2 =12

I.

a.

b.

.

.

h

Part B

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

II. a.

b.

c.

d.

e.

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

III a.

b.

c.

d.

e.

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

IV a.

b.

c.

d.

e.

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

V a.

b.

c.

d.

e.

OE Mathematics Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** 2 ½ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part - A and Part – B.
- Part – A: Consist of **09 Questions.** (3 Questions from each Unit). **6 Questions** to be answered.
- Part – B: Consist of **3 Main** Questions (1 from Each Unit). **6 Sub Question** will be given, out of which **4 Questions** to be answer

Part A

Answer any six questions. Each Question carries 2 Marks. 6×2 =12

I

a.
b.
.
.
i.

Part B

Answer any FOUR questions. Each Question carries 4 Marks. 4×4 =16

II a.
b.
c.
d.
e.
f.

Answer any FOUR questions. Each Question carries 4 Marks. 4×4 =16

III a.
b.
c.
d.
e.
f.

Answer any FOUR questions. Each Question carries 4 Marks. 4×4 =16

IV a.
b.
c.
d.

e.

f.

B.Sc (Mathematics) NEP Syllabus 2021 - 2022

Board of Studies

Sl.No.	Name and address	Designation	Signature
1	Dr. Sumathi M P HoD, Dept of Mathematics SBRR Mahajana First Grade College, Mysuru Mob. 9880810618 sumathimp.fgc@mahajana.edu.in	Chairperson	Sumathi. M.P
2	Prof. D D Somashekar Professor ,DOS in Mathematics Manasagangotri, Mysuru Mob. 9480057505 somashekara@maths.uni-mysore.ac.in	Member	
3	Dr M C Mahesh Kumar Assistant Professor GFGC, KR Puram, Bangalore-36 Mob. 9844753730 Softmahe15@gmail.com	Member	M. C. Mahesh
4	Kemparaju R Assistant Professor Government college for women, Chintamani-563125 Mob. 9844335388 kemps007@gmail.com	Member	
5	Niranjan L Assistant Professor SBRR Mahajana First Grade College Mysuru, Mob: 9108257072 niranjankavi.np@gmail.com	Member	
6	Harshavardhana C N Assistant Professor Govt First Grade college for Women, Holenarasipura. Mob. 8971876885 cnhmaths@gmail.com	Member	

Sumathi. M.P
Chairperson
BOS/BOE in Mathematics
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

DEPARTMENT OF MATHEMATICS

Motto

Accuracy and Perfection

Vision

To Create a Mindset to apply Analytical Skills

Mission

Empower with Logic Enhance with Skills

Program Outcomes (POs) for Bachelor of Science

PO 1 **: Domain Knowledge -** Acquire and apply knowledge of science in relevant areas.

PO 2 **: Problem Analysis –** Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3 **: Design and Development of Solutions –** Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4 **: Investigation & Research** – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5 **: Use of Modern Techniques/Tools** – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6 **: Impact of Science on Society** – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7 **: Environment and Sustainability** – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8 **: Moral and Ethical Values** – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9 **: Individual and Team Work with Time Management** – Work productively in a team or as an individual while exhibiting time management skills.

PO 10 **: Communication** – Develop the caliber to convey various concepts of science effectively.

PO 11 **: Project Management and Finance** – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12 **: Life-long Learning** – Engage in the art of self-directed learning.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Dr. Sumathi M P Assistant Professor & HoD	Department of Mathematics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	sumathimp.fgc@mahajana.edu.in 9880810618
2	Member	Sri. Niranjan L Assistant Professor	Department of Mathematics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	niranjankavi.np@gmail.com 9108257072
3	Two Experts from Other University	Dr Sudha T G Associate Professor	Department of Mathematics Nrupathunga University (Govt. Science College Autonomous) Nrupathunga Road, Bengaluru-560001	tgsudha65@gmail.com 9003310571
4		Dr. Jagadeesh R Assistant Professor	Department of Mathematics Government First Grade college Ramanagar	jagadeeshr1978@gmail.com 9448006546
5	Nominee by the Vice Chancellor	Dr. R Rangarajan Professor	DoS in Mathematics Manasagangotri, University of Mysore, Mysuru – 570006	ranga@maths.uni-mysore.ac.in 9611109079
6	Alumnus	Harshavardhana C N Assistant Professor	Department of Mathematics Govt First Grade college for Women, Holenarasipura	cnhmaths@gmail.com 8971876885

Course Structure (NEP 2020)

Discipline Specific Courses (DSC) and Open Elective (OE)

II Year

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
MATHEMATICS – III Semester									
DSC(3)	Algebra–III and Differential Equations – I **222339**	**4**	**0**	**4:0:2** **(6credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
DSC(3)-Lab	Theory based Practical's on Algebra - III and Differential Equations – I **222339**	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(3)	Discrete Mathematics – I **22OEMAT301** Mathematical Aptitude –III **22OEMAT302** **(Any one OE course to be opted)**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**

MATHEMATICS – IV Semester									
DSC(4)	Real Analysis - I and Differential Equations – II **222439**	**4**	**0**	**4:0:2** **(6credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
DSC(4) Lab	Theory based Practical's on Real Analysis - I and Differential Equations – II **222439**	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE(4)	Basics of Number Theory **22OEMAT401**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**
	Mathematical Aptitude- IV **22OEMAT402**								
	(Any one OE course to be opted)								

DSC(3) Mathematics Syllabus for B.Sc. Mathematics (Basic and Honors)

Semester III

Course Code:222339	**Course Title:** DSC(3) : Algebra–III and Differential Equations – I DSC(3) Lab :Theory based Practical's on Algebra–III and Differential Equations – I
Course Credits:06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 : Acquiring the knowledge and structure of group, subgroup, cyclic group and group of permutation

CO2 : Analyzing and applying the concepts of normal subgroup, quotient group , homomorphism and isomorphism for groups.

CO3 : Identifying and evaluating differential equations using different techniques.

CO4 : Applying various methods to solve first order and higher degree differential equations. Designing solutions for ordinary differential equations and simultaneous equations with constant coefficients by constructing complementary function and particular integral.

Course Content

	Content	Hours
UNIT – 1		
	Group Theory – I : Definition and examples of groups – Some general properties of Groups, Subgroups, Group of permutations – Cyclic permutations – Even and odd permutations. Order of an element of a group – Cyclic groups problems and theorems.	**14**
UNIT – 2		

Group Theory – II : Cosets, Index of a group, Lagrange's theorem, consequences, Normal Subgroups, Quotient groups – Homomorphism. – Kernel of homomorphism – Isomorphism – Automorphism -Fundamental theorem of homomorphism, Cayley's theorem.	**14**
UNIT – 3	
Differential Equations – I : Recapitulation of Definition, examples of differential equations, Formation of differential equations by elimination of arbitrary constants, Differential equations of first order – Separation of variables, Reducible to separation of variables, Homogeneous differential equations, Reducible to homogeneous, Exact differential equations, Reducible to exact, Integrating factors found by inspection and the determination of integrating factors, Linear differential equations, Bernoulli's differential equations.	**14**
UNIT – 4	
Differential Equations – II: Equations of First order and higher degree – Solvable for p, Solvable for x, Solvable y, Clairaut's equations – Singular and General solutions. Ordinary Linear differential equations with constant coefficients – Complementary function – particular integral – Inverse differential operators. Simultaneous differential equations (two variables with constant coefficients).	**14**

Books for References:

1. Daniel A Murray – Introductory Course to Differential equations
2. Earl David Rainville and Philip Edward Bedient – A short course in Differential equations, Prentice Hall College Div; 6th edition.
3. I N Herstien – Topics in Algebra.
4. Joseph Gallian – Contemporary Abstract Algebra, Narosa Publishing House, New Delhi, Fourth Edition.
5. G. D. Birkhoff and S Maclane – A brief Survey of Modern Algebra.
6. J B Fraleigh – A first course in Abstract Algebra.
7. Michael Artin – Algebra, 2nd ed. New Delhi, India: PHI Learning Pvt. Ltd., 2011.
8. Vashista, A First Course in Modern Algebra, 11th ed.: Krishna Prakasan Mandir, 1980.
9. R Balakrishan and N.Ramabadran, A Textbook of Modern Algebra, 1st ed. New Delhi, India: Vikas publishing house pvt. Ltd., 1991.
10. M D Raisinghania, Advanced Differential Equations, S Chand and Co. Pvt. Ltd., 2013.
11. F Ayres, Schaum's outline of theory and problems of Differential Equations, 1st ed. USA McGraw-Hill, 2010.

12. S Narayanan and T K Manicavachogam Pillay, Differential Equations .: S V Publishers Private Ltd., 1981.

13. E Kreyszig- Advanced Engineering Mathematics, Wiley India Pvt. Ltd.

G F Simmons, Differential equation with Applications and historical notes, 2nd ed.: McGraw- Hill Publishing Company, Oct 1991.

Mathematics Weblinks:

1. http://scienceworld.wolfram.com/biography/topics/Mathematicians.html
2. http://teachers.sduhsd.k12.ca.us/abrown/index2.html
3. http://www.maths.tcd.ie/pub/HistMath/People/RBallHist.html
4. http://www.geometry.net/math.html
5. http://www-history.mcs.st-andrews.ac.uk/history/Indexes/Full_Alph.html
6. http://mathforum.org
7. http://www.cut-the-knot.org
8. http://nrich.maths.org
9. http://archives.math.utk.edu/
10. http://www-groups.dcs.st-and.ac.uk/~history/
11. http://www.maa.org/
12. http://e-math.ams.org/
13. Website on Books in Mathematics

Practical/Lab Work to be performed in Mathematics Lab (FOSS) Suggested Software's:

Maxima/Scilab /Python/R.

ntroduction to the software and commands related to the topic.

1. Generate Cayley's table.
2. Verifying whether given operator is binary or not.
3. Finding identity and inverse elements of a group.
4. Finding left and right cosets of a group.
5. To find all the Cyclic subgroups of a given group.

6. Verification of Normality of a given subgroup of a group.
7. Solution of Differential equation and plotting the graph of the solution: Variable Separable.
8. Solution of Differential equation and plotting the graph of the solution: Homogeneous Equations.
9. Solution of Differential equation and plotting the graph of the solution: Linear differential equations.
10. Solution of Differential equation and plotting the graph of the solution: Bernoulli's equations.
11. Solution of Differential equation and plotting the graph of the solution: Exact equations.
12. Finding Complementary function and particular Integral of constant coefficients.

Note: Student has to execute a minimum of 8 programs in each part to complete the Lab course.

Course Articulation Matrix - 222339

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	1	-	-	1	1	1	1	2	1	1	2
CO 2	3	2	1	-	1	1	1	1	2	1	1	2
CO 3	3	3	1	1	2	2	1	1	1	1	1	2
CO 4	3	3	1	1	2	2	1	1	1	1	1	2
Weighted Average	**3**	**2.25**	**1**	**1**	**1.5**	**1.5**	**1**	**1**	**1.5**	**1**	**1**	**2**

OE(3) Mathematics Syllabus for All Programs (Except Science)

Semester III

Course Code: 22OEMAT301	**Course Title:** OE(3) Discrete Mathematics
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours:42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Apply set theoretic identities involving, Unions, Intersections, Cartesian product, Relation & Ordering, Compatibility and Composition of Binary relation.

CO 2: Applying the Applications of Graph theory involving path, connectedness , trees, matrix representation of graphs in real life problems

CO 3: Formulate the negation, converse, contrapositive, conditional, Biconditional, Technologies & equivalence relation of a quantified implication, both linguistically and in symbolic form.

Course Content

UNIT – 1	**Basics of Set The** **14 HOURS**
Notation, Inclusion and Equality of sets, The power set, Operation on sets, Venn diagram, Set dentities, Ordered pairs and Cartesian products. Relations and ordering – Properties of binary elation in a set, Relation matrix and Graph of a relation. Equivalence relations, Compatibility elations, composition of Binary relation.	
UNIT – 2	**Graph Theory** **14 HOURS**
Basic definitions, Paths and Connectedness, Matrix representation of Graphs, Trees.	
UNIT – 3	**Mathematical Logic** **14 HOURS**
Statements and Notation, Connectives, Negation, Conjunction, Disjunction,, Statement formulas and Truth tables, Conditional and Bi-conditional, Tautologies, Equivalence of formulas, Tautological Implications.	

Books for References:

1. Discrete Mathematical Structures with Application to computer science by J. P. Tremblay, R. Manohar 3rd Edition – Tata McGraw Hill.

2. Discrete Mathematical Structures by B. Kolman, R. C. Busby and S. Rose, 3rd edition.

3. Introduction to discrete mathematics by C. L. Liu, McGraw Hill, 2nd edition, 1985.

4. Discrete Mathematics by S. A. Witala, McGraw Hill, 1987.

Course Articulation Matrix - 22OEMAT301

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	3	1	1	1	2	1	1	1	1	1	1
CO 2	2	3	1	2	1	2	1	1	1	1	1	1
CO 3	3	3	1	2	1	1	1	1	1	1	1	
Weighted Average	**2.33**	**3**	**1**	**1.67**	**1**	**1.67**	**1**	**1**	**1**	**1**	**1**	**1.7**

OE(3) Mathematics Syllabus for All Programs (Except Science)

Semester III

Course Code: 22OEMAT302	**Course Title:** OE(3) Mathematical Aptitude - III
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours:42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Examine and Develop solution for polynomial equations, linear equation and problems based on Ages.

CO 2: Evaluate the problems on Area, Volume and Surface area for some conic sections.

CO 3: Analysis of Direction test, Relation test and seating puzzles using various techniques.

Course Content

UNIT – 1	**14 HOURS**
Algebraic Expressions, Polynomials, Fundamental operations on Algebraic expressions, Factorization, Linear equations and problems based on Ages, Quadratic equations.	
UNIT – 2	**Mensuration** **14 HOURS**
Area, Volume and Surface area (Cylinder, Cone, Sphere).	
UNIT – 3	**Verbal Reasoning** **14 HOURS**
Direction Test, Relation Test, Venn Diagram Analysis Test, Seating puzzles.	

Books for References:

1. R.S. Aggarwal, "Quantitative Aptitude for Competitive Examinations", Revised Edition, S. Chand and Co. Ltd, New Delhi, 2018.
2. Quantitative Aptitude and Reasoning by R V Praveen, PHI publishers.
3. Quantitative Aptitude : Numerical Ability (Fully Solved) Objective Questions, Kiran Prakashan, Pratogita prakasan, Kic X, Kiran Prakasan publishers.
4. Quantitative Aptitude for Competitive Examination by Abhijit Guha, Tata Mc Graw hill publications.

Course Articulation Matrix - 22OEMAT302

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	3	1	2	1	1	1	1	1	1	1	2
CO 2	2	3	1	2	1	3	1	1	1	1	1	3
CO 3	2	3	1	2	1	2	1	1	1	1	1	2
Weighted Average	**2**	**3**	**1**	**2**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**2.33**

DSC(4) Mathematics Syllabus for B.Sc. Mathematics (Basic and Honors)

Semester IV

Course Code:222439	**Course Title:** DSC(4) : Real Analysis – I and Differential Equations – II DSC(4) Lab: Theory based Practical's on Real Analysis – I and Differential Equations – II
Course Credits:06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 : Interpreting the behavior of convergence , divergence, oscillatory and monotonic sequences with their general principles.

CO2 : Evaluation of convergence, divergence and oscillatory series applying various methods.

CO3 : Apply various methods to evaluate linear differential equations and total differential equations.

CO4 : Formation of Partial differential equations and designing solutions for first order non-linear partial differential equations using standard methods.

Course Content

Content	Hours
UNIT – 1	
Sequences : Sequence of real numbers – Bounded and unbounded sequences – Infimum and supremum of a sequence – Limit of a sequence – Sum, product and quotient of limits – Standard theorems on limits – Convergent , divergent and oscillatory sequences – Discuss the convergence x^n, $n^{\frac{1}{n}}$, $\left(1+\frac{1}{n}\right)^n$ and standard problems – Monotonic sequences and their properties – Cauchy's general principle of convergence.	**14**

UNIT – 2

Infinite Series : Infinite series of real numbers – Convergence and Divergence - Oscillation of series – Properties of convergence – Series of positive terms – Geometric series – p – series – Comparison tests – D'Alembert's ratio test – Raabe's test – Cauchy's root test – Leibnitz's test for alternating series.	**14**
UNIT – 3	
Linear differential equations : Cauchy – Euler differential equations, Solution of ordinary second order linear differential equations with variable coefficients by various methods such as: (i) When a part of complementary function is given. (i) Changing the independent variable. (ii) Changing the dependent variable. (iii) By method of variation of parameters. (iv) Exact method. Total differential equations - Necessary and sufficient condition for the equation Pdx + Qdy + Rdz = 0 to be exact (proof only for the necessary part) – Simultaneous equations of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$.	**14**
UNIT – 4	
Partial differential equations (14 hrs) : Basic concepts – Formation of a partial differential equations by elimination of arbitrary constants and functions – Solution of partial differential equations – Solution by Direct integration, Lagrange's linear equations of the form Pp + Qq = R , Standard types of first order non-linear partial differential equations – Charpit's method – Homogenous linear equations with constant coefficient – Rules for finding the complementary function – Rules for finding the particular integral, Method of separation of variables (product method).	**14**

Books for References:

1. G. Stephonson – An introduction to Partial Differential Equations.
2. B. S. Grewal – Higher Engineering Mathematics
3. E Kreyszig- Advanced Engineering Mathematics, Wiley India Pvt. Ltd.
4. E D Reinville and P E Bedient – A Short Course in Differential Equations
5. D A Murray – Introductory Course in Differential Equations.
6. G P Simmons – Differential Equations
7. F. Ayres – Differential Equations (Schaum Series)
8. Martin Brown – Application of Differential Equations.
9. M D Raisinghania, Advanced Differential Equations, S Chand and Co. Pvt. Ltd., 2013.
10. S C Malik –Real Analysis
11. Leadership project – Bombay university- Text book of mathematical analysis
12. S S Bali – Real analysis.
13. Richard R Goldberg, Methods of Real Analysis, Indian ed.

Mathematics Web links:

14. http://scienceworld.wolfram.com/biography/topics/Mathematicians.html
15. http://teachers.sduhsd.k12.ca.us/abrown/index2.html
16. http://www.maths.tcd.ie/pub/HistMath/People/RBallHist.html
17. http://www.geometry.net/math.html
18. http://www-history.mcs.st-andrews.ac.uk/history/Indexes/Full_Alph.html
19. http://mathforum.org
20. http://www.cut-the-knot.org
21. http://nrich.maths.org
22. http://archives.math.utk.edu/
23. http://www-groups.dcs.st-and.ac.uk/~history/
24. http://www.maa.org/
25. http://e-math.ams.org/
26. Website on Books in Mathematics

Practical/Lab Work to be performed in Computer Lab Suggested Software's:

Maxima/Scilab//Python/R.

1. To test the convergence of the Sequence.
2. To test the convergence of the sequence using Cauchy's criterion.
3. To verify whether the given sequence is monotonically Increasing or Decreasing.
4. To test the convergence of the series.
5. To test the convergence of the series by D'Alembert's ratio test and Raabe's test.
6. To solve second order LDE when a part of the complementary function is known.
7. To solve second order LDE by changing the dependent variable (Normal form).
8. To find the Wronskian of second order LDE.
9. To test for exactness and solving second order LDE.
10. To verify the condition for Integrability of a total D.E.

11. To solve first order non linear PDE containing p and q only.
12. To solve first order non linear PDE of the form $f_1(x,p)=f_2(y,q)$.

Course Articulation Matrix - 222439

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	-	3	-	-	-	1	1	-	1
CO 2	1	2	2	-	3	1	1	1	1	1	-	1
CO 3	2	3	2	1	3	-	-	1	2	2	1	1
CO 4	1	2	2	-	3	-	-	-	1	-	-	1
Weighted Average	**1.5**	**2.25**	**1.75**	**1**	**3**	**1**	**1**	**1**	**1.25**	**1**	**1**	**1**

OE(4) Mathematics Syllabus for All Programs (Except Science)

Semester IV

Course Code: 22OEMAT401	**Course Title:** OE(4) Basic of Number Theory
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Analyzing Binomial theorem and Mathematical induction in solving real life problems.

CO 2: Acquiring the knowledge of divisibility, GCD, LCM and relation between GCD & LCM.

CO 3: Apply the properties of congruences, Binary & Decimal representation of integers with Chinese remainder theorem in evaluating practical problems.

Course Content

UNIT – 1	**14 HOURS**
Binomial Theorem, Mathematical Induction.	
UNIT – 2	**Number System** **14 HOURS**
Test for Divisibility, Number of divisors and Sum of divisors of a number, Greatest Common Divisor (GCD), Least Common Multiple (LCM), Relation between GCD and LCM, Representation of a GCD as a linear combination of given two numbers.	
UNIT – 3	**Congruence** **14 HOURS**
Basic properties of congruence, Binary and Decimal representations of integers, Linear Congruences and the Chinese Remainder Theorem.	

Books for References:

1. An Introduction to the Theory of Numbers by Ivan Niven, Herbert S. Zuckerman, Hugh L. Montgomery.
2. Elementary Number Theory by David M. Burton.

Course Articulation Matrix - 22OEMAT401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	-	2	1	1	1	1	1	1	1
CO 2	1	1	2	-	1	-	-	-	1	-	-	1
CO 3	1	1	2	-	1	-	-	-	1	-	-	1
Weighted Average	**1.33**	**1.33**	**1.66**	**-**	**1.33**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

OE(4) Mathematics Syllabus for All Programs (Except Science)

Semester IV

Course Code: 22OEMAT402	**Course Title:** OE(4) Mathematical Aptitude – IV
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours:42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2 ½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Analysing & Interpretation of Data.

CO 2: Apply the properties of Surds , Indices and logarithm in solving problems.

CO 3: Enahancing analytical reasoning through classification, series test,

Course Content

UNIT – 1	**14 HOURS**
Data interpretation, Data sufficiency.	
UNIT – 2	**14 HOURS**
Surds & Indices, Logarithm and its properties.	
UNIT – 3 **Non - Verbal Reasoning**	**14 HOURS**
Series Test, Analogy, Classification, Cube and Dice, Analytical Reasoning.	

Books for References:

1. R.S. Aggarwal, "Quantitative Aptitude for Competitive Examinations", Revised Edition, S. Chand and Co. Ltd, New Delhi, 2018.
2. Quantitative Aptitude and Reasoning by R V Praveen, PHI publishers.
3. Quantitative Aptitude : Numerical Ability (Fully Solved) Objective Questions, Kiran Prakashan, Pratogita prakasan, Kic X, Kiran Prakasan publishers.

4. Quantitative Aptitude for Competitive Examination by Abhijit Guha, Tata Mc Graw hill publications.

Course Articulation Matrix - 22OEMAT402

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	-	2	1	1	1	1	1	1	1
CO 2	1	1	2	-	1	-	-	-	1	-	-	1
CO 3	1	1	2	-	1	-	-	-	1	-	-	1
Weighted Average	**1.33**	**1.33**	**1.66**	**-**	**1.33**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20

Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance(the marks is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of manual work, programme and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

• The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

C1 Component: 10 Marks : This will be based on a practical test. This should be completed by the 8th week of the semester.

C2 Component : 15 Marks : This will be based on practical test / assignment for 10 marks and 5 marks for practical record. This should be completed by the 16th week of the semester.

• The student is evaluated for 25 marks in **C3** as per the following scheme:

Assessment Criteria	Marks

For each Experiment Manual work – 04 Marks Program writing – 04 Marks Execution – 02 Marks	10 × 2 = 20
Viva	05
Total	**25**

DSC Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** 2 ½ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part - A and Part – B.
- **Part – A** : Should consist of **08 Questions** (2 Questions from each Unit).
  6 Questions to be answered.
- **Part – B** : Should consist of **4 Main** Questions (1 from Each Unit).
  5 Sub Question will be given, out of which **3 Questions** to be answer

Part A

Answer any six questions. Each Question carries 2 Marks. 6×2 =12

III.

a.

b.

.

.

h

Part B

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

IV. a.

b.

c.

d.

e.

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

III a.

b.

c.

d.

e.

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

IV a.

b.

c.

d.

e.

Answer any three questions. Each Question carries 4 Marks. 3×4 =12

V a.

b.

c.

d.

e.

OE Theory Question Paper Pattern

Max. Marks: 60 Marks **Exam Duration:** 2 ½ Hours

Instructions: Paper Setting

- The Question Paper is divided into 2 parts: Part - A and Part – B.
- **Part – A** : Consist of **09 Questions.** (3 Questions from each Unit).
  6 Questions to be answered.
- **Part – B** : Consist of **3 Main** Questions (1 from Each Unit).
  6 Sub Question will be given, out of which **4 Questions** to be answer

Part A

Answer any six questions. Each Question carries 2 Marks. 6×2 =12

I

a.
b.
.
.
i.

Part B

Answer any FOUR questions. Each Question carries 4 Marks. 4×4 =16

II a.
b.
c.
d.
e.
f.

Answer any FOUR questions. Each Question carries 4 Marks. 4×4 =16

III a.
b.
c.
d.
e.
f.

Answer any FOUR questions. Each Question carries 4 Marks. 4×4 =16

IV a.
b.
c.
d.
e.
f.

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

Affiliated to University of Mysore

Re-accredited by NAAC with 'A' Grade, College with Potential for Excellence

UG ☑ **PG** ☐

MOTTO : ***Accuracy and Perfection***

VISION : ***To Create a Mindset to apply Analytical Skills***

MISSION : ***Empower with Logic Enhance with Skills***

Syllabi of V and VI Semester

B.Sc. – Mathematics

Choice Based Credit System – 2021 - 2022

Board of Studies

Mahajana Education Society (R)
Education to Excel
SBRR Mahajana First Grade College (Autonomous)
Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
Affiliated to University of Mysore,
Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Choice Based Credit System (CBCS) and Continuous Assessment and Grading Pattern (CAGP)

For Undergraduate Programs From 2020-21.

AIMS AND OBJECTIVES OF TEACHING MATHEMATICS

The main objectives of B.Sc in Mathematics is to provide a solid education in the basic subjects of mathematical knowledge and its applications, essential to access the 2nd cycle (Master) programs in Mathematics or Mathematics Teaching. The developed skills also allow direct access to labor market. With the B.Sc in Mathematics, the students must be able to: use and construct logical arguments, in particular, be familiar with proof techniques and know how to apply the laws of logic in mathematical proofs; understand and communicate concepts and mathematical ideas with clarity and coherence; use computational tools to solve mathematical problems; create/use mathematical models to solve real problems. The B.Sc in Mathematics with Minor allows complementary scientific training in mathematics with further studies in another scientific field, extending the range of knowledge and skills of the students.

Mathematics cannot be learnt without whole-hearted concentration. Hamilton says, 'the study of mathematics cures the vice of mental distraction and cultivates the habit of continuous attention'.

In every field new ideas and new methods are being introduced rapidly. In this every advancing society the important thinking is not only to learn facts but also to know how to learn facts. This is the discipline of the mind. Mathematics has a vast scope of application. Mathematics has the ability to apply knowledge to new situation and acquire the power to think effectively so that intellectual power of the learner is strengthened.

1. Acquire knowledge and understanding of the terms, symbols, concepts, principles, process, proofs, etc.
2. Develop mastery of basic algebraic skills and drawing skills.
3. Apply mathematical knowledge and skills to solve real mathematical problems by developing abilities to analyze, to see interrelationship involved, to think and reason.

4. Develop necessary skills to work with modern technological devices such as calculators, computers, etc.
5. Develop required communication and computing skills to peruse a career in teaching field or software industry.
6. Develop reverence and respect towards great mathematicians, particularly towards the Indian mathematicians for their contributions to the field of mathematics.

Course Outcome

In the 5th semester the student will be capable of :

Real Analysis -II and Algebra- III (DSE)

1. Define the real numbers, least upper bounds, and the triangle inequality.
2. Define functions between sets; equivalent sets; finite, countable and uncountable sets. Recognize convergent, divergent, bounded, Cauchy and monotone sequences.
3. Calculate the limit superior, limit inferior, and the limit of a sequence.
4. Recognize alternating, convergent, conditionally and absolutely convergent series.
5. Apply the ratio, root, limit and limit comparison tests.
6. Prove theorems on different test of convergence and divergence of a series of positive terms
7. Verify the given sequence in convergent and divergent by using behaviour of Monotonic sequence.
8. Verify the given series is convergent or divergent by using different test.
9. Summation of Binomial, Exponential and Logarithmic series.
10. Analyze and demonstrate examples of ideals and quotient rings .
11. Understand basic notions in the theory of field extensions to assess properties implied by the definitions of rings and modules.
12. Homomorphisms, Kernel of a ring Homomorphisms, Eisenstein's Criterion of irreducibility

Applied Mathematics (SEC)

1. Know about piecewise continuous functions, Dirac delta function, Laplace transforms and its properties.
2. Solve ordinary differential equations using Laplace transforms.
3. Familiarize with Fourier transforms of functions belonging to inverse Laplace transforms class, relation between Laplace and Fourier transforms.
4. Find Fourier series expansions for given functions and find Cosine and Sine series expansions for given functions.

Numerical Analysis (SEC)

1. Obtain numerical solutions of algebraic and transcendental equations.
2. Find numerical solutions of system of linear equations and check the accuracy of the solutions.
3. Learn about various interpolating and extrapolating methods.
4. Define Basic concepts of operators Δ, E, ∇
5. Find the difference of polynomial, Solve problems using Newton forward formula and Newton backward formula.
6. Derive Gauss's formula and Stirling formula using Newton forward formula and Newton

backward formula.
7. Find maxima and minima for differencial difference equation . Derive Simpson's 1/3 ,3/8 rules using trapezoidal rule
8. Find the solution of ordinary differential equation of first by Euler,Taylor Runge-Kutta and Picard'smethods.

In the 6th semester the student will be capable of :

Algebra- IV and Complex Analysis- I (DSE)

1. Understand the concepts of basis and dimension of vector spaces linear dependence and linear independence, to solve problems.
2. Apply the properties of linear transformations to linearity of transformations, kernel and rank of linear transformations, inverse transformations to solve the problems of matrix transformations, change of basis.
3. Solving linear equations, working with matrices, in particular eigenvalues and eigenvectors, and applying the techniques to real life problems like graph theory, computer science, Electronics and applied Mathematics.
4.Compute sums, products, quotients, conjugate, modulus, and argument of complex numbers.
5. Calculate exponentials and integral powers of complex numbers.
6. Write equation of straight line, circle in complex form and define reflection points, concyclic points, inverse points .
8. Understand the significance of differentiability for complex functions and be familiar with the Cauchy-Riemann equations.
9. Determine whether a given function is analytic.
10. Define Bilinear transformation, cross ratio, fixed point and write the bilinear transformation which maps real line to real line, unit circle to unit circle, real line to unit circle Discussion of the standard transformations.

Complex Analysis II and Improper Integrals (SEC)

1. Find parametrizations of curves, and compute complex line integrals directly.
2. Use Cauchy's integral theorem and formula to compute line integrals.
3. Applies the theory into application of the power series expansion of analytic functions Understand the basic methods of complex integration and its application in contour integration.
4. Proof of the theorems Cauchy's Inequality, Liouvile's theorem and Fundamental theorem of Algebra will be learnt.
5. Explain properties of Beta functions and derive relation between Beta and Gamma functions.
6. Evaluate integrals by using Beta and Gamma functions.

Graph Theory (SEC)

1. Appreciate the definition and basics of graphs along with types and their examples.
2. Understand the definition of a tree and learn its applications to fundamental circuits.
3. Know the applications of graph theory to network flows.
4. Understand the notion of planarity and coloring of a graph.
5. Relate the graph theory to the real-world problems.

Credit Pattern for Courses

L: Lecture; T: Tutorial; P: Practicals

Semester	Sl. No	Subject Code	Title of the paper	Teaching/ instructional class hrs/week	Credit Pattern L:T:P
V	5	DSE – 212515	Real Analysis-II and Algebra-III	3 hrs	3:0:0
			Practicals-5 & 6	3 hrs	0:0:3
	6	SEC – 212555	Applied Mathematics	2hrs	2:0:0
	7	SEC – 212565	Numerical Analysis	2hrs	2:0:0
VI	8	DSE – 212635	Algebra-IV and Complex Analysis-I	3 hrs	3:0:0
			Practicals-7 & 8	3 hrs	0:0:3
	9	SEC – 212655	Complex Analysis-II and Improper Integrals	2hrs	2:0:0
	10	SEC –212665	Graph Theory	2hrs	2:0:0

Credit means the unit by which the course work is measured. One hour session of Lecture or Tutorial per week for 16 weeks amounts to 1 credit. Two hours session of practical's per week for 16 weeks amounts to 1 credit per semester.

SYLLABI FOR B.Sc MATHEMATICS

V SEMESTER

212515 – (DSE) : REAL ANALYSIS-II AND ALGEBRA - III

(3 lecture hours/week: 16 x 3= 48 Hours)

Theory

UNIT I: Sequences (12 hrs)

Sequence of real numbers – Bounded and unbounded sequences – Infimum and supremum of a sequence – Limit of a sequence – Sum, product and quotient of limits – Standard theorems on limits – Convergent , divergent and oscillatory sequences – Standard properties – Monotonic sequences and their properties – Cauchy's general principle of convergence.

UNIT II: Infinite Series (12 hrs)

Infinite series of real numbers – Convergence and Divergence - Oscillation of series – Properties of convergence – Series of positive terms – Geometric series – p – series – Comparison tests – D'Alembert's ratio test – Raabe's test – Cauchy's root test – Leibnitz's test for alternating series. Summation of Binomial, Exponential and Logarithmic series.

UNIT III: Rings and Fields (12 hrs)

Rings – Examples – Integral Domains – Division rings – Fields – Subrings. Subfields – Characteristic of a ring – Ordered integral domain – Imbedding of a ring into another ring – The field of quotients – Ideals – Algebra of Ideals – Principal ideal ring – Divisibility in an integral domain – Units and Associates – Prime elements.

UNIT IV: Polynomial rings and Homomorphisms (12 hrs)

Polynomial rings – Divisibility – Irreducible polynomials – Division Algorithm – Greatest Common Divisors – Euclidean Algorithm – Unique factorization theorem – Prime fields – Quotient rings – Homomorphism of rings – Kernel of a ring homomorphism – Fundamental theorem of homomorphism – Maximal ideals – Prime ideals – Properties – Eisenstein's Criterion of irreducibility.

Books for References:

1. S.C. Malik –Real Analysis.
2. S.C. Malik and Savita Arora, Mathematical Analysis, 2nd ed. New Delhi, India: New Age international (P) Ltd., 1992.
3. Richard R Goldberg, Methods of Real Analysis, Indian ed.
4. Asha Rani Singhal and M .K Singhal, A first course in Real Analysis.
5. I. N. Herstien – Topics in Algebra.
6. G. D. Birkhoff and S Maclane – A brief Survey of Modern Algebra.
7. T. K.Manicavasagam Pillai and K S Narayanan – Modern Algebra Volume 2
8. J B Fraleigh – A first course in Abstract Algebra.
9. Robert G Bartle and Donald R Sherbert, Introduction to Real Analysis, John Wiley and Sons Inc., Fourth Ed.

212515 – (DSE) Practical 5
Course duration: 16 weeks with 3 hours of lab work per week.
Any TEN of the following experiments:

Mathematics practical with Free and open Source Software (FOSS) tools for computer programs

Programs using Scilab/Maxima/Python:

1. To test the convergence of the Sequence.
2. To test the convergence of the sequence using Cauchy's Criterion.
3. To verify whether the given sequence is Monotonically increasing or decreasing.
4. To test the convergence of the series.
5. To test the convergence of the series by D'Alembert's ratio test and Raabe's test.
6. To find the Sum of the Series.
7. (i) To Verify the given Ring is Commutative or not.
   (ii) To check the Presence of the Unity element in the Ring.
8. (i) To Verify the given Ring is a Field /Integral Domain or not.
   (ii) To Verify given set is a Subring of a Ring or not.
9. To Verify given function is a Homomorphism or not.
10. (i) To verify the given polynomial is Reducible or Irreducible.
    (ii) To find the zeros of the given polynomial.
11. To find the G.C.D of any two polynomials.
12. (i) To find the Units of the given ring.
    (ii) To verify the given elements are Associates or not.

212515 – (DSE) Practical 6
Course duration: 16 weeks with 3 hours of lab work per week.

Any TEN of the following experiments:

Mathematics practical with Free and open Source Software (FOSS) tools for computer Programs

Programs using Scilab/Maxima/Python:

1. To find the root of the algebraic and the transcendental equations using Bisection method.
2. To find the root of the algebraic and the transcendental equations using Regula-Falsi method.
3. To find the root of the algebraic and the transcendental equations using Newton - Raphson method.
4. To solve the first order ordinary differential equation using fourth order Runge - Kutta method.
5. To evaluate the given integral using Simpson's one-third rule.
6. To evaluate the given integral using Simpson's three-eighth rule.
7. (i) To plot periodic functions with period 2π and $2l$.
   (ii) To find the full range Trigonometric Fourier Series of simple functions with period 2π and $2l$.
8. To find Half range Sine and Cosine Series.
9. (i) To find the Laplace Transform of the functions.
   (ii) To find the Inverse Laplace Transform of the functions.
10. (i) To find Laplace transform of Integrals.
    (ii) To find the value of some Definite Integrals using Laplace transform.
11. To find the Laplace transform of Unit Step Functions.
12. To Solve Ordinary Linear Differential Equations using Laplace Transforms.

V SEMESTER

212555 – (SEC): APPLIED MATHEMATICS

(2 lecture hours/week: 16 x 2 = 32 Hours)

Theory

UNIT I: Laplace Transforms (16 hrs)

Definition and basic properties – Laplace transforms of e^{kt}, cos kt, sin kt, a^t , t^n , cosh kt and sinh kt – Laplace transform of e^{at} F(t), t^n F(t), F(t)/t – problems – Laplace transform of derivatives of functions – Laplace transforms of integrals of functions – Laplace transforms of α functions – Inverse Laplace transforms – problems.

Convolution theorem – Simple initial value problems – Solution of first and second order differential equations with constant coefficients by Laplace transform method.

UNIT II: Fourier series (16 hrs)

Introduction – Periodic functions – Fourier series and Euler formulae (statement only) – Even and odd functions – Half range series – Change of interval.

Books for References:

1. Murray R Speigel – Laplace Transforms
2. E Kreyszig- Advanced Engineering Mathematics, Wiley India Pvt. Ltd.
3. M D Raisinghania, Laplace and Fourier Transforms S. Chand publications

V SEMESTER

212565 – (SEC) : NUMERICAL ANALYSIS

(2 lecture hours/week: 16 x 2 = 32 Hours)

Theory

UNIT I: Numerical Analysis (16 hrs)

Numerical solutions of Algebraic and transcendental equations – Bisection method – The method of false position – Newton – Raphson method.

Numerical solutions of first order linear differential equations – Euler – Cauchy method – Euler's modified method – Runge -Kutta fourth order method – Picard's method.

UNIT II: Finite differences and Numerical integration (16 hrs)

Forward and backward differences – shift operator – Interpolation – Newton – Gregory forward and backward interpolation formulae – Lagrange's interpolation formula.

General quadrature formula – Trapezoidal Rule – Simpson's $1/3^{rd}$ rule – Simpson's $3/8^{th}$ rule, Weddle's rule.

Books for References:

1. B. D Gupta – Numerical Analysis
2. H. C Saxena – Finite Difference and Numerical Analysis
3. S. S. Shastry- Introductory Methods of Numerical Analysis
4. B. S. Grewal – Numerical Methods for Scientists and Engineers
5. M K Jain, S R K Iyengar, and R K Jain, Numerical Methods for Scientific and Engineering Computation, 4th ed. New Delhi, India: New Age International, 2012.
6. S S Sastry, Introductory methods of Numerical Analysis, Prentice Hall of India, 2012.
7. E Kreyszig- Advanced Engineering Mathematics, Wiley India Pvt. Ltd.

VI SEMESTER

212635 – (DSE) : ALGEBRA - IV AND COMPLEX ANALYSIS I

(3 lecture hours/week: 16x3 = 48 Hours)

Theory

UNIT I: Vector Spaces (12 hrs)

Vector Spaces – Definition – Examples – Vector subspaces – Criterion for a subset to be a subspace – Algebra of Subspaces – Linear Combination – Linear Span – Linear dependence and linear Independence of vectors – Theorems on linear dependence and linear independence – Basis of a vector space – Dimension of a vector space — Some properties – Quotient spaces – Homomorphism of vector spaces– Isomorphism of vector spaces – Direct Sums.

UNIT II: Linear Transformations (12 hrs)

Linear transformation – Linear maps as matrices – Change of basis and effect of associated matrices – Kernel and image of a linear transformation – Rank and nullity theorem – Eigen values and Eigen vectors of a linear transformation.

UNIT III: Functions of a Complex Variable (12 hrs)

Equation to a circle and a straight line in complex form, Limit of a function – Continuity and differentiability – Analytic functions – Singular points – Cauchy-Riemann equations in Cartesian and polar forms – Necessary and sufficient condition for function to be analytic – Harmonic functions – Real and Imaginary parts of an analytic function are harmonic – Construction of analytic function i) Milne Thomson Method – ii) using the concept of Harmonic function.

UNIT IV: Transformations (12 hrs)

Definition – Jacobean of a transformation – Identity transformation – Reflection – Translation – Rotation – Stretching – Inversion – Linear transformation – Definitions – The Bilinear transformations – Cross Ratio of four points – cross ratio preserving property – Preservation of the family of straight lines and circles – conformal mappings – Discussion of the transformations $w = z^2$, $w = \sin z$. $w = e^z$, $w = ½ (z + 1/z)$.

Books for References:

1. I. N. Herstien – Topics in Algebra.
2. Stewart – Introduction to Linear Algebra .
3. T. K. Manicavasagam Pillai and K S Narayanan – Modern Algebra Volume 2.
4. S. Kumaresan – Linear Algebra.
5. G. D. Birkhoff and S Maclane – A brief Survey of Modern Algebra.
6. Gopalakrishna – University Algebra.
7. Saymour Lipschitz – Theory and Problems of Linear Algebra.
8. L. V. Ahlfors – Complex Analysis.
9. Bruce P. Palka – Introduction to the Theory of Function of a Complex Variable.
10. Serge Lang – Complex Analysis.
11. Shanthinarayan – Theory of Functions of a Complex Variable.
12. S. Ponnuswamy – Foundations of Complex Analysis.
13. R. P. Boas – Invitation to Complex Analysis.
14. R V Churchil & J W Brown, Complex Variables and Applications, 5th ed. : McGraw Hill Companies., 1989.
15. A R Vashista, Complex Analysis, Krishna Prakashana Mandir, 2012.
16. Tristan Needham, Visual Complex Analysis, Clarendon Press Oxford.

212635 - (DSE) Practical 7
Course duration: 16 weeks with 3 hours of lab work per week.
Any TEN of the following experiments:

Mathematics practical with Free and open Source Software (FOSS) tools for computer programs

Programs using Scilab/Maxima/Python:

1. Linear combination of vectors.
2. Linear dependent and independent vectors.
3. Basis and Dimension.
4. To verify whether a given transformation is linear or not.
5. Matrix of linear transformation w.r.t standard basis.
6. Eigen values and Eigen vectors.
7. The Rank – Nullity theorem.
8. i). Cauchy – Riemann equations in Cartesian form.
   ii) Cauchy – Riemann equations in Polar form.
9. Construction of analytic function using Milne – Thomson method.
10. Harmonic Function.
11. Cross ratio.
12. Bilinear transformations.

212635 - (DSE) Practical 8
Course duration: 16 weeks with 3 hours of lab work per week.
Any TEN of the following experiments:

Mathematics practical with Free and open Source Software (FOSS) tools for computer programs

Programs using Scilab/Maxima/Python:

1. Obtain Standard Graphs.
2. Obtain Induced Subgraphs.
3. Obtain Random graphs.
4. To check the given graphs are Isomorphic or not.
5. (i) Obtain degree of each vertex.
   (ii) Obtain distance between vertices and eccentricity of vertices.
6. Operation on graphs: Product of graphs.
7. Minimum/Maximum degree vertices of a graph.
8. Obtain radius and diameter of the graph.
9. Obtain edge connectivity and vertex connectivity.
10. Obtain minimum spanning tree.
11. Obtain Adjacency matrix of a graph.
12. Complex Integration.

VI SEMESTER

212655 – (SEC): COMPLEX ANALYSIS II AND IMPROPER INTEGRALS

(2 lecture hours/week: 16 x 2 = 32 HOURS)

Theory

UNIT I: Complex Integration (16 hrs)

The complex Line integral – Examples and Properties – Proof of Cauchy's Integral theorem using Green's Theorem – Direct consequences of Cauchy's theorem – The Cauchy's integral formula for the function and the derivatives – Applications to the evaluations of simple line integrals – Cauchy's Inequality – Liouville's theorem – Fundamental theorem of Algebra.

UNIT II: Improper Integrals (16 hrs)

Improper Integrals (definition only) – Gamma and Beta functions and results following the definitions – Connection between Beta and gamma functions – Applications to evaluation of integrals – Duplication formula.

Books for References:

1. L. V. Ahlfors – Complex Analysis.
2. Bruce P. Palka – Introduction to the Theory of Function of a Complex Variable.
3. Serge Lang – Complex Analysis.
4. Shanthinarayan – Theory of Functions of a Complex Variable.
5. S. Ponnuswamy – Foundations of Complex Analysis.
6. R P Boas – Invitation to Complex Analysis.
7. R V Churchil & J W Brown, Complex Variables and Applications, 5th ed.:McGraw Hill Companies., 1989.
8. A R Vashista, Complex Analysis, Krishna Prakashana Mandir, 2012.
9. Tristan Needham, Visual Complex Analysis, Clarendon Press Oxford.

VI SEMESTER

212665 –(SEC) : GRAPH THEORY

(2 lecture hours/week: 16 x 2 = 32 HOURS)

Theory

UNIT - I: Basics of Graph theory (16 hrs)

Basic Definitions, Isomorphism, Subgraphs, Operations on graphs, Walks, Paths, Circuits, Connected and disconnected graphs, Euler graphs, Hamiltonian graphs, Some Applications, Trees and Basic properties, Distance, Eccentricity, centre, Spanning trees, Minimal spanning tree.

UNIT - II: Cut- sets, Cut- vertices and Planar Graphs (16 hrs)

Cut- sets, Fundamental circuits; fundamental cut-sets, Connectivity, Separability, cutvertex, Network flows, 1- and 2- Isomorphisms. Planar and non planar graphs, Euler's formula, Detection of planarity. Matrix representation of Graphs – Adjacency matrix of a graph, Incidence matrix of a graph.

Books for References:

1. Edgar G. Goodaire and Michael M. Parameter, Discrete Mathematics with Graph theory, 2nd Ed., Pearson Education(Singapore) P. Ltd., Indian Reprint, 2003.
2. Rudolf Lidl And Gunter Pilz, Applied Abstract Algebra, 2nd Ed., Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint, 2004.
3. C.L. Liu – Elements of discrete mathematics, McGraw-Hill, 1986.
4. Kenneth H. Rosen – Discrete Mathematics and its applications, McGraw-Hill, 2002.
5. F Harary – Graph theory, Addison Wesley, Reading Mass, 1969.
6. N Deo – Graph theory with applications to Engineering and Computer Science, Prentice Hall of India, 1987.
7. K R Parthasarathy – Basic Graph theory, Tata McGraw-Hill, New Delhi, 1994.
8. D B West – Introduction to Graph theory, Pearson Education inc., 2001, 2nd Ed.
9. J A Bondy and U S R Murthy – Graph theory with applications, Elsevier, 1976.

Useful web links:

1. http://www.cs.columbia.edu/~zeph/3203s04/lectures.html
2. http://home.scarlet.be/math/matr.htm
3. http://www.themathpage.com/
4. http://www.abstractmath.org/
5. http://ocw.mit.edu/courses/mathematics/
6. http://planetmath.org/encyclopedia/TopicsOnCalculus.html
7. http://mathworld.wolfram.com/
8. http://www.univie.ac.at/future.media/moe/galerie.html
9. http://www.mathcs.org/
10. http://www.amtp.cam.ac.uk/lab/people/sd/lectures/nummeth98/index.htm
11. http://math.fullerton.edu/mathews/numerical.html
12. http://www.onesmartclick.com/engineering/numerical-methods.html
13. http://www.math.gatech.edu/~harrell/calc/
14. http://tutorial.math.lamar.edu/classes/de/de.aspx
15. http://www.sosmath.com/diffeq/diffeq.html
16. http://www.analyzemath.com/calculus/Differential_Equations/applications.html

7. http://www.math.gatech.edu/~harrell/calc/
8. http://www.amtp.cam.ac.uk/lab/people/sd/lectures/nummeth98/index.htm
9. http://www.fourier-series.com/
10. http://www.princeton.edu/~rvdb
11. http://www.zweigmedia.com/RealWorld/Summary4.html
12. http://www.math.unl.edu/~webnotes/contents/chapters.htm
13. http://www-groups.mcs.st-andrews.ac.uk/~john/analysis/index.html
14. http://web01.shu.edu/projects/reals/index.html

Evaluation Pattern:

For DSE Theory:

(i) Internal assessment

C1 Component: 10 Marks. This will be based on a theory test. This should be completed by the 8th week of the semester.
C2 Component: 10 Marks. This will be based on an assignment. This should be completed by the 15th week of the semester.

(ii) C3 Component:

Main Examination of 3 hours duration: Max. Marks : 80
The pattern of the question paper will be as follows:
There will be 5 questions, FIRST question carries 20 marks and remaining questions carrying 15 marks. All questions must be answered.

Question 1. This question covers all the four units of the syllabus. There are 12 questions (Three questions shall be chosen from each unit) each carrying 2 marks. The candidate has to answer any 10 questions.

Question 2. This question covers Unit 1 of the syllabus. There will be 5 sub- questions each carrying 5 marks. The candidate has to answer any three of the 5 sub-questions.
Question 3. This question covers Unit 2 of the syllabus. There will be 5 sub-questions each carrying 5 marks. The candidate has to answer any three of the 5 sub-questions.
Question 4. This question covers Unit 3 of the syllabus. There will be 5 sub-questions each carrying 5 marks. The candidate has to answer any three of the 5 sub-questions.
Question 5. This question covers Unit 4 of the syllabus. There will be 5 sub-questions each carrying 5 marks. The candidate has to answer any three of the 5 sub-questions.

For SEC Theory:

(i) Internal assessment

C1 Component: 05 Marks. This will be based on a theory test. This should be completed by the 8th week of the semester.
C2 Component: 05 Marks. This will be based on an assignment. This should be completed by the 15th week of the semester.

(ii) C3 Component:

Main Examination of 2 hours duration: Max. Marks : 40
The pattern of the question paper will be as follows:
There will be 3 questions, FIRST question carries 10 marks and remaining questions carrying 15 marks. All questions must be answered.

Question 1. This question covers all the two units of the syllabus. There are 8 questions (Four questions shall be chosen from each unit) each carrying 2 marks. The candidate has to answer any 5 questions.
Question 2. This question covers Unit 1 of the syllabus. There will be 5 sub- questions each carrying 5 marks. The candidate has to answer any three of the 5 sub-questions.
Question 3. This question covers Unit 2 of the syllabus. There will be 5 sub-questions each carrying 5 marks. The candidate has to answer any three of the 5 sub-questions.

For Practicals:

(i) Internal assessment

C1 Component (Practical VII and Practical VIII) 10 Marks : This will be based on a practical test. This should be completed by the 8th week of the semester.
C2 Component (Practical VII and Practical VIII) 10 Marks : This will be based on practical assignment. This should be completed by the 15th week of the semester.

(ii) C3 Component:

Main Examination of 4 hours duration : Max Marks: 80(40+40)

Three experiments will be given from Practical VII and Practical VIII each carrying 10 marks and 10 marks for each record.

In 5^{th} and 6^{th} semesters, the student will write Practical VII and Practical VIII in one session of 4hours duration. The student will be evaluated for 80 marks in C3 as per the following scheme:

Heading	Marks
Experiments (Practical VII and Practical VIII)	60
Viva(Practical VII and Practical VIII)	10
Record (Practical VII and Practical VIII)	10
Total	80

4. Minimum marks for Securing Credits: As per CBCS regulations.
5. Minimum credits for getting B.Sc. Degree: As per CBCS regulations.
6. Award of degree: As per CBCS regulations.

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DEPARTMENT OF MATHEMATICS

Pattern of Question Paper

(For the semester V)

Paper (DSE – 212515)

(Duration of Exam 3 Hrs) **Max marks : 80**

Part A

Answer any ten questions 10×2 =20

1-3 Sequences

4-6 Infinite Series

7-9 Rings and Fields

10-12 Polynomial rings and Homomorphisms

Part B

Answer any three questions from each unit (Each question carries 5 marks)

4×15 =60

Sequences : a, b , c, d, e

Infinite Series : a, b , c, d, e

Rings and Fields : a, b , c, d, e

Polynomial rings and Homomorphisms : a, b , c, d, e

(For the semester V)

Paper (SEC – 212555)

(Duration of Exam 2 Hrs) **Max marks : 40**

Part A

Answer any five questions 5×2 =10

1-4 Laplace Transforms

5-8 Fourier series

Part B

Answer any three questions from each unit (Each question carries 5 marks)

2×15 =30

Laplace Transforms : a, b, c, d, e

Fourier series : a, b, c, d, e

(For the semester V)

Paper (SEC – 212565)

(Duration of Exam 2 Hrs) **Max marks :40**

Part A

Answer any five questions 5×2 =10

1-4 Numerical Analysis

5-8 Finite differences and Numerical integration

Part B

Answer any three questions from each unit (Each question carries 5 marks)
2×15 =30

Numerical Analysis : a, b , c, d, e

Finite differences and Numerical integration : a, b , c, d, e

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DEPARTMENT OF MATHEMATICS

Pattern of Question Paper

(For the semester VI)

Paper (DSE – 212635)

(Duration of Exam 3 Hrs) **Max marks :80**

Part A

Answer any ten questions 10×2 =20

1-3 Vector Spaces

4-6 Linear Transformations

7-9 Functions of a Complex Variable

10-12 Transformations

Part B

Answer any three questions from each unit (Each question carries 5 marks)

4×15 =60

Vector Spaces : a, b , c, d, e

Linear Transformations : a, b , c, d, e

Functions of a Complex Variable : a, b , c, d, e

Transformations : a, b , c, d, e

(For the semester VI)

Paper (SEC – 212655)

(Duration of Exam 2 Hrs) **Max marks :40**

Part A

Answer any five questions 5×2 =10

1-4 Complex Integration

5-8 Improper Integrals

Part B

Answer any three questions from each unit (Each question carries 5 marks)
2×15 =30

Complex Integration : a, b , c, d, e

Improper Integrals : a, b , c, d, e

(For the semester VI)

Paper (SEC – 212665)

(Duration of Exam 2 Hrs) Max marks : 40

Part A

Answer any five questions 5×2 =10

1-4 Basics of Graph Theory

5-8 Cut- sets, Cut- vertices and Planar Graphs

Part A

Answer any three questions from each unit (Each question carries 5 marks)

2×15 =30

Basics of Graph Theory : a, b, c, d, e

Cut- sets, Cut- vertices and Planar Graph : a, b, c, d, e

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DEPARTMENT OF MATHEMATICS

LIST OF EXAMINERS (UG)

Sl. No	Name	Designation	Address
1	Dr. SUMATHI M P	Assistant Professor	SBRR MAHAJANA FIRST GRADE COLLEGE, MYSURU
2	NIRANJAN L	Assistant Professor	SBRR MAHAJANA FIRST GRADE COLLEGE, MYSURU
3	SHYLASHRYEE	Associate Professor	AVK COLLEGE FOR WOMENS,

			HASSAN
4	SALY ABRAHAM	Associate Professor	TERESIAN COLLEGE, MYSORE
5	MANJUNATH M	Associate Professor	P E S COLLEGE OF ARTS AND SCIENCE , MANDYA
6	DAKSHAYINI B	Associate Professor	JSS COLLEGE, NANJANGUD
7	RUBY SALASTINA	Assistant Professor	YUVARAJA'S COLLEGE, MYSORE
8	JAYANTHI C	Associate Professor	TERESIAN COLLEGE , MYSORE
9	PRAKASHA P	Assistant Professor	GOVT FIRST GRADE COLLEGE FOR WOMEN, MADDUR
10	NATESH M K	Assistant Professor	GOVT FIRST GRADE COLLEGE, HOLENARASIPURA
11	VINAYKUMAR P N	Assistant Professor	SRI H.D DEVEGOWDA GOVT FIRST GRADE COLLEGE,PADUVALAHIPPE.
12	SUMA B A	Assistant Professor	N.I.E COLLEGE OF SCIENCE, MYSORE
13	SHRIDHARA C	Associate Professor	MAHARANI SCINCE COLLEGE FOR WOMEN, MYSORE
14	VENUPRASHAD K K	Assistant Professor	GOVT. FIRST GRADE COLLEGE, HETHUR, SAKALESHAPURA TALUK
15	SIDDARAJU	Assistant Professor	GFGC FOR WOMEN , HOLENARASIPURA
16	GURUPRASHAD P S	Assistant Professor	GOVT FGC, CHAMARAJANAGAR
17	RAVIKUMAR N	Assistant Professor	GOVT, FIRST GRADE COLLEGE, GUNDLUPET
18	JYOTHI M J	Assistant Professor	GOVT FIRST GRADE COLLEGE, CHAMARAJANAGAR
19	NANDUSHWAMY N	Assistant Professor	SRI MAHADESWARA COLLEGE, KOLLEGALA
20	RAMESH M S	Assistant Professor	GOVT COLLEGE FOR WOMEN, MANDYA
21	SWAMY	Assistant Professor	MAHARANI'S SCINCE COLLEGE FOR WOMEN, MYSORE
22	MAHADEVASWAMY B S	Assistant Professor	MAHARANI SCIENCE COLLEGE FOR WOMENS, MYSORE
23	NANJUNDSWAMY M	Assistant Professor	SRI MAHADESWARA COLLEGE, KOLLEGALA
24	MANJULA K M	Assistant Professor	GOVT WOMENS COLLEGE, HASSAN
25	SUDHAKARA K B	Assistant Professor	D.DEVARAJA URS FIRST GRADE COLLEGE, HUNSUR
26	SHREEDEVI M J	Assistant Professor	GOVT SCINCE COLLEGE, HASSAN
27	HARSHAVARDHANA C N	Assistant Professor	GOVT FIRST GRADE COLLEGE FOR WOMEN, HOLENARASIPURA .
28	POORNIMA A R	Assistant Professor	N.I.E. COLLEGE OF SCIENCE , MYSORE
29	THEJAS N S	Assistant Professor	N.I.E. COLLEGE OF SCIENCE , MYSORE
30	MAMATHA J	Assistant Professor	GOVT. COLLEGE FOR WOMEN, VIJAYANAGAR, MYSORE
31	RENUKADEVI K	Assistant Professor	GOVT. F G C ,KUVEMPUNAGAR, MYSORE.

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Date: 11-08-21

Proceedings of BoS Meeting

Proceedings of board of studies meeting in Mathematics held on 11-08-2021 at 3:00 PM in online mode in Mathematics Department, SBRR Mahajana First Grade College, Mysuru

At the outset, the chairperson BOS in Mathematics welcomed the members to the meeting of BOS and briefed about the agenda to be discussed .

The following agenda were placed by the chairperson which were discussed and resolved as follows:

Agenda 1: To frame, discuss and approve the syllabus under choice based credit system for V and VI semester BSc Mathematics for the academic year 2021-22 onwards .

Agenda 2: To prepare the panel of examiners for BSc Mathematics for

the acedamic year 2021-22 onwards .

Agenda 3: Discuss about the scheme of valuation for Practicals and

Theory Examination for the academic year 2021-22 onwards .

Decision Taken (Resolutions)

1. V and VI semester B.Sc Mathematics Syllabus was approved.
2. List of Examiners were approved.
3. Scheme of valuation for both Theory and Practical were Approved.

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Date: 11-08-21

The BoS meeting in Mathematics was held on 11-08-21 at 3.00PM in Department of Mathematics by online mode. The syllabus for the V and VI sem B.SC Mathematics has been approved. The List of Examiners is also approved.

This for your kind information .

Date: Signature

Place: Name:
Designation:
Address:

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BOARD OF STUDIES (BoS)

DEPARTMENT OF MICROBIOLOGY

UG ☑

PG ☐

NEP Syllabi for I and II Semester B.Sc. Microbiology

2021-22

DEPARTMENT OF MICROBIOLOGY

Motto

Impart benefit to the society

Vision

To provide innovative research expertise

Mission

To expand the knowledge of scientific field research

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2**: Problem Analysis –Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.**

PO 3: Design and Development of Solutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate hypothesis, augment researchquestions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resource and to **develop scientific** attitude at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a **team or** as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

Board of Studies

Sl. No.	Category	Name and Designation	Address for Communication	e-Mail & Mobile number
1	Chairperson	Smt. Shruthi Prakash H P Assistant Professor & HoD	Department of Microbiology, SBRR Mahajana First Grade College, Mysuru -12	shruthiprakashhp.fgc@mahajana.edu.in 9731468085
2	Member	Ms. Spandana N Assistant Professor		spandanar.fgc@mahajana.edu.in 9449680239
3		Smt. Sangeetha K P Assistant Professor		sangeethasangeethakp@gmail.com 8431254737
4	Two Experts from Other University	Dr. Jamuna Bai A Assistant Professor	Department of Microbiology, Faculty of life Sciences, JSS – Academy of Higher Education and Research, Mysuru - 570004	jamunabhounsle@gmail.com 9480278098
5		Dr. Sindhu R Assistant Professor		sindhur@jssuni,edu.in 9986297935
6	Nominee by the Vice Chancellor	Dr. Sreenivasa M Y Professor	DOS in Microbiology, UOM, Manasagangotri, Mysuru - 570005	sreenivasamy@gmail.com 9449054480
7	One Person from Industry/	Smt. Sushrutha Assistant Manager	Zeus Biotech Limited, Metagalli, Mysuru -570016	sushruthazeus@gmail.com 8971703690

	Corporate Sector/Allied Area			
8	Alumnus	Dr. Chaitra Narayan Founder	Codagu Agritech-Eco, Plot no. 24/3 and 24/4, KIADB, Industrial area, kudlur PB #58, Kushalnagar - 571234	codagu.agritech.giu@gmail.com 9886299801

Year-wise Structure (NEP 2020): Microbiology

Discipline Specific Courses (DSC) and Open Elective (OE)

I Year

Course Type, Code and Title		Hours /Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Microbiology – I Semester									
212179	**DSC (1) -** General Microbiology	4	0	4:0:2 **(6 Credits)**	20	20	60	2½ Hours	150
	DSC (1) Lab - General Microbiology Lab	0	4		10	15	25	3 Hours	

OE (1)	Microbial Technology for Human Welfare **21OEMIB101**	3	0	3:0:0 **(3 Credits)**	20	20	60	2½ Hours	100
Microbiology – II Semester									
212279	**DSC (2) -** Microbial Biochemistry And Physiology	4	0	4:0:2 **(6 Credits)**	20	20	60	2½ Hours	150
	DSC (2)Lab - Microbial Biochemistry And Physiology Lab	0	4		10	15	25	3 Hours	
OE(2)	Environmental and Sanitary Microbiology **21OEMIB201**	3	0	3:0:0 **(3 Credits)**	20	20	60	2½ Hours	100

DSC (1) Syllabus for B.Sc. Microbiology (Basic and Honors)

Semester I

Course Code: 212179	**Course Title:** General Microbiology (Theory) General Microbiology Lab (Practical)
Course Credits (L:T:P) : 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Acquisition of concepts of microbiology.
CO 2: Professional skills in handling microbes.

CO 3: Thorough applications of good laboratory and good manufacturing practices in microbial quality control.
CO 4: Reviewing the structural organization and reproduction of microorganisms.

Course Content

Content	Hours
UNIT – 1 Historical development, major contributions, origin of microorganisms and microscopy	
Historical development of microbiology -Theory of spontaneous generation, Biogenesis and Abiogenesis. Contributions of Anton Von Leeuwenhoek, Louis Pasteur, Robert Koch, Joseph Lister and Edward Jenner, Alexander Fleming, Martinus Beijerinck, Elie Metchnikoff. Contributions of Indian scientists in the field of Microbiology. Branches of Microbiology, **Microcopy**- working principle, construction and operation of simple, compound microscopes.	**14**
UNIT – 2: Staining, sterilization and preservation of microorganisms	
Staining: Nature of stains, principles, mechanism, methods and types of staining- Simple, Differential-Gram staining, Acid fast staining, Structural staining of capsule, cell wall, endospore. **Sterilization:** Principles, types and techniques, Physical and chemical methods. Preservation of microorganisms: Methods of preservation of microorganisms; slant culture, stab culture, soil culture, mineral oil overlaying, glycerol preservation.	**14**
UNIT - 3: Types, structure, organization and reproduction of prokaryotic microorganism	
Overview of Prokaryotic Cell Structure: Size, shape, arrangement. Diagram of Prokaryotic cell organization, cell wall structure of Gram positive and negative bacteria, cell membrane; Cytoplasmic matrix- Cytoskeleton, ribosome, inclusion granules: Composition and function. **Nuclear Materials** – Bacterial chromosomes structure (its differences with the Eukaryotic chromosome); Extra Chromosomal materials. Components external to cell wall- capsule, slime, s-layer, pili, fimbriae, flagella; structure, motility, chemotaxis. **Bacterial Endospore** - Examples of endospore forming organisms, habitats, function, formation and germination. Reproduction in bacteria and bacterial cell cycle.	**14**
UNIT - 4: Types, structure, organization and reproduction of eukaryotic microorganisms	

Over view of eukaryotic cell structure: General structure and types of cells; External cell Coverings and cell membrane. Structure and function of Cytoplasmic matrix. **cytoskeleton:** Structure and function; single Membrane organelles- Endoplasmic reticulum, Golgi complex, Lysosomes, Vesicles and Ribosomes; Double Membrane organelles- Nucleus, **Mitochondrion and Chloroplast**: Structure and Functions; Peroxisomes; Organelles of motility Structure and movement of flagella and cilia.	**14**

References:

1. Prescott, Harley, Klein's Microbiology, J.M. Willey, L.M. Sherwood, C.J. Woolverton, 7th International edition 2008, McGraw Hill.
2. Foundations in Microbiology, K. P. Talaro, 7th International edition 2009, McGrawHill.
3. A Textbook of Microbiology, R. C. Dubey and D. K. Maheshwari, 1st edition, 1999, S. Chand & Company Ltd.
4. Brock Biology of Microorganisms, M.T.Madigan, J.M.Martinko, P. V. Dunlap, D. P.Clark- 12th edition, Pearson International edition 2009, Pearson Benjamin Cummings.
5. Microbiology – An Introduction, G. J.Tortora, B. R.Funke, C. L. Case, 10th ed. 2008,Pearson Education.
6. General Microbiology, Stanier, Ingraham et al, 4th and 5th edition 1987,Macmillan education limited.
7. Microbiology- Concepts and Applications, Pelczar Jr,Chan, Krieg, International ed, McGraw Hill.
8. Black, J.G. 2008. Microbiology principles and explorations. 7edn. John Wiley and Sons Inc., New Jersey 846 pp.

Weblinks:

1. https://www.britannica.com/science/microbiology
2. http://cattheni.edu.in/wp-content/uploads/2018/09/3.Staining-and-Sterilization-Techniques.pdf
3. https://courses.lumenlearning.com/suny-wmopen-biology2/chapter/the-structure-of-prokaryotes/
4. https://openstax.org/books/microbiology/pages/3-4-unique-characteristics-of-eukaryotic-cells

DSC (1): Practical
General Microbiology

(4Hrs/week) 2 Credits

1. Microbiological laboratory standards and safety protocols.

2 & 3. Operation and working principles of light and compound microscope.

4. Working principles and operations of basic equipments of microbiological laboratory (Autoclave, Hot Air Oven, Incubator, Laminar air flow chamber).

5. Applications of basic microbiological tools (Pipettes, Micropipette, Bunsenburner, Inoculation loop, Inoculation needle).

6&7. Demonstration and observations of microorganisms under compound microscope (Algae, and Cyanobacteria)

8. Demonstration of bacterial motility by hanging drop method.

9. Positive staining.

10. Negative staining.

11. Differential staining - Gram staining.

12. Bacterial endospore staining.

13. Staining of fungi by Lactophenol cotton blue.

14. &15. Microscopic measurement of microorganisms/spores using stage and ocular micrometer

Course Articulation Matrix – 212179

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	2	2	-	2	1	-	-	1	-	2
CO 2	2	2	2	2	-	2	2	-	-	1	-	2
CO 3	1	2	2	2	-	2	2	-	-	1	-	2
CO 4	2	2	2	2	-	-	-	-	-	1	-	2
Weighted Average	1.75	2	2	2	-	2	1.66	-	-	1	-	2

OE (1) Microbiology Syllabus for All Programs (Except Science)

Semester I

Course Code: 21OEMIB101	**Course Title:** Microbial Technology for HumanWelfare
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Acquire information about Fermentation Microbial Technology.
CO 2: Considerate broader goals of Agricultural Microbiology.
CO 3: Appreciate the comprehension of antibiotic therapy, drugs and Vaccines.

Course Content

Content	Hours
UNIT – 1 Food and Fermentation Microbial Technology	
Fermented Foods – Types, Nutritional Values, Health Benefits- Prebiotics, Probiotics, Synbiotics and Nutraceutical Foods. **Fermented Products** – Alcoholic and nonalcoholic beverages, fermented dairyproducts, Fruit fermented drinks.	**14**
UNIT – 2 Agricultural Microbial Technology	
Microbial Fertilizers, Microbial Pesticides, Microbial Herbicides, Mushroom Cultivation and its nutritional value, BiogasProduction.	**14**
UNIT – 3 Pharmaceutical Microbial Technology	
Microbial Drugs – General Characteristics and Development of Drug Resistance. Antibiotics – Types, Functions and Antibiotic Therapy, Vaccines – Types, Properties, Functions and Schedules.	**14**

References:

1. Prescott, Harley, Klein's Microbiology, J.M. Willey, L.M. Sherwood, C.J. Woolverton, 7th International, edition 2008, McGraw Hill.
2. Brock Biology of Microorganisms, M.T.Madigan, J.M.Martinko, P. V. Dunlap, D. P. Clark- 12th edition, Pearson International edition 2009, Pearson Benjamin Cummings.
3. Microbiology – An Introduction, G. J.Tortora, B. R.Funke, C. L. Case, 10th ed.2008,Pearson Education.
4. Schlegel, H.G. 1995.General Microbiology. Cambridge University Press, Cambridge, 655pp.

Weblinks:

1. https://www.frontiersin.org/articles/10.3389/fpls.2015.00659/full
2. https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1
3. https://www.healthline.com/nutrition/8-fermented-foods

Course Articulation Matrix – 21OEMIB101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	1	-	-	2	2	-	-	1	-	1
CO 2	2	1	1	-	1	2	2	-	-	1	-	1
CO 3	2	1	1	1	-	2	2	-	-	1	-	1
Weighted Average	2	1	1	1	1	2	2	-	-	1	-	1

SEC-(1)

Microbiological Methods and Analytical Techniques

Semester I:

Course Code: 212182	**Course Title**: Microbiological Methods and Analytical Techniques
Course Credits (L:T:P): 01 (1:0:0)	**Hours of Teaching/Week:** 1 Hours (Theory)
Total Contact Hours: 14 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Accomplish microbiology and analytical techniques.
CO 2: Acquire broader facts of environment, health, and safety
CO 3: Expertise in professional skills

Course Content:

Content	Hours
Microbiological Methods and Analytical Techniques	
Microbiological Skills Microbiological culture media: Types, Composition, Preparation, Application and storage**;** Ingredients of media, natural and synthetic media, chemically defined media, complex media, selective, differential, indicator, transport, storage enriched andenrichment media. **Isolation and cultivation of microorganisms:** Collection of samples, processing of samples, serial dilution, technique, inoculation of samples, incubation and observations of microbial colonies. Morphological characterization of microorganisms - Colony characteristics, Microscopic characters, biochemical/physiological tests or properties and identification. Subculturing of microorganisms and pure culture techniques. Preservation of microorganisms. **Advanced Microscopic Skills:** Different types of microscopes - Phase contrast, Bright Field, Dark Field, Fluorescent, Confocal, Scanning and Transmission Electron Microscopy. **Analytical Skills:** Centrifugation, Chromatography and Spectroscopy: Principles, Types, Instrumentation, Operation and applications.	**14**

References:

1. Prescott, Harley, Klein's Microbiology, J.M. Willey, L.M. Sherwood, C.J. Woolverton, 7th International, edition 2008, McGraw Hill.
2. Foundations in Microbiology, K. P. Talaro, 7th International edition 2009, McGrawHill.
3. A Textbook of Microbiology, R. C. Dubey and D. K. Maheshwari, 1st edition, 1999, S. Chand & Company Ltd.
4. General Microbiology, Stanier, Ingraham et al, 4th and 5th edition 1987, Macmillan education limited.
5. Microbiology- Concepts and Applications, Pelczar Jr,Chan, Krieg, International ed,McGraw Hill.

Weblinks:

1. http://cattheni.edu.in/wp-content/uploads/2018/09/3.Staining-and-Sterilization-Techniques.pdf
2. https://courses.lumenlearning.com/suny-wmopen-biology2/chapter/the-structure-of-prokaryotes/
3. https://openstax.org/books/microbiology/pages/3-4-unique-characteristics-of-eukaryotic-cells

SEC (1) - Practicals

Microbiological Methods and Analytical Techniques

1. Preparation of different microbiological culture media
2. Isolation and cultivation of bacteria, Actinobacteria, fungi and algae
3. Characterization and identification of bacteria, Actinobacteria, fungi and algae –

colony characters and microscopic characters

4. Biochemical and physiological tests for identification of bacteria
5. Methods and practices in microbiology lab: MSDS (Material Safety Data Sheet), Good clinical Practices (GCP), Standard Operating Procedure (SOP), Good Laboratory Practices (GLP), Good Manufacturing Practices.
6. Usage and maintenance of basic equipment of microbiology lab: Principles, calibrations, and SOPs of balances (Types), pH meter (Types), Autoclaves (Types), Laminar flows and biosafety cabinets, basic Microscopes, homogenizers, stirrers.
7. Procedures for documentation, lab maintenance, repair reporting
8. Separation of mixtures of biomolecules by paper / thin layer chromatography.
9. Demonstration of column packing in column chromatography.

Course Articulation Matrix - 212182

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	1	1	2	1	1	-	-	1	-	2
CO 2	-	1	1	1	2	1	1	-	-	1	-	2
CO 3	2	1	1	1	2	1	1	-	-	1	-	2
CO 4	2	1	1	1	2	1	1	-	-	1	-	2
Weighted Average	2	1	1	1	2	1	1	-	-	1	-	2

DSC (2) Syllabus for B.Sc. Microbiology (Basic and Honors)

Semester II

Course Code: 212279	**Course Title:** Microbial Biochemistry and Physiology (Theory) Microbial Biochemistry and Physiology (Practical)
Course Credits (L:T:P) : 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56Hours(Theory) 56 Hours(Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Compare the types of biomolecules, structure, and their functions.
CO 2: Exhibit the skills to perform bioanalytical techniques.
CO 3: Solicit proficiency on microbial growth and nutrition.
CO 4: Acquire broader facts of Microbial respiration and Photosynthesis.

Course Content:

Content	Hours
UNIT - 1 Biochemical Concepts	
Basic Biochemical Concepts: Major elements of life and their primary characteristics, atomic bonds and molecules – bonding properties of carbon, chemical bonds- covalent and non covalent, Hydrogen bonds and Vander Waal Forces. **Biological Solvents:** Structure and properties of water molecule, Water as an universal solvent, polarity, hydrophilic and hydrophobic interactions, properties of water, Acids, bases, electrolytes, hydrogen ion concentration, pH, buffers and physiological buffer system.	**14**
UNIT - 2 Macromolecules – Types and Properties	
Carbohydrates: Definition, classification, properties and its importance. **Amino acids and proteins**: Definition, classification, properties and importance of aminoacids. **Lipids and Fats:** Definition, classification, properties and importance of lipids. **Vitamins**: Definition, properties and importance of chlorophyll,cytochrome and hemoglobin.	**14**
UNIT – 3 Microbial Physiology	
Microbial Growth: Definition of growth, Growth curve, phases of growth, Influence of environmental factors on growth. Definition of generation time and specific growth rate. Synchronous growth,Continuous growth (chemostat and turbidostat), Diauxic growth. Measurement of Growth: Direct Microscopic count - Haemocytometer; Viable count, Membrane filtration; Electronic Counting; Measurement of cell mass; Turbidity measurements-spectrophotometer techniques. **Microbial Nutrition:** Microbial nutrients, Classification of organisms based on carbon source, energy source and electron source, Macro and micronutrients. Membrane Transport: Types of Cellular transport, Passive, Facilitated, Active, Group Translocation, Ion transduction Na K^+, ATPase.	**14**
UNIT – 4 Microbial Physiology- Microbial Respiration, Microbial Photosynthesis	
Microbial Respiration: Respiratory electron transport chain in bacteria, oxidation – reduction reactions, protein translocation, substrate level phosphorylation – inhibitors and mechanism, chemiosmotic coupling. Fermentation reactions (homo and hetero). **Microbial Photosynthesis:** Definition, Photosynthetic microorganisms, Oxygenic and Anoxygenic	**14**

types, Light harvesting pigments, Apparatus and components of Photosynthesis , Photophosphorylation, CO_2 fixation pathways: Calvin cycle, Reductive TCA pathway.	

References:

1. Cohen, Georges N, 2014, Microbial Biochemistry, Springer Netherlands.
2. Felix Franks, 1993; Protein Biotechnology, Humana Press, New Jersey.
3. Stryer L, 1995; Biochemistry, Freeman and Company, New York.
4. Voet & Voet, 1995; Biochemistry, John Wiley and Sons, New York.
5. Nelson and Cox, 2000; Lehninger Principles of Biochemistry, Elsevier Publ.
6. Harper, 1999; Biochemistry, McGraw Hill, New York.
7. Palmer T. (2001), Biochemistry, Biotechnology and Clinical Chemistry, Harwood Publication, Chichester.
8. Boyer R. (2002), Concepts in Biochemistry 2nd Edition, Brook/ Cole, Australia.
9. Moat A. G., Foster J.W. Spector. (2004), Microbial Physiology 4th Edition Panama Book Distributors.

Weblinks:

1. https://www.austincc.edu/rohde/CHP7a.htm
2. https://www.slideshare.net/tamilsilambarasan/microbial-respiration
3. https://www.nature.com/articles/srep35496
4. https://iubmb.onlinelibrary.wiley.com/doi/10.1002/bmb.20727

DSC (2): Practical

Microbial Biochemistry and Physiology

(4Hrs/week) 2 Credits

1. Preparation of Physiological Saline and Serial dilution.
2. Study of Photographs (Colorimeter, Photosynthetic apparatus, Colony counter, Membrane filter).
3. Qualitative determination of Carbohydrates.

4&5. Qualitative determination of Proteins and Lipids.

6&7. Determination of bacterial growth by Spectrophotometric method & calculation of generation time.

8 Measurement of growth by cell number using Haemocytometer.
9 Cultivation of Anaerobic microorganisms using Gaspak method.
10 Isolation of microorganisms by Spread plate, Pour plate and Streak plate methods.
11 Effect of Carbon on the growth of the microorganisms.
12 Effect of Nitrogen on the growth of the microorganisms.
13 Effect of pH on bacterial growth.
14 Effect of Salt concentration on bacterial growth.
15 Effect of Temperature on bacterial growth.

Course Articulation Matrix - 212279

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	1	1	2	-	-	-	-	-	2	-	2
CO 2	1	1	1	2	2	-	-	-	-	2	-	2
CO 3	3	1	1	-	2	1	-	-	-	2	-	2
CO 4	3	1	1	-	-	1	-	-	-	2	-	2
Weighted Average	2.5	1	1	-	2	1	-	-	-	2	-	2

OE (2) Microbiology Syllabus for All Programs (Except Science)

Semester II

Course Code: 21OEMIB201	**Course Title:** Environmental and Sanitary Microbiology
Course Credits : 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Comprehend the concepts of Microbial distribution in the environment.
CO 2: Considerate broader goals of detection and control of microbial contaminants**.**
CO 3: Impact of microbial infections and diseases on public health.

Course Content

Content	Hours
UNIT – 1 Soil and Air Microbiology	
Soil and Air as a major component of environment. Types and properties of soil and air. Distribution of microorganisms in soil and air. Major types of beneficial and harmful microorganisms in soil and air.	**14**
UNIT – 2 Water Microbiology	
Water as a major component of environment. Types, properties and uses of water. Microorganisms of different water bodies. Standard qualities of drinking water.	**14**
UNIT – 3 Sanitary Microbiology	
Public health hygiene and communicable diseases. Survey and surveillance of microbial infections. Airborne microbial infections (Tuberculosis), waterborne microbial infections (Cholera), Food borne microbial infections (Botulism). Epidemiology of microbial infections, their detection and control.	**14**

References:

1. Prescott, Harley, Klein's Microbiology, J.M. Willey, L.M. Sherwood, C.J. Woolverton, 7th International, edition 2008, McGraw Hill.
2. A Textbook of Microbiology, R. C. Dubey and D. K. Maheshwari, 1st edition, 1999, S.Chand & Company Ltd.
3. Brock Biology of Microorganisms, M.T.Madigan, J.M.Martinko, P. V. Dunlap, D. P. Clark-12th edition, Pearson International edition 2009, Pearson Benjamin Cummings.
4. Microbiology- Concepts and Applications, Pelczar Jr,Chan, Krieg, International ed, McGraw Hill.

Weblinks:

1. https://gcwgandhinagar.com/econtent/document/1587964691air,soil%20and%20water%20b

Orne%20microorganisms%20in%20food.pdf
2. https://repo.knmu.edu.ua/bitstream/123456789/28121/1/Kovalenko%20Sanitary%20microbiology.pdf
3. https://asm.org/Articles/2020/December/Why-Studying-Microorganisms-in-the-Air-Is-Vital

Course Articulation Matrix – 21OEMIB201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	1	1	-	-	1	1	-	-	1	-	1
CO 2	2	1	1	2	-	1	1	-	-	1	-	1
CO 3	2	1	1	2	-	1	1	-	-	1	-	1
Weighted Average	2	1	1	2	-	1	1	-	-	1	-	1

Continuous Formative Evaluation/Internal Assessment

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the collegefor each course. This forms the third and final component of assessment (C3) and the maximum marks forthe final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of thecase and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/ Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the ratio is 25 (10 + 15):25).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decidedby the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed aboutthe modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall beobtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:Part-A (C1): 10 marks

  Part-B (C2): 10 marks + Record: 05 marks = 15 marks
- The student is evaluated for 25 marks in C3 as per the following scheme:

Part A	Major question	08
Part B	Minor question	04
Identify and comment (Any four photographs: Decided by the External Examiner)		08
Viva Voce		05
TOTAL		**25**

I SC Theory Question Paper Pattern

B.Sc MICROBIOLOGY

Duration: 2½ Hours **Maximum: 60 Marks**

Instructions: All questions are compulsory.

Draw neat labeled diagrams wherever necessary.

I Define any FIVE of the following **5X2=10 Marks**

1. (a) **(b)**

(c) **(d)**

(e) **(f)**

(g)

II Write short notes any FIVE of the following **5X6=30 Marks**

(2) **(6)**

(3) **(7)**

(4) **(8)**

(5)

III Answer any TWO of the following **2X10=20 Marks**

(9)

(10)

(11)

(12)

PATTERN OF PRACTICAL EXAMINATION

Practical examination – B.Sc MICROBIOLOGY- C3

Duration: 3 hours **Max. Marks: 25**

Q. 1	Major question	08 Marks
Q. 2	Minor question	04 Marks
Q. 3	Identify and comment	2X4 = 08Marks
Q. 4	Viva-voce	05 Marks

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NEP Syllabi for III and IV Semester B.Sc. Microbiology

2022-23

DEPARTMENT OF MICROBIOLOGY

Motto

Impart benefit to the society

Vision

To provide innovative research expertise

Mission

To expand the knowledge of scientific field research

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2**: Problem Analysis –Recognize real-world problems and user's requirementsto propose solutions for the same using basic principles of science.**

PO 3: Design and Development of Solutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resource and to **develop scientific** attitude at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a **team or** as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

Board of Studies

Sl. No.	Category	Name and Designation	Address for Communication	e-Mail & Mobile number
1	Chairperson	Smt. Shruthi Prakash H P Assistant Professor & HoD	Department of Microbiology, SBRR Mahajana First Grade College, Mysuru -12	shruthiprakashhp.fgc@mahajana.edu.in 9731468085
2	Member	Ms. Spandana N Assistant Professor		spandanar.fgc@mahajana.edu.in 9449680239
3		Smt. Sangeetha K P Assistant Professor		sangeethasangeethakp@gmail.com 8431254737
4	Two Experts from Other University	Dr. Jamuna Bai A Assistant Professor	Department of Microbiology, Faculty of life Sciences, JSS – Academy of Higher Education and Research, Mysuru - 570004	jamunabhounsle@gmail.com 9480278098
5		Dr. Sindhu R Assistant Professor		sindhur@jssuni,edu.in 9986297935
6	Nominee by the Vice Chancellor	Dr. Sreenivasa M Y Professor	DOS in Microbiology, UOM, Manasagangotri, Mysuru - 570005	sreenivasamy@gmail.com 9449054480
7	One Person from	Smt. Sushrutha Assistant Manager	Zeus Biotech Limited, Metagalli,	sushruthazeus@gmail.com 8971703690

	Industry/ Corporate Sector/Allied Area		Mysuru -570016	
8	Alumnus	Dr. Chaitra Narayan Founder	Codagu Agritech-Eco, Plot no. 24/3 and 24/4, KIADB, Industrial area, kudlur PB #58, Kushalnagar - 571234	codagu.agritech.giu@gmail.com 9886299801

Year-wise Structure (NEP 2022): Microbiology

Discipline Specific Courses (DSC) and Open Elective (OE)

II Year

Course Type, Code and Title		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Microbiology – III Semester									
222379	**DSC (3) -**Microbial Diversity	4	0	4:0:2 **(6 Credits)**	20	20	60	2½ Hours	**150**
	DSC (3)Lab – Microbial Diversity Lab	0	4		10	15	25	3 Hours	

OE (3)	Microbial Entrepreneurship **22OEMIB301**	3	0	3:0:0 **(3 Credits)**	20	20	60	2½ Hours	**100**
Microbiology – IV Semester									
222479	**DSC (4) -** Microbial Enzymology and Metabolism	4	0	4:0:2 **(6 Credits)**	20	20	60	2½ Hours	**150**
	DSC (4) Lab - Microbial Enzymology and Metabolism Lab	0	4		10	15	25	3 Hours	
OE (4)	Human Microbiome **22OEMIB401**	3	0	3:0:0 **(3 Credits)**	20	20	60	2½ Hours	**100**

DSC (3) Syllabus for B.Sc. Microbiology (Basic and Honors)

Semester III

Course Code: 222379	**Course Title**: Microbial Diversity (Theory) Microbial Diversity Lab (Practical)
Course Credits (L:T:P) : 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Appreciate the comprehension of Microbial Diversity.
CO 2: Illustrate the characters, classification and economic importance of Prokaryotic microbes.

CO 3: Emphasize the characters, classification and economic importance of Eukaryotic microbes.
CO 4: Acquire broader facts of viruses and their diversity.

Course Content

Content	Hours
UNIT – 1 Biodiversity and Microbial Diversity	
Concept, definition, and levels of biodiversity; Biosystematics – Major classification systems- Numerical and Chemotaxonomy. Study and measures of microbial diversity; Conservation and Economic values of microbial diversity.	**14**
UNIT – 2: Diversity of Prokaryotic Microorganisms	
Diversity of Prokaryotic Microorganisms : Distribution, factors regulating distribution, general characteristics, classification and economic importance of the following: **Bacteria and Archaea-** An overview of Bergey's Manual of Systematic Bacteriology. **Bacteria-** *Escherichia coli, Bacillus subtilis* **Cyanobacteria-** *Nostoc, Microcystis, Spirulina* **Archea-** *Thermus aquaticus, Methanogens* **Actinomycetes:** *Streptomyces* **Rickettsiae-** *Rickettsia rickettsii* **Chlamydiae –** *Chlamydia trachomatis* **Spirochaetes-** *Treponema pallidum*	**14**
UNIT - 3: Diversity of Eukaryotic Microorganism	
Diversity of Eukaryotic Microorganism: General characters, Classification and Economic importance. **Fungi:** Ainsworth classification- detailed study up to the level of classes, Salient features and reproduction. Type study: *Rhizopus, Aspergillus, Agaricus, Fusarium* . **Algae:** Occurrence, distribution and symbiotic association - Lichen; Thallus organization and Economic importance of *Chlorella, Cosmarium, Gracilaria.* **Protozoa:** Structure and Reproduction of *Amoeba, Euglena, Paramecium.*	**14**
UNIT - 4: Diversity of Virus	

Diversity of Virus: General properties and structure, Isolation and Identification of Viruses. Principles of Viral Taxonomy- Baltimore and ICTV and the recent trends. Capsid symmetry- Icosahedral, Helical, Complex **Structure and Replication of the following:** **Human and Animal Viruses:** HIV, Corona, Oncogenic virus **Plants Viruses:** TMV, Bean Mosaic Virus **Microbial Viruses:** T4/Lambda/Cyano/Mycophages. Viroids and Prions.	**14**

References:

9. Prescott, Harley, Klein's Microbiology, J.M. Willey, L.M. Sherwood, C.J. Woolverton, 7th International, edition 2008, McGraw Hill.
10. A Textbook of Microbiology, R. C. Dubey and D. K. Maheshwari, 1st edition, 1999, S. Chand & Company Ltd.
11. Brock Biology of Microorganisms, M.T.Madigan, J.M.Martinko, P. V. Dunlap, D. P.Clark- 12th edition, Pearson International edition 2009, Pearson Benjamin Cummings.
12. Microbiology – An Introduction, G. J.Tortora, B. R.Funke, C. L. Case, 10th ed. 2008,Pearson Education.
13. Flint, S.J., Enquist, L.W., Drug, R.M., Racaniello, V.R. and Skalka, A.M. 2000. Principles of Virology- Molecular Biology, Pathogenesis and Control. ASM Press, Washington, D.C
14. Vashishta B.R, Sinha A.K and Singh V. P. Botany – Fungi 2005, S. Chand and Company Limited, New Delhi
15. Kotpal R.L Protozoa 5th Edition 2008, Rastogi Publications, Meerut, New Delhi.
16. Alexopoulos, C.J., Mims, C.W., and Blackwell, M. 2002. Introductory Mycology. John Wiley and Sons (Asia) Pvt. Ltd. Singapore. 869 pp.
17. Microbiology- Concepts and Applications, Pelczar Jr. Chan, Krieg, International ed, McGraw Hill

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6. https://pressbooks-dev.oer.hawaii.edu/biology/chapter/prokaryotic-diversity/
7. https://academic.oup.com/femsre/article/42/5/543/5045018
8. http://medbox.iiab.me/kiwix/wikipedia_en_medicine_2019-12/A/Virus_classification
9. https://www.nature.com/articles/s41564-020-0709-x

DSC (3): Practical

Microbial Diversity

(4Hrs/week) 2 Credits

1. Study of morphology of bacteria.
2. Isolation of bacteria from soil.
3. Isolation of bacteria from air.
4. Isolation of bacteria from water.
5. Isolation of fungi from soil.
6. Isolation of fungi from air.
7. Isolation of fungi from water.

8. Cultivation of Cyanobacteria.
9. Cultivation of Actinomycetes.
10. Study of Cyanobacteria - *Nostoc, Microcyctis, Spirulina.*
11. Study of Algae - *Chlorella,Cosmarium, Gracilaria.*
12. Study of Fungi- *Rhizopus, Fusarium, Agaricus.*
13. Study of Protozoa(Permanent slides) - *Amoeba Paramecium Euglena.*
14. Study of Photographs or Models - HIV, TMV, Corona virus.
15. T4Phage, Lambda, Oncogenic viruses.

Course Articulation Matrix – 222379

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	-	-	-	2	1	1	-	3	2	-	1
CO 2	2	-	-	-	2	1	1	-	3	2	-	1
CO 3	2	-	-	-	2	1	1	-	3	2	-	1
CO 4	2	-	-	-	2	1	-	-	-	2	-	1
Weighted Average	1.75	-	-		2	1	1	-	3	2	-	1

OE (3) Microbiology Syllabus for All Programs (Except Science)

Semester III

Course Code: 22OEMIB301	**Course Title:** Microbial Entrepreneurship
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Exhibit entrepreneurial skills.
CO 2: Erudition of industrial entrepreneurship.
CO 3: Proficiency in Healthcare Entrepreneurship.

Course Content

Content	Hours
UNIT – 1 General Entrepreneurship	
Entrepreneurship and microbial entrepreneurship - Introduction and scope, Business development, product marketing, HRD, Biosafety and Bioethics, IPR and patenting, Government organization/ institutions/ schemes, Opportunities and challenges.	**14**
UNIT – 2 Industrial Entrepreneurship	
Microbiological industries – Types, processes and products, Dairy products, Fermented foods, Alcoholic products and Beverages, Enzymes – Industrial production and applications. Biofertilizers and Biopesticides, SCP (Mushroom and *Spirulina*) etc.	**14**
UNIT – 3 Healthcare Entrepreneurship	
Production and applications: Sanitizers, Antiseptic solutions, Polyphenols (Flavonoids), Alkaloids, Cosmetics, Biopigments and Bioplastics, vaccines, Diagnostic tools and kits.	**14**

References:

1. Srilakshmi B, (2007), Dietetics. New Age International publishers. New Delhi
2. Srilakshmi B, (2002), Nutrition Science. New Age International publishers. New Delhi
3. Swaminathan M. (2002), Advanced text book on food and Nutrition. Volume I. Bappco
4. Gopalan.C.,RamaSastry B.V., and S.C.Balasubramanian (2009), Nutritive value of Indian Foods.NIN.ICMR.Hyderabad.
5. Mudambi S R and Rajagopal M V, (2008), Fundamentals of Foods, Nutrition & diet therapy by New Age International Publishers, New Delhi

Weblinks:

1. https://microbiologysociety.org/publication/past-issues/making-money-from-microbes.html
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3570996/
3. https://www.researchgate.net/publication/356668525_The_Use_of_Mushrooms_and_Spirulina_Algae_as_Supplements_to_Prevent_Growth_Inhibition_in_a_Pre-Clinical_Model_for_an_Unbalanced_Diet

Course Articulation Matrix – 22OEMIB301

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	1	1	-	-	1	-	2	-	2	-	1
CO 2	1	1	1	-	1	1	1	-	-	2	-	1
CO 3	1	1	1	1	1	1	1	-	-	2	-	1
Weighted Average	1	1	1	-	1	1	1	2	-	2	-	1

DSC (4) Syllabus for B.Sc. Microbiology (Basic and Honors)

Semester IV

Course Code: 222479	**Course Title:** Microbial Enzymology and Metabolism (Theory) Microbial Enzymology and Metabolism (Practical)
Course Credits (L:T:P): 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04(Practical)
Total Contact Hours: 56Hours(Theory) 56 Hours(Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Delineate the Enzyme activity.
CO 2: Swotting the enzyme kinetics and regulation.

CO 3: Extricate the concepts of Chemoheterotrophic metabolism and Chemolithotrophic metabolism.
CO 4: Differentiating concepts of aerobic and anaerobic respiration and how these are manifested in the form of different metabolic pathways in microorganisms.

Course Content:

Content	Hours
UNIT - 1 Basics of Enzymes	
Definitions of terms – enzyme unit, specific activity and turnover number, exo/ endoenzymes, constitutive/ induced enzymes, isozymes. Monomeric, Oligomeric and Multimeric enzymes. Multienzyme complex: pyruvate dehydrogenase; isozyme: lactate dehydrogenase. Ribozymes, abzymes. **Structure of enzyme**: Apoenzyme and cofactors, prosthetic group-TPP, coenzyme, NAD, metal cofactors. Classification of enzymes, Mechanism of action of enzymes: active site, transition state complex and activation energy. Lock and key hypothesis and Induced Fit hypothesis. Multisubstrate reactions. **Enzyme catalysis:** Catalytic mechanisms with type examples.	**14**
UNIT - 2 Enzyme Kinetics and Regulation	
Enzyme Kinetics: Kinetics of one substrate reactions. i.e. Equilibrium assumptions ii. Steady state assumptions iii. Michaelis-Menten equations. Kinetics of enzyme inhibition. Competitive, non-competitive and uncompetitive inhibition. Effect of changes in pH and temperature on enzyme catalysed reaction. Kinetics of two substrate reactions. Kinetics of immobilized enzymes. **Enzyme regulation:** Allosteric enzyme - general properties, Hill equation, Koshland-Nemethy-Filmer model. Covalent modification by various mechanisms. Regulation of multi-enzyme complex-Pyruvate dehydrogenase. Feedback inhibition. HIV enzyme inhibitors and drug design. **Microbial Enzymes:** sources- Bacterial, Fungal, and their applications.	**14**
UNIT – 3 Metabolism of Carbohydrates	

Chemoheterotrophic Metabolism- Sugar degradation pathways i.e. EMP, ED, Pentose phosphate pathway, Phosphoketolase pathway. TCA cycle. Fermentation - Fermentation balance, concept of linear and branched fermentation pathways. **Fermentation pathways**: Alcohol fermentation and Pasteur effect; Butyric acid and Butanol-Acetone Fermentation, Mixed acid and 2,3-butanediol fermentation, Propionic acid Fermentation (Succinate pathway and Acrylate pathway), acetate fermentation. **Chemolithotrophic Metabolism: Chemolithotrophy** - Hydrogen oxidation, Sulphur oxidation, Iron oxidation, Nitrogen oxidation.	**14**
UNIT – 4 Metabolism of Aminoacids, Nucleotides and Lipids	
Nitrogen Metabolism Introduction to biological nitrogen fixation, Ammonia assimilation, Assimilatory nitrate reduction, dissimilatory nitrate reduction, denitrification. **2. Biosynthesis of ribonucleotides and deoxyribonucleotides** The de novo pathway. Regulation by feedback mechanisms. Recycling via the salvage pathway. **3. Amino acid degradation and biosynthesis.** **4. Lipid degradation and biosynthesis.** **5.Metabolism of one carbon compounds:** Methylotrophs :i. Oxidation of methane, methanol, methylamines; ii. Carbon assimilation in methylotrophic bacteria and yeasts. Methanogens: i. Methanogenesis from methylamines; ii. Energy coupling and biosynthesis in methanogenic bacteria. Acetogens: Autotrophic pathway of acetate synthesis. **6. Metabolism of two-carbon compounds:** **Acetate**: i. Glyoxylate cycle. **Acetic acid bacteria**: Ethanol oxidation, sugar alcohol oxidation. **Glyoxylate and glycolate metabolism**:i. Dicarboxylic acid cycle, ii. Glycerate pathway iii. Beta hydroxyaspartate pathway , **Oxalate** as carbon and energy source.	**14**

References:

1. Philipp. G. Mannual of Methods for General Bacteriology.
2. David T. Plummer. An Introduction to Practical Biochemistry
3. Biochemistry- A Problem Approach, Wood W. B. Wilson J.H., Benbow R.M. and Hood L.E.2nd ed., 1981, The Benjamin/ Cummings Pub.co
4. Biochemical calculations, Segel I.R., 2nd ed., 2004, John Wiley and Sons
5. Biochemical Calculations, Irwin H. Segel, 2nd Edition John Wiley & Sons

Weblinks:

1. https://www.medicalnewstoday.com/articles/319704
2. https://www.toppr.com/guides/biology/mineral-nutrition/metabolism-of-nitrogen/
3. https://courses.lumenlearning.com/suny-ap2/chapter/carbohydrate-metabolism-no-content/
4. https://teachmephysiology.com/biochemistry/molecules-and-signalling/enzyme-kinetics/
5. https://www.britannica.com/science/metabolism/The-synthesis-of-macromolecules

DSC (4): Practical

Microbial Enzymology and Metabolism

(4Hrs/week) 2 Credits

4. Handling of micropipettes and checking their accuracy.
5. Acid and gas production from Carbohydrates – Demonstration of fermentation of lactose.
6. Detection of amino acids by paper chromatography.
7. Screening of fungi for pectin degradation.
8. Starch Hydrolysis.
9. Gelatin Hydrolysis.
10. Catalase activity.
11. Microscopic examination of root nodules.
12. Demonstration of citric acid production.
13. Casein hydrolysis.
14. Demonstration of lipolytic activity.
15. Demonstration of Ammonification/ Dinitrificaton/Nitrification.
16. Demonstration of alcoholic fermentation – Fermentation of glucose using Kuhne's fermentation vessel.
17. Effect of variables on enzyme activity (amylase): a. Temperature b. pH c. substrate concentration d. Enzyme concentration.
18. Study of Photographs – Methanogens, lactose fermentation, Alcohol fermentation, Lock and key hypothesis, Induced Fit hypothesis, ribozymes, abyzymes, Allosteric enzymes, results of Experiments.

Course Articulation Matrix – 222479

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	2	1	-	-	-	-	-	2	-	2
CO 2	3	2	2	1	-	-	-	-	-	2	-	2
CO 3	3	2	2	1	-	-	-	-	-	2	-	2
CO 4	3	2	2	1	-	-	-	-	-	2	-	2
Weighted Average	3	2	2	1	-	-	-	-	-	2	-	2

OE (4) Microbiology Syllabus for All Programs (Except Science)

Semester IV

Course Code: 22OEMIB401	**Course Title: HUMAN MICROBIOME**
Course Credits (L:T:P): 03 (3:0:0)	**Hours of Teaching/Week:** 3 Hours (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours (Theory)	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO 1: Articulate a deeper understanding on biological complexities of human microbiome.
CO 2: Acquire broader goals of biological anthropology.
CO 3: Compare and contrast the microbiome of different human body sites and impact human health promotion.

Course Content

Content	Hours
UNIT – 1 Introduction to Microbiome	
Evolution of microbial life on Earth, Symbiosis host-bacteria. Microbial association with plants and animals, Symbiotic and parasitic, Normal human microbiota and their role in health. Microbiomes other than digestive system.	**14**
UNIT – 2 Microbiomes and Human health	
Microbiome in early life, Nutritional modulation of the gut microbiome for metabolic health-role of gut microbiomes in human obesity, human type 2 diabetes and longevity. Probiotics-Criteria for probiotics, Development of Probiotics for animal and human use; Pre and synbiotics. Functional foods-health claims and benefits, Development of functional foods.	**14**
UNIT – 3 Culturing of Microbes from Microbiomes	
Culturing organisms of interest from the microbiome: bacterial, archaeal, fungal, yeast and viral. Extracting whole genomes from the microbiome to study microbiome diversity **Microbiomes and diseases:** Microbiome and disease risks: The gut microbiome and host immunity, bacteriocins and other antibacterial. Human microbiome research in nutrition	**14**

References:

5. Prescott, Harley, Klein's Microbiology, J.M. Willey, L.M. Sherwood, C.J. Woolverton, 7th International,edition 2008, McGraw Hill.
6. A Textbook of Microbiology, R. C. Dubey and D. K. Maheshwari, 1st edition, 1999, S.Chand & Company Ltd.
7. Brock Biology of Microorganisms, M.T.Madigan, J.M.Martinko, P. V. Dunlap, D. P. Clark-12th edition, Pearson International edition 2009, Pearson Benjamin Cummings.
8. Microbiology- Concepts and Applications, Pelczar Jr,Chan, Krieg, International ed,McGraw Hill.

Weblinks:

1. https://uta.pressbooks.pub/microbiomeshealthandtheenvironment/chapter/an-introduction-to-microbiomes/
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5962619/
3. https://microbiologysociety.org/our-work/75th-showcasing-why-microbiology-matters/unlocking-the-microbiome/the-microbiome-and-human-health.html
4. https://www.technologynetworks.com/immunology/articles/an-introduction-to-culturing-bacteria-355566

Course Articulation Matrix – 22OEMIB401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	-	-	2	-	1	1	-	-	2	-	1
CO 2	2	2	2	2	-	1	1	-	-	2	-	1
CO 3	2	1	1	2	-	1	1	-	-	2	-	1
Weighted Average	2	1.5	1.5	2	-	1	1	-	-	2	-	1

Continuous Formative Evaluation/Internal Assessment

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks

Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

k) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

l) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

m) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the collegefor each course. This forms the third and final component of assessment (C3) and the maximum marks forthe final component will be 60%.

n) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of thecase and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

o) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

p) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	**C2 Marks**	**Total Marks**
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance (the ratio is 25 (10 + 15):25).
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decidedby the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., the students should be informed aboutthe modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall beobtained back to maintain them till the announcement of the results of the examination of the concerned semester.

q) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

r) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

s) There shall be no minimum in respect of internal assessment marks.

t) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of procedure development and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following scheme:Part-A (C1): 10 marks

  Part-B (C2): 10 marks + Record: 05 marks = 15 marks
- The student is evaluated for 25 marks in C3 as per the following scheme:

Part A	Major question	08
Part B	Minor question	04
Identify and comment (Any four photographs: Decided by the External Examiner)		08
Viva Voce		05
TOTAL		**25**

DSC Theory Question Paper Pattern

B.Sc MICROBIOLOGY

Duration: 2½ Hours **Maximum: 60 Marks**

Instructions: All questions are compulsory.

Draw neat labeled diagrams wherever necessary.

I Define any FIVE of the following **5X2=10 Marks**

2. (a) **(b)**

(c) **(d)**

(e) **(f)**

(g)

II Write short notes any FIVE of the following **5X6=30 Marks**

(2) **(6)**

(3) **(7)**

(4) **(8)**

(5)

III Answer any TWO of the following **2X10=20 Marks**

(9)

(10)

(11)

PATTERN OF PRACTICAL EXAMINATION

Practical examination – B.Sc MICROBIOLOGY- C3

Duration: 3 hours **Max. Marks: 25**

Q. 1	Major question	08 Marks
Q. 2	Minor question	04 Marks
Q. 3	Identify and comment	2X4 = 08Marks
Q. 4	Viva-voce	05 Marks

Open Elective Theory Question Paper Pattern

B.Sc MICROBIOLOGY

Duration: 2½ Hours **Maximum: 60 Marks**

Instructions: All questions are compulsory.

Draw neat labeled diagrams wherever necessary.

I Define any FIVE of the following **5X2=10 Marks**

1. (a) **(b)**

(c) **(d)**

(e) **(f)**

(g)

II Write short notes any FIVE of the following **5X6=30 Marks**

(2) **(6)**

(3) **(7)**

(4) **(8)**

(5)

III Answer any TWO of the following **2X10=20 Marks**

(9)

(10)

(11)

(12)

Education to Excel

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Vision: To provide innovative research expertise

Mission: To expand the knowledge of scientific field research

Syllabi of V and VI Semester

B.Sc. – Microbiology

Choice Based Credit System – 2021-22

Board of Studies

Sl.No.	Name and address	Designation	Signature
1	Smt. Shruthi Prakash H P HOD, Department of Microbiology SBRR Mahajana First Grade College, Mysuru 9731468085 shruthiprakashhp.fgc@mahajana.edu.in	Chairperson	
2	Dr. Sreenivasa M Y Assistant Professor DOS in Microbiology, UOM, Manasagangotri, Mysuru 9449054480 sreenivasamy@gmail.com	Member	
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6	Ms. Spandana N Assistant Professor Department of Microbiology SBRR Mahajana First Grade College, Mysuru 9449680239 spandanar.fgc@mahajana.edu.i	Member	
7	Smt. Sangeetha K P Assistant Professor Department of Microbiology SBRR Mahajana First Grade College, Mysuru 8431254737 sangeethasangeethakp@gmail.com	Member	

Sem	Type	Subject Code	Paper No.	Course	L+T+P=Tot.	I.A. Marks [C1+C2]	Theory Exam and Practical Exam	Total Marks

8	Ms. Mahalakshmi R K Microbiologist Ganesha Consultancy and Analytical Services 9019943546 Mahalakshmi.rk2602@gmail.com	Member	

1	DSC	**192119**	1	Introduction to Microbiology and Microbial Diversity	4 + 0 + 0 = 4	20+10	80 +40	150
				Practical 1	0 + 0 + 2 = 2			
2	DSC	**192219**	2	Microbial Physiology and Molecular Biology	4 + 0 + 0 = 4	20 +10	80 +40	150
				Practical 2	0 + 0 + 2 = 2			
3	DSC	**202319**	3	Microbial Genetics and Recombinant DNA Technology	4 + 0 + 0 = 4	20 +10	80 +40	150
				Practical 3	0 + 0 + 2 = 2			
4	DSC	**202419**	4	Environmental and Agricultural Microbiology	4 + 0 + 0 = 4	20 +10	80 +40	150
				Practical 4	0 + 0 + 2 = 2			
5	DSE	**212519**	5	Food and Industrial Microbiology	3+0+0 = 3	20+20	80+80	200
				Practical 5	0+0+3= 3			
	DSE	**212529**	6	Microbial Biotechnology and Bioinformatics	3+0+0 = 3	20+20	80+80	200
				Practical 6	0+0+3= 3			
	SEC	**212559**	1	Microbial Quality Control in Food and Pharmaceutical Industries	2+0+0 = 2	10	40	50
	SEC	**212569**	2	Microbiological Analysis of Air and Water	2+0+0 = 2	10	40	50
6	DSE	**212639**	7	Immunology and Medical Microbiology	3+0+0 = 3	20+20	80+80	200
				Practical 7	0+0+3= 3			
	DSE	**212649**	8	Advances in Microbiology, Biostatistics and Intellectual Property Rights	3+0+0 = 3	20+20	80+80	200
				Practical 8	0+0+3= 3			
	SEC	**212659**	3	Microbial Diagnosis in Health Clinics	2+0+0 = 2	10	40	50
	SEC	**212669**	4	Management of Human Microbial diseases	2+0+0 = 2	10	40	50

V SEMESTER

DSE-1.1: FOOD AND INDUSTRIAL MICROBIOLOGY

Paper V **48 (3hrs/week) 3 Credits**

Subject Code: 212519

Course objectives: This paper aims to introduce general principles of food microbiology, food spoilage causing microorganisms; methods of food preservation and microbiological examination of foods and its microbiological quality control. It also deals with strain improvement methods, fermentation techniques, bioreactor design, and downstream fermentation process.

Course / Learning outcomes:

- Students will understand the importance and activities of microorganisms in food.
- Students will analyze the importance of microbiological quality control in food production.
- Students will also understand the microbial production of industrial products such as antibiotics, enzymes, wine and mushroom cultivation.
- Comprehend the techniques and the underlying principles in downstream processing
- Understand the rationale in medium formulation & design for microbial fermentation, sterilization of medium and air
- The course will also be useful for students aiming towards careers in Dairy and food industries as Microbiologist, Entrepreneurship, Quality Assurance, Research Officer and Research Associate.

Unit I Food Microbiology 12hrs

Spoilage of food: Introduction, Scope of Food Microbiology, Sources of contamination, Food as a substrate for the growth of microorganisms (Intrinsic and extrinsic factors that affect growth and survival of microbes in foods). Microbial spoilage and preservation of fruits, vegetables, meat and canned foods.

Principles and methods of food preservation: Physical methods of food preservation: temperature (low, high, canning, and drying), irradiation, and aseptic packaging, Chemical methods of food preservation: salt, sugar, organic acids (propionates, benzoates, sorbates), SO_2, nitrite and nitrates, and antibiotics.

Unit II Dairy Microbiology 12hrs

Microbiology of milk: Introduction, Sources of milk contamination. Methods to detect microbial quality by SPC, Reductase test, and clot on boiling test. Biochemical changes of milk-souring, gassy fermentation, proteolysis, lipolysis, ropiness. Starter culture and its role.

Therapeutic value of Yoghurt. Cheese (preparation and types). Preservation of milk and milk products - Pasteurization.

Food infection and safety: Origin, types and importance of toxins with reference to Food infection (Salmonellosis) and Food intoxication (Aflatoxin, Botulism). Food safety and quality control.

Unit III Industrial microbiology **12hrs**

Fermentor and fermentation medium: Microorganisms of industrial importance. Types of stock culture. Strain improvement. Fermentation media: Production medium, Inoculum medium, Raw materials (Molasses and its types, corn steep liquor, and whey). Buffers, Precursors, Inhibitors and Antifoam agents. Design of typical fermentor.

Industrial processes: Batch and Continuous fermentation, Surface, Submerged and Solid state fermentation. Downstream processing- Precipitation, centrifugation, cell disruption, solvent recovery, drying, crystallization.

Unit IV Industrial production **12hrs**

Microbial production of industrial products: Industrial production and uses of Ethyl alcohol, wine, Penicillin, Lactic acid, Amylase, *Spirulina*. Mushroom cultivation-Oyster mushroom and its nutritional value.

Enzyme immobilization: Methods of immobilization, advantages and applications of immobilization, large scale applications of immobilized enzymes (glucose isomerase and penicillin acylase).

V SEMESTER

PRACTICAL-V **(6hrs/week) 03 credits**

FOOD MICROBIOLOGY

1. a) Isolation and enumeration of bacteria from food utensils.
2. b) Isolation and identification of fungi from food utensils.
3. a) Isolation and enumeration of bacteria from spoiled vegetables.
4. b) Isolation and identification of fungi from spoiled vegetables.
5. a) Isolation and enumeration of bacteria from spoiled fruits.
6. b) Isolation and identification of fungi from spoiled fruits.
7. Isolation and identification of ***Aspergillus*** on groundnut by blotters method.
8. Microscopic examination of idli batter.

DAIRY AND INDUSTRIAL MICROBIOLOGY

1. Quantitative examination of bacteria in raw and pasteurized milk by SPC method.
2. Turbidity test to detect efficiency of sterilization.
3. Methylene blue Reductase test to determine the quality of milk.
4. Preparation of wine from grapes.
5. Cultivation of Oyster mushroom by bag method.
6. Estimation of % alcohol in a given sample by specific gravity bottle method.
7. Culturing of ***Spirulina.***
8. Visit to Dairy Industries/ Distilleries/ Reports.

SUGGESTED READING

1. Adams, M.R. and Moss, M. O.(1995) Food Microbiology. Royal Society of Chemistry , Cambridge University Press.
2. Anathanarayanan, C and Paniker, C.K.J. (2009) Text Book of Microbiology, 9th ed. Orinet Longman ltd., Chennai.
3. Banwart, G.J.(1987) Basic Food Microbiology. CBS Publishers and distributors, New Delhi.
4. Casida,L. E. Jr (1968) Industrial Mirobiology. New Age International Publishers.
5. Frazier & Westhoff, D.C. (1995) Food Microbiology Tata McGraw Hill Pub. Company Ltd.,New Dehli.
6. Thomas, J. Kindt, Richard, A. Goldsby, Barbara A. Osborne, Janis Kuby, W. H. Freeman, (2007) Kuby Immunology, W. H. Freeman and Company New York.
7. Jagadish Chandra (1996). Text Book of Medical Mycology. Oreint Longman.
8. Jawetz, Melnick and Adelberg(2007) Medical Microbiolgy, Prentice Hall Inc, London.
9. Jay, J.M. (1985). Modern Food Microbiology.CBS Publishers and distributors, New Delhi.
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11. R.P.Singh, (2007) Immunology and Medical MicrobiologyKalyani Publishers; 2 edition
12. Rajan, S. (2007) Medical Microbiology. MJP Publishers, Chennai.
13. Roitt, I. M. (1997)Essentials of Immunology, ELBS, Blackwell Scientific Publishers,London.
14. Stanbury, P.T. and Whitaker,(1984) Principles of Fermentation Technology,PergamongPress, NewYork.
15. Tizard, I.R. (1998). Immunology An Introduction, 2nd ed. W.B. Saunders, Philadelphia.

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1. https://www.uoguelph.ca/foodscience/book/export/html/1884
2. https://bio.libretexts.org/Bookshelves/Microbiology/Book%3A_Microbiology_(Boundless)/17%3A_Industrial_Microbiology
3. https://ncof.dacnet.nic.in/Trainings/OrganicFoodCertification.pdf
4. https://www.britannica.com/science/microbiology/Food-microbiology
5. https://biologyreader.com/food-preservation-techniques.html

V SEMESTER

DSE-1.2: MICROBIAL BIOTECHNOLOGY AND BIOINFORMATICS

Paper V **48hrs (3hrs/week) 3 Credits**

Subject Code: 212529

Course Objective: This course aims to introduce the scope and key concepts in microbial biotechnology. It includes the applications of microbial technology in human therapeutics and agriculture. It also includes methods used to purify microbial products, Bio-ethanol and Bio-diesel production, the course also focuses on basic aspects of bioinformatics, computer fundamentals, biological databases, Sequence Alignments, Phylogeny and Phylogenetic trees.

Course / Learning outcomes:

- Students will gain knowledge on Microbial biotechnology and genetically engineered microbes.
- To value the role of microorganisms in microbial production processes.
- Students will be able to describe the contents and properties of the most important bioinformatics databases, perform text- and sequence-based searches.
- Will be familiar with Local and Global Sequence alignment.
- The course will also be useful for students aiming towards careers in the Project Assistant, and Research Associate.

Unit I Microbial Biotechnology and its Applications 12hrs

Microbial biotechnology: Scope and its applications in human therapeutics, agriculture (Biofertilizers, PGPR, Mycorrhizae), environmental, and food technology. Genetically engineered microbes for industrial application: Bacteria and yeast.

Recombinant microbial production processes in pharmaceutical industries – Streptokinase. Microbial polysaccharides and polyesters, Microbial production of bioplastics. Microbial biosensors.

Unit II Microbial products and their recovery 12hrs

Microbial product purification: Filtration, ion exchange & affinity chromatography techniques Immobilization methods and their application.

Microbes for Bio-energy and Environment: Bio-ethanol and bio-diesel production: commercial production from lignocellulosic waste and algal biomass, Biogas production: Methane and hydrogen production using microbial culture.

Unit III Introduction to Bioinformatics **12hrs**

Introduction to Computer Fundamentals: RDBMS - Definition of relational database Mode of data transfer (FTP, SFTP), advantage of encrypted data transfer.

Introduction to Bioinformatics and Biological Databases: Biological databases - nucleic acid, genome, protein sequence and structure, gene expression databases, Mode of data storage - File formats – FASTA and Genbank, Data submission & retrieval from NCBI, EMBL.

Unit IV Applications of Bioinformatics **12hrs**

Sequence Alignments, Phylogeny and Phylogenetic trees: Local and Global Sequence alignment, pairwise and multiple sequence alignment. Types of phylogenetic trees, Different approaches of phylogenetic tree construction - UPGMA, Neighbour joining, Maximum Parsomony, Maximum likelihood.

Protein Structure Predictions: Hierarchy of protein structure - primary, secondary and tertiary structures, modeling Structural Classes, Motifs, Folds and Domains.

SEMESTER-V

PRACTICAL-VI **(6hrs/week) 03 credits**

MICROBIAL BIOTECHNOLOGY

1. Study yeast cell immobilization in calcium alginate gels
2. Study enzyme immobilization by sodium alginate method

3&4. Pigment production from fungi (*Trichoderma / Aspergillus / Penicillium).*

5&6. Isolation of xylanase or lipase producing bacteria.

7. Study of algal Single Cell Proteins.

8. Visit to Industries / Reports.

SEMESTER-V

BIOINFORMATICS

1&2. Introduction to bioinformatics databases (any two): NCBI**,** EMBL**.**

3. Sequence retrieval using BLAST

4&5. Sequence alignment & phylogenetic analysis using clustalW & phylip**.**

6. Picking out a given gene from genomes using Genscan or other softwares (promoter region identification, repeat in genome, ORF prediction).

7&8. Gene finding tools (Glimmer, GENSCAN), Primer designing, Genscan/Genetool.

SUGGESTED READING

1. Glazer, A. N. and Nikaido, H. (2007) Microbial Biotechnology, 2nd edition, Cambridge University Press.
2. Glick, B. R., Pasternak, J. J. and Patten, C. L. (2010) Molecular Biotechnology 4th edition, ASM Press.
3. Gupta, P. K. (2009) Elements of Biotechnology 2nd edition, Rastogi Publications.
4. Lesk, M.A.(2008) Introduction to Bioinformatics . Oxford Publication, 3rd International Student Edition.
5. Pradeep and Sinha Preeti, (2007). Foundations of Computing, 4th ed., BPB Publications.
6. Prescott, Harley and Klein's Microbiology by Willey, J. M., Sherwood, L. M., Woolverton, C. J. (2014), 9th edition, Mc Graw Hill Publishers.
7. Primrose and Twyman, (2003) Principles of Genome Analysis & Genomics. Blackwell.
8. Rastogi, S.C., Mendiratta, N. and Rastogi P. (2007) Bioinformatics: methods and applications, genomics, proteomics and drug discovery, 2nd ed. Prentice Hall India Publication.
9. Ratledge, C. and Kristiansen, B. (2001). Basic Biotechnology, 2nd Edition, Cambridge University Press.
10. Saxena Sanjay, (2003) A First Course in Computers, Vikas Publishing House.
11. Swartz, J. R. (2001). Advances in Escherichia coli production of therapeutic proteins. Current Opinion in Biotechnology, 12, 195–201.

Websites:

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4993168/#:~:text=Microbial%20biotechnology%20is%20an%20exceptionally,agriculture%20and%20horticulture%2C%20food%20provision
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1122955/#:~:text=Bioinformatics%20is%20defined%20as%20the,1
3. https://beginnersbook.com/2015/04/rdbms-concepts/
4. https://www.enago.com/academy/biological-databases-an-overview-and-future-perspectives/
5. https://bioinf.comav.upv.es/courses/biotech3/theory/databases.html

V SEMESTER

SE-1.1: MICROBIAL QUALITY CONTROL IN FOOD AND PHARMACEUTICAL INDUSTRIES

Paper V **32 (2hrs/week) 2 Credits**

Subject code: 212559

Course Objective: The course provides basic knowledge on Good laboratory practices, Biosafety cabinets; it includes various cultural, biochemical immunological and molecular methods to detect microbes in samples. The course also describes the Importance of Pathogenic Microorganisms in Food & Water, and to understand microbiological quality control.

Course / Learning outcomes:

- Students will understand various methods employed to detect microbes in samples.
- Students will understand the basis of food safety regulations and the use of standard methods and procedures for the microbiological analysis of food and water.

Unit I Biosafety **16hrs**

Good laboratory practices: Good microbiological laboratory practices. Biosafety cabinets; Working of biosafety cabinets, using protective clothing, Discarding biohazardous waste.

Determining Microbes in Samples: Culture and microscopic methods- Standard plate count, Direct microscopic counts, Biochemical and immunological methods: Limulus lysate test for endotoxin, gel diffusion, Sterility testing for pharmaceutical products. Molecular methods - Nucleic acid probes, PCR based detection.

Unit II Microbiological quality analysis of Food and Water **16hrs**

Pathogenic Microorganisms of Importance in Food & Water: Enrichment culture technique, Detection of specific microorganisms- on XLD agar, Mannitol salt agar, EMB agar, Sabouraud Agar.

Ascertaining microbial quality of milk by MBRT, Rapid detection methods of microbiological quality of milk at milk collection centers (COB).

Food safety and Standard: HACCP for Food Safety and Microbial Standards. Microbial Standards for Different Foods and Water- BIS standards for common foods and drinking water.

SUGGESTED READING

1. Baird, R. M., Hodges, N. A. and Denyer, S. P. (2005) Handbook of Microbiological Quality control in Pharmaceutical and Medical Devices, Taylor and Francis Inc.
2. Garg, N., Garg, K. L. and Mukerji, K. G. (2010) Laboratory Manual of Food Microbiology I K International Publishing House Pvt. Ltd.
3. Harrigan, W. F. (1998) Laboratory Methods in Food Microbiology, 3rd ed. Academic Press.
4. Jay, J. M., Loessner, M. J., Golden, D. A. (2005) Modern Food Microbiology, 7th edition. Springer.

Website:

1. https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2009-P.pdf
2. https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Food_Additives_Regulations_08_09_2020-compressed.pdf

V SEMESTER

SE-1.2: MICROBIOLOGICAL ANALYSIS OF AIR AND WATER

Paper V **32hrs (2hrs/week) 2 Credits**

Subject Code: 212569

Course Objective: The course aims to explain bioaerosols, and their impact on human health and environment. To inform students about bioaerosols sampling methods, the course also describes the methods to detect potability of water samples, and to have knowledge to control microbes in water.

Course / Learning outcomes:

- Student will learn the bioaerosols sampling techniques.
- Understand various methods to detect potability of water.
- Control and significance of water-borne pathogens and diseases.

Unit I Analytical Aeromicrobiology **16hrs**

Microflora of Air: Bioaerosols, Air borne microorganisms (bacteria, Viruses, fungi) and their impact on human health and environment, significance in food and pharma industries and operation theatres.

Collection of air sample and Analysis: Bioaerosol sampling, air samplers, methods of analysis, Control Measures: Fate of bioaerosols, inactivation mechanisms- UV light, HEPA filters, desiccation, Incineration.

Unit II Water Microbiology **16hrs**

Microbiological analysis of water sample: Methods to detect potability of water samples: (a) standard qualitative procedure: presumptive/MPN tests, confirmed and completed tests for faecal coliforms (b) Membrane filter technique and (c) H_2S Test.

Control of microbes in water: Water borne pathogens, water borne diseases, Control of water borne pathogens- Precipitation, chemical disinfection, filtration, high temperature, UV light.

SUGGESTED READING

1. da Silva, N., Taniwaki, M. H., Junqueira, V. C., Silveira, N., Nascimento, M. S. and Gomes, R. A. R. (2012) Microbiological Examination Methods of Food and WaterA Laboratory Manual, CRC Press.
2. Atlas, R. M. and Bartha, R. (2000). Microbial Ecology: Fundamentals & Applications. 4th edition. Benjamin/Cummings Science Publishing, USA.
3. Maier, R. M., Pepper, I. L. and Gerba, C. P. (2009). Environmental Microbiology. 2nd edition, Academic Press.
4. Hurst, C. J, Crawford, R. L., Garland, J. L. and Lipson, D. A. (2007) Manual of Environmental Microbiology, 3rd edition, ASM press.

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1. https://www.sciencedirect.com/topics/engineering/bioaerosols#:~:text=Bioaerosols%20are%20defined%20as%20particles,can%20induce%20an%20immune%20response)%2C
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7128579/
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2996186/

VI SEMESTER

DSE-2.1: IMMUNOLOGY AND MEDICAL MICROBIOLOGY

Paper VI **48(3hrs/week) 3 Credits**

Subject Code: 212639

Course objectives: This paper aims to introduce the Types of immunity and immune system, Cells and tissues of immune system, Antigen and Antibody structure, Serological tests, Immunological disorders and vaccines. This paper also deals with Bacterial, Viral, Fungal, Protozoan diseases and Chemotherapy.

Course / Learning outcomes:

- Students will be able to correlate disease symptoms with causative agent, isolate and identify pathogens.
- They will gain knowledge of mechanism of action of antimicrobial drugs and prophylaxis.
- Recognize the basis for antibiotic resistance and ways of controlling spread of antibiotic resistance.
- It also provides opportunities to develop informatics and diagnostic skills, including the use and interpretation of laboratory tests in the diagnosis of infectious diseases.
- To understand the importance of pathogenic bacteria in human disease with respect to infections of the respiratory tract, gastrointestinal tract, urinary tract, skin and soft tissue.
- The course will also be useful for students aiming towards careers in diagnostic laboratories, Microbiologist, Quality Assurance, Research Officer and Research Associate.

Unit I **Immunity and Immune system** **12 hrs**

Introduction to immune system: History of immunology. Contributions of following scientists to the development of field of immunology - Edward Jenner, Robert Koch. Types of immunity-innate (non-specific) and Adaptive immunity (specific)- Antibody (humoral) mediated immunity and cell mediate immunity.

Lymphatic system: Cells and tissues of immune system-structure and role of primary lymphoid organs (bone marrow, thymus), secondary lymphoid organs (spleen, lymph nodes and tonsils), B &T lymphocytes. Antigens- Definition, nature (Foreignness, Molecular size and Heterogeneity) and types, Adjuvants. Antibodies- definition, sturcture, class- properties and functions of Immunoglobulins.

Unit II **Serological tests and Immunological disorders** **12 hrs**

Antigen-antibody reactions: Definition**,** Salient features, Agglutination (Blood grouping, Widal test) Precipitation Reaction (Gel diffusion techniques, VDRL), Neutralization, Opsonisation, complement fixation test. Immuno-fluorescent techniques- RIA, ELISA.

Immunoprophylaxis: Vaccine-Types – Killed, Live attenuated (bacterial and viral) and Toxoid with an example each. National immunization schedule (Tabular form)

Unit III **Medical Microbiology** **12 hrs**

Introduction to medical microbiology: History and development of medical microbiology. Normal flora of human body-skin, oral cavity, respiratory tract and urogenital tract. Infection-types of infection, modes of disease transmission, portal of entry of pathogen. Pathogenesis, virulence, attenuation and exaltation with an example each.

Bacterial diseases: Cultural and biochemical characteristics, pathogenesis, symptoms, mode of transmission, prophylaxis and control of Respiratory diseases: *Mycobacterium tuberculosi*s. Gastrointestinal diseases: *Salmonella typhi.* Others: *Treponema pallidum.*

Unit IV **Viral, Fungal and Protozoan disease and Chemotherapy** **12 hrs**

Human pathogen: Pathogenesis, clinical symptoms, laboratory diagnosis, epidemiology, prophylaxis and treatment of viral diseases (Dengue, AIDS). Fungal diseases- transmission, symptoms and prevention of Dermato mycosis (Athlete's foot), Candidiasis. Protozoan diseases (Malaria, Trichomoniasis).

Chemotherapy: General characteristics, types of antimicrobial agents. Mode of action of Antibacterial (Penicillin, Streptomycin) Antifungal (Nystatin), antiviral-Acycloguanosine.

VI SEMESTER

PRACTICAL-VII **(6hrs/week) 3 Credits**

IMMUNOLOGY

1. Determination of blood group and Rh factor
2. Demonstration of prcipitation reacion- ODD
3. Demonsatration of single Radial ImmunoDiffusion
4. Widal Test
5. VDRL test
6. Neutralization Test
7. Complement fixation test
8. ELISA

MEDICAL MICROBIOLOGY

1. Study of bacterial flora of skin by swab method
2. Microbial flora of oral cavity.
3. Antibiotic sensitivity test
4. Study of composition and use of important differential media for identification of bacteria: EMB Agar, McConkey agar, Mannitol salt agar, Deoxycholate citrate agar, TCBS
5. Culturing of microorganisms - Urine culture
6. Culturing of microorganisms - Blood culture
7. Material/Microscopic observation/display of photographs of human pathogens as per theory syllabus- *Mycobacterium tuberculosis, Treponema pallidum, Salmonella typhi,* Dengue, HIV, *Candida albicans, Tinea, Plasmodium, Trichomonas vaginalis* .
8. Visit to laboratory/report.

SUGGESTED READING

1. Abbas, A. K., Lichtman, A. H. and Pillai, S. (2007). Cellular and Molecular Immunology. 6th edition Saunders Publication, Philadelphia.
2. Ananthanarayan, R. and Paniker, C.K.J. (2009) Textbook of Microbiology. 8th edition, University Press Publication.
3. Brooks, G.F., Carroll, K.C., Butel, J.S., Morse, S.A. and Mietzner, T.A. (2013) Jawetz, Melnick and Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication.
4. Delves, P., Martin, S., Burton, D. and Roitt, I. M. (2006). Roitt's Essential Immunology.11th edition WileyBlackwell Scientific Publication, Oxford.
5. Glodsby Richard A., Kindt Thomas J. and Osborne Barbara A., Kuby Immunology, W. H. Freeman and Company New York.
6. Goering, R., Dockrell, H., Zuckerman, M. and Wakelin D. (2007) Mims' Medical Microbiology. 4th edition. Elsevier.
7. Gupte, S.M.D. (1986). Short Text Book of Medical Microbiology. Jaypee Brothers, Medical Publishers, New Delhi.
8. Jagadish Chandra, (1996). Text Book of Medical Mycology. Oreint Longman.
9. Jawetz, Melnick, Adelberg, Medical Microbiolgy, Prentice Hall Inc, London.
10. Jayaram Panicker, C.K. 1993 Text Book of Medical Parsitology Jaypee Brothers, Medical Publishers, New Delhi.
11. Mackie and Mc catney, Medical Microbiolgy I and II. Charchill Livingston , 14th ed.

12. Madigan, M. T., Martinko, J. M., Dunlap, P. V. and Clark, D. P. (2014). Brock Biology of Microorganisms. 14th edition. Pearson International Edition.
13. Murphy, K., Travers. P. and Walport M. (2008). Janeway's Immunobiology. 7th edition Garland Science Publishers, New York.
14. Nandhini Shetty 1993. Immunology: Inductory Text Book . New Age International Ltd.
15. Peakman, M. and Vergani, D. (2009). Basic and Clinical Immunology. 2nd edition Churchill Livingstone Publishers, Edinberg.
16. R.P.Singh, Immunology and Medical Microbiology.
17. Rajan, S. Medical Microbiology. MJP Publishers, Chennai.
18. Richard, C. and Geiffrey, S. (2009). Immunology. 6th edition. Wiley Blackwell Publication.
19. Roitt, I.M., Essentials of Immunology, ELBS, Blackwell Scientific Publishers, London.
20. Stanbury, P.T. and Whitaker,(1984) Principles of Fermentation Technology, Pergamong Press, Newyork.
21. Tizard, I.R. (1998). Immunology An Introduction, 2nd ed. W.B. Saunders, Philadelphia.
22. Willey, J. M., Sherwood, L. M. and Woolverton, C. J. (2013) Prescott, Harley and Klein's Microbiology. 9th edition. McGraw Hill Higher Education.

Websites

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2. https://www.medicalnewstoday.com/articles/320101#immunity
3. http://www.antimicrobe.org/b242.asp
4. https://rarediseases.info.nih.gov/diseases/diseases-by-category/2/bacterial-infections
5. https://main.mohfw.gov.in/sites/default/files/24545352106148966387 3.pdf
6. http://www.textbookofbacteriology.net/normalflora_3.html

DSE-2.2: ADVANCES IN MICROBIOLOGY, BIOSTATISTICS AND INTELLECTUAL PROPERTY RIGHTS

Paper VI **48 (3hrs/week) 3 Credits**

Subject Code: 212649

Course objectives: This paper aims to introduce Evolution of microbial genomes and metagenomics, recent development in microbiology, Host-microbe interaction, networking in biological systems. It also deals with biostatistics, correlation and regression, Statistical analysis of biological data, intellectual property rights and their importance.

Course / Learning outcomes:

- Students will demonstrate skills in interpreting and communicating the results of statistical analysis.
- Acquire skills in data coordination and management.
- Identify the various steps in sampling design and describe the criteria for selecting sampling design.
- Understand the criteria and importance of IPR.

Unit I Genomics and Metagenomics **12 hrs**

Evolution of Microbial Genomes: Salient features of sequenced microbial genomes, core genome pool, flexible genome pool and concept of pangenome, Horizontal gene transfer (HGT),

Metagenomics: Brief history and development of metagenomics, Understanding bacterial diversity using metagenomics approach. Basic knowledge of viral metagenome, metatranscriptomics,

Unit II Recent developments in Microbiology **12 hrs**

Host-Microbe Interactions: Epiphytic fitness and its mechanism in plant pathogens, Hypersensitive response (HR) to plant pathogens and its mechanism, Type three secretion systems (TTSS) of plant and animal pathogens,

Systems and Synthetic Biology: Networking in biological systems, Quorum sensing in bacteria, Co-ordinated regulation of bacterial virulence factors,

Unit III Biostatistics **12 hrs**

Introduction to biostatistics: Measures of central tendency, Measures of dispersion; skewness, kurtosis; Elementary Probability and basic laws; Discrete and Continuous Random variable, Correlation and Regression. Emphasis on examples from Biological Sciences; Mean and Variance of Discrete and Continuous Distributions namely Binomial, Poisson, and Normal distribution.

Statistical methods: Scope of statistics: utility and misuse. Principles of statistical analysis of biological data. Sampling parameters. Difference between sample and Population, Sampling Errors, , Standard Error, Level of Significance and Degree of Freedom; , Small sample test based on t-test,

Unit IV **Intellectual Property Rights** **12 hrs**

Introduction to Intellectual Property: Patents, Types, Trademarks, Copyright & Related Rights, Industrial Design and Rights, importance of IPR, patentable and non patentables, World Intellectual Property Rights Organization (WIPO).

Grant of Patent and Patenting Authorities: Types of patent applications: Ordinary, PCT, Conventional, Divisional and Patent of Addition; An introduction to Patent Filing Procedures; Patent licensing and agreement;

VI SEMESTER

PRACTICAL-VIII **(6hrs/week) 03 credits**

ADVANCES IN MICROBIOLOGY

1. Extraction of metagenomic DNA from soil

2&3. Understand the impediments in extracting metagenomic DNA from soil

4&5. PCR amplification of metagenomic DNA using universal 16s ribosomal gene primers

6&7. Case study to understand how the poliovirus genome was synthesized in the laboratory

8. Case study to understand how networking of metabolic pathways in bacteria takes place

BIOSTATISTICS AND INTELLECTUAL PROPERTY RIGHTS

1. Mean,
2. Median,
3. Mode from grouped and ungrouped Data set
4. Standard Deviation and Coefficient of Variation
5. Skewness and
6. Kurtosis
7. Correlation
8. Study of steps of a patenting process

SUGGESTED READING

1. Glazer, A. N. and Nikaido, H. (2007) Microbial Biotechnology, 2nd edition, Cambridge University Press.
2. Glick, B. R., Pasternak, J. J. and Patten, C. L. (2010) Molecular Biotechnology 4th edition, ASM Press.
3. Gupta, P. K. (2009) Elements of Biotechnology 2nd edition, Rastogi Publications.
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7. Primrose and Twyman, (2003) Principles of Genome Analysis & Genomics. Blackwell.
8. Rastogi, S.C., Mendiratta, N. and Rastogi P. (2007) Bioinformatics: methods and applications, genomics, proteomics and drug discovery, 2nd ed. Prentice Hall India Publication.
9. Ratledge, C. and Kristiansen, B. (2001). Basic Biotechnology, 2nd Edition, Cambridge University Press.
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11. Swartz, J. R. (2001). Advances in Escherichia coli production of therapeutic proteins. Current Opinion in Biotechnology, 12, 195–201.

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2. http://users.stat.ufl.edu/~winner/sta6934/st4170_int.pdf
3. https://www.wipo.int/about-ip/en
4. https://www.frontiersin.org/articles/10.3389/fcell.2020.00229/full
5. https://www.ijert.org/the-hypersensitive-response-a-case-of-cell-death-induction-in-plants
6. https://www.mondaq.com/india/patent/656402/patents-law-in-india--everything-you-must-know

VI SEMESTER

SE-2.1: MICROBIAL DIAGNOSIS IN HEALTH CLINICS

Paper VI **32(2hrs/week) 2credits**

Subject Code: 212659

Course objectives: This paper aims to introduce Laboratory procedures for the collection of samples, its transportation, storage and serological diagnosis of samples. It also deals with antibiotic sensitivity of bacteria and their resistance**.**

Course / Learning outcomes:

- Students will Learn to collect different clinical samples and its transportation, storage, microscopic examination and culture methods to detect different pathogens.
- It also provides opportunities to develop informatics and diagnostic skills, including the use and interpretation of laboratory tests in the diagnosis of infectious diseases.
- To determine sensitivity of pathogens against antibiotics.

Unit I **Sample collection and Examination** **16 hrs**

Collection of clinical samples: Disease associated clinical samples for diagnosis. Collection of Clinical Samples. How to collect clinical samples (oral cavity, throat, skin, Blood, CSF, urine and faeces) and precautions required. Method of transport of clinical samples to laboratory and storage. Importance of Diagnosis of Diseases Bacterial (*Tuberculosis*), Viral (HIV), Fungal (*Candidiasis*) andProtozoan Diseases (*Plasmodium*) of various human body systems.

Diagnostic Methods: diagnostic methods for *M. tuberculosis*, HIV, *Candida*, *Plasmodium*.

Unit II **Pathogens detection and Antibiotic sensitivity test** **16 hrs**

Detection of pathogens: Serological and Molecular Methods: Serological Methods - Agglutination, ELISA, immunofluorescence, Nucleic acid based methods - PCR, Nucleic acid probes. Kits for Rapid Detection of Pathogens- Typhoid, Dengue and Swine flu.

Antibiotic sensitivity test: Testing for Antibiotic Sensitivity in Bacteria- Importance, Determination of resistance/sensitivity of bacteria using disc diffusion method, Determination of minimal inhibitory concentration (MIC) of an antibiotic by serial double dilution method.

SUGGESTED READING

1. Ananthanarayan, R. and Paniker, C. K. J. (2009)Textbook of Microbiology, 8th edition, Universities Press Private Ltd.
2. Brooks, G.F., Carroll, K.C., Butel, J.S., Morse, S.A. and Mietzner, T.A. (2013) Jawetz, Melnick and Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication.
3. Randhawa, V. S., Mehta, G. and Sharma, K. B. (2009) Practicals and Viva in Medical Microbiology 2nd edition, Elsevier India Pvt Ltd.
4. Tille, P. (2013) Bailey's and Scott's Diagnostic Microbiology, 13th edition, Mosby.
5. Collee, J. G., Fraser, A. G., Marmion, B. P. and Simmons, A. (2007) Mackie and Mccartney Practical Medical Microbiology, 14th edition, Elsevier. 31

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2. https://www.vetfolio.com/learn/article/bacterial-culture-and-antibiotic-susceptibility-testing
3. https://www.sinobiological.com/category/principle-of-if
4. https://labtestsonline.org/articles/collecting-samples-laboratory-testing

SE-2.2: MANAGEMENT OF HUMAN MICROBIAL DISEASES

Paper VI **32(2hrs/week) 2credits**

Subject Code: 212669

Course objectives: This paper aims to introduce different types of human diseases and impact of microbial diseases on different organ system, their mode of preventions and study of recent outbreak of human diseases. It also deals with mode of mechanism of action of antimicrobial drugs, prophylaxis of microbial diseases, vaccines and its importance.

Course / Learning outcomes:

- Students will understand the importance of pathogenic bacteria in human disease with respect to infections of the respiratory tract, gastrointestinal tract, urinary tract, skin and soft tissue.
- Students will be able to correlate disease symptoms with causative agent, isolate and identify pathogens.
- Recall the relationship of infection to symptoms, relapse and the accompanying pathology.
- Methods to control microorganisms, e.g. chemotherapy & vaccines and prevention of microbial diseases.
- Acquire knowledge of mechanism of action of antimicrobial drugs and prophylaxis.
- To work in pharmaceutical industries and diagnostic centres as clinical microbiologist.

Unit I **Human diseases** **16 hrs**

Human diseases types: Infectious and non-infectious diseases, microbial and non-microbial diseases, Deficiency diseases, occupational diseases, Incubation period, mortality rate, nosocomial infections.

Microbial diseases: Respiratory microbial diseases, gastrointestinal microbial diseases, Nervous system diseases, skin diseases, eye diseases, urinary tract diseases, Sexually transmitted diseases: clinical systems and general prevention methods, study of recent outbreaks of human diseases (SARS/ Swine flu/ Ebola)- causes,
spread and control, Mosquito borne disease- Types and prevention.

Unit II **Therapeutics and Prophylaxis of Microbial diseases** **16 hrs**

Treatments for Microbial diseases: Treatment using antibiotics: beta lactam antibiotics (penicillin, cephalosporin), quinolones, polypeptides and aminoglycosides. Judicious use of antibiotics, importance of completing antibiotic regimen, Concept of DOTS, emergence of antibiotic resistance, current issues of MDR/XDR microbial strains. Treatment using antiviral agents: Amantadine, Acyclovir, Azidothymidine.

Prevention of Microbial Diseases: General preventive measures, Importance of personal hygiene, environmental sanitation and methods to prevent the spread of infectious agents transmitted by direct contact, food, water and insect vectors. Vaccines: Importance, types, vaccines available against microbial diseases, vaccination schedule (compulsory and preventive) in the Indian context.

SUGGESTED READINGS

1. Ananthanarayan, R. and Paniker, C.K.J. (2009) Textbook of Microbiology. 8th edition, University Press Publication.
2. Brooks, G.F., Carroll, K.C., Butel, J.S., Morse, S.A. and Mietzner, T.A. (2013) Jawetz, Melnick and Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication.
3. Goering, R., Dockrell, H., Zuckerman, M. and Wakelin, D. (2007) Mims' Medical Microbiology. 4th edition. Elsevier.
4. Willey, J. M., Sherwood, L. M. and Woolverton, C. J. (2013) Prescott, Harley and Klein's Microbiology. 9th edition. McGraw Hill Higher Education.
5. Madigan, M. T., Martinko, J. M., Dunlap, P. V. and Clark, D. P. (2014). Brock Biology of Microorganisms. 14th edition. Pearson International Edition.

Websites:

1. https://www.ncbi.nlm.nih.gov/books/NBK8142/
2. https://oxfordmedicine.com/view/10.1093/med/9780199661756.001.0001/med-9780199661756-chapter-238
3. https://www.amboss.com/us/knowledge/Nosocomial_infections/
4. https://tmedweb.tulane.edu/pharmwiki/doku.php/betalactam_pharm
5. https://infectionsinsurgery.org/judicious-use-of-antibiotics/

Scheme of Valuation for Practical's

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of skill, comprehension and recording the results.

The students have to compulsorily submit the practical record during C1 and C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 10 marks in C1 and C2 as per the following scheme: Experiment 10 The marks scored is then normalized for 5.
- The student is evaluated for 40 marks in C3 as per the following scheme:

Heading	Marks
Experiment	30
Record	10
Total	40

The experiment portion of evaluation is carried out as per the following scheme:

V SEMESTER

PRACTICAL-V **Duration: 4 hours**

Max. Marks: 40

Record: 10 Marks

I. Demonstrate or perform the experiment A giving principle and procedure. Record the result. 15 Marks

(Isolation and enumeration of bacteria from spoiled vegetables/fruits/Utensils /Isolation and identification of fungi from spoiled vegetables/fruits/ Utensils)

(Demonstration- 6 Marks, Principle- 2 Mark, Procedure- 4 Marks, Results- 3 Marks)

II. Write critical notes on B, C and D. 5x3=15 Marks

(*Penicillium* on citrus, Canned foods, Nitrates & Nitrites, Sodium chloride, propionates, benzoates, sorbates, Aseptic packaging, Freeze drying, Spray Drying, High temperature)
(Identification – 1 Mark, critical notes – 4 Marks)

Max. Marks: 40

Record: 10 Marks

III. Write critical notes on E, F and G. 5x3=15 Marks

(Yoghurt, Butter milk. Cheese, Molasses, Antifoam agents, Fermentor, Ethyl alcohol, Wine, Amylase, *Spirulina, Chlorella*, Mushroom)
(Identification – 1 Mark, critical notes – 4 Marks)

IV. Demonstrate or perform the experiment H giving principle and procedure. Record the result. 15 Marks

(Methylene blue reductase test / SPC / Turbidity test)

(Demonstration- 6 Marks, Principle- 2 Mark, Procedure- 4 Marks, Results- 3 Marks)

V SEMESTER

PRACTICAL-VI **Duration: 4 hours**

Max. Marks: 40

Record: 10 Marks

I. Demonstrate or perform the experiment A giving principle and procedure. Record the result. 15 Marks

(Quantification of pigment produced from fungi / Characterization of algal Single Cell Proteins)
(Demonstration- 6 Marks, Principle- 2 Mark, Procedure- 4 Marks, Results- 3 Marks)

II. Write critical notes on B, C and D. 5x3=15 Marks

(Bioethanol, Biodiesel, Biofertilizer, Mycorrhizae, Bioplastics, biosensors, Immobilization techniques)

(Identification – 1 Mark, critical notes – 4 Marks)

Max. Marks: 40

Record: 10 Marks

III. Analyze the given sequence of genes or amino acids E & F for homology. 16 Marks

(Sequence retrieval using BLAST / Sequence alignment & phylogenetic analysis using clustalW & phylip /Primary structure analysis protein / Secondary structure prediction using psipred / Homology modeling using Swissmodel)

(Homology analysis- 8 Marks, Data interpretation- 8 Marks)

IV. Write the biological applications of the given Operating Systems or Database G & H. Mention its significance. 14 Marks

(UNIX / LINUX / Windows / NCBIPDB / DDB / Uniprot / PDB)

(Applications- 7 Marks, Significance- 7 Marks)

VI SEMESTER

PRACTICAL-VII **Duration: 4 hours**

Max. Marks: 40

Record: 10 Marks

I. Demonstrate or perform the experiment A giving principle and procedure. Record the result. 15 Marks

(Blood group and Rh factor/ Widal test / Ouchterlony Double Diffusion)

(Demonstration- 6 Marks, Principle- 2 Mark, Procedure- 4 Marks, Results- 3 Marks)

II. Write critical notes on B, C and D. 5x3=15 Marks

(Edward Jenner, Karl Landsteiner, Robert Koch, bone marrow, thymus, spleen, lymph nodes, tonsils, Vaccine, Gel Diffusion, Widal test, VDRL, RIA, ELISA, complement fixation test)
(Identification – 1 Mark, critical notes – 4 Marks)

Max. Marks: 40

Record: 10 Marks

III. Write critical notes on E, E and G. 5x3=15 Marks

(*Mycobacterium tuberculosis, Treponema pallidum, Salmonella typhi,* Dengue, HIV, *Candida albicans, Tinea, Plasmodium, Trichomonas vaginalis*)

(Identification – 1 Mark, critical notes – 4 Marks)

IV. Demonstrate or perform the experiment H giving principle and procedure. Record the result. 15 Marks

(Bacterial flora of skin by swab method / Antibacterial sensitivity)

(Demonstration- 6 Marks, Principle- 2 Mark, Procedure- 4 Marks, Results- 3 Marks)

VI SEMESTER

PRACTICAL-VIII **Duration: 4 hours**

Max. Marks: 40

Record: 10 Marks

I. Demonstrate or perform the experiment A giving principle and procedure. Record the result. 15 Marks

(Extraction of metagenomic DNA from soil / PCR amplification of metagenomic DNA/ Case study to understand how the poliovirus genome was synthesized in the laboratory /
Case study to understand how networking of metabolic pathways in bacteria takes place)

(Demonstration- 6 Marks, Principle- 2 Mark, Procedure- 4 Marks, Results- 3 Marks)

II. Write critical notes on B, C and D. 5x3=15 Marks

(Horizontal gene transfer, Gene pool, Quorum sensing in bacteria, Biofilm formation, viral metagenome, metatranscriptomics Photographs or charts related to syllabus)
(Identification – 1 Mark, critical notes – 4 Marks)

Max. Marks: 40

Record: 10 Marks

III. Write critical notes on E, F and G. 5x3=15 Marks

(Skewness, Kurtosis, WIPRO, Binomial, Poisson, and Normal distribution)
(Identification – 1 Mark, critical notes – 4 Marks)

IV. Find the given parameter H for the biological data. 15 Marks

(Mean, Median, Mode from grouped and ungrouped Data set / Standard Deviation and Coefficient of Variation/ Skewness and Kurtosis / Correlation / Regression/ Study of steps of a patenting process)

Question Paper Pattern

DSE Courses:

Max Marks: 80 **Time: 3 hours**

I. Answer the following **[4×15=60]**

1. Long answer questions; Answer **anyone** out of 2 1 × 15 = 15
2. Long answer questions; Answer **anyone** out of 2 1 × 15 = 15
3. Long answer questions; Answer **anyone** out of 2 1 × 15 = 15
4. Long answer questions; Answer **anyone** out of 2 1 × 15 = 15

II. Answer any **four** of the following **[4×05=20]**

5.

6.
7.
8.
9.
10.

Question Paper Pattern

SEC Courses:

Max Marks: 40 **Time: 3 hours**

I. Answer the following **[2×10=20]**

1. Long answer questions; Answer **anyone** out of 2 1 × 10 = 10
2. Long answer questions; Answer **anyone** out of 2 1 × 10 = 10

II. Answer any **five** of the following **[5×04=20]**

3.
4.
5.
6.

7.
8.

List of Examiners

Department of Microbiology

Sl. No.	Name	Designation	Address for Communication
35.	Smt. Shruthi Prakash H P	Assistant Professor	SBRR Mahajana First Grade College, Mysuru
36.	Ms. Spandana N	Assistant Professor	SBRR Mahajana First Grade College, Mysuru
37.	Smt. Sangeetha K P	Assistant Professor	SBRR Mahajana First Grade College, Mysuru
38.	Dr. Syeda Kouser Fathima	Professor	PG Dept, Maharani's Science College for Women, Mysuru
39.	Smt. Shobha M S	Assistant Professor	Maharani's Science College for Women, Mysuru
40.	Dr. Girish K	Associate Professor	PG Dept, Maharani's Science College for Women, Mysuru
41.	Dr. Raghavendra M. P	Associate Professor	PG Dept, Maharani's Science

			College for Women, Mysuru
42.	Dr. Siddegowda G S	Assistant Professor	Maharani's Science College for Women, Mysuru
43.	Smt. Vanitha P R	Assistant Professor	Maharani's Science College for Women, Mysuru
44.	Smt. Vasundara Devi R	Guest Faculty	Maharani's Science College for Women, Mysuru
45.	Smt. Samjna S R	Guest Faculty	Maharani's Science College for Women, Mysuru
46.	Sri. Manjunath R A	Assistant Professor	Sarada Vilas College, Mysuru
47.	Sri. Suresha M G	Assistant Professor	Government Science College, Hassan.
48.	Smt. Thara H K	Guest Faculty	Government Science College, Hassan.
49.	Dr. S Mahadeva Murthy	Professor	Yuvaraja's College, Mysuru
50.	Dr. Maheshwar P K	Professor	Yuvaraja's College, Mysuru
51.	Sri. Girish M	Assistant Professor	JSS College for Women, Mysuru
52.	Sri. Mahadeva Prasad G	Assistant Professor	JSS College for Women, Mysuru
53.	Dr. Poornima C R	Guest Faculty	Yuvaraja's College, Mysuru
54.	Smt. M P Aatiya Sameen	Assistant Professor	MMK & SDM, Mysuru
55.	Smt. Rajarajeshwari	Assistant Professor	MMK & SDM, Mysuru
56.	Smt. Syeda Farhana Parveen	Assistant Professor	St.Philomena's College, Mysuru
57.	Smt. Uzma Bathool	Assistant Professor	St.Philomena's College, Mysuru
58.	Dr. Vaishali Rai M	Assistant Professor	St Aloysius College, (Autonomous) Mangalore.
59.	Smt. Geetanjali P A	Assistant Professor	Field Marshal K M Cariappa College, Madikeri
60.	Vishwanath Naik P	Guest Faculty	Government Women's College, Mandya.
61.	Dr. Sowmya K	Assistant Professor	Field Marshal K M Cariappa College, Madikeri
62.	Tejaswini B Shetty	Guest Faculty	Field Marshal K M Cariappa College, Madikeri
63.	Dr. Deepashree C L	Guest Faculty	Maharani's Science College for Women, Mysuru
64.	Dr. Sangeetha M S	Guest Faculty	Maharani's Science College for Women, Mysuru
65.	Dr. H S Jayanth	Professor	Yuvaraja's College, Mysuru
66.	Ms. Arpitha	Guest Faculty	Govt Science College, Mandya
67.	Dr. Niveditha Prakash	Assistant Professor	JSS College for Women, Mysuru

68.	Dr. Smitha	Assistant Professor	JSS College for Women, Mysuru
69.	Dr. Jamuna Bai	Assistant Professor	Department of Water & Health - Faculty of Life Sciences, JSS University, Mysuru

1. (Smt. Shruthi Prakash H P)

2. (Dr. Sreenivasa M Y)

3. (Dr. Rekha C R)

4. (Dr. Sumana K)

5. (Dr. Chaitra Narayan)

6. (Ms. Spandana N)

7. (Smt. Sangeetha K P)

8. (Ms. Mahalakshmi R K)

DEPARTMENT OF PHYSICS

Motto

Physics for Progress

Vision

Science and Technology for Better Future

Mission

Imparting Physics education with a professional approach to make citizens thatare scientifically tempered to invent and discover

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis – Recognize real-world problems and user‟s requirements to propose solutions for the same using basic principles of science.

PO 3: Design and Development of Solutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate a hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/ platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resources and to develop scientific attitudes at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving the environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain integrality in a professional scenario while being aware of cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

List of BoS Members

Sl No	Category	Name & Designation	Address for Communication	Email & Mobile No.
1	Chairman	Sri. Manjunatha R Associate Professor & HoD	Department of Physics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	manjukalp@yahoo.com 9611075347
2	Members	Poornima S Assistant Professor	Department of Physics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	psmks2@gmail.com 9844815838
3		Gayathri V Assistant Professor	Department of Physics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	gayatrivasu94@gmail.com 9980859170
4	Two Experts from Other University	Smt. Rajeshwari S Associate Professor	Department of Physics MES Degree College Malleshwaram, Bengaluru	srfeb2166@gmail.com 9900945312
5		Smt. Rupa Shree M P Associate Professor	Department of Physics DRM Science College, Davangere	rupa2friends@gmail.com 9449773064
6	Nominee by the Vice Chancellor	Dr.M.A.Sridhar Professor	DOS in Physics, Manasagangothri, Mysuru.	mas@physics.uni-mysore.ac.in 0821-2419333
7	Alumnus	Smt. M. Sushma Assistant Professor	Department of Physics Yuvaraja"s College, Mysuru.	sushmamraju77@gmail.com 9986163654

8	One Person from Industry/ Corporate Sector/Allied Area	Dr.A.Chandrashekara Officer-in charge of help Physics unit	Officer-in charge of help Physics unitUCIL, MC Palle, Kadapa dist. Andrapradesh.	chandrabasav@yahoo.co.in 9481149674

Course Structure (NEP 2020)

Discipline Specific Courses (DSC) and Open Elective (OE)

I Year

Course type, code and Title		Hours/week		Credits	Maximum Marks			Exam Duration	Total
		L	T/P	L: T: P	C1	C2	C3		Marks
Physics- I Sem									
DSC(1) 212129	Mechanics and Properties of Matter	4	0	4:0:2 6 credits	20	20	60	$2\frac{1}{2}$ hours	150
	DSC(1)- Lab	0	4		10	15	25	3 hours	
OE(1)	**Energy Sources** 21OEPHY101	3	0	3:0:0 3credits	20	20	60	$2\frac{1}{2}$ hours	100
OE(2)	**Climate Science** 21OEPHY102								
Note: OE Any one to be selected									
Physics- II Sem									
DSC(2) 212229	Electricity and Magnetism	4	0	4:0:2 6 credits	20	20	60	$2\frac{1}{2}$ hours	150
	DSC(2)- Lab	0	4		10	15	25	3 hours	
OE(3)	**Astronomy** 21OEPHY201	3	0	3:0:0 3credits	20	20	60	$2\frac{1}{2}$ hours	100
OE(4)	**Medical Physics** 21OEPHY202								

Note: OE Any one to be selected

DSC(1) Syllabus for B.Sc. Physics (Basic and Honors)

Semester I

Course Code: 212129	**Course Title:** DSC(1)- Mechanics and Properties of Matter (Theory) DSC(1)-lab
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester-End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs)	
CO1	Implementation of data on Units and measurement, Special theory of relativity. For tabulation and Monitoring of data to comprehend the accuracy of measurements and to analyze the sources of errors. And, also to gain knowledge of Energy and Momentum.
CO2	Analyze laws of motion and gravitational law and also acquire knowledge of momenta of inertia of different rigid bodies.
CO3	Implementation of various moduli of elasticity by experimental method to comprehend its applications.
CO4	Implement the experimental techniques adopted to evaluate surface tension and viscosity.

Course Content

Content	Hrs
Unit – 1	
Units and measurements: System of units (CGS and SI), measurement of length, mass and time, dimensions of physical quantities, dimensional formulae. Minimum deviation, errors. **Momentum and Energy**: Work and energy, Conservation of momentum (linear). Conservation of energy with examples. Motion of rockets. **Special Theory of Relativity:** Constancy of speed of light. Postulates of Special Theory of Relativity. Length contraction. Time dilation. Relativistic addition of velocities. Numerical problems.	12
Suggested Activities	02
Activity No. 1	(i) Students can measure the diameters of small balls of different sizes and estimate their volumes. (ii) Students can measure the lengths of nails of different sizes. (iii) Students can measure the volume of a liquid (iv) Students can measure distances and put the result both in CGS and SI units in 2, 3 and 4 significant figures. Ask them to mention the precession of the measurement. (v) Students can estimate standard deviations wherever possible.
Activity No. 2	Students can try and understand the conservation of energy in everyday examples. For example: (i) What happens in solar conservation panels (ii) Pushing an object on the table it moves (iii) A moving car hits a parked car and causes the parked car to move. In these cases, energy is conserved. How? Understand and verify if possible.
Unit – 2	
Laws of Motion: Newton‟s Laws of motion. Dynamics of single and a system of particles. Centre of mass. Numerical problems. **Dynamics of Rigid bodies**: Rotational motion about an axis, Relation between torque and angular momentum, Rotational energy. moment of inertia: M I of a rectangular Lamina and solid cylinders. Flywheel, Theory of compound pendulum and determination of g. Numerical problems. **Gravitation:** Law of Gravitation. Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant). Kepler‟s laws (statements). Satellite in a circular orbit. Numerical problems.	12

Suggested Activities		02
Activity No. 3	Moment of inertia is an abstract concept. It simply gives a measure of the rotational inertia of a rigid body and it is proportional to the product of the square of the radius, r of the body and its mass, m. Students by referring to websites, can construct and perform simple experiments to verify that MI α mr^2. Reference: www.khanacademy.org, www.pinterest.com, www.serc.cerleton.edn	
Activity No. 4	Activity: Prepare suitable charts and give seminar talks in the class.	
Unit – 3		
Elasticity: Hooke‟s law - Stress-strain diagram, elastic moduli-relation between elastic constants, Poisson‟s Ratio-expression for Poisson‟s ratio in terms of elastic constants. Work done in stretching and work done in twisting a wire-Twisting couple on a cylinder. Torsional pendulum-Determination of rigidity modulus and moment of inertia - q, η and σ by Searle‟s method. Numerical problems.		12
Suggested Activities		02
Activity No. 5	Arrange a steel spring with its top fixed with rigid support on a wall and a meter scale alongside. Add 100 g load at a time on the bottom of the hanger in steps. This means that while putting each 100g load, we are increasing the stretching force by 1N. Measure the extension for loads up to 500g. Plot a graph of extension versus load. The shape of the graph should be a straight line indicating that the ratio of load to extension is constant. Go for higher loads and find out the elastic limit of the material.	
Activity No. 6	Repeat the above experiment with rubber and other materials and find out what happens after exceeding the elastic limit. Plot and interpret.	
Unit –4		
Surface tension: Definition of surface tension. Surface energy, the relation between surface tension and surface energy, the pressure difference across the curved surface example, excess pressure inside the spherical liquid drop, and angle of contact. Numerical problems. **Viscosity:** Streamline flow, turbulent flow, equation of continuity, determination of coefficient of viscosity by Poisulle‟s method, Stoke‟s method. Numerical problems.		12
Topics for self-study (If any) Capillarity determination of surface tension by drop weight method.		

Suggested Activities	02
Activity No. 7	Measure t h e surface tension of water and other common liquids and compare and learn (i) Why water has high ST? think of reasons. (ii) Check whether ST is a function of temperature? You can do it by heating the water to different temperatures and measuring ST. (iii) Plot ST versus T and learn how it behaves. Mix some quantity of kerosene or any oil to water and measure ST. Check whether ST for the mixture is more or less than pure water. List the reasons.
Activity No. 8	Collect a set of different liquids and measure their viscosity. (i) Find out whether sticky or non-sticky liquids are t he most viscous. List the reasons. (ii) Mix the nonsticky liquid with the sticky liquid in defined quantities and measure viscosity. Find out if the viscosity is increasing or decreasing with an increase in non-sticky liquid concentration. (iii) Do the above experiment by mixing sticky liquid with nonsticky liquid. Find out t h e change in viscosity with a n increase in t h e concentration of sticky liquid. List the applications where the concept of Viscosity plays a dominant role

Textbooks

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1.	Mechanics	D. S. Mathur	S.Chand & Co.	2000
3.	Mechanics Berkeley Physics Course, Vol.1:	Charles Kittel, *et.al*.	Tata McGraw-Hill	2007
4.	Properties of Matter	Brijlal & Subramanyam.	Eurasia Publishing House Limited,	1993

References Books

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1.	Physics. 9th Edn,	Resnick, Halliday & Walter,	Wiley	2010
2.	Physics Vol-I	Halliday and Resnick,		

Weblinks

- https://www.fullonstudy.com/bsc-1st-year-physics-notes
- https://byjus.com/chemistry/properties-of-matter/
- https://edscl.in/course/view.php?id=347&section=3

DSC(1) lab

List of Experiments **Credit : L:T:P 0:0:2**

(Minimum EIGHT experiments must be completed)

Sl No	Experiments
1	Determination of g using bar pendulum.
2	Determination of the moment of inertia of a Fly Wheel.
3	Determination of rigidity modulus using a torsional pendulum.
4	Modulus of rigidity of a rod – Static torsion method.
5	Determination of elastic constants of a wire by Searle‟s method.
6	Young‟s modulus by Koenig‟s method.
7	Viscosity by Stoke‟s method.
8	Verification of Hook‟s law.
9	Determination of surface tension of a liquid and the interfacial tension between two liquids using the drop weight method.
10	Study of motion of the spring and to calculate the Spring constant, g and unknown mass.
11	Determination of Young‟s modulus of a bar by the single cantilever method.
12	Determination of Young‟s modulus of a bar by uniform bending method.
13	The radius of the capillary tube by mercury pellet method.
14	Verification of parallel and perpendicular axis theorems.

Reference Book for Laboratory Experiments

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1	Physics through experiments	B.Saraf	Vikas Publications	2013
2	A lab manual of Physics for undergraduate classes, 1st Edition,		Vikas Publications.	
3	BSc Practical Physics Revised Ed	CL Arora	S.Chand & Co.	2007
4	An advanced course in practical physics.	D. Chattopadhyay, PC Rakshit, B.Saha	New Central Book Agency Pvt Ltd.	2002

Course Articulation Matrix- Course code 212129												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	2	1	1	2	___	2
CO2	3	2	1	1	2	2	2	1	1	1	___	2
CO3	3	2	1	1	2	2	2	1	2	2	1	2
CO4	3	2	1	1	2	2	2	1	2	1	1	2
Weighted average	**3**	**1.75**	**1**	**1**	**2**	**2**	**2**	**1**	**1.5**	**1.5**	**1**	**2**

OE Physics Syllabus for All Programs (Except Science)

Semester I

Course Code: 21OEPHY101	**Course Title:** OE(1): Energy Sources
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Acquiring knowledge of energy concepts and conventional energy sources in nonrenewable energy sources.
CO2	Gaining knowledge of renewable energy sources and solar energy with their applications.
CO3	Comprehending the knowledge of wind energy, tidal energy harvesting, geothermal and hydro energy utilization.

Course Content

Content	Hrs
Unit – 1: Non-Renewable energy sources	
Introduction: Energy concept-sources in general, its significance & necessity. Classification of energy sources: Primary and Secondary energy, Commercial and Non-commercial energy, Renewable and Non-renewable energy, Conventional and Non-conventional energy, Based on Origin-Examples and limitations. Importance of Non-commercial energy resources.	05
Conventional energy sources: Fossil fuels & Nuclear energy- production & extraction, usage rate and limitations. Impact on environment and their issues& challenges. Overview of Indian & world energy scenario with latest statistics-consumption & necessity. Need of eco-friendly & green energy & their related technology.	08
Unit – 2: Renewable energy sources	
Introduction: Need of renewable energy, and non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, and Hydroelectricity.	05
Solar Energy-Key features its importance, Merits & demerits of solar energy, and Applications of solar energy. Solar water heater, flat plate collector, solar distillation, solar cooker, solar greenhouses, solar cell -a brief discussion of each. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun-tracking systems.	08
Unit – 3	
Wind and Tidal Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies. Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy.	08
Geothermal and hydro energy: Geothermal Resources, Geothermal Technologies. Hydropower resources, hydropower technologies, and the environmental impact of hydropower sources. Carbon-captured technologies, cell, batteries, power consumption.	05

Suggested Activities	03
1. Demonstration of Solar energy, wind energy, etc, using training modules at Labs. 2. Conversion of vibration to voltage using piezoelectric materials. 3. Conversion of thermal energy into voltage using thermoelectric (using thermocouples or heat sensors) modules. 4. Project report on Solar energy scenario in India 5. Project report on Hydro energy scenario in India 6. Project report on wind energy scenario in India 7. Field trip to nearby Hydroelectric stations. 8. Field trip to wind energy stations like Chitradurga, Hospet, Gadag, etc. 9. Field trip to solar energy parks like Yeramaras near Raichur. Videos on solar energy, hydro energy and wind energy.	

Text books

1. Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi
2. Solar energy - M P Agarwal - S Chand and Co. Ltd.
3. Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd.

Reference books

1. Godfrey Boyle, "Renewable Energy, Power for a sustainable future", 2004, Oxford University Press, in association with The Open University.
2. Dr. P Jayakumar, Solar Energy: Resource Assessment Handbook, 2009
3. J.Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).

Weblinks

- http://en.wikipedia.org/wiki/Renewable_energy
- https://www.energy.gov/energy-sources
- https://www.eia.gov/energyexplained/what-is-energy/sources-of-energy.php

Course Articulation Matrix- 21OEPHY101												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	2	1	2	2	2	1	1	1	___	1
CO2	3	2	2	1	2	2	2	1	2	1	1	1
CO3	3	1	2	1	2	2	2	1	2	1	1	1
Weighted average	**3**	**1.66**	**2**	**1**	**2**	**2**	**2**	**1**	**1.66**	**1**	**1**	**1**

OE Physics Syllabus for All Programs (Except Science)

Semester I

Course Code: 21OEPHY102	**Course Title:** OE(2): Climate Science
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Developing knowledge about atmospheric science as a multidisciplinary concept.
CO2	Analyze the impact of atmospheric circulation on world climate and the influence of meteorological parameters and atmospheric stability.
CO3	Evaluate the contribution of greenhouse gases in Global warming and thereby bringing change in the climate.

Course Content

Content	Hrs
Unit – 1: Atmosphere	
Atmospheric Science (Meteorology) is a multidisciplinary science. Physical and dynamic meteorology, Some terminology, the difference between weather and climate, weather and climate variables, t h e composition of the present atmosphere: fixed and variable gases, volume mixing ratio (VMR), sources and sinks of gases in the atmosphere. Greenhouse gases. Structure (layers) of the atmosphere. Temperature variation in the atmosphere, temperature lapse rate, mass, pressure and density variation in the atmosphere. Distribution of winds.	13
Unit – 2: Climate Science	
Overview of meteorological observations, measurement of: temperature, humidity, wind speed and direction and pressure. Surface weather stations, upper air observational network, satellite observation. Overview of clouds and precipitation, aerosol size and concentration, nucleation, droplet growth and condensation (qualitative description). Cloud seeding, lightning and discharge. Formation of trade winds, cyclones. Modeling of the atmosphere: General principles, Overview of General Circulation Models (GCM) for weather forecasting and prediction. Limitations of the models. R and D institutions in India and abroad dedicated to climate Science, NARL, IITM, CSIR Centre for Mathematical Modeling and Computer Simulation, and many more	13
Unit – 3: Global Climate Change	
Greenhouse effect and global warming, Enhancement in concentration of carbon dioxide and other greenhouse gases in the atmosphere, Conventional and non-conventional energy sources and their usage. EL Nino/LA Nino Southern oscillations. Causes for global warming: Deforestation, fossil fuel burning, industrialization. Manifestations of global warming: Sea level rise, melting of glaciers, variation in monsoon patterns, increase in frequency and intensity of cyclones, hurricanes, and tornadoes. Geo-engineering as a tool to mitigate global warming? Schemes of geoengineering.	13
Suggested Activities	03
1. Try to find answer to the following questions: (a) Imagine you are going in a aircraft at an altitude greaten than 100 km. The air temperature at that altitude will be greater than 200^{o}C. If you put your hands out of the window of the aircraft, you will not feel hot. (b) What would have happened if ozone is not present in the stratosphere?	

2. Visit a nearby weather Station and learn about their activities.
3. Design your own rain gauge for rainfall measurement at your place.
4. Learn to determine atmospheric humidity using the wet bulb and dry bulb thermometers.
5. Visit the website of the Indian Institute of Tropical Meteorology (IITM), and keep track of the occurrence and landfall of cyclone prediction.
6. Learn about the ozone layer and its depletion and ozone hole.
7. Keep track of the melting of glaciers in the Arctic and Atlantic region through a database available over several decades.

Watch documentary films on global warming and related issues (produced by amateur filmmakers and promoted by British Council and BBC).

References Books

1. Basics of Atmospheric Science – A Chandrashekar, PHI Learning Private Ltd. New Delhi, 2010.
2. Fundamentals of Atmospheric Modelling- Mark Z Jacbson, Cambridge University Press, 2000.

Weblinks

- https://climatescience.org
- https://wild.org/climate/
- https://warmheartworldwide.org/climate-change/

Course Articulation Matrix- 21OEPHY102

Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	2	1	1	1	___	1
CO2	3	1	1	1	2	2	2	1	2	1	___	1
CO3	3	2	2	1	2	2	2	1	2	1	1	1
Weighted average	**3**	**1.33**	**1.33**	**1**	**2**	**2**	**2**	**1**	**1.66**	**1**	**1**	**1**

DSC(2) Syllabus for B.Sc. Physics (Basic and Honors)

Semester II

Course Code: 212229	**Course Title:** DSC(2)- Electricity and Magnetism (Theory) DSC(2)-lab
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester-End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs)	
CO1	Comprehend Gauss Law, and Coulomb‟s law applying for point charges, and line charges and also differentiate the vector formalisms of Electrostatics.
CO2	Acquiring knowledge of Conductors in the Electrostatic field and to Analyse the properties of circuit elements.
CO3	Accomplishing the experimental laws of Magnetism and obtaining resonance in an LCR circuit
CO4	Analyzing Maxwell‟s equation in Electromagnetic waves to acquire knowledge of Electric current and Magnetism.

Course Content

Content	Hrs
Unit – 1	
Electric charge and field, Coulomb‟s law, electric field strength, electric field lines, point charge in an electric field and electric dipole, work done by a charge (derivation of the expression for potential energy). Numerical problems.	03
Gauss‟s law and its applications (electric fields of an (i) spherical charge distribution, (ii) line charge and (iii) an infinite flat sheet of charge). Numerical problems.	03
Electric potential, line integral, the gradient of a scalar function, and the relation between field and potential. Potential due to point charge and distribution of charges (Examples: potential associated with a spherical charge distribution, infinite line charge distribution, an infinite plane sheet of charges). Constant potential surfaces, Potential due to a dipole and electric quadrupole. Numerical problems.	06
Suggested Activities	02
Activity No. 1	1. Learn the difference between and DC and AC electricity and their characteristics. Voltage and line frequency standards in different countries. 2. A small project report on the production of electricity as a source of energy: Different methods.
Activity No. 2	1. Learn to use a multimeter (analog and digital) to measure voltage, current and resistance. Continuity testing of a wire. 2. Learn about household electrical connection terminals: Live, neutral and ground and the voltage between the terminals. Role of earthing and safety measures.
Unit – 2	
Conductors in an electrostatic field Conductors and insulators, conductors in electric field. Capacitance and capacitors, calculating capacitance in a parallel plate capacitor, parallel plate capacitor with dielectric, dielectrics: an atomic view. Energy stored in a capacitor, Dielectric and Gauss's law.	06
Electric currents and current density. Electrical conductivity and Ohm‟s law. Physics of electrical conduction, conduction in metals and semiconductors, circuits and circuit elements: Variable currents in capacitor circuits, Resistor, inductor and capacitor and their combination. force on a moving charge.	06

Suggested Activities		02
Activity No. 3	1. Learn about electrical appliances which work with AC and DC electricity 2. Learn about types of resistors and their colour codes and types of capacitors(electrolytic and non-electrolytic)	
Activity No. 4	1. Learn about power transmission: 3-phase electricity, voltage and phase 2. Visit a nearby electrical power station. Interact with linemen, Electrical engineers and managers. Discuss power loss in transmission. How to reduce it? 3. Prepare a small project report on street lighting and types of electrical bulbs..	
Unit – 3		
Magnetism Definition of the magnetic field, Ampere‟s law and Biot-Savart law (magnetic force and magnetic flux), Magnetic force on a current carrying conductor, Hall effect. Electromagnetic induction, conducting rod moving in a magnetic field, law of induction and mutual inductance, self- inductance and energy stored in a magnetic field.		06
Alternating current circuits: Resonant circuit, alternating current, quality factor, RL, RC, LC, LCR circuits, admittance and impedance, power and energy in AC circuits.		06
Suggested Activities		02
Activity No. 7	1. Prepare a small project report on street lighting and types of electrical bulbs. 2. Learn the measurement of electric current using a tangent galvanometer.	
Activity No. 8	Build a small coil with insulated copper wire. Connect an ammeter micro/milli ammeter. Verify magnetic induction using a powerful bar magnet.	
Unit – 4		
Electromagnetic waves: Equation of continuity, Maxwell‟s equations, displacement current, electromagnetic wave, energy transported by electromagnetic waves. Electromagnetic waves in different frames of reference, Field of a current loop, magnetic moment, Electric current in atoms, electron spin and magnetic moment, magnetization and magnetic susceptibility.		08
Types of magnetic materials: diamagnetic, paramagnetic and ferromagnetic materials. B-H hysteresis curves and its characteristics Ferrites.		04

Suggested Activities		02
Activity No. 7	1. Prepare a small project report on production of magnetic field: Permanent magnets, electromagnets and superconducting magnets. 2. Learn the principle of working of a Gauss meter to measure magnetic field	
Activity No. 8	Model the earth‟s magnetic field with a diagram. Explain the effect of tilt of the earth‟s axis and reasons for the change in the tilt of the earth‟s axis over thousands of years.	

References Books

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1	Physics-Part-II,	David Halliday and Robert Resnick	Wiley Eastern Limited	2001
2	Berkeley Physics Course, Vol-2, Electricity and Magnetism, Special Edition	Edward M Purcell	Tata Mc Graw-Hill Publishing Company Ltd, New Delhi	2008

Weblinks

- https://faculty.wcas.northwestern.edu/infocom/Ideas/
- https://www.toppr.com/guides/physics/electromagnetism/electricity-and-magnetism/
- https://www.electricityforum.com/electricity-and-magnetism

DSC(2) lab

List of Experiments **Credit : L:T:P**

0:0:2

(Minimum EIGHT experiments must be completed)

1	Experiment to determine the low resistance and hence to determine the specific resistance of the material of the wire.
2	Determination of components of earth‟s magnetic field using a Ballistic galvanometer.
3	Determination of capacitance of a condenser using B.G.
4	Determination of high resistance by leakage using B.G.
5	Determination of mutual inductance using BG.
6	Charging and discharging of a capacitor (energy dissipated during charging and time- constant measurements.
7	Series and parallel resonance circuits (LCR circuits).
8	The impedance of series RC circuits- determination of the frequency of AC.
9	Study the characteristics of a series RC and RL Circuit.
10	Determination of self-inductance of a coil.
11	Verification of laws of combination of capacitances and determination of unknown capacitance using the de-Sauty bridge.
12	Determination of BH using Helmholtz double coil galvanometer and potentiometer

Course Articulation Matrix-Course code 212229												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	2	1	2	1	1	2
CO2	3	2	1	1	2	2	2	1	2	1	1	2
CO3	3	2	1	1	2	2	2	1	2	2	1	2
CO4	3	3	1	1	2	2	2	1	2	2	1	2
Weighted average	**3**	**2**	**1**	**1**	**2**	**2**	**2**	**1**	**2**	**1.5**	**1**	**2**

OE Physics Syllabus for All Programs (Except Science)

Semester II

Course Code: 21OEPHY201	**Course Title:** OE(3): Astronomy
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Gaining knowledge of Ancient Indian, Medieval and modern astronomy and Comprehending tool and methods implemented to observe heavenly bodies.
CO2	Acquiring knowledge of the solar system.
CO3	Monitoring the prominent stars and constellations visible during stipulated periods.

Course Content

Content	Hrs
Unit – 1: History and Introduction	
Ancient Astronomy Greek Observations, Sumerian Observations, Mayan Observations, Arabic Observations, and Chinese Observations.	03
Indian Astronomy Vedic Astronomy, Ancient Astronomy – Aryabhata, Varahamihira, Bhaskara Astronomy in Indian Scriptures, Precession of the Equinox, Celebrations of Equinox.	03
Medieval & Modern Astronomy The invention of Telescopes, Models of the Solar System & Universe, Observations by Tycho Brahe, Kepler, Galileo, Herschel and Others, and Modern Astronomy.	02
Optical tools for Astronomy Pin Hole, Binoculars, Telescopes & Imaging. Mathematical Methods of Observations Angular Measurement, Trigonometric functions, Stellar Parallax Observational Terminologies Cardinal Directions, Azimuth, Altitude, Measurements using Compass and Hand. Equatorial Coordinates, Light years, Magnitude, Colors, etc.	05
Unit – 2: Observations of the Solar System	
The Sun Ecliptic and the Orientation of the Earth, Seasons - Solstices and Equinox, Observations of the Sun from Earth during seasons. Eclipses, Zero-shadow day, The Moon Earth-Moon system – Phases, Lunar Eclipses, Ecliptic and Lunar Orbital Plane – Nodes, Lunar Month, Full Moon Names. Inner Planets: Mercury & Venus Observational History, Observational Windows, Appearance, Apparitions, Elongations, Superior Conjunctions, Inferior Conjunctions, Transits. Outer Planets Outer Planets: Mars, Jupiter & Saturn Observational History. Observational Windows, Appearance, Frequency of Oppositions, Conjunctions, Moons Eclipses. Galilean Moons, Saturn‟s Rings	13

Unit – 3: Major Astronomy Observations	
March to June Prominent Stars and Constellations Visible during this period, Methods of Spotting June to September Prominent Stars and Constellations Visible during this period, Methods of Spotting. September to December Prominent Stars and Constellations Visible during this period, Methods of Spotting. December to March Prominent Stars and Constellations Visible during this period, Methods of Spotting.	13
Suggested Activities	03
Experiment **1.** Measuring Seasons using Sun‟s Position. **2.** Measuring Distance using Parallax **3.** Estimation of the Stellar Diameter using Pin Hole **4.** Measuring Height of an Object Using Clinometer. **5.** Star spotting using constellation maps **6.** Constellation spotting using Skymaps **7.** Estimation of „Suitable Periods‟ to observe deep sky objects using Planisphere. **8.** Estimation of the Size of the Solar System in using Light Years. **9.** Identification of Lunar Phases across a year. **10.** Measuring the Constellation of the Sun using Night Skymaps or Planispheres.	

Text Books

1. P. N. SHANKAR A GUIDE TO THE NIGHT SKY
2. Biman Basu, Joy of Star Watching, National Book Trust of India 2013

Reference books

1. The Stargazer's Guide - How to Read Our Night Sky by Emily Winterburn
2. A guide to the Night Sky – Beginner‟s handbook by P.N. Shankar
3. The Complete Idiot‟s Guide to Astronomy by Christopher De Pree and Alan Axelrod
4. Christopher De Pree: The Complete Idiot's Guide to Astronomy, Penguin USA, 2008.
5. Emily Winterburn, The Stargazer's Guide: How to Read Our Night Sky, Constable and Robinson, 2008.

Weblinks

- https://www.arvindguptatoys.com/arvindgupta/nightskyshankar.pdf
- https://egyankosh.ac.in/

Course Articulation Matrix- 21OEPHY201												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	1	1	1	1	___	1
CO2	3	1	1	1	2	2	1	1	1	1	1	1
CO3	3	1	1	2	2	2	----	1	1	1	----	1
Weighted average	**3**	**1**	**1**	**1.33**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**

OE Physics Syllabus for All Programs (Except Science)

Semester II

Course Code: 21OEPHY202	**Course Title:** OE(4): Medical Physics
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Developing knowledge about human anatomy and physiology.
CO2	Analyze the knowledge in the field of Physics in medical diagnostics instruments.
CO3	Acquire knowledge about the physics behind radiotherapy.

Course Content

Content	Hrs
Unit – 1: Human Anatomy and Physiology	
Overview of human anatomy - cells, cell structure, type of cells and their functions, tissues, organs, and their functions. Different systems in the human body, their structure and function, physiological properties of the circulatory system, digestive system, respiratory system, reproductive system, excretory system, endocrine system and nervous system.	13
Unit – 2: Physics of Medical Diagnostics	
Principle of production of X-rays. Use of X-rays in medical diagnosis, X-ray imaging systems. Computed Tomography (CT): principle and generation of CT. Magnetic Resonance Imaging (MRI): basic principle and image characteristics. Ultrasound Imaging: Interaction of sound waves with body tissues, production of ultrasound, transducers, acoustic coupling, image formation, modes of image display and color Doppler.	13
Unit – 3: Physics of Radiotherapy	
Clinical aspects of radiation therapy: Biological basis of radiotherapy, radiation sources, radiation dose, time dose fractionation. External beam radiation therapy, radiation therapy modalities, production of radioisotopes, use of radioisotopes in therapy, particle and ion beam radiotherapy. Brachytherapy - the principle of brachytherapy and classification of brachytherapy techniques.	13
Suggested Activities	03
Class Room Activities- 1-3	
Activity No. 1	Students can demonstrate the shape, size, positions and functions of different organs in the body with the help of models.
Activity No. 2	The use of X-rays in the diagnosis of the fractured bone can be demonstrated with the help of a gamma source and a gamma ray survey meter. As the density of materials between the source and the detector changes the reading on the meter (or intensity of the beefing sound) changes.
Activity No. 3	i) Students can be asked to list out different type of cancers and possible causative factors. They can be asked to list out the healthy practices to reduce the risk of cancers. (ii) As there will be students from different disciplines in the OE course, group discussion can be arranged to discuss about their programme and outcome. This will be an opportunity for the students to know about other disciplines.

Activity No. 4	**Other related activities/projects:** 1. Visit nearby hospitals/diagnostic centers to study the working of X-ray machines. 2. Visit ultrasound diagnostic centers to study the principle and use of ultrasound in diagnosis. 3. Project on principle and use of X-ray films in imaging. 4. Visit radiotherapy centers to study the modalities of radiotherapy.

Text Books

1. C. H. Best and N. B. Taylor. A Test in Applied Physiology. Williams and Wilkins Company, Baltimore, 1999.
2. C. K. Warrick. Anatomy and Physiology for Radiographers. Oxford University Press, 2001.
3. Jerrold T. Bushberg. The Essential Physics for Medical Imaging (2nd Edition). Lippincott Williams & Wilkins, 2002.
4. Jean A. Pope. Medical Physics: Imaging. Heinemann Publishers, 2012.
5. Faiz M. Khan and Roger A. Potish. Treatment Planning in Radiation Oncology. Williams and Wilkins,
6. D. Baltas. The physics of modern brachytherapy for oncology. Taylor and Francis, 2007.

Reference book s

1. J. R. Brobek. Physiological Basis of Medical Practice. Williams and Wilkins, London, 1995.
2. Edward Alcamo, Barbara Krumhardt. Barron's Anatomy and Physiology the Easy Way. Barron's Educational Series, 2004.
3. Lippincott, Anatomy and Physiology. Lippincott Williams & Wilkins, 2002.
4. G. S. Pant. Advances in Diagnositc Medical Physics. Himalaya Publishing House, 2006.
5. AAPM Report No. 72. Basic Applications of Multileaf collimators, AAPM, USA, 2001.
6. AAPM Report No. 91. Management of Respiratory motion in radiation oncology, 2006.
7. CA Joslin, A. Flynn, E. J. hall. Principles and Practice of Brachytherapy. Arnold publications, 2001.
8. Peter Hoskin, Catherine Coyle. Radiotherapy in Practice. Oxford University Press, 2011.
9. W. R. Handee. Medical Radiation Physics. Year Book Medical Publishers Inc., London, 2003.
10. Donald T. Graham, Paul J. Cloke. Principles of Radiological Physics. Churchill Livingstone, 2003.

Weblinks

- https://aapm.onlinelibrary.wiley.com/journal/24734209
- https://en.wikipedia.org/wiki/Medical_physics
- https://www.medphys.org/

Course Articulation Matrix- 21OEPHY202												
Mapping of Course Outcomes (CO) Program Outcomes(PO)												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	1	1	1	1	___	1
CO2	3	1	1	1	2	2	1	1	2	1	___	1
CO3	3	1	1	1	2	2	1	1	2	1	1	1
Weighted average	**3**	**1**	**1**	**1**	**2**	**2**	**1**	**1**	**1.66**	**1**	**1**	**1**

Continuous Formative Evaluation/ Internal Assessment

Total marks for each course shall be based on continuous assessments and semester- end examinations. The pattern of 40:60 for IA and Semester End theory examinations respectively and 50:50 for IA and Semester End practical examinations respectively.

	Theory	Practical
Total Marks for each Course	100 marks	50 marks
Continuous assessment-1 (C1)	20 marks	10 marks
Continuous assessment-2 (C2)	20 marks	15 marks
Semester End Examination (C3)	60 marks	25 marks

The evaluation process of IA marks shall be as follows:

a) The first component (C1) of the assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, fieldwork, project work, etc. This assessment and score process should be completed after completing 50% of the syllabus of the course/s and within 45 working days of the semester program
b) The second component (C2) of the assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship / industrial practicum/project work, etc. This assessment and score process should be based on the completion of the remaining 50 percent of the syllabus of the courses of the semester.
c) During the 17th – 19th week of the semester, a semester-end examination shall be conducted by the University for each Course. This forms the third and final component of the assessment (C3) and the maximum marks for the final component will be 60%.
d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on the scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct a special test for such candidate on the date fixed by the concerned teacher but before the commencement of the concerned semester-end examinations.
e) For assignments, tests, case study analysis, etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets, etc., required for such tests/assignments and these be stamped by the concerned department using their department seal at the time of conducting tests/assignment/work, etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under.

	C1 marks	C2 marks	Total Marks
Session Test	20	---	20
Seminars/Presentations/Activity/ Case study /Assignment / Fieldwork / Project work etc.	---	20	20
Total	20	20	40

- For the practical course of full credits, the Seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance. (the ratio is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).
- Conduct of Test, Seminar, Case study / Assignment, etc. can be either in C1 or in the C2 component at the convenience of the concerned departmet/teacher.
- The teachers concerned shall conduct test / seminar / case study, etc. The students should be informed about the modalities well in advance. The evaluated course assignments during component I (C1) and component II (C2) of the assessment are immediately provided to the candidates after obtaining acknowledgment in the register by the concerned teachers(s) and maintained by the Department. Before the commencement of the semester-end examination, the evaluated test, assignment, etc. of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board ofthe department/college for information of the students.

h) The Internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during the 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated based on skill, comprehension and recording of the results. The student has to compulsorily submit the practical record for evaluation during C1 and C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following

scheme: Experiment: 10 for C1 (10 marks)

Experiment: 10, Record: 05 for C2 (15 marks)

- The student is evaluated for 25 marks in C3 as per the

followingscheme: Experiment: 20, Viva: 05 for C3 (25 marks)

The experimental portion of the evaluation (C3) is carried out as per the following scheme:

formula with proper units and explanation	03
Setting up the apparatus/circuit connections	03
Taking readings and tabulating	07
Calculations and Graph	07
Viva	05
Total	25

DSC THEORY QUESTION PAPER PATTERN FOR I AND II SEMESTER

Max Marks: 60 Exam duration: $2\frac{1}{2}$ hours

Part-A

I. One question from each unit is to be given with an internal choice. Each question carries 10 marks $4 \times 10 = 40$

1 (a)

OR

(a)

2 (a)

OR

(a)

3 (a)

OR

(a)

4 (a)

OR

(a)

Part-B 8

II. One numerical problem must be given for each unit. Any three to be answered.

5

6

7

3× 4 = 12

Part-C

III One question must be given from each unit. Any four to be answered. 2 × 4 = 08

9 (a)
(b)
(c)
(d)
(e)
(f)

OPEN ELECTIVE THEORY QUESTION PAPER PATTERN FOR I AND II SEMESTER

Max Marks: 60 Exam duration: $2\frac{1}{2}$ hours

Part-A

I. One question must be given from each unit. Any three to be answered out of four questions

$3 \times 15 = 45$

1

2

3

4

Part-B

II Numerical problems or short essay-type questions must be given from each unit. Answer any three out of four questions. $3 \times 5 = 15$

5

6

7

8

Board of Studies

SLNo.	Name and address	Designation	Signature
1	Sri.Manjunatha R HoD, Dept of Physics SBRR Mahajana First Grade College Mysore. Mob. 9611075347 manjukalp@yahoo.com	Chairman	Manjunatha. R 19/11/21
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8	Smt. M. Sushma Assistant Professor Department of Physics Yuvaraja's College, Mysore Mob:9986163654 sushmamraju77@gmail.com	Member	M. Sushma

Manjunatha. R

SBRR Mahajana First Grade College (Autonomous), Jayalakshmipuram, Mysuru

Head of Dept.
SBRR Mahajana First Grade College
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Jayalakshmipuram, Mysuru-570 012

Open Elective Theory Question Paper Pattern

B.Sc MICROBIOLOGY

Duration: 2½ Hours **Maximum: 60 Marks**

Instructions: All questions are compulsory.

Draw neat labeled diagrams wherever necessary.

I Define any FIVE of the following **5X2=10 Marks**

3. (a) **(b)**

(c) **(d)**

(e) **(f)**

(g)

II Write short notes any FIVE of the following **5X6=30 Marks**

(2) **(6)**

(3) **(7)**

(4) **(8)**

(5)

III Answer any TWO of the following **2X10=20 Marks**

(9)

(10)

(11)

(12)

DEPARTMENT OF PHYSICS

Motto

Physics for Progress

Vision

Science and Technology for Better Future

Mission

Imparting Physics education with a professional approach to make citizens thatare scientifically tempered to invent and discover

Program Outcomes (POs) for Bachelor of Science

PO 1: Domain Knowledge - Acquire and apply knowledge of science in relevant areas.

PO 2: Problem Analysis – Recognize real-world problems and user's requirements to propose solutions for the same using basic principles of science.

PO 3: Design and Development of Solutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate a hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting technical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use digital resources, various software/ platforms and appropriate techniques to interpret concepts of science.

PO 6: Impact of Science on Society – To prepare competent human resources and to develop scientific attitudes at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain integrality in a professional scenario while being aware of cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills.

PO 10: Communication – Develop the caliber to convey various concepts of science effectively.

PO 11: Project Management and Finance – Set up enterprises/companies and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

List of BoS Members

Sl No	Category	Name & Designation	Address for Communication	Email & Mobile No.
1	Chairman	Sri. Manjunatha R Associate Professor & HoD	Department of Physics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	manjukalp@yahoo.com 9611075347
2	Members	Dr. Poornima S Assistant Professor	Department of Physics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	psmks2@gmail.com 9844815838
3		Gayathri V Assistant Professor	Department of Physics SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	gayatrivasu94@gmail.com 9980859170
4	Two Experts from Other University	Smt. Thejavathi N R Assistant Professor	Department of Physics Govt. College (Autonomous) Mandya.	thejavathi@gmail.com 9481037230
5		Dr. Chethan Prathap K.N Assistant Professor	Department of Physics University College of Science Tumkur University, Tumkur.	cpforphysics@gmail.com 9686245523
6	Nominee by the Vice Chancellor	Dr. Chandrashekar. M.S Professor	DOS in Physics, Manasagangothri, Mysuru.	msc@physics.uni-mysore.ac.in mschandrashekara@gmail.com 9448600121
7	Alumnus	Smt. M. Sushma Assistant Professor	Department of Physics Yuvaraja's College, Mysuru.	sushmamraju77@gmail.com 9986163654

Course Structure (NEP 2020)

Discipline Specific Courses (DSC) and Open Elective (OE)

II Year

Course type, code and Title		Hours/week		Credits	Maximum Marks			Exam Duration	Total Marks
		L	T/P	L: T: P	C1	C2	C3		
Physics- III Sem									
DSC(3) 222329	Wave motion and Optics	4	0	4:0:2 6 credits	20	20	60	$2\frac{1}{2}$ hours	150
	DSC(3)- Lab	0	4		10	15	25	3 hours	
OE(5)	**Optical Instrument** 22OEPHY301	3	0	3:0:0 3credits	20	20	60	$2\frac{1}{2}$ hours	100
OE(6)	**Sports Science** 22OEPHY302								
Note: OE Any one to be selected									
Physics- IV Sem									
DSC(4) 222429	Thermal Physics and Electronics	4	0	4:0:2 6 credits	20	20	60	$2\frac{1}{2}$ hours	150
	DSC(4)- Lab	0	4		10	15	25	3 hours	
OE(7)	**Nanotechnology** 22OEPHY401	3	0	3:0:0 3credits	20	20	60	$2\frac{1}{2}$hours	100
OE(8)	**Electrical Instrument** 22OEPHY402								

Note: OE Any one to be selected

DSC(3) Syllabus for B.Sc. Physics (Basic and Honors)Semester III

Course Code: 222329	**Course Title:** DSC(3)-Wave motion and Optics (Theory) DSC(3)-lab
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester-End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs)	
CO1	Identify different types of waves, wave equations and different parameters for the wave and superposition of waves for different amplitude and frequency.
CO2	Analyze the formation of standing waves and how the energy is transferred along the standing wave in different methods, applications and mathematical models in the case of stretched string and vibration of a rod and identify the different parameters that affect the acoustics in a building, measure it, and control it.
CO3	Gain knowledge on various theories of light and apply the phenomenon of interference.
CO4	Implement the knowledge gained on diffraction and Polarization.

Course Content

Content		Hrs
Unit – 1: Waves and Superposition of Harmonic Waves		
Waves: Plane and Spherical Waves. Longitudinal and Transverse Waves. Characteristics of wave motion, Plane Progressive (Travelling) Wave and its equation, Wave Equation – Differential form (derivation). Particle and Wave Velocities: Relation between them, Energy Transport – Expression for the intensity of progressive wave, Newton's Formula for Velocity of Sound. Laplace's Correction (Derivation). A brief account of Ripple and Gravity Waves. Numerical Problems.		06
Superposition of Harmonic Waves Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats) – Analytical treatment. Superposition of two perpendicular Harmonic Oscillations: Lissajous Figures with equal and unequal frequency- Analytical treatment, graphical method. Uses of Lissajous' figures. Numerical Problems.		06
Suggested Activities		02
Activity No. 1	We know that sound is produced because of vibration. Look into at least 10 musical instruments and identify the regions of vibrations that produce the sound and those parts which enhance the sound because of reverberation. 1. Identify one common element in all of these. 2. Identify equipment that creates beats and try to explain the underlying basic principles. Demonstrate examples of beats using two tuning forks. 3. Identify what will happen when you drop a stone in standing water, and when your drop two stones side by side. 4. Make your observations sketch them and comment on them in a report.	
Activity No. 2	Draw two sine waves (Amplitude vs time) one shifted with the other in phase. Identity where the resonation occurs for each phase shift. Plot phase vs time taken for resonance.	
Activity No. 3	Take smooth sand, and place a pointed-edged pen vertically on the sand. To the mid of the pen, connect two perpendicular threads. Pull these perpendicular threads by varying the forces and timings. Note down the different shapes produced on the sand. Try to interpret the shapes. Make a report of it.	
Activity No. 4	Hang a pot with sand, which has a hole in the bottom. Gently pull the pot to one side and observe the pattern formed by the sand on the floor. Report the observations.	
Activity No. 5	Design a coupled pendulum. Study the impact of the motion of one pendulum over the other pendulum by varying the length, direction of the motion of one pendulum, and mass of the pendulum, and observe the resultant changes. Trace the path of the bobs and make a report.	

Activity No. 6	**Note for the teachers for the activity:** Make 3 groups among students and assign each group the activity of drawing one of the 3 graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. 1. The first slide will explain the process of doing the experiment. 2. In the second slide. Students will show the graph of measurement. 3. In the third slide, they will list three observations from that study. **Activity:** Take a stretched spring. Stretch it across two edges. Put a weight on the string, pluck it and measure the amplitude of the vibration. All groups will measure the total damping time of the oscillating spring. (Using mobile or scale) And plot a graph of the- 1. Varying load on the spring and amplitude at the center. 2. Take another weight and put that in another place and measure the amplitude of vibration at the center. 3. Vary the load in the center of the spring and measure the amplitude at the center.	
Unit – 2: Standing Waves and Acoustics		
Standing Waves: Velocity of transverse waves along a stretched string (derivation), Standing (Stationary)Waves in a String - Fixed and Free Ends (qualitative). Theory of Normal modes of vibration in a stretched string, Energy density and energy transport of a transverse wave along a stretched string. Vibrations in rods – longitudinal and transverse modes (qualitative). The velocity of Longitudinal Waves in gases (derivation). Normal Modes of vibrations in Open and Closed Pipes – Analytical treatment. Concept of Resonance, Theory of Helmholtz resonator. Numerical Problems.		08
Acoustics: Intensity and loudness of sound, Intensity level, Absorption coefficient, Reverberation and Reverberation time, Sabine's Reverberation formula (derivation), Factors affecting acoustics in buildings, Requisites for good acoustics. Acoustic measurements – intensity and pressure levels. Numerical Problems.		04
Suggested Activities		02
Activity No. 7	List different phenomena where standing waves are found in nature. Identify the phenomena and reason for standing waves. Also, identify the standing waves in musical instruments. Make a report.	
Activity No. 8	**1.** Go to 5 different newly constructed houses when they are not occupied and when they are occupied. Make your observations on the sound profile in each room. Give the reasons. Make a report**.** 2. Visit three very good auditoriums, and list out different ways in which the acoustic arrangements have been done (as decoration and Civil works). Look for the reasons in Google and identify which is acoustically the best auditorium among the three you visited. Make a report.	

Activity No. 9	**Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. 1. The first slide will explain the process of doing the experiment. 2. In the second slide. Students will show the graph of measurement. 3. In the third slide, they will list three observations from that study. **Activity:** Take a bowl of different liquids (water, milk, kerosene, salt water, and Potassium Permanganate (KMNO4) solution. Place a smallnon-oily floating material (ex: thin plastic) on the surface of the liquid. Drop a marble on the liquid at the center of the bowl. Repeat the experiment by dropping the marble from different heights. Plot a graph of- 1. Height v/s time of oscillation 2. Weight of the marble v/s time of oscillation.
Activity No. 10	**Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. 1. The first slide will explain the process of doing the experiment. 2. In the second slide. Students will show the graph of measurement. 3. In the third slide, they will list three observations from that study. **Activity:** Take two marble of the same weight. Drop both marbles on the surface of the liquid from some height. With the help of the mobile take the picture and measure the position of an interface of two wavefronts formed in the liquid. Plot graphs for different activities by doing the following activities. 1. By dropping two marbles of the same weight from different heights. 2. By dropping two marbles of different weights from the same height.

Unit – 3: Nature of light and Interference

Nature of light: The types of fringes using Michelson interferometer. The corpuscular model of light - The wave model - Maxwell's electromagnetic waves- Wave-Particle Duality. Numerical Problems.	02

<table>
<tr><td colspan="5">Interference of light by divisionof wavefront: Huygen’s theory-Concept of wave-front-Interference pattern produced on the surface of water-Coherence-Interference of light waves by division of wave-front- Young’s doubleslit experiment- derivation of expression for fringe width-Fresnel Biprism, Loyd’s Mirror (description only) - Interference with white light- Numerical Problems.</td><td>05</td></tr>
<tr><td colspan="5">Interferenceof light by divisionof amplitude: Interference by division of amplitude-Interference by a plane parallel film illuminated bya plane wave-Interference by a film with two non-parallel reflecting surfaces- the colour of thin films—Newton’s rings-(Reflected light)- Michelson Interferometer- Determination of the wavelength of light. Numerical Problems.</td><td>05</td></tr>
<tr><td></td><td colspan="4">Suggested Activities</td><td>02</td></tr>
<tr><td>Activity No. 11</td><td colspan="5">In the table given below explore which phenomenon can be explained by what and Make a report.
<table>
<tr><td>Sl.No</td><td>Phenomenon</td><td>Particle of Light</td><td>Wave Nature</td><td>Dual Nature</td></tr>
<tr><td></td><td>Pinhole camera</td><td></td><td></td><td></td></tr>
<tr><td>1.</td><td>Formation of images on lenses</td><td></td><td></td><td></td></tr>
<tr><td>2.</td><td>Formation of images on mirror</td><td></td><td></td><td></td></tr>
<tr><td>3.</td><td>Interference</td><td></td><td></td><td></td></tr>
<tr><td>4.</td><td>Polarization</td><td></td><td></td><td></td></tr>
<tr><td>5.</td><td>Diffraction due to single slit</td><td></td><td></td><td></td></tr>
<tr><td>6.</td><td>Black body radiation</td><td></td><td></td><td></td></tr>
<tr><td>7.</td><td>Photoelectric effect</td><td></td><td></td><td></td></tr>
<tr><td>8.</td><td>De-Broglie hypothesis</td><td></td><td></td><td></td></tr>
<tr><td>9.</td><td>Davisson & Germer Experiment</td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Activity No. 12</td><td colspan="5">Why color strips are seen in paddles on roads in rainy seasons try to simulate the same. Give the reasons. Make a report.</td></tr>
<tr><td>Activity No. 13</td><td colspan="5">Note for the teachers for the activity: Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks.</td></tr>
</table>

	1. The first slide will explain the process of doing the experiment. 2. In the second slide. Students will show the graph of measurement. 3. In the third slide, they will list three observations from that study. **Activity:** Take a bowl of different liquids (water, milk, kerosene, salt water, and Potassium Permanganate (KMNO4) solution. Place a small non-oily floating material (ex: thin plastic) on the surface of the liquid. Drop two marbles of the same weight (mass) from the same height onto the surface of the water but at different time intervals. Plot graph for the different observations. **For teachers:** Demonstrate the formation of a Lissajous Figure using a CRO. Give different shapes of Lissajous Figure with varying frequency and amplitude. Ask the students to comment on the observations.

Unit –4: Diffraction and Polarisation	
Fraunhofer diffraction: Introduction- Fraunhofer diffractions- Single slit diffraction pattern-position of Maximaand Minima (Qualitative arguments)- Two slit diffraction pattern-position of Maxima and minima- Theory of plane diffraction grating-Grating spectrum- normal and oblique incidence- Resolving power and dispersive power of a grating Single slit; Double Slit. Multiple slits & Diffraction grating. Numerical Problems.	04
Fresnel Diffraction: Fresnel Diffraction- Fresnel half-period zones- Diffraction by a circular aperture- diffraction by an opaque disc- The zone plate -comparison between zone plate andconvex lens. Numerical Problems.	04
Polarisation: Introduction-Production of polarized light- The wire Grid polarizer and Polaroid- Superposition of two disturbances-Phenomenon of double refraction-Quarter waveplates and half wave plates- Analysis of polarized light-optical activity. Numerical Problems.	04
Suggested Activities	02

Activity No. 14	• Explain the polarization of light through a chart. • List out the surfaces that reflect polarized light. • Learn how the polarization of light can be done by both transmission and reflection. • Perform an experiment and make a report. using CDs and DVDs as diffraction gratings. Ref:https://www.nnin.org/sites/default/files/files/Karen_Rama • Obtain the diffraction spectra using a CD and design an experiment to find the distance between the tracks on it (Ref:https://www.brighthubeducation.com/science-lessons-grades-9-12/39347- diffraction- experiment-measuring-groove-spacing-on-CDs/,https://silo.tips/download/diffraction-from-a-compact-disk) .

Activity No. 15	What is the physics behind making 3D movies? Group Discussion (https://www.slideserve.com/rae/physics-behind-3d-movies-powerpoint-ppt-presentation) Make a report.
Activity No. 16	List out different types of zone plates and look for their applications in day-to-day life. Make a report.
Activity No. 17	Collect information and study how optically polarizing lenses are made. Visit a nearby lens-making facility. Learn the principle behind sunglasses. Make a report.
Activity No. 18	**Note for the teachers for the activity:** Make 3 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. 1. The first slide will explain the process of doing the experiment. 2. In the second slide. Students will show the graph of measurement. 3. In the third slide, they will list three observations from that study. **Activity:** Identify any 3 sharp edges of varying thickness and assign them to 3 groups. Shine a laser light pointing towards the edge of the needle. Observe the patterns formed on the wall or screen and measure the distance between the bands. Correlate the distance between the bands formed with the thickness of the edge and the distance from the edge to the screen. By this, calculate the wavelength of the laser light used.

Textbooks

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1.	The Physics of Waves and Oscillations,	N K Bajaj	Tata McGraw-Hill Publishing Company Ltd., Second Edition,	1984
2.	Waves and Oscillations	N Subramanyam and Brij Lal	Vikas Publishing House Pvt. Ltd., Second Revised Edition	2010
3.	A Text Book of Sound	D R Khanna and R S Bedi	Atma Ram & Sons, Third Edition	1952
4.	Oscillations and Waves	Satya Prakash	Pragathi Prakashan, Meerut, Second Edition	2003
5.	Optics	Ajoy Ghatak	McGraw Hill Education (India) Pvt Ltd	2017
6.	A text Book of Optics	Brij Lal, M N Avadhanulu & N Subrahmanyam	S. Chand Publishing	2012

References Books				
Sl No	**Title of the Book**	**Authors Name**	**Publisher**	**Year of Publication**
1.	Berkeley Physics Course – Waves,	Frank S Crawford Jr.	Tata Mc Graw-Hill Publishing Company Ltd., Special Indian Edition,.	2011
2.	Optics	Eugene *Hecht*	Pearson Paperback	2019
3.	Introduction To Optics	Pedrotti and Frank L ,	Pearson India	3rd Edition
4.	Fundamentals of Optics	Francis Jenkins Harvey White	McGraw Hill Education	2017

Weblinks

- https://www.britannica.com/science/wave-motion
- https://testbook.com/learn/physics-wave-motion/
- http://hyperphysics.phy-astr.gsu.edu/hbase/Sound/wavplt.html
- https://cnx.org › exports › waves-and-optics-33.7.pdf

DSC(3) lab

List of Experiments **Credit : L:T:P**

0:0:2

(Minimum EIGHT experiments must be completed)

Sl No	Experiments
1	The velocity of sound through a wire using a Sonometer.
2	Determination of unknown concentration of sugar solution by a graphical method using a polarimeter
3	Study of Lissajous Figures
4	Helmholtz resonator using tuning fork.
5	To determine the refractive index of the Material of a prism using a sodium source.
6	To determine the Cauchy's constants of the material of a prism using a mercury source.
7	To determine the wavelength of sodium light using Fresnel Biprism.
8	To determine the radius of curvature of planoconvex using Newton's Rings
9	To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped Film.
10	To determine the wavelength of spectral lines of Hg source using a plane diffraction grating.

Reference Book for Laboratory Experiments

Sl No	Title of the Book	Authors Name	Publisher	Year of Publication
1	Advanced Practical Physics for students	B.L. Flint and H.T. Worsnop	Asia Publishing House.	1971
2	A Text Book of Practical Physics	I. Prakash & Ramakrishna	Kitab Mahal, 11th Edition	2011
3	Advanced level PhysicsPracticals	Michael Nelson and Jon M. gborn	Heinemann Educational Publishers, 4th Edition	1985
4	A Laboratory Manual of Physics for undergraduateclasses	D.P.Khandelwal	Vani Publications.	1985

Course Articulation Matrix- course code-222329												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	2	1	1	1	___	2
CO2	3	2	1	1	2	2	2	1	1	1	___	2
CO3	3	2	1	1	2	2	2	1	2	2	___	2
CO4	3	3	1	1	2	2	2	1	2	2	1	2
Weighted average	**3**	**2**	**1**	**1**	**2**	**2**	**2**	**1**	**1.5**	**1.5**	**1**	**2**

OE Physics Syllabus for All Programs (Except Science)

Semester III

Course Code: 22OEPHY301	**Course Title:** OE(5): Optical Instruments
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Comprehending the basic knowledge of different laws and principles of optics and assimilating the different formulae of optics.
CO2	Gaining knowledge about the construction and working of various microscopes and cameras and their utilization.
CO3	Acquiring the knowledge of construction, working and application of different types of telescopes and spectroscopes.

Course Content

Content	Hrs
Unit – 1	
Basics of Optics: Scope of optics, optical path, laws of reflection and refraction as per Fermat's principle, magnifying glass, Lenses (thick and thin), convex and concave lenses, Lens makers formulae for double concave and convex lenses, lens equation. Focal and nodal points, focal length, image formation, a combination of lenses, Dispersion of light: Newton's experiment, angular dispersion and dispersion power. Dispersion without deviation. (Expressions need not be derived, but have to be discussed qualitatively).	13
Unit – 2	
Camera and microscopes: Human eye (constitution and working), Photographic camera (principle, construction and working), construction, working and utilities of Simple microscopes, Compound microscope, Electron microscopes, Binocular microscopes.	13
Unit – 3	
Telescopes and Spectrometer: Construction, working and utilities of Astronomical telescopes, Terrestrial telescopes, Reflecting telescopes, Construction, working and utilities of Eyepieces or Oculars (Huygen, Ramsden's, Gauss) Spectrometer - Construction, working and utilities, measurement of refractive index.	13
Activities: ➢ Find the position and size of the image in a magnifying glass and magnification. ➢ Observe rainbows and understand optics. ➢ Create a rainbow. ➢ Find out what makes a camera to be of good quality. ➢ Observe the dispersion of light through a prism. ➢ Make a simple telescope using magnifying glass and lenses. ➢ Learn the principle of refraction using prisms. ➢ Check the bending of light in different substances and find out what matters here. ➢ Learn about different telescopes used to see galaxies and their ranges. ➢ Many more activities can be tried to learn optics by going through you tubes and websites such as https://spark.iop.org, http://www.yenka.com, https://publiclab.org etc.	03

Text books

- Fundamentals and Basic Optical Instruments, 1st Edition, Volume 1 Edited By Daniel Malacara Hernández and Brain J Thompson
- Basic Optics and Optical Instruments, Revised Edtion By Fred A. Carson.

Reference books

- Fundamentals and basic optical instruments; Advanced optical instruments andtechniques by Malacara & Daniel & Thompson & Brian J
- Introduction to Optics by Anchal Srivastava, R K Shukla, T Pandys.

Weblinks

- https://en.wikipedia.org/wiki/Optical_instrument
- https://byjus.com/physics/optical-instruments/
- https://www.vedantu.com/physics/different-optical-instruments

Course Articulation Matrix- 22OEPHY301												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	2	1	1	1	___	1
CO2	3	1	1	1	2	2	2	1	2	1	___	1
CO3	3	1	1	1	2	2	2	1	2	1	1	1
Weighted average	**3**	**1**	**1**	**1**	**2**	**2**	**2**	**1**	**1.66**	**1**	**1**	**1**

OE Physics Syllabus for All Programs (Except Science)

Semester III

Course Code: 22OEPHY302	**Course Title:** OE(6): Sports Science
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Comprehension of measurements, Newton's laws of motion and assimilating the knowledge of projectile motion.
CO2	Gaining knowledge about the law of conservation, a center of mass and gravitational law, and Archimedes's principles.
CO3	Enlightening the significance of nutrients in food for physical exercise and briefing about the energy sources that are required in day-to-day life.

Course Content

Content		Hrs
Unit – 1		
Measurement: Physical quantities. Standards and Units. An international system of Units. Standards of time, length and mass. Precision and significant figures. **Newton's laws of motion**: Newton's first law. Force, mass. Newton's second law. Newton's third law. Mass and weight. Applications of Newton's laws. **Projectile motion**: Shooting a falling target. Physics behind Shooting, Javelin throw and Discus throw.		13
Unit – 2		
Conservation laws: Conservation of linear momentum, collisions – elastic and inelastic. Angular momentum. (Physics behind Carom, Billiards, Racing). **Centre of mass**: Physics behind Cycling, rock climbing, Skating. **Gravitation**: Origin, Newton's law of gravitation. Archimedes's principle, Buoyancy (Physics behind swimming)		13
Unit – 3		
Food and Nutrition: Proteins, Vitamins, Fat, Blood pressure. Problems due to the deficiency of vitamins. **Energy:** Different forms of Energy, Conservation of mass-energy. **Physical exercises:** Walking, Jogging and Running, Weight management.		13
Suggested Activities		03
Activity 1:	Identify the methods of measurement of time, length and mass from ancient times and build models for them. Reference: History of measurement - Wikipedia https://en.wikipedia.org › wiki> History_of_measurement.	
Activity 2:	Identify Physics principles behind various Sports activities. **https://www.real-world-physics-problems.com/physics-of-sports.html.**	
Activity 3:	List the difficulties experienced in Gymnastics, Cycling and weightlifting	
Activity 4:	List the difficulties experienced in swimming.	
Activity 5:	Learn breathing exercises. Reference: 1)Simple Breathing Exercise for Beginners | Swami Ramdev 2) https://www.yogajournal.com.	
Activity 6:	Write an essay on Physical health v/s Mental health or conduct a debate on Physical health v/s Mental health.	

Textbooks				
Sl No	**Title of the Book**	**Authors Name**	**Publisher**	**Year of Publication**
1.	Physics for Entertainment	Yakov Perelman	Createspace Independent Pub.	2012
2.	Physics Everywhere	Yakov Perelman	Prodinnova	2014
3.	Mechanics for Entertainment	Yakov Perelman	Prodinnova	2014
4.	Handbook of Food and Nutrition	M.Swaminathan	Bangalore Press 2012	2012
5.	Food Science	B. Srilakshmi	New Age International Pub	2015

References Books				
Sl No	**Title of the Book**	**Authors Name**	**Publisher**	**Year of Publication**
1.	Physics	Resnick, Halliday and Krane, Vol 1	Wiley Student Edition.	2011
2.	For the love of Physics	Walter Lewin	Taxmann Publications Private Limited	2012
3.	An Introduction to the Physics of Sports	VassiliosMcInnesSpathopoulos	CreateSpace Independent Publishing Platform	2013

Weblinks

- https://www.topendsports.com/biomechanics/physics.htm
- https://www.real-world-physics-problems.com/physics-of-sports.html
- https://www.healthline.com/
- https://www.mayoclinic.org/
- https://www.who.int/news-room/

Course Articulation Matrix- 22OEPHY302												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	2	1	1	2	3	2	1	1	1	___	2
CO2	3	2	1	1	2	3	2	1	2	1	___	2
CO3	3	1	1	1	2	3	2	1	2	1	1	2
Weighted average	**3**	**1.66**	**1**	**1**	**2**	**3**	**2**	**1**	**1.66**	**1**	**1**	**2**

DSC(4) Syllabus for B.Sc. Physics (Basic and Honors)

Semester IV

Course Code: 222429	**Course Title:** DSC(4)-Thermal Physics and Electronics (Theory) DSC(4)-lab
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: $2\frac{1}{2}$ Hours (Theory) 3 Hours (Practical)	**Semester-End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs)	
CO1	Apply the laws of thermodynamics, laws of kinetic theory and radiation laws to the ideal and practical thermodynamics systems through derived thermodynamic relations.
CO2	Use the concepts of semiconductors to comprehend different Semiconductor devices such as diode transistors, BJT, FET, etc and explain their functioning.
CO3	Acquire knowledge on the functioning of OP-AMPS and apply it as the building blocks in logic gates.
CO4	Implement the use of logic gates in different theorems of Boolean Algebra followed by logic circuits.

Course Content

Content	Hrs
Unit – 1	
Laws of Thermodynamics: Review of the concepts of Heat and Temperature.	01
First Law of Thermodynamics: Differential form, Internal Energy. Equation of state for an adiabatic process, Work Done during Isothermal and Adiabatic Processes. Numerical Problems.	04
Second Law of Thermodynamics: Kelvin-Planck and Clausius Statements and their Equivalence. Reversible and Irreversible processes with examples. Heat Engines: Carnot engine & efficiency (no derivation). Refrigeration & coefficient of performance, Applications of Carnot engine in locomotion, Thermodynamic Scale of Temperature and its Equivalence to Perfect Gas Scale. Concept of Entropy, Second Law of Thermodynamics in terms of Entropy. Numerical Problems.	05
Third Law of Thermodynamics: Statement, Significance and Unattainability of Absolute Zero. Numerical Problems.	02
Suggested Activities	02
Activity No. 1	• Feel cold because coldness enters my body. Discuss the statement in day-to-day life. Approximately give examples of **(i)** open system **(ii)** closed system and **(iii)** isolated system • Discuss when the temperature of the body is locked until what time you hold the thermometer in contact with the body. Discuss it in contact with the laws of thermodynamics. • Discuss why when a person works or does exercise, he sweats. Reason it with the laws of thermodynamics.
Activity No. 2	**Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. **(i)** The first slide will explain the process of doing the experiment. **(ii)** In the second slide. Students will show the graph of measurement. **(iii)** In the third slide, they will list three observations from that study.

	Activity: Take four different sizes of the same metal, preferably of the same shape and give one piece to each group. Heat it uniformly on a hot plate. Keep a beaker of water with a thermometer immersed in it. Drop one hot metal into the water and record the temperature with time. Repeat the experiment for the other heated metal pieces of different sizes. **(i)** Plot a graph for the volume of the metal piece used v/s respective temperature change observed. **(ii)** Determine the heat capacity and specific heat of the metal used.
Activity No. 3	**Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. **(i)** The first slide will explain the process of doing the experiment. **(ii)** In the second slide. Students will show the graph of measurement. **(iii)** In the third slide, they will list three observations from that study. **Activity:** Take ice cubes of different sizes and immerse them in water and measure the temperature change with time and repeat the experiment. Graph the observations.

Unit – 2	
Thermodynamics Potentials: Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy. Their Definitions, Properties and Applications. Numerical Problems.	02
Maxwell's thermodynamic Relations Derivations and applications of Maxwell's Relations (1) First order Phase Transitions with examples, Clausius-Clapeyron Equation (2) Values of Cp-Cv (3) Joule-Thomson Effect and J- T coefficient (Derivation) for Vander Walls gas. Attainment of low temperature by liquefaction of gases and adiabatic demagnetization. Numerical Problems.	03
Kinetic Theory Of Gases: Distribution of Velocities: Maxwell-Boltzmann Law of Distribution of Velocities in an Ideal Gas: Mean, RMS and Most Probable Speeds. Degrees of Freedom, Law of Equipartition of Energy (no derivation). Specific heats of Gases. Numerical Problems.	04
Radiation: Blackbody radiation, spectral distribution, Lummer-Pringsheim experiment-Result, the concept of energy density and pressure of radiation (no derivation). Derivation of Planck's law, Wein's law, Rayleigh-Jean law, deduction of Stefan-Boltzmann law and Wien's displacement law from Planck's law. Numerical Problems.	03

Suggested Activities	02
Activity No. 4	**(i)** Measuring the Solar Constant Materials: Simple flat-sided Jar and Thermometer. **Activity:** A bottle containing water is exposed to solar radiation. The rise in temperature and time took are noted. Calculate the heat absorbed by water and relate it to the output of the Sun. **(ii)** Thermo emf Materials: Suitable for two dissimilar metal wires, and voltage measuring devices. **Activity:** In this experiment, students will assemble the thermocouple and study the three effects namely, Seebeck, Peltier, and Thompson. **(iii)** Inverse square law of radiation Materials: A cardboard with a grid, cardboard with a hole, supporting clips, a ruler, candle. **Activity:** Students set the device. They count the lighted squares on the cardboard with the grid by varying the distance. And make necessary measurements and calculations to arrive at the inverse square law of radiation. Ref: Activity-Based Physics Thinking Problems in Thermodynamics: Kinetic Theory http://www.physics.umd.edu/perg/abp/think/thermo/kt.htm
Activity No. 5	**Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. **(i)** The first slide will explain the process of doing the experiment. **(ii)** In the second slide. Students will show the graph of measurement. **(iii)** In the third slide, they will list three observations from that study. **Activity:** Take two dissimilar metal wires. Spot weld them forming two junctions. Dip one junction in ice and heat the other junction with a burner. Plot a graph of the time of heating v/s Thermo EFM generated in the voltmeter.
Activity No. 6	**Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks.

	(i) The first slide will explain the process of doing the experiment. **(ii)** In the second slide. Students will show the graph of measurement. **(iii)** In the third slide, they will list three observations from that study. **Activity:** Make 4 groups and give different-sized balloons to each group. Fit different-sized nozzles into the mouth of the large balloons. Measure the temperature or the EMF generated using a thermocouple placed at the mouth of the nozzle as the pressurized gas is released. Plot a graph of time v/s temperature. Vary the volume of the balloon and repeat the experiment. Plot the graph of volume v/s temperature difference created.	
Unit – 3		
Semiconductor devices: Review of Intrinsic and Extrinsic semiconductors, p-n junction and its Characteristics and Parameters, Diode approximations, Half-wave rectifier, Full-wave rectifier, Zener diode voltage regulators: Regulator circuit with no load, Loaded Regulator. Numerical problems.		06
Junction Transistors: Basics of Bipolar Junction Transistors (BJT), BJT operation, Common Base, Common Emitter and Common Collector Characteristics. Field Effect Transistor (FET) and its characteristics. Transistor as an Amplifier and Oscillator. Numerical problems.		06
Suggested Activities		02
Activity No. 7	Wire a regulated DC power supply on a breadboard or groove board to give a regulated output voltage of + 5 V; +15 V; Dual power output: ± 5 V; Dual power output: ± 15 V. Use: 3-pin voltage regulators. Components required: 1. Step down transformer- 1 No. (5 V tapping, 100 – 500 mA current rating), BY 127 semiconductor diodes – 4 Nos, Inductor - 1, Capacitor - 1, 3 pins 5V regulator-1 Search for circuit diagrams in books/net. **Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. **(i)** The first slide will explain the process of doing the experiment. **(ii)** In the second slide. Students will show the graph of measurement. **(iii)** In the third slide, they will list three observations from that study. **Activity:** Form 3 groups and tell them to make a DC supply of low current of different voltages like 5V, 10V, and 15V on a breadboard.	
Activity No. 8	**(i)** Learn to identify the terminals of different types (packages) of BJTs. **(ii)** In the case of power transistors, learn how to fix a heat sink for the transistor. **(iii)** Learn the difference between BJT and FET in their operational characteristics.	

Activity No. 9	**Note for the teachers for the activity:** Make 3-4 groups among students and assign each group the activity of drawing one of the graphs given below. Provide a few days to complete the activity. On a specific day, each group has to make a ppt presentation of the following three slides. On the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, a teacher shall assign marks to each group, wherein all members of the group will get equal marks. **(i)** The first slide will explain the process of doing the experiment. **(ii)** In the second slide. Students will show the graph of measurement. **(iii)** In the third slide, they will list three observations from that study. **Activity:** Take any 3 diodes and assign one to each group. Measure its resistance when dipped in ice and heat the ice till it boils. Using this data, plot the calibration curve of temperature v/s resistance and also the cooling curve of temperature V/s time for the diode by each group.

Unit – 4

Electronics: Integrated Circuits (Analog and Digital), Operational Amplifiers, Ideal characteristics of Op-Amp, Inverting and Non-Inverting Configurations. Applications- Voltage Follower, Addition and Subtraction. Numerical problems.	04
Digital: Switching and Logic Levels, Digital Waveform. Number Systems: Decimal Number System, Binary Number System, Converting Decimal to Binary, Hexadecimal Number System: Converting Binary to Hexadecimal, Hexadecimal to Binary.	04
Boolean Algebra Theorems: De Morgan's theorem. Digital Circuits: Logic gates, NOT Gate, AND Gate, OR Gate, NAND Gate, NOR Gate, Algebraic Simplification, Implementation of NAND and NOR functions.	04
Suggested Activities	02

Activity No. 10	Learn how to implement logic functions (AND, OR, NOT) using just diodes and resistors. A circuit diagram shows how different types of gates can be built by X-NOR gates.
Activity No. 11	**Operational Amplifiers** **(i)** Understand the concept of virtual ground of an OP-AMP. **(ii)** Learn the different types of op-amps used for different applications. **(iii)** What is a buffer? Prepare a report on buffers and their application in instrumentation electronics.
Activity No. 12	**(i)** A man has to take a wolf, a goat, and some cabbage across a river. His rowboat has enough room for the man plus either the wolf or the goat or the cabbage. If he takes the cabbage with him, the wolf will eat the goat. If he takes the wolf, the goat will eat the cabbage. Only when the man is present

	are the goat and the cabbage safe from their enemies. All the same, the man carries a wolf, goat, and cabbage across the river. How? Write the truth table for the above story and implement using gates. **(ii)** A locker has been rented in the bank. Express the process of opening the locker in terms of digital operation. **(iii)** A bulb in a staircase has two switches, one switch being at the ground floor and the other one at the first floor. The bulb can be turned ON and also can be turned OFF by and one of the switches irrespective of the state of the other switch. The logic of switching of the bulb resembles.

Textbooks				
Sl No	**Title of the Book**	**Authors Name**	**Publisher**	**Year of Publication**
1	Electronic Devices and Circuits	David A. Bell	PHI, New Delhi	2004
2	Integrated Electronics	Jacob Millman and CC Halkias		
3.	Digital Fundamentals	Floyd	PHI, New Delhi	2001

References Books				
Sl No	**Title of the Book**	**Authors Name**	**Publisher**	**Year of Publication**
1	Heat and Thermodynamics	M.W. Zemansky, Richard Dittman	McGraw-Hill.	1981
2	Thermal Physics	S. Garg, R. Bansal and Ghosh	Tata McGraw-Hill	2nd Edition, 1993
3	A Treatise on Heat	Meghnad Saha, and B.N.Srivastava,	Indian Press	1958
4	Modern Thermodynamics with Statistical Mechanics	Carl S. Helrich,	Springer.	2009
5	Thermodynamics, Kinetic Theory & Statistical Thermodynamics.	Sears & Salinger	Narosa.	1988
6	An Introduction to Thermal Physics	Daniel V Schroeder	Oxford University Press	2020

Weblinks

- https://deepblue.lib.umich.edu/bitstream/handle/2027.42/75853/ayd_1.pdf/
- https://sites.ualberta.ca/gingrich/courses/phys395/notes/phys395/
- https://www.researchgate.net

DSC(4) lab

List of Experiments

Credit : L:T:P 0:0:2

(Minimum EIGHT experiments must be completed)

1	Verification of Gaussian distribution law and calculation of standard deviation – Monte Carlo experiment.
2	Determination of Unknown Temperature using Platinum resistance thermometer.
3	Verification of Stefan's Boltzmann fourth power law using Meter bridge.
4	V-I Characteristics of Silicon & Germanium PN Junction diodes (FB & RB).
5	V-I Characteristics of Zener Diode and voltage regulator.
6	Characteristics of BJT in Common Emitter Configuration.
7	Frequency response of CE Amplifier.
8	Half Wave and Full Wave Rectifier with and Without Filter.
9	Truth table verification of logic gates using TTL 74 series ICs.
10	Verification of basic logic gates using transistors.
11	Non-inverting and Inverting op-amp circuits.
12	Voltage follower, Adder and Subtractor circuits using OPAMP.

Sl No	Title of the Book	Publisher	Year of Publication
1	Basic Electronics Lab (P242) Manual 2015-16	National Institute of Science Education and Research Bhubaneswar	2015

Suggested Readings:

1. B.L. Worsnop, H.T. Flint, -Advanced Practical Physics for Students‖, Methuen & Co.,Ltd., London, 1962, 9e.
2. S. Panigrahi, B. Mallick, -Engineering Practical Physics‖, Cengage Learning India Pvt.Ltd., 2015, 1e.

Course Articulation Matrix-Course code-222429												
Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	2	1	1	1	___	2
CO2	3	2	1	1	2	2	2	1	1	1	___	2
CO3	3	2	1	1	2	2	2	1	2	2	___	2
CO4	3	3	1	1	2	2	2	1	2	2	1	2
Weighted average	**3**	**2**	**1**	**1**	**2**	**2**	**2**	**1**	**1.5**	**1.5**	**1**	**2**

OE Physics Syllabus for All Programs (Except Science)

Semester IV

Course Code: 22OEPHY401	**Course Title:** OE(7): Nanotechnology
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Acquiring the knowledge of Nanomaterials, Application of the Schrödinger equation and confinement of nanostructure and its consequences in 1D,2D and 3D.
CO2	Gaining knowledge on various methods used in the processing, synthesizing and characterization of nanostructure materials
CO3	Comprehending the properties and application of nanomaterials by implementing various nanomaterial devices.

Course Content

Content	Hrs
Unit – 1	
Introduction to nanomaterials Length scales in physics, Nanostructures: 1D, 2D and 3Dnanostructures (nanodots, thin films, nanowires, nanorods), Band structure and density of states of materials at the nanoscale, Size Effects in nanosystems, Quantum confinement: Applications of Schrodinger equationInfinite potential well, potential step, potential box, quantum confinement of carriers in 3D,2D, 1D nanostructures and its consequences.	13
Unit – 2	
Synthesis and Characterization of nanostructure materials Top-down and Bottom-up approach, Photolithography. Ball milling. Gas phase condensation.Vacuum deposition. Physical vapor deposition (PVD): Thermal evaporation, E-beam evaporation, Pulsed Laser deposition. Chemical vapor deposition (CVD). Sol-Gel. Electrodeposition. Spray pyrolysis. Hydrothermal synthesis. Preparation through colloidal methods.MBE growth of quantum dots. X-Ray Diffraction. Optical Microscopy. Scanning electron microscopy. Transmission Electron Microscopy. Atomic Force Microscopy. ScanningTunneling Microscopy.	13
Unit – 3	
Properties and applications of nanomaterials Coulomb interaction in nanostructures. Concept of dielectric constant for nanostructures and charging of nanostructure. Quasi-particles and excitons. Excitons in direct and indirect bandgap semiconductor nanocrystals. Quantitative treatment of quasiparticles and excitons, charging effects. Radiative processes: General formalization-absorption, emission and luminescence. Optical properties of heterostructures and nanostructures. Applications of nanoparticles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Nanomaterial Devices: Quantum dots heterostructure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots - magnetic data storage.	13
Suggested Activities	03
1. Synthesis of metal nanoparticles by chemical route. 2. Synthesis of semiconductor nanoparticles. 3. XRD pattern of nanomaterials and estimation of particle size. 4. To study the effect of size on the color of nanomaterials. 5. Growth of quantum dots by thermal evaporation. 6. Prepare a disc of ceramic of a compound using ball milling, pressing and sintering, and study its XRD. 7. Fabricate a thin film of nanoparticles by spin coating (or chemical route) and study transmittance spectra in the UV-Visible region. 8. Prepare a thin film capacitor and measure capacitance as a function of temperature or frequency. 9. Visit nearby research labs to study the working of XRD, SEM, and UV-Visible Spectrophotometer instruments. 10. Visit nearby research labs for project work and interaction with scientists at IISC, JNCSR, Universities, etc.	

Text books

- C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).
- S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company)
- K.K. Chattopadhyay and A. N. Banerjee, Introduction to Nanoscience andTechnology (PHI Learning Private Limited).
- Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).

Reference books

- M. Hosokawa, K. Nogi, M. Naita, T. Yokoyama, Nanoparticle Technology Handbook (Elsevier, 2007).
- Introduction to Nanoelectronics, V.V. Mitin, V.A. Kochelap and M.A. Stroscio, 2011, Cambridge University Press.
- Bharat Bhushan, Springer Handbook of Nanotechnology (Springer-Verlag, Berlin, 2004).

Weblinks

- https://www.twi-global.com/technical-knowledge/faqs/what-is-a-nanomaterial
- https://en.wikipedia.org/wiki/Nanomaterials
- https://www.mdpi.com/journal/nanomaterials

Course Articulation Matrix- 22OEPHY401

Course outcomes	Program outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	2	2	2	1	1	1	___	1
CO2	3	1	1	1	2	2	2	1	1	2	1	1
CO3	3	1	1	1	2	3	2	1	2	1	___	1
Weighted average	**3**	**1**	**1**	**1**	**2**	**2.33**	**2**	**1**	**1.33**	**1.33**	**1**	**1**

OE Physics Syllabus for All Programs (Except Science)

Semester IV

Course Code: 22OEPHY402	**Course Title:** OE(8) : Electrical Instruments
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours	**Formative Assessment Marks:** 40
Exam Duration: $2\frac{1}{2}$ Hours	**Semester-End Examination Marks:** 60

Course Outcomes (COs)	
CO1	Developing knowledge of Kirchoff's laws and experimental application of circuit elements.
CO2	Gaining knowledge about the different types of galvanometers, potentiometers and DC/AC bridges.
CO3	Acquiring knowledge on lead acid batteries, working of CRO and transducers.

Course Content

Content	Hrs
Unit – 1	
Voltage and current sources, Kirchoff's current and voltage laws, loop and nodal analysis of simple circuits with dc excitation. Ammeters,voltmeters: (DC/AC). Representation of sinusoidal waveforms, peak and RMS values, and power factor. Analysis of single-phase series and parallel R-L-C ac circuits. Three-phase balanced circuits, voltage and current relations in star and delta connections. Wattmeters: Induction type, single phase and three phase wattmeter, Energy meters: AC. Induction-type single-phase and three-phase energy meters. Instrument Transformers: Potential and current transformers, ratio and phase angle errors, phasor diagram, methods of minimizing errors; testing and applications.	13
Unit – 2	
Galvanometers: General principle and performance equations of D'Arsonval Galvanometers, Vibration Galvananometer and Ballistic Galvanometers. **Potentiometers:** DC Potentiometer, Crompton potentiometer, construction, standardization, application. AC Potentiometer, Drysdalepolar potentiometer; standardization, application. **DC/AC Bridges:** General equations for bridge balance, measurement of self-inductance by Maxwell's bridge (with variable inductance & variable capacitance), Hay's bridge, Owen's bridge, measurement of capacitance by Schering bridge, errors, Wagner's earthing device, Kelvin's double bridge.	13
Unit – 3	
Transducer: Strain Gauges, Thermistors, Thermocouples, Linear Variable Differential Transformer (LVDT), Capacitive Transducers, Piezo-Electric transducers, Optical Transducer, Hall Effect Transducer. **CRO:** Block diagram, Sweep generation, vertical amplifiers, use of CRO in the measurement of frequency, phase, Amplitude and rise time of a pulse. Digital Multi-meter: Block diagram, the principle of operation. Basics of lead-acid batteries, Lithium Ion Battery, Battery storage capacity, Coulomb efficiency, Numerical of high and low charging rates, Battery sizing.	13
Suggested Activities	03

Activity No. 1	Identify a variety of electrical switches and note down their applications/utility. Reference: Weblink/Youtube/Book
Activity No. 2	Identify the hazards involved in handling electrical circuits and instruments, and make a list of safety precautions as well as first aid for electrical shocks. Reference: Weblink/Youtube/Book
Activity No. 3	Make a study of the importance of grounding in electrical circuits Reference: Weblink/Youtube/Book
Activity No. 4	Prepare a detailed account of various methods of earthing and their utility/applications Reference: Weblink/Youtube/Book.
Activity No. 5	Prepare a document on the evolution of incandescent bulbs to the present-day LED lights Reference: Weblink/Youtube/Book.
Activity No. 6	Make a comparative study of Fuses, MCB, ELCB, and Relays highlighting their use and applications. Reference: Weblink/Youtube/Book.

Text Books

- AK. Sawhney, A Course in Elec. & Electronics Measurements & Instrumentation, Dhanpatrai & Co. 1978.
- A.D. Helfrick & W.D. Cooper, Modern Electronic Instrumentation and Measurement Techniques PHI,2016

Reference book:

- D C Kulshreshtha, Basic Electrical Engineering, Mc Graw Hill Publications,**2019**
- David G Alciatore and Michel B Histand, Introduction to Mechatronics and Measurement Systems, 3rd, Tata McGraw Hill Education Private Limited, New Delhi., 2005
- Vincent Del Toro, Electrical Engineering Fundamentals Prentice Hall India**2009**

Weblinks

- https://en.wikipedia.org/wiki/List_of_electrical_and_electronic_measuring_equipment
- https://www.electrical4u.com/electrical-measuring-instruments-types-accuracy-precision-resolution-speed/
- https://www.embibe.com/exams/electrical-instruments/

Course Articulation Matrix- 22OEPHY402

Course outcomes	Program outcomes											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	3	1	1	1	2	2	2	1	1	1	___	1
CO2	3	1	1	2	2	2	2	1	2	1	___	1
CO3	3	1	1	2	2	2	2	1	2	1	1	1
Weighted average	**3**	**1**	**1**	**1.66**	**2**	**2**	**2**	**1**	**1.66**	**1**	**1**	**1**

Continuous Formative Evaluation/ Internal Assessment

Total marks for each course shall be based on continuous assessments and semester- end examinations. The pattern of 40:60 for IA and Semester End theory examinations respectively and 50:50 for IA and Semester End practical examinations respectively.

	Theory	Practical
Total Marks for each Course	100 marks	50 marks
Continuous assessment-1 (C1)	20 marks	10 marks
Continuous assessment-2 (C2)	20 marks	15 marks
Semester End Examination (C3)	60 marks	25 marks

The evaluation process of IA marks shall be as follows:

a) The first component (C1) of the assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, fieldwork, project work, etc. This assessment and score process should be completed after completing 50% of the syllabus of the course/s and within 45 working days of the semester program

b) The second component (C2) of the assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship / industrial practicum/project work, etc. This assessment and score process should be based on the completion of the remaining 50 percent of the syllabus of the courses of the semester.

c) During the 17th – 19th week of the semester, a semester-end examination shall be conducted by the University for each Course. This forms the third and final component of the assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on the scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct a special test for such candidate on the date fixed by the concerned teacher but before the commencement of the concerned semester-end examinations.

e) For assignments, tests, case study analysis, etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets, etc., required for such tests/assignments and these be stamped by the concerned department using their department seal at the time of conducting tests/assignment/work, etc.

f) The outline for continuous assessment activities for Component-I (C1) and

Component-II (C2) of a course shall be as under.

	C1 marks	C2 marks	Total Marks
Session Test	20	---	20
Seminars/Presentations/Activity/ Case study /Assignment / Fieldwork / Project work etc.	---	20	20
Total	20	20	40

- For the practical course of full credits, the Seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance. (the ratio is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).
- Conduct of Test , Seminar, Case study / Assignment, etc. can be either in C1 or in the C2 component at the convenience of the concerned departmet/teacher.
- The teachers concerned shall conduct test / seminar / case study, etc. The students should be informed about the modalities well in advance. The evaluated course assignments during component I (C1) and component II (C2) of the assessment are immediately provided to the candidates after obtaining acknowledgment in the register by the concerned teachers(s) and maintained by the Department. Before the commencement of the semester-end examination, the evaluated test, assignment, etc. of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board ofthe department/college for information of the students.

h) The Internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations for III and IV Sem

C1 and C2 are internal tests to be conducted during the 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated based on skill, comprehension and recording of the results. The student has to compulsorily submit the practical record for evaluation during C1 and C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 25 marks in C1 and C2 as per the following

scheme: Experiment: 10 for C1 (10 marks)

Experiment: 10, Record: 05 for C2 (15 marks)

- The student is evaluated for 25 marks in C3 as per the

followingscheme: Experiment: 20, Viva: 05 for C3 (25 marks)

The experimental portion of the evaluation (C3) is carried out as per the following scheme:

formula with proper units and explanation	03
Setting up the apparatus/circuit connections	03
Taking readings and tabulating	07
Calculations and Graph	07
Viva	05
Total	25

DSC THEORY QUESTION PAPER PATTERN FOR III AND IV SEM

Max Marks: 60 Exam duration: $2\frac{1}{2}$ hours

Part-A

I. One question from each unit is to be given with an internal choice. Each question carries 10 marks

$4 \times 10 = 40$

1 (a)

OR

(a)

2 (a)

OR

(a)

3 (a)

OR

(a)

4 (a)

OR

(a)

Part-B

II. One numerical problem must be given for each unit. Any three to be answered.

3× 4 = 12

5

6

7

8

Part-C

III One question must be given from each unit. Any four to be answered. $2 \times 4 = 08$

9 (a)
(b)
(c)
(d)
(e)
(f)

OPEN ELECTIVE THEORY QUESTION PAPER PATTERN FOR III AND IV SEM

Max Marks: 60 Exam duration: $2\frac{1}{2}$ hours

Part-A

I. One question must be given from each unit. Any three to be answered out of four questions

$3 \times 15 = 45$

1

2

3

4

Part-B

II Numerical problem or short essay-type question must be given from each unit. Answer any three out of four questions. $3 \times 5 = 15$

5

6

7

8

Board of Studies

Sl.No.	Name and address	Designation	Signature
1	Manjunatha R HoD, Dept of Physics SBRR Mahajana First Grade College (Autonomous), Mysuru. Mob. 9611075347 manjukalp@yahoo.com	Chairman	
2	Dr. Chandrashekar. M.S DOS in Physics, Manasagangothri, Mysuru.Mob.9448600121 msc@physics.uni-mysore.ac.in mschandrashekara@gmail.com	Member	
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Department of Physics

Motto: *Physics for progress*

Vision: *Imparting Physics education with professional approach to make citizens that are scientifically tempered to invent and discover*

Syllabi for V and VI Semester B.Sc Physics

2021-22

B.Sc. Programme in Physics

Semester with Choice Based Credit System (CBCS)

L: Lecture; T: Tutorial; P: Practicals

Sem	Type	Subject code	Course	L + T + P = Tot.
5	DSE	212514	Relativity, Nuclear Physics and Wave Mechanics	3 + 0 + 0 = 3
5	DSE	212514	Practical 5 and Practical 6	0 + 0 + 3 = 3
5	SEC	212554	Lasers and Fibre Optics	2 + 0 + 0 = 2
5	SEC	212564	Astronomy and Astrophysics	2 + 0 + 0 = 2
5	SEC	212574	Nano Materials	2 + 0 + 0 = 2
6	DSE	212634	Solid State Physics	3 + 0 + 0 = 3
6	DSE	212634	Practical 7 and Practical 8	0 + 0 + 3 = 3
6	SEC	212654	Optoelectronics	2 + 0 + 0 = 2
6	SEC	212664	Renewable Energy Sources	2 + 0 + 0 = 2
6	SEC	212674	Solving Problems in Physics	2 + 0 + 0 = 2

Credit means the unit by which the course work is measured. One hour session of Lecture or Tutorial per week for 16weeks amounts to 1credit. Two hour's session of practical's perweekfor16week's amounts to 1 credit per semester.

V Semester

212514 - (DSE) Relativity, Nuclear Physics and Wave Mechanics Course

duration: 16 weeks with 3 hours of instruction per week. Total 48Hrs Outcomes

- The students shall be familiar with the fundamental principles of the general theory of relativity and special theory of relativity.
- Determine the mass and relative abundance of the isotopes by using various spectrographs.
- Demonstrate knowledge of fundamental aspects of the structure of the nucleus, radioactive decay, nuclear reactions and the interaction of radiation with matter.
- Understand the idea of wave nature associated with the matter.

Objective

- To introduce students to the concept of special relativity and its applicationsto physical sciences.
- Students learn various types of nuclear reactions and the energies possessedby the particle.
- Students learn the concept of wave function.
- Student will learn importance of Schrodinger equation and its applications.

Part A: 16 hours

Special theory of relativity: Michelson-Morley experiment and its outcome. Postulates of Special Theory of Relativity. Lorentz transformations (no derivation).Lorentz contraction. Time dilation. Relativistic transformation of velocity, Relativistic addition of velocities. Variation of mass with velocity. Rest mass. Massless particles. Mass energy equivalence, $E = mc^2$. The energy-momentum relation. The principle of equivalence. Numerical problems. [8 hours]

Cosmic rays and particle physics: Cosmic ray discovery; Primary and secondary cosmic rays—their composition. Cosmic ray showers. Origin of cosmic rays, Mention of the basic interactions in nature; Particles and anti-particles. Types of interaction between elementary particles, Classification of particles. Conservation laws. A qualitative introduction to quarks (quark model). Numerical problems.

[4 hours]

Mass spectrographs: Theory of Dempster and Aston mass spectrograph. Numerical problems. [2 hours]

Nuclear detectors: Bubble chamber. GM counter. Principle of semiconductor detector. [2 hours]

Part B: 16 hours

The nucleus: Properties of nucleus. Discovery of neutron, mass of neutron. The proton neutron hypothesis. Nuclear forces and their characteristics. Yukawa's theory (qualitative). [2 hours]

Radioactive decay: Successive disintegration, Radioactive equilibrium, Range and energy of alpha-particle and their measurements. Theory of alpha-decay (qualitative). Geiger-Nuttal law. Beta Decay—Pauli's neutrino hypothesis, K- electron capture, internal conversion. Nuclear isomerism. Mirror nuclei. Numericalproblems. [4 hours]

Accelerators: Cyclotron, and Betatron. Numerical problems. [3 hours]

Nuclear reactions: Q-values. Threshold energy of an endoergic reaction. Reactions induced by proton, deuteron, neutrons and α-particles. Numerical problems. [2 hours]

Nuclear models: Liquid-drop model. Semi-empirical mass formula. Shell model and magic numbers. Numerical problems. [2 hours]

Nuclear fission and fusion: Estimation of the fission energy on the basis of the liquid drop model, the four-factor formula, Thermo-nuclear reactions sources of stellar energy. The C-N cycle. Numerical problems. [3 hours]

Part C: 16 hours

Matter waves: Failure of classical mechanics in the microscopic domain. Black body radiation, Hydrogen atom, Specific heats of solids, Fine structure of spectral lines, Particle and wave nature in classical mechanics. Dual nature of light and Matter, de Broglie's concept of matter waves, Expression for de Broglie's wave, Phase and group velocity. Experiments of Thomson and Davisson and Germer.

Heisenberg's uncertainty principle, Examples of position-momentum uncertainty—the gamma ray microscope (thought experiment). Numerical problems. [7 hours]

Schrödinger's equation: Eigen values, Eigen functions; Eigen value equation, Dynamical variables as operators, Hermitian operators. Postulates of quantum mechanics. Setting up the time-independent Schrödinger equation and time dependent Schrödinger equation. The notion of probability and Born's interpretation of the wave function. Solution of the time-independent Schrödinger equation for particle in one-dimensional infinite potential—calculation of its energy Eigen values. Harmonic oscillator—mention of energy Eigen values and Eigen zero-point energy. Numerical problems. [9 hours]

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- https://www.britannica.com/science/quantum-mechanics-physics/Schrodingers-wave-mechanics
- http://www.wave-mechanics.com/

212514 - (DSE) Practical 5

Course duration: 16 weeks with 3 hours of lab work per week.

Any TEN of the following experiments:

1. Characteristics of GM tube.
2. Absorption coefficient of gamma rays.
3. Verification of inverse square law for gamma rays.
4. Solar cell: IV characteristics, efficiency and fill factor.
5. Dielectric constant of a solid.
6. Dielectric constant of a liquid.
7. Determination of wavelength of laser light.
8. e/m of an electron by Thomson's method.
9. Cockcroft-Walton voltage multiplier.
10. Transistor characteristics (CE mode).
11. Determination of Planck's constant using photocell.
12. Verification of Maximum power transfer theorem.

212514 - (DSE) Practical 6

Course duration: 16 weeks with 3 hours of lab work per week.

Any TEN of the following experiments:

1. Zener diode characteristics.
2. Study of Divergence of a diode laser.
3. Determination of mass of an electron.
4. Determination of ionization potential of Xenon.
5. Verification Thevenin's theorem.
6. Half-life of 40K.
7. Determination of range of electrons in aluminium using GM Counter.
8. Study of X-ray photograph—determination of interplanar distance.
9. Phase measurement in LCR circuit using CRO.
10. To determine value of Boltzmann constant using V I characteristic of a diode.
11. Triode characteristics.
12. V-I characteristics of a thermistor.

212554 - (SEC) Lasers and Fibre Optics

Course duration: 16 weeks with 2 hours of instruction per week. Total 32Hrs

Outcomes

- The course provides students with a working knowledge of Laser physics and provides introduction to fibre optics.
- It provides a good understanding of the critical Laser parameters.
- Students will understand trends of the development of modern lasers.

Objective

- This course provides an introduction to Laser Physics, different types of lasers and output modulation methods.
- It discusses applications in the industry, medical field, etc.
- The structure, fabrication and types of optical fibre are explained.
- Learning principles of the key components used in optical telecommunications are provided.

Part A: 16 hours

Laser basics: Coherence properties of laser light, temporal coherence, monochromaticity, spatial coherence, directionality, line width, brightness, divergence, line shape broadening, focusing properties of laser radiation, laser modes - axial and transverse, mode selection, single mode operation, selection of laser emission line. [5 hours]

Laser oscillator: Pumping schemes, Gain-threshold conditions; Optical resonators. [3 hours]

Types of lasers: Construction and principles of working of Nd-YAG, CO_2 and dye lasers and semiconductor laser. [4 hours]

Laser diodes: Lasing conditions and gain in a semiconductor, selective amplification and coherence, Materials for laser diodes, quantum well lasers, surface emitting lasers, characterization and modulation of lasers. [4 hours]

Part B: 16 hours

Fibre optics and dielectric wave guides: Wave Guide- Slab wave guide, Modes, V-number, Modal material and waveguide dispersions, Numerical problems.

[3 hours]

Optical fibre: Types, functions, light propagation, optical power, velocity of propagation, critical angle, acceptance angle, numerical aperture, mode of propagation. Numerical problems. [4 hours]

Index profile: Single mode step-index optical fibre, multimode step-index fibre, graded index fibre; advantages and disadvantages. Numerical problems. [3 hours]

Energy losses in optical fibre: Bit rate, dispersion optical fibre communication, and optical bandwidth, Absorption and scattering, optocoupler. [6 hours]

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212564 - (SEC) Astronomy and Astrophysics

Course duration: 16 weeks with 2 hours of instruction per week. Total 32Hrs

Outcomes

- Describe the basic concepts in astronomy and astrophysics.
- Explain how natural sciences work.
- Describe the working principle of astronomical tools.
- Discuss physical processes in stars and the evolution of stars.
- Explain the structure and dynamics of galaxies.
- Discuss the evolution of the universe.

Objective

- Develop an interest in astronomy and astrophysics.

Part A: 16 hours

Astronomical scales: Astronomical distance, mass and time; scales; brightness, radiant flux and luminosity, measurement of astronomical quantities astronomical distances, stellar radii, masses of stars, stellar temperature. Basic concepts ofpositional astronomy- celestial sphere, geometry of a sphere, spherical triangle, astronomical coordinate systems, geographical coordinate systems, horizon system, equatorial system, diurnal motion of the stars, conversion of coordinates. Measurements of time-sidereal time, apparent solar time, mean solar time, equation of time, calendar the Julian date and its importance in astronomical observation. Basic parameters of stars- determination of distance by parallax method; brightness, radiant flux and luminosity, apparent and absolute magnitude scale, distance modulus. Numerical problems. [16 hours]

Part B: 16 hours

Stars: Surface or effective temperature, and color of a star. Intrinsic temperature of a star. Expression for average temperature, core temperature and core pressure of a star based on the linear density model of a star. Numerical problems.

[3 hours]

Stellar characteristics: Spectral classification, Edward Charles Pickering classification (i.e., OBAFGKM), Harvard sequence and Yerke's luminosity classification. Size (radius) of a star. Expression for radius using Stefan-Boltzman

law. Spectral signature of elements present in the stellar atmosphere. Mass luminosity relationship and expression for lifetime of a star. Color index HDclassification and HR diagram. Main sequence stars and their general characteristics. The stellar evolution. The evolutionary track of stars-Protostars, premain sequence stars, main sequence stars. Evolution of a star to white dwarf stage through red giant stage. Supernova explosion. Formation of a pulsar orneutron star and black hole (qualitative). Numerical problems. [10 hours]

Cosmology: Basic assumptions and limitations of cosmology; Expansion of the Universe and its evidence; Hubble's Law: Big bang theory and thermal history of the universe. Size and age of the universe. [3 hours]

References

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212574 - (SEC) Nano Materials

Course duration: 16 weeks with 2 hours of instruction per week. Total 32Hrs

Outcomes

- Learn about the background on Nanoscience
- Understand the synthesis of nanomaterials and their application and the impact of nanomaterials on the environment
- Apply their learned knowledge to develop nanomaterials.

Objective

- To foundational knowledge of the Nanoscience and related fields.
- To make the students acquire an understanding the Nanoscience and Applications
- To help them understand in broad outline of Nanoscience andNanotechnology.

Part A: 16 hours

Nanoscale systems: Length scales in physics. Nanostructures-1D, 2D, and3D nanostructures (nanodots, thin films, nanowires, nanorods), Band structure and density of states of materials at nanoscale, Size effects in nano systems, Quantum confinement: Applications of Schrödinger equation- Quantum confinement of carriers in 3D, 2D, 1D nanostructures and its consequences. [8 hours]

Synthesis of nanostructure materials: Top down and Bottom up approach, Photolithography. Ball milling. Gas phase condensation. Vacuum deposition. Physical vapor deposition (PVD): Thermal evaporation, E-beam evaporation, Pulsed laser deposition. Chemical vapor deposition (CVD). Sol-Gel. Electro deposition. Spray pyrolysis. Hydrothermal synthesis. Preparation through colloidal methods. MBE growth of quantum dots. [8 hours]

Part B: 16 hours

Characterization: X-Ray Diffraction. Optical Microscopy. Scanning Electron Microscopy. Transmission Electron Microscopy. Atomic Force Microscopy. Scanning Tunneling Microscopy. [8 hours]

Optical properties: Coulomb interaction in nanostructures. Concept of dielectric constant for nanostructures and charging of nanostructure. Quasi-particles andexcitons. Excitons in direct and indirect band gap semiconductor nanocrystals, Radiative processes: General formalization-absorption, emission and luminescence. Optical properties of hetero-structures and nanostructures. [8 hours]

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VI **Semester**

212634 - (DSE) Solid State Physics

Course duration: 16 weeks with 3 hours of instruction per week. Total 48Hrs

Outcomes

- Acquire the basic concepts of force between atoms, bonding between molecules.
- Analyze the structural properties of elemental solids
- Classify magnetic and superconducting behavior of solids
- Understand the properties of semiconductors and the application of semiconductor devices.
- To understand the principles and techniques of X-rays diffraction, thermaland dielectric properties of solids.
- Understand the basic idea about superconductors and their classifications.

Objective

- To give a basic knowledge of the force between atoms and the bond structure of materials.
- To describe the working of transistor, FET and photo cells and their applications.
- To explain the detailed theory of semiconductors, dielectric andsuperconducting materials and their uses.

Part A: 16 hours

Semiconductors: Concept of bands in solids, Brief introduction of semiconductors. Expression for electron and hole concentration in intrinsic semiconductor under thermal equilibrium. Derivation of the expression for electrical conductivity of intrinsic semiconductors; electron and hole mobilities; Expression for the energy gap; Numerical problems. [5 hours]

Semiconductor devices: Diode current equation, I-V characteristics, Bridge rectifier, Expression for ripple factor and efficiency. C and π -Filters, Zener breakdown and avalanche breakdown. Phenomenon of photoconductivity, photovoltaic cells, LED, FET- construction and working. Numerical problems.

[4 hours]

Transistors: Type and configuration, h parameters; Methods of transistor biasing—voltage divider bias; Fixing operating point, drawing load line. Effect of temperature on the operating point. Numerical problems. [2 hours]

Amplifier: Two stage transistor RC coupled amplifier, mathematical analysis, frequency response curve, half power frequency bandwidth. Opamp- inverting and non-inverting amplifier (IC based) [3 hours]

Oscillators: The feedback concept—positive and negative feedback. Mention of the Barkhausen criterion. Hartley oscillator. [2 hours]

Part B: 16 hours

Statistical physics: Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac energy distribution formulae (no derivation). A qualitative comparison of the three distribution formulae. [2 hours]

Dielectric properties: Dielectric materials; their properties. Method of determining dielectric constant for solids and liquids. [2 hours]

Thermal properties of solids: Dulong and Petit's law; its limitations. Einstein's theory of specific heat. Debye's theory of specific heat. Numerical Problems.

[3 hours]

Electrical properties of metals: Band theory of solids—review, Free electron theory of metals— classical theory and quantum theory. Expression for electrical conductivity— Ohm's law, Wiedemann-Franz law. Statement of number of the available energy states between E and E +dE. Expression for the Fermi energy. Hall effect and magneto resistance in metals. Expression for Hall coefficient in metals. Numerical problems. [6 hours]

Logic gates: Construction of AND, OR, and NOT logic gates using Diodes and transistors (two input). Symbols and discussion of truth table using Boolean expressions for NOR, NAND, and XOR logic gates. Half adder and full adder.

[3 hours]

Part C: 16 hours

Superconductivity: Elementary ideas and experimental facts. Meissner effect. Magnetic properties of type-I and type-II superconductors, Critical magnetic field. Influence of external agents on superconductivity, Cooper pairs, BCS theory (qualitative). Applications of superconductivity. Introduction to high temperature superconductors. [4 hours]

Liquid crystals: Symmetry, structure, and classification of liquid crystals; polymorphism in thermotropics. [2 hours]

X-rays: Brag's law and the Bragg spectrometer. A brief mention of the different types of crystals. Miller indices, structure of NaCl and KCl crystals. Continuous X-ray spectrum and its origin, Duane and Hunt limit. Characteristic X-ray spectra and its origin. Mosley law and its significance. Compton effect—Expression for Compton shift, Compton wavelength, Verification of change in wavelength; Reason for non-observance of Compton effect in visible light. Numerical problems. [10 hours]

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212634 - (DSE) Practical 7

Course duration: 16 weeks with 3 hours of lab work per week.

Any TEN of the following experiments:

1. Basic logic gates using transistors.
2. Harteley oscillator.
3. Transistor characteristics (CB mode).
4. Characteristics of LED.
5. CE Amplifier—gain and bandwidth.
6. Opamp- inverting and non-inverting amplifier (DC mode)
7. Phase shift oscillator.
8. Zener diode as voltage regulator.
9. Energy gap of a semiconductor using Meter Bridge.
10. Determination of energy gap of a semiconductor using four probes.
11. Negative feedback amplifier.
12. Calculation h parameters by drawing static characteristics of a transistor in CEmode.

212634 - (DSE) Practical 8

Course duration: 16 weeks with 3 hours of lab work per week.

Any TEN of the following experiments:

1. Bridge rectifier with C and Pi filter.
2. Fermi energy of copper using meter bridge.
3. Logic gates—AND, OR, NOT, NOR, and X-OR using IC 7400 and 7402.
4. Half adder.
5. Full adder.
6. Phototransistor characteristics.
7. Two stage RC coupled amplifier—gain and bandwidth.
8. Verification of inverse square law of light Using photodiode.
9. Wein bridge oscillator.
10. FET characteristics.
11. Measurement of susceptibility of a paramagnetic solution.
12. DC load line—Determination of Q point of a transistor using voltage divider bias.

212654 - (SEC) Optoelectronics

Course duration: 16 weeks with 2 hours of instruction per week. Total 32Hrs

Outcomes

- Describe the fundamental physical processes of optoelectronic transitionsand apply the concepts to different optoelectronic devices.
- Define, in-depth, the principles/functionality of the most importantoptoelectronic devices, compare and evaluate the different devices.
- Describe and analyze the physics behind semiconductor optoelectronic devices.

Objective

- Understanding basic laws and phenomena in the area of Optoelectronics
- Theoretical and practical preparation of students to acquire and apply knowledge and skills in Optoelectronics

Part A: 16 hours

Optical process in a semiconductor: Electron-hole pair formation and recombination, absorption in semiconductor direct and indirect band gap semiconductors, effect of electric field on absorption, Franz-Keldysh effect insemiconductors. [4 hours]

Optoelectronic devices: Light Emitting Diodes-Materials for light emitting diodes, Principle of action of LED, expression for light power in terms of photon energy, homostructured LED and Heterojunction LED, drawbacks of homostructured LED. Types of LED structures- planar, dome type, surface emitter, edge emitter, super luminescent structure. Performance characteristics of LED- Optical output power-current characteristics, forward current voltage characteristics, Modulation bandwidth, power bandwidth product, Lifetime, Risetime/fall time, reliability, Internal quantum efficiency, advantages / disadvantages of using LED. Numerical problems. [10 hours]

Organic optoelectronic devices: Organic light emitting diodes (OLED), The principle of OLED, characterisation, structure, efficiency, multilayer OLED.

[2 hours]

Part B: 16 hours

Photo detectors: Important parameters of photodetectors, Detector responsivity, spectral response range, response time, quantum efficiency, capacitance, noise characteristics. Absorption of radiation-absorption coefficient, mention of expression for photocurrent, long wavelength cut off, direct and indirect absorption. Types of photodiodes- Junction photodiodes, pin diode, avalanchephotodiodes, CCD photodetectors; Comparison of different detectors, Photo multiplier tubes. Phototransistors- characteristics. Photoconductive detectors- expression for photoconductive gain (as in the book of Kasap S.O.). Numerical problems. [10 hours]

Photovoltaic devices: Solar cell-IV characteristics, efficiency, materials. Organic photovoltaic diodes (OPVD)-fundamental process, exciton absorption, exciton dissociation, charge transport, charge collection, characterisation. Numerical problems. [6 hours]

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• Katiyar S, Optical Communication, 1st Edn., S K Kataria and Sons (2010).

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Weblinks:

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- https://www.sciencedirect.com/topics/chemistry/optoelectronics
- https://blog.ttelectronics.com/optoelectronics
- https://www.allaboutcircuits.com/technical-articles/an-introduction-to- optoelectronics/

212664 - (SEC) Renewable Energy Sources

Course duration: 16 weeks with 2 hours of instruction per week. Total 32Hrs

Outcomes

- To understand the importance of sustainable energy
- Demonstrate an overview of the main sources of renewable energy.

Objective

- To encourage the preferential use of renewable energy
- Facilitate Research and Development in renewable energy and energy efficiency

Part A: 16 hours

Solar energy: Basic ideas- Origin, Spectral distribution of solar radiation, Attenuation of beam radiation, Basic earth solar angle and derived solar angle, GMT, LCT, LST, Day length, Estimation of average solar radiation, sunshine recorder. Numerical problems. [6 hours]

Solar collectors: Principle of conversion of solar energy into heat, classification of solar collectors, Flat plate and concentrating collectors, construction, Thermal efficiency and coating, Heat losses, Solar cell and its efficiency, PV Panels. Numerical problems. [6 hours]

Photothermal devices: Solar cooker, Solar dryer, solar hot water systems- principles and working. [2 hours]

Photovoltaic systems: Solar lantern, water pumps and street lights- principles and working. [2 hours]

Part B: 16 hours

Wind energy: Origin, estimation of energy obtainable from wind, velocity and power duration curves, energy, pattern factors. Theory of power- Momentum transfer, power coefficients, principle of wind turbine, power vs velocity characteristics of wind turbine generator, cutin speed and cutout speed. Numerical problems. [8 hours]

Wind driven machines: Characteristics of wind turbine; Types-Horizontal and vertical axis types, vertical axis darrieus rotor wind turbine, Horizantal axis propeller type- twin blade and three blade. Blade pitch control. Advantages and disadvantages of two blade and three blade systems. Numerical problems.

[8 hours]

References

- Rai G D, Non-Conventional Energy Sources, 4th Edn., Khanna Publishers(2009).
- Aarwal M P, Solar Energy, S Chand and Co. (1985).
- Sukhatme S P, Nayak J K, Solar Energy, 3rd Edn., Tata McGraw-Hill (2008).
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Weblinks:

- https://www.nrdc.org/stories/renewable-energy-clean-facts
- https://www.edfenergy.com/for-home/energywise/renewable-energy-sources
- https://justenergy.com/blog/7-types-renewable-energy-future-of-energy/
- https://en.wikipedia.org/wiki/Renewable_energy

212674 - (SEC) Solving Problems in Physics

Course duration: 16 weeks with 2 hours of instruction per week. Total 32Hrs

Outcomes

- The students will be able to understand and apply mathematical skills tosolve quantitative problems in the study of physics.
- The students will be able to apply an integral transform to solve mathematical problems of interest in physics.
- The students will be able to use Fourier transforms as an aid for analyzingexperimental data.
- The students should be able to formulate and express a physical law in termsof tensors and simplify it by the use of coordinate transforms.

Objective

- To provide students the ability towards the mathematical skills necessary toapproach problems in advanced physics courses.

Part A: 16 hours

Frames of reference, Rigid body dynamics Conservation of Linear and angular momentum, Conservation of energy, Surface Tension, Elasticity, Kinetic theory, Thermal conductivity, Radiation, Joule-Thomson expansion, Clausius-Clapeyron first latent heat equation, Entropy, Thermodynamic potentials.

Sound waves motion in one dimension, Superposition of simple harmonic motion, Mechanical force and electric pressure on a charged surface, Galvanometers- moving coil Helmholtz, Thermoelectricity, DC currents, Alternating current fundamentals AC bridges, Network theorems, Frequency filters.

Part B: 16 hours

Interference- division of wave front and division of amplitude, Diffraction-Fresnel and Fraunhofer diffraction, Polarization, Laser fundamentals.

Atomic Spectra-Bohr and vector atom model, Zeeman effect, Molecular Spectra and Raman Effect, Special theory of relativity, Matter waves, Schrödinger's equation-particle in a box, Mass spectrographs, Radioactive decay, Nuclear

reactions, Particle accelerators, Nuclear fission, Electrical properties of metals, Semiconductors and devices, X-rays-Bragg's law and crystal structure, Moseley law, Compton effect.

References

• Halliday D, Resnick R, and Walker J, Fundamentals of Physics, 6th Edn., Wiley India Pvt. Ltd. (2001).
• Kamal A A, Solutions to Halliday and Resnick Physics Part 2, Wiley Eastern Pvt Limited (1994).
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• Young H D, Freedman R A, Sears F, and Zeemansky M, University Physics Vols. 1and 12, 13th Edn., Pearson (2011).

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- https://phys.libretexts.org/Bookshelves/University_Physics/Book%3A_University_Physics_(OpenStax)/Book%3A_University_Physics_I_-_Mechanics_Sound_Oscillations_and_Waves_(OpenStax)/01%3A_Units_and_Measurement/1.08%3A_Solving_Problems_in_Physics
- https://courses.lumenlearning.com/suny-osuniversityphysics/chapter/1-7- solving-problems-in-physics/
- http://www.csun.edu/science/courses/525/old_files/thinking/probsolv_physi cs.htm
- https://www.gigapromo.in/?q=solved%20problems%20in%20physics&asid=gg_g2c1_01_sp&mt=b&nw=g&de=c&ap=&ac=14820&cid=12208656895&aid=118738708682&kid=kwd-1333292435&locale=en_IN&gclid=EAIaIQobChMIqKXU4q3Q8QIVR62 WCh0q-ABNEAMYASAAEgIbT_D_BwE

Scheme of Valuation for Practicals

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3hours for first to fourth semesters and for fifth and six semesters it will be for 4 hours. The student will be evaluated on the basis of skill, comprehension and recording the results.

The student has to compulsorily submit the practical record during C1 and C2. For C3, the record has to be certified by the Head of the Department.

- The student is evaluated for 10 marks in C1 and C2
- The marks scored are then normalized for 5, in case of I to IV semesterstudents.
- The student is evaluated for 40 marks in C3 as per the following scheme:

Heading	Marks
Experiment	25
Viva	05
Record	10
Total	40

- For fifth and six semesters, the student will conduct two experiments for fourhours. The marks for each experiment will be 40.

Heading	Marks
Experiment	25
Viva	05
Record	10
Total	40

The experiment portion of evaluation is carried out as per the followingscheme:

Heading	Marks
Formula with proper units and explanation	05
Setting up the apparatus/circuit connection	05
Taking reading and tabulating	05
Calculation	05
Graph and accuracy of result	05
Total	**25**

Question Paper Pattern

DSE Courses: **212514 and 212634 – V and VI Semester**

Max Marks: 80 Time: 3hours

Part A

Long answer questions: Answer 2 out of 3 2×8=16

Part B

Long answer questions: Answer 2 out of 3 2×8=16

Part C

Long answer questions: Answer 2 out of 3 2×8=16

Part D

Numerical problems: minimum 1 from each part; Answer 3 out of 5 3×4=12

Part E

Short answer questions: 4 questions from each part to be given, 10 to be answered. 10×2=20

SEC Courses:
212554, 212564, 212574, 212654, 212664 and 212674- V and VI Semester

Max Marks: 40 Time: 2 hours

Part A
Long answer questions: Answer 2 out of 3 2 X 8 = 16

Part B
Long answer questions: Answer 2 out of 3 2 X 8 = 16

Part C
Short answer questions: 3 questions from each part to be given , 4 to be answered 4 X 2 = 8

List of Examiners
Department of Physics

Sl.No.	Name	Designation	Address for Communication
1.	Sri. Manjunatha R	Associate Professor	SBRR Mahajana First Grade College (Autonomous), Mysuru
2.	Smt. Poornima S	Assistant Professor	SBRR Mahajana First Grade College (Autonomous), Mysuru
3.	Ms. Gayathri V	Assistant Professor	SBRR Mahajana First Grade College (Autonomous), Mysuru
4.	Dr. Kumar Swamy	Associate Professor	Maharani's Science College for women (Autonomous), Mysuru
5.	Dr. ThippeSwamy G B	Associate Professor	Maharani's Science College for women (Autonomous), Mysuru
6.	Smt. Reema	Assistant Professor	Maharani's Science College for women (Autonomous), Mysuru
7.	Dr. Ragini	Assistant Professor	Maharani's Science College for women (Autonomous), Mysuru
8.	Smt. Hemalatha K	Assistant Professor	Maharani's Science College for women (Autonomous), Mysuru
9.	Smt. Rashmi R	Assistant Professor	Maharani's Science College for women (Autonomous), Mysuru
10.	Sri. Krisna Mohan	Assistant Professor	Maharani's Science College for women (Autonomous), Mysuru
11.	Smt. Suganthi S Singh	Assistant Professor	Sarada Vilas College, Mysuru
12.	Sri. Thomas Gunasheelan	Assistant Professor	St. Philomena's College (Autonomous), Mysuru
13.	Sri. Subramanyam	Assistant Professor	St. Philomena's College (Autonomous), Mysuru
14.	Sri. NagaraujUrs M	Assistant Professor	St. Philomena's College (Autonomous), Mysuru,
15.	Sri. T. Sadashivaiah	Associate Professor	Yuvaraja's College, (Autonomous), Mysuru
16.	Sri NageshBabu .C	Assistant Professor	Yuvaraja's College (Autonomous), Mysuru
17.	Sri. B.C. Manjunath	Assistant Professor	Yuvaraja's College (Autonomous), Mysuru

18.	Sri. Vinay Kumar L	Assistant Professor	JSS College, Ooty Road (Autonomous), Mysuru
19.	Ms. Chaithra S N	Assistant Professor	JSS College, Ooty Road (Autonomous), Mysuru
20.	Sri Umesh	Assistant Professor	JSS College for Women's (Autonomous), Mysuru
21.	Sri. Yashwanth D B	Assistant Professor	JSS College for Women's (Autonomous), Mysuru
22.	Smt. Sowmya K	Assistant Professor	JSS College for Women's (Autonomous), Mysuru
23.	Smt. Roopa	Assistant Professor	Govt. First Grade College, Gundlupet
24.	Smt. Kathyayini L	Assistant Professor	NIE First Grade College. Mysuru
25.	Smt. Bharathi N	Associate Professor	MMK and SDM College, Mysuru
26.	Smt. Latha	Assistant Professor	Govt. First Grade College, Vijayanagar, Mysuru
27.	Smt. Annie Mathew	Associate Professor	Tersian College, Mysuru
28.	Sri. Revanna	Associate Professor	Bharthi College, Bharthinagar.
29.	Sri. Nanda Kumar V	Assistant Professor	Govt. First Grade College, Holenarasepura.
30.	Smt. Mahalakshmi	Associate Professor	PES college, Mandya.
31.	Ms. Chandini K.M	Assistant Professor	MMK and SDM College, Mysuru
32.	Smt. Shridevi N Dyavanagowda	Associate Professor	JSS College, Nanjanagudu.
33.	Dr. Manjunath M V	Associate Professor	Maharani's Science College for women (Autonomous), Mysuru
34.	Sri. Srinivasa P	Assistant Professor	Sri Mahadeshwara College, Kollegal.
35.	Sri. Ravi C	Assistant Professor	Sri D Devaraja Urs Govt. First Grade College, Hunsur.

List of BoS Members

Members present **Signature**

1.

2.

3.

4.

5.

6.

List of Examiners or BoE Members

1.

2.

3.

4.

Approved by the following BoS members

1.

2.

3.

4.

5.

Proceedings of the BOS Meeting

Agenda:

1.

2.

3.

Members present

1.

2.

3.

4.

5.

6.

Proceedings of Board of studies meeting

Department of Physics

Proceeding of Board of studies meeting in Physics held on 26/07/2021 at 3.00PM in AVC-3, SBRR Mahajana first grade college (autonomous), Mysuru. (Through online mode).

At, the outset the chairman BoS in Physics welcomed the members to the meeting of BoS and brief about the agenda to be discussed. The following agenda were placed by the chairman which were discussed and resolved as follows

Agenda 1: To frame, discuss and approved the syllabus under choice based creditsystem for V and VI semester B.Sc Physics for the academic year 2021 onwards.

Agenda 2: To prepare the panel of examiners for B.Sc Physics examination for theyear 2021 onwards.

Agenda 3: Discuss about scheme of valuation for practicals and theory examination for the year 2021 onwards.

1) V and VI semester B.Sc Physics syllabus approved.
2) List of examiners approved.
3) Scheme of valuation for practical and theory approved.

Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

DEPARTMENT OF PSYCHOLOGY

Motto: Enriching scientific thought & Promoting Pro-Social Behavior.

Vision: Thriving towards a scientifically driven environment for the development of Psychological literacy.

Mission: Enabling the 'Learner' to develop the Research attitude and explore new dimensions in Behavioral Sciences.

Program Outcomes (PO,s) - "Bachelors of Arts"	
PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social

	setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.
PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

OBJECTIVES: Psychology

1.) **Promote higher learning and research orientation among students, through effective establishment of the interface between the field of Psychology and its empirical nature.**

2.) **Establish Introspective approach through – Educational tours, Internship Programmes, Minor Projects ect; to gear-up the Learner to explore the dynamics of Applied Psychology.**

3.) **Kindle "Self – Enhancing and Innovative" skills among students through broader insights into the realm of Psychology.**

4.) **Inspire Students to foresee various promising Career prospects available in the field of Mental Health Sciences through the pursuit of Psychology.**

5.) **Endow a sense of 'Professional Integrity' in the learner through realizing the significance of Psychology in facilitating Mental Health services.**

List Of BOS Members in Psychology

Sl.No.	Category	Name	Designation	Address for Communication	E-mail and Mobile No.
1.	HoD	Smt. Sujata. M	Asst. Professor & HoD	Dept. of Psychology SBRR Mahajana First Grade College, Mysore	Sujatam.fgc@mahajana.edu.in 9886191174
2.	Two Experts from Outside the parent University	1.) Dr Rekha	Associate Professor	Dept. of Psychology Govt. College for Women (Autonomous) Mandya.	rekhamsumesh@gmail.com 9986627024
		2.) Dr Archana Bhatt K	Associate Professor & HoD	UG & PG Dept. of Psychology Kateel Ashok Pai Memorial College – Shivamogga, Kuvempu University.	archana.kallahalla@gmail.com 9538298660
3.	Nominee by the Vice Chancellor	Dr. Mridula Singh	Associate Professor	Dept. of Psychology Maharajas College, Mysore.	mridulasingh15@gmail.com 9448312327
4.	One Person from Industry /Corporate Sector /Allied area	Dr. Lancy D'Souza	Professor & HoD,	Dept. of Psychology, Maharaja's College Mysore	lancyd@gmail.com
6.	Alumnus	Siyana Salim	P G Student M.Sc Clinical Psychology	Dept. of Clinical Psychology St. Agnes College Mangalore	ishasalim31@gmail.com 9071693910

Course Structure (NEP 2020)

Discipline Specific Courses (DSC) & Open Elective (OE)

I Sem Course Code - 211165	II Sem Course Code - 211265

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
PSYCHOLOGY – I Sem									
DSC(1) - 211165	Foundations of Psychology- I	4	0	4:0:2	20	20	60	2:30 Hours	150
DSC (1) - Lab	Psychology Practicals	0	4		10	15	25	3 Hours	
OE (1) 21OEPSY101 21OEPSY102	Psychology of Health	3	0	3:0:0	20	20	60	2:30 Hours	100
	Life Skills -I	3	0	3:0:0	20	20	60	2:30 Hours	100
PSYCHOLOGY – II Sem									

DSC(2) - 211265 **DSC(2) - Lab**	**Foundations of Psychology-II**	**4**	**0**	**4:0:2**	**20**	**20**	**60**	**2:30 Hours**	**150**
	Psychology Practicals	**0**	**4**		**10**	**15**	**25**	**3 Hours**	
OE (2) 21OEPSY201 21OEPSY202	**Youth, Gender & Identity**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2:30 Hours**	**100**
	Life Skills -II	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2:30 Hours**	**100**

Semester I

DSC (1) Syllabus for B.A PSYCHOLOGY (Basic and Honors)

Course Code: 211165	**Course Title:** DSC(1)- Foundations of Psychology - I (Theory) DSC(1) Lab-Psychology (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2:30 Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 – Articulate the fundamentals of Psychology and infer the basic concepts comprehensively.
CO2 – Concretely relate and synthesize the "Biological basis of Behaviour".
CO3 – Define, Integrate, and determine the nature and nexus among various physical and cognitive processes.
CO4 – Analyze and contrast the inherent characteristics of Learning and its attribution to behaviour.
CO5 – Summarize and demonstrate the structure and significance of Memory in human functioning.

Course Content

Content	Hours
UNIT – 1 GENESIS AND GOALS OF PSYCHOLOGY	
• Psychology: History and Development of Psychology; Definition and Goals of Psychology- Understanding, Describing, Predicting and Control of Behaviour. • Key Perspectives: Psychodynamic, Behavioural, Humanistic, Biological and Cognitive. • Branches of Psychology - General, Bio–Physiological, Social, Child, Developmental, Abnormal and Cognitive Psychology. • Methods in Psychology: Observation, Experimental, Clinical and Survey/Questionnaire Methods.	**13 Hrs**
UNIT – 2 BIOLOGY AND BEHAVIOUR	
• Neuron: Structure and functions; Neural impulse; Synapse and Neurotransmitters • Nervous system: Structure and Functions of Central nervous system and Peripheral nervous system • Advanced Methods of studying brain functions: Various Scanning methods. • Endocrine system: Pituitary, Thyroid, Parathyroid, Adrenal and Gonads – Functions	**10 Hrs**

UNIT – 3 SENSATION, ATTENTION AND PERCEPTION	
• Sensation: Definition and Characteristics. • Types of Senses and functions. • Attention: Meaning and Phenomena (Span of Attention, Division of Attention, Fluctuation and distraction), Determinants of Attention. • Perception: Meaning and Characteristics, Gestalt - Laws of Perceptual Organization. • Depth Perception: Meaning, Monocular and Binocular Cues, Perceptual Constancies – Size, Shape & Color. • Errors in Perception - 1) Illusion - Types - Horizontal-Vertical, Muller Lyer and Illusion of Movement. 2) Hallucination	**12 Hrs**
UNIT – 4 LEARNING	
• Introduction: Definition, Factors Influencing Learning: Motivation, Reinforcement and Association. • Types of Learning: Trial and Error Learning- Thorndike's Experiment and Laws; Classical Conditioning- Acquisition, Spontaneous Recovery, Generalization, Discrimination, Extinction and Higher Order Conditioning. • Operant Conditioning: Experiment - Reinforcement, Schedules of Reinforcement, Shaping and Chaining. • Cognitive Learning: Insightful (Kohler) and Observational (Bandura).	**11 Hrs**
UNIT – 5 MEMORY AND FORGETTING	
• Memory: Meaning, Basic Processes – Encoding, Storage and Retrieval. • Types of Memory: Sensory Memory, Short-Term Memory, Long-Term Memory, Working Memory, Semantic Memory, Autobiographical Memory and Flashbulb Memory. • Techniques to Improve Memory: Mnemonics, Chunking, SQ3R (Survey, Question, Read, Recite and Review) • Forgetting: Nature – Normal & Abnormal forgetting and Causes of Forgetting.	**10 Hrs**

References:

1. Robert Feldman (2011) Essential of *Understanding Psychology* 10th Edition, ISBN-13-9781259003059/ISBN–10–1259003051

2. Morgan, C. T., King, R. A., Weiss, J. R. and Schopler, J. (2012). (Latest Edition).*Introduction to*

Psychology. Tata McGraw Hill Education Pvt. New Delhi

3. Nataraj, P. (latest edition): *Psychology for Beginners*. Mysore :Srinivas publication

4. Parameshwaran, E. G., & Beena, C. (2010): *An Invitation to Psychology*, Neelkamal Pvt. Hyderabad

5. Mangal S.K.(2000) General Psychology. New Delhi: Sterling Publishers Pvt.Ltd.

6. Shashi Jain (Latest edition). Introduction to Psychology. New Delhi: Kalyani Publishers.

7. Rajamanickam, M. (2008). Modern General Psychology. Vol 1 & 2. Concept Publisher. New Delhi.

Online / E-sources

1.) Introduction to Psychology - Open Textbook Library (umn.edu)
2.) American Psychological Association (APA)
3.) Beginning Psychology (lardbucket.org)
4.) Psychology (d3bxy9euw4e147.cloudfront.net)
5.) https://youtu.be/ysda8PHQnGY - Introduction to Psychology
6.) https://youtu.be/bl08fSne14U - Psychology As Science

SEMESTER I

(DSC) Practical

PRACTICALS DSC - 211165

Course duration: 14 weeks with 4 hours of lab work per week amounting to 2 credits.

PRACTICALS DSC - Foundations of Psychology - I

Any 6 of the following experiments

4 hours per week. Maximum Marks: 50

1. **Directed Observation on the accuracy of report**
2. **Color blindness**
3. **Localization of sound**
4. **Set on Attention**
5. **Bilateral transfer of training**
6. **Muller-Lyre Illusion**
7. **Meaning on retention**
8. **Retroactive Inhibition**

STATISTICS

- Grouping of Data: Tabulation and frequency distribution
- Measures of Central tendency: Mean and Median for Grouped and Ungrouped data

Course Articulation Matrix – 211165

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	3	3	3	-	2	2	3	-	2
CO 2	3	2	1	3	3	2	-	-	-	3	-	2
CO 3	3	3	1	3	3	2	-	-	2	3	-	1
CO 4	3	3	2	2	3	3	-	1	1	3	-	1
CO 5	3	2	1	2	3	3	-	1	1	3	-	1
Weighted Average	**3**	**2.4**	**1.2**	**2.6**	**3**	**2.6**	**0**	**1.3**	**1.5**	**3**	**0**	**1.4**

OE (1) Syllabus of Psychology

Semester I

Course Code: 21OEPSY101	**Course Title O.E (1): Psychology of Health & Wellbeing**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2:30 Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1 – Analyze and describe the spectrum of health & illness for better health management.
CO2 - Identify and introspect the impact of stressors and determine the coping strategies.
CO3 - Conceptualize and reflect upon the health protective and health compromising behaviors, further determine illness management.
CO4 – Synthesize and determine various strategies to Life enhancement for overall wellbeing.

Course Content

Content	Hours
UNIT – 1 Introduction	
Illness, Health and Wellbeing; Health continuum; Models of Health and Illness: Medical, Bio-psychosocial; Holistic Health.	**11 Hrs**
UNIT – 2 Stress & Coping	
Stress and Coping: Nature and Sources of Stress; Personal and Social Mediators of Stress; Effects of Stress on Physical and Mental Health; Coping and Stress management.	**11 Hrs**
UNIT – 3 Health Management	
Health Management: Health enhancing behaviours: Exercise, Nutrition, Meditation, Yoga; Health compromising behaviours - alcoholism, smoking, internet addiction; Illness Management – Prevention & Treatment.	**10 Hrs**
UNIT – 4 Promoting Human Strengths and Life Enhancement	
Promoting Human Strengths and Life Enhancement: Strength- Meaning and Realizing strength; Maximizing Unrealized Strength. Weakness – Meaning, Identifying & Overcoming – Practices of Mindfulness.	**10 Hrs**

References:

Carr. A. (2004) Positive Psychology: The science of happiness and human strength UK: Routledge.

DiMatteo, M.R &. Martin, L.R.(2002). Health Psychology. New Delhi: Pearson.

Farshaw, M 2DD3) Advanced PsychoIo9Y: Health Psychology. London:Hodder and Stoughton

Forshaw, M. (2003).Advanced Psychology: Health Psychology. London: Hodder and Stou9htan.

Hick.J.W. (2005).Fifty signs of Mental Health.A Guide to understanding mental health.Yale University Press.

Snyder, C R., & Lopez. S.J.(2007) Positive Psychology: The scientific and practical explorations of human strengths. Thousand Oaks, CA Sage.

Taylor. S.E. 2006).Health Psychology.6th Edition.Flew DelhI: Tata M

Online E-resources

1. **https://www.ahajournals.org/doi/10.1161/CIR.0000000000000947**
2. **https://iaap-journals.onlinelibrary.wiley.com/journal/17580854**
3. **BPCG-173 Psychology for Health and Wellbeing - https://egyankosh.ac.in/handle/123456789/73140**
4. **Health Psychology Promotes Wellness - https://www.apa.org/education-career/guide/subfields/health**

Course Articulation Matrix - 21OEPSY101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	-	-	1	-	1	1	3	-	1
CO 2	3	3	1	-	-	2	1	-	1	3	-	2
CO 3	3	2	1	-	1	3	1	1	1	3	-	2
CO 4	3	2	1	-	1	3	1	1	1	3	-	2
Weighted Average	**3**	**2.2**	**1**	**0**	**1**	**2.2**	**1**	**1**	**1**	**3**	**0**	**1.75**

OE (1) Syllabus of Psychology (Except B.A Streams)

Semester I

Course Code: 21OEPSY102	**Course Title O.E (1) : Life Skills - I**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2:30 Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1 – Describe the basics and conceptual features of Life skills.
CO2- Comprehend the basic framework of Self-awareness and empathy understanding their association.
CO3 - Determine and classify the nature and relevance of Critical and Creative Thinking in Life Skills.
CO4 – Describe and analyze the dynamics of Decision making and Problem Solving.

Course Content

Content	Hours
UNIT – 1 **Overview of Life Skills**	
• Meaning and significance of life skills • Life skills identified by WHO: Self-awareness, Empathy, Critical thinking, Creative thinking, Decision making, problem solving, Effective communication, interpersonal relationship, coping with stress, coping with emotion • Use of Life skills in personal and professional life • Life Skills Training – Models-4 H, • Life Skills Education in the Indian Context.	**11 Hrs**
UNIT – 2 **Self-awareness and empathy**	
• Definition and need for self-awareness and empathy; • Self-esteem and self-concept • Human Values, tools and techniques of Self-awareness and empathy Activities: Johari window and SWOC analysis, Journaling, reflective questions, meditation, mindfulness, psychometric tests and feedback.	**11 Hrs**
UNIT – 3 **Critical and creative Thinking**	

• Definition and need for Creativity and Critical Thinking • Need for Creativity in the 21st century, Imagination, Intuition, Experience and Sources of Creativity • Lateral Thinking • Critical thinking Vs Creative thinking, Convergent & Divergent Thinking. • Activities: Fish Bowl, Debates, 9 dots puzzle, Circles of possibilities, Best out of waste, Socratic seminars, Group discussion, brain storming and lateral thinking exercises.	**10 Hrs**
UNIT – 4 Decision Making and Problem Solving	
• Definition of decision making and problem solving • Steps in problem solving: Problem Solving Techniques • Analytical Thinking, Numeric, symbolic, and graphic reasoning. Scientific temperament and Logical thinking • Activities: Six Thinking Hats, Mind Mapping, Forced Connections, A shrinking vessel, reverse pyramid.	**10 Hrs**

References:

- Barun K. Mitra, "Personality Development & Soft Skills", Oxford Publishers, Third impression, 2017.
- ICT Academy of Kerala, "Life Skills for Engineers", McGraw Hill Education (India) Private Ltd., 2016.
- Caruso, D. R. and Salovey P, "The Emotionally Intelligent Manager: How to Develop and Use the Four Key Emotional Skills of Leadership", John Wiley & Sons, 2004.
- Kalyana, "Soft Skill for Managers"; First Edition; Wiley Publishing Ltd, 2015.
- Larry James, "The First Book of Life Skills"; First Edition, Embassy Books, 2016.
- ShaliniVerma, "Development of Life Skills and Professional Practice"; First Edition; Sultan Chand (G/L) & Company, 2014.

Online E-resources

1. Basic Life Skills Curriculum – UNICEF https://www.unicef.org › azerbaijan › media › file

2. **Module 7 Life Skills – UNODC** - https://www.unodc.org › message › escap_peers_07

3. https://wachemo-elearning.net/courses/general-psychology/lessons/chapter-8introduction-to-life-skills

Course Articulation Matrix - 21OEPSY102

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	2	1	1	-	1	1	3	-	1

CO 2	3	3	-	3	1	1	1	-	2	3	-	1
CO 3	3	1	1	3	1	1	1	1	2	3	1	1
CO 4	3	1	1	3	1	1	1	1	1	3	1	1
Weighted Average	**3**	**1.7**	**0.7**	**2.8**	**1**	**1**	**0.7**	**0.7**	**1.5**	**3**	**0.5**	**1**

DSC (2) Syllabus for B.A Psychology (Basic and Honors)

Semester II

Course Code: 211265	**Course Title: Foundations of Psychology -II** DSC(2) (Theory) DSC(2) Psychology Lab (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2:30 Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 – Elucidate and analyze the construct of "Human Emotions"; and demonstrate the impact of Emotions on Behaviour.
CO2 – Describe the concept of Motivation and comprehend its relevance to human behavior.
CO3 – Demonstrate the structure of "Human Intelligence" and analyze its relevance to human life as an active cognitive process.
CO4 – Interpret Cognition, systematically analyze and comprehend the features of "Thinking-Reasoning".
CO5 – Conceptualize the dynamics of Human Personality and determine its significance to behaviour.

Course Content

Content	Hours
UNIT – 1 **EMOTIONS**	
• Definition, Elements of Emotions - physiological, behavioural, psychological and cognitive. • Classification of emotions- primary and secondary. • Theories of emotions- Physiological and Cognitive. • Emotional Intelligence- Meaning, definition, components. Application of emotional intelligence.	**12 Hrs**
UNIT – 2 **MOTIVATION**	

● Definition, Basic Concepts of Motivation - Instincts, needs, drives, incentives, Motivational cycle. ● Approaches to the Study of Motivation: S – R approach (Behavioural), Cognitive and Humanistic. ● Biological Motives: Hunger, thirst, sleep and sex. ● Social Motives: Achievement, affiliation, approval.	**10 Hrs**

UNIT – 3 INTELLIGENCE	
• Definition of intelligence, Nature and characteristics of intelligence. • Types- Social, Emotional, Multiple, Crystallized and Fluid Intelligence. • Theories of Intelligence- Thurstone's, Spearman's, Guillford's and Gardener. • The concept of intelligence quotient. Assessment of intelligence- Tests of intelligence. • Artificial Intelligence.	**10 Hrs**
UNIT – 4 THINKING AND REASONING	
• Introduction to cognition – Definition of Thinking, Elements of Thinking. • Concept Formation: Importance and process of concept formation • Types of Thinking - Creative and critical thinking, Convergent & Divergent Thinking, Altruistic and Realistic Thinking. • Problem Solving: Meaning, Process of Problem Solving and obstacles • Reasoning – Inductive and Deductive, decision making.	**12 Hrs**
UNIT – 5 PERSONALITY	
• Definition & Determinants of Personality. • Theories of personality- Type and Trait, Psychodynamic, Behavioural and Humanistic. • Assessment of personality- Rating scales, Questionnaires and Projective techniques.	**12 Hrs**

Reference:

1.) Baron, R. A. (2014).Psychology. (5th ed.). Delhi: PHI Learning Pvt. Ltd.

2.) Feldman, R. S. (2018). Understanding Psychology (14th ed.). New York: McGraw Hill Hergenhahn, B. R., & Henley, T. (2013). An Introduction to the history of psychology.Cengage Learning.

3.) Hilgard, E. R., Atkinson, R. C. & Atkinson, R. L. (2015).Introduction to psychology. (16th ed.). Boston: Cengage Learning.

4.) Malim, T. (2017). Introductory Psychology.Macmillan International Higher Education. Morgan, C. T.,

5.) King, R. A., Weisz, J. R., &Schopler, J. (2001).Introduction to psychology. (7th ed.) Chennai: McGraw-Hill Education (India) Pvt. L

Online / E-sources

1.) Introduction to Psychology - Open Textbook Library (umn.edu)

2.) American Psychological Association (APA)

3.) Beginning Psychology (lardbucket.org)

4.) Psychology (d3bxy9euw4e147.cloudfront.net)

5.) https://youtu.be/RGdK67Z0A00 - The Science of Personality

SEMESTER II

(DSE) Practical

PRACTICALS DSE - 211265

Course duration: 14 weeks with 4 hours of lab work per week amounting to 2 credits.
PRACTICALS DSC - Foundations of Psychology – II

Any 6 of the following experiments

(Selecting at least 1 from each of the given clusters and the 6th Experiment to be chosen from anyone of the given clusters)

4 hours per week. **Maximum Marks: 50**

1.) **Emotions:**
   a. Emotional intelligence scale/ questionnaire
   b. Oxford happiness scale

2.) **Motivation**
   a. Achievement motivation
   b. Guidance need inventory

3.) **Intelligence**
   a. Standard progressive matrices
   b. SFB (Seguin Form Board)

4.) **Thinking and reasoning**
   a. Stroop effect
   b. Problem solving ability test based on Tower of London test

5.) **Personality:**
   a. Eyescenk's personality inventory
   b. NEO Personality Inventory

Statistics: Measures of Variance (Grouped and Ungrouped)

- Standard Deviation

Course Articulation Matrix - 211265

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	2	3	3	1	2	2	3	-	2
CO 2	3	2	1	2	3	2	-	-	-	3	-	2
CO 3	3	3	1	2	3	2	1	2	2	3	-	2
CO 4	3	3	2	2	3	3	1	1	1	3	-	2
CO 5	3	2	1	2	3	3	-	1	1	3	-	2
Weighted Average	**3**	**2.4**	**1.2**	**2**	**3**	**2.6**	**1**	**1.5**	**1.5**	**3**	**0**	**2**

OE (2) Syllabus of Psychology (Except B.A Streams)

Semester II

Course Code: 21OEPSY201	**Course Title O.E (2): Youth, Gender & Identity**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2:30 Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1 – Conceptualize the concept of Youth and determine the dynamics involved in Identity Formation.
CO2 – Elucidate and describe the attributes, conflicts and challenges to identity formation in youth.
CO3 – Demonstrate and analyze the complexities associated with Youth, Gender and Identity Crisis.
CO4 – Describe and critique the laws associated with Youth.

Course Content

Content	Hours
UNIT – 1 Introduction	
a. Concepts of Youth: Transition to Adulthood, Extended Youth in the Indian context b. Concepts of Gender: Sex, Gender Identity, Sexual Orientation and Issues c. Gender and Identity - Gender Roles, Gender Role Attitudes, Gender Stereotypes, Gender discrimination d. Concepts of Identity: Multiple identities.	**11 Hrs**
UNIT – 2 Youth and Identity	
a. Family: Parent-youth conflict, sibling relationships, intergenerational gap b. Peer group identity: Friendships and Romantic relationships c. Workplace identity and relationships d. Youth culture: Influence of globalization on Youth identity and Identity crisis	**11 Hrs**
UNIT – 3 Issues related to Youth, Gender and Identity	

a. Youth, Gender and violence b. Enhancing work-life balance c. Changing roles and women empowerment d. Encouraging non-gender stereotyped attitudes in youth.	**10 Hrs**
UNIT – 4 **Law and Youth**	
a. Juvenile Justice act b. LGBT rights in India c. UNICEF programs for youth	**10 Hrs**

References:

Carr. A. (2004) Positive Psychology: The science of happiness and human strength UK: Routledge.

DiMatteo, M.R &. Martin, L.R.(2002). Health Psychology. New Delhi: Pearson.

Farshaw, M 2DD3) Advanced PsychoIo9Y: Health Psychology. London:Hodder and Stoughton

Forshaw, M. (2003).Advanced Psychology: Health Psychology. London: Hodder and Stou9htan.

Hick.J.W. (2005).Fifty signs of Mental Health.A Guide to understanding mental health.Yale University Press.

Snyder, C R., & Lopez. S.J.(2007) Positive Psychology: The scientific and practical explorations of human strengths. Thousand Oaks, CA Sage.

Taylor. S.E. 2006).Health Psychology.6th Edition.Flew DelhI: Tata M

Online E-resources

1. Youth Psychology :Concept of Youth and Youth across cultures-https://www.docsity.com › youth-psychology-concept
2. Psychology of Youth - https://www.idymop.org/post/psychology-of-youth
3. Positive youth Development & Wellbeing: Gender Differences - https://www.frontiersin.org/articles/10.3389/fpsyg.2021.641647/full

Course Articulation Matrix - 21OEPSY201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	-	-	1	-	1	1	3	-	1
CO 2	3	3	-	-	-	1	1	-	1	3	-	1
CO 3	3	1	1	-	1	1	1	1	1	3	-	1

CO 4	3	1	1	-	1	1	1	1	1	3	-	1
Weighted Average	**3**	**1.75**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**3**	**0**	**1**

OE (2) Syllabus of Psychology (Except B.A Streams)

Semester II

Course Code: 21OEPSY202	**Course Title O.E (2): Life Skills - II**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2:30 Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1 – Identify the nature of Effective Communication and comprehend the skills necessary for effective communication.
CO2 – Elucidate the dynamics involved in Interpersonal Relationships and interpret the techniques of enhancing Interpersonal skills.
CO3 – Demonstrate effective Stress management and analyze stress coping skills.
CO4 – Synthesize the dynamics of a Group or Team, comprehending the techniques to resolve conflict and enhance group performance.

Course Content

Content	Hours
UNIT – 1 Effective Communication	
• Effective communication and Presentation skills. • Verbal and nonverbal communication, types of barriers • Writing Skills: Activities: Letter Writing, Job Application, Resume writing. • Listening Skills: Activities : Listen and Draw , Blindfold walk	**11 Hrs**

• Activities : Interview Skills, Group Discussion, Presentation Skills, stand up for fillers, Just A Minute	
UNIT – 2 Interpersonal Relationship	
• Meaning and benefits of Interpersonal skills • Components of Interpersonal skills, • Techniques of improving Interpersonal skills, • Activities: Role play, Ice breakers, circle time discussions, group discussion, two truths and a lie and SWOC analysis of peer	**11 Hrs**
UNIT – 3 Coping with Stress and emotions	
• Stress Management: Stress, reasons and effects • Identifying stress, the four A's of stress management • Identifying and managing emotions, harmful ways of dealing with emotions • Activities : Stress Dairies, PATH method and relaxation techniques, Zen / Mandala drawing, creating Joy Collage, Gratitude Journaling, Eye Contact games	**10 Hrs**
UNIT – 4 Group and Team Dynamics	
• Introduction to Groups: Composition, formation, expectations, Problem Solving, Consensus, Dynamics techniques, • Group vs Team, Team Dynamics, • Managing team performance and managing conflicts • Activities : Chinese Puzzle, Use what you have game ,Group timeline, Do the Math : Cooperation and competition in groups, Barter Puzzle.	**10 Hrs**

References:

- Barun K. Mitra, "Personality Development & Soft Skills", Oxford Publishers, Third impression, 2017.
- ICT Academy of Kerala, "Life Skills for Engineers", McGraw Hill Education (India) Private Ltd., 2016.
- Caruso, D. R. and Salovey P, "The Emotionally Intelligent Manager: How to Develop and Use the Four Key Emotional Skills of Leadership", John Wiley & Sons, 2004.
- Kalyana, "Soft Skill for Managers"; First Edition; Wiley Publishing Ltd, 2015.
- Larry James, "The First Book of Life Skills"; First Edition, Embassy Books, 2016.
- ShaliniVerma, "Development of Life Skills and Professional Practice"; First Edition; Sultan Chand (G/L) & Company, 2014.

Online E-resources

1. https://www.tutorialspoint.com/effective_communication/effective_communication_tutorial.pdf1.
2 .https://www.tutorialspoint.com/interpersonal_skills/interpersonal_skills_tutorial.pdf

3. **Module 7 Life Skills – UNODC** - https://www.unodc.org › message › escap_peers_07

Course Articulation Matrix - 21OEPSY202

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	-	-	1	-	1	1	3	-	1
CO 2	3	3	-	-	-	1	1	-	1	3	-	1
CO 3	3	1	1	-	1	1	1	1	1	3	-	1
CO 4	3	1	1	-	1	1	1	1	1	3	-	1
Weighted Average	**3**	**1.75**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**3**	**0**	**1**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and SemesterEnd Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work,

quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks forthe final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a courseshall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance, the marks are 25 (10 + 15) and 25. Evaluated for a total of 50 Marks.
- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decidedby the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study/Assignment etc., the students should be informed aboutthe modalities well in advance. The evaluated courses

assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE (Controller of Examination) at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

PRACTICAL COMPONENT

Scheme of Valuation for I & II Sem: Practical Experimentation

C1 and C2 (Practical) are internal tests to be conducted during 8th and 16th weeks of the semester respectively. C3 (Practical Examination) is conducted during the end of the semester for the duration of 3 hours. The students are assessed and evaluated by the External and Internal Examiners - on various skills associated with Psychology Practical – Administration, Procedure, Instructions, Analysis and Interpretation of results of the Subjects performance in the Experiment conducted. The Practical Component is valuated for 50 Marks (during each of the Semesters respectively).

The C1(Test) and C2 (Assignment – Case Study) components are - IA assessment.
During the C1 and C2 elements the student is evaluated for 20 marks (collectively) as per the following scheme:
a.) C1 – Test on Experiments - 10 marks (On first Half of the Practical Portions)
b.) C2 – Test on Experiments / Assignment/Case Study/Statistics - 15 marks (On the second Half of Practical Syllabus + Record)

Though the C1 and C2 components are evaluated for 20 marks each for the ease of calculation,

however the total marks scored by the student are then normalized to 10 under each component, (C1 and C2 Collectively – 20 + 5 Marks for Practical Record).

Record - 5 Marks; the Practical record has to be evaluated on 5 marks (IA) and then certified by the Head of the Department.

- The student is evaluated for 25 marks during C3 Examination as per the following scheme:

Heading	Marks
Experiment	5
Conduction	5
Group Discussion	5
Viva Voce	5
Statistics	5
TOTAL	**25**

General Pattern on Psychology PRACTICAL Question Paper (NEP-2020)

Term End Examination for Discipline Specific Paper

Scheme of Valuation for I & II Sem: Practical Experimentation

Total marks = 50		
Internal assessment =25		
Content	Marks	
Test C1	10	
C2 Test/Assignment (Case Study/Reports/Seminar Presentations; Statistics etc) + Practical Record	10 05	Total 15
Total IA	**25**	
Practical examination =25		
Content	Marks	
Writing Plan and procedure (any one)	05	
Conduction / administration (any one)	05	
Discussion of results (any one)	05	
Statistics	05	

Viva voce	05
Total Practical Examination	**25**

Practical Exam Duration & Ordinance

- **The Exam duration for I.A Practicals (Test C1 component) is for 1 Hr and C3 the main Practical Examination is for 3 Hrs.**
- **The student is expected to reach the Examination venue 30 minutes before the schedule.**
- **If the student is delayed beyond 30 min of the given schedule of Practical Examination; then he/she is not entitled or allowed to write the Practical examination for that Semester and will be considered as absent.**

*** **Practical Record** - 5 Marks; Record submission is compulsory prior to the scheduled Examination date failing which the student is considered as not eligible to take up the Practical Examination. The student has to compulsorily submit the written Practical Record during C3 - Final Practical Examination. While, the student is considered as eligible for the C3 component of Psychology Practical Examination, only if the Practical record has been submitted by the student to be evaluated on 5 marks (IA) and then certified by the Head of the Department. In case of an incomplete record the Department has every authority to either consider or penalize the student by deducting the marks for their negligence and lack of involvement.

DSC - Question Paper Pattern (Theory – I & II Sem)

PSYCHOLOGY B.A PROGRAMME

B.A PSYCHOLOGY - DSC (For I & II Semesters)

Time: 2:30 Hours **Max. Marks: 60**

Part-A

I. Answer any five of the following questions. **5x2=10**

1.)……
2.)……
3.)……
4.)……
5.)……
6.)……
7.)……

Part-B

II. Answer any Four of the following questions. **4x5=20**

8.)……..
9.)……..
10.)……
11.)…….
12.)……
13.)……
14.)……

Part-C

III. Answer any Four of the following questions. **3x10=30**

15.)……
16.)……
17.)……
18.)……
19.)……
20.)……

O.E Psychology - Question Paper Pattern (Theory I & II Sem)

PSYCHOLOGY B.A PROGRAMME

B.A PSYCHOLOGY – O.E (For I & II Semesters)

Time: 2:30 Hours **Max. Marks: 60**

Part-A

I. Answer any five of the following questions. **5x2=10**

1.)…….
2.)…….
3.)…….
4.)…….
5.)…….
6.)…….
7.)…….

Part-B

II. Answer any Four of the following questions. **4x5=20**

8.)……..
9.)……..
10.)……
11.)…….
12.)……
13.)……
14.)……

Part-C

III. Answer any Four of the following questions. **3x10=30**

15.)……
16.)……
17.)……
18.)……
19.)……
20.)……

Approved by the Board of Studies in Psychology (2022-2023) and forwarded to the Academic Council and the Governing Council for further reference and consent.

M. Sujata 12/9/2022

(Asst. Prof. Sujata. M)

Chairperson
BOS/BOE in Psychology
SBRR Mahajana First Grade College
(Autonomous)
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(Dr. Mridula Singh)

Vice Chancellor Nominee, University of Mysore.

(Dr. Lancy D'Souza)

(Dr. Archana Bhatt K)

Department of Psychology

(Dr.Rekha)

(Siyana Salim)

(ABSENT)

Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

DEPARTMENT OF PSYCHOLOGY

Motto: **Enriching scientific thought & Promoting Pro-Social Behavior.**

Vision: **Thriving towards a scientifically driven environment for the development of Psychological literacy.**

Mission: **Enabling the 'Learner' to develop the Research attitude and explore new dimensions in Behavioral Sciences.**

Programme Outcomes (PO,s) - Bachelors of Arts

PO1	**Domain Knowledge:** Inculcation of fundamental concepts, principles, methods and the application of the same in the realm of concerned domain.
PO2	**Problem Analysis:** This programme enhances the ability to define, identify and analyze appropriate means towards amicable solutions in the given area of Knowledge.
PO3	**Design & Development of Solutions:** Structuring theoretical knowledge and developing customized designs in terms of – Intervention strategies, Profiling, Reviews, Archives, Marketing strategies, Info-graphics and Approaches for arriving at relevant and desirable solutions.
PO4	**Research & Investigation**: Knowledge and application of "Research Methods" to investigate domain specific problems and derive scientific conclusions through testing of Hypotheses and relevant findings empirically.
PO5	**Usage of Modern Tools and Techniques:** Mastery in the academic enclave through skilled handling administering, assessing, validating and interpreting complex phenomena using advanced tools and techniques to create simple and sustainable solutions.
PO6	**Social Sciences & Society –** Promotes domain specific literacy to illuminate the significance of each discipline and its applicability for the well-being of Society.
PO7	**Environment and Sustainability:** Contemplate and Introspect prevailing environmental challenges and consequences. Further, channelize initiatives towards sustainability.
PO8	**Moral and Ethical Values:** Application of Professional Ethics, Humanitarian Values, Accountability and Social Responsibilities in emerging society towards attainment of harmony and co-existence.
PO9	**Individual and Teamwork:** Imbibe the qualities of Teamwork and function effectively as an emerging leader in the diversified and multidisciplinary areas.
PO10	**Communication:** Demonstrates Competency in comprehending and conceptualizing discipline specific concepts and ideas and communicates effectively through fluid communication within the professional and social setup.
PO11	**Economics and Project Management:** Understand the Economic Concept in the context of specific discipline and apply the same through initiating Planning, and Executing the Project Dynamics effectively towards successful Project Management.
PO12	**Lifelong Learning**: Identify and address their own educational needs in a changing world in ways sufficient to upgrade one's skills and competencies through constant self-evaluation and eternal learning.

OBJECTIVES: Psychology

1.) **Promote higher learning and research orientation among students, through effective establishment of the interface between the field of Psychology and its empirical nature.**

2.) **Establish Introspective approach through – Educational tours, Internship Programmes, Minor Projects ect; to gear-up the Learner to explore the dynamics of Applied Psychology.**

3.) **Kindle "Self – Enhancing and Innovative" skills among students through broader insights into the realm of Psychology.**

4.) **Inspire Students to foresee various promising Career prospects available in the field of Mental Health Sciences through the pursuit of Psychology.**

5.) **Endow a sense of 'Professional Integrity' in the learner through realizing the significance of Psychology in facilitating Mental Health services.**

List Of BOS Members in Psychology

Sl.No.	Category	Name	Designation	Address for Communication	E-mail and Mobile No.
1.	HoD	Smt. Sujata. M	Asst. Professor & HoD	Dept. of Psychology SBRR Mahajana First Grade College, Mysore	Sujatam.fgc@mahajana.edu.in 9886191174

2.	Two Experts from Outside the parent University	1.)	Dr Rekha	Associate Professor	Dept. of Psychology Govt. College for Women (Autonomous) Mandya.	rekhamsumesh@gmail.com 9986627024
		2.)	Dr Archana Bhatt K	Associate Professor & HoD	UG & PG Dept. of Psychology Kateel Ashok Pai Memorial College – Shivamogga, Kuvempu University.	archana.kallahalla@gmail.com 9538298660
3.	Nominee by the Vice Chancellor	Dr. Mridula Singh		Associate Professor	Dept. of Psychology Maharajas College, Mysore.	mridulasingh15@gmail.com 9448312327
4.	One Person from Industry /Corporate Sector /Allied area	Dr. Lancy D'Souza		Professor & HoD,	Dept. of Psychology, Maharaja's College Mysore	lancyd@gmail.com
6.	Alumnus	Siyana Salim		P G Student M.Sc Clinical Psychology	Dept. of Clinical Psychology St. Agnes College Mangalore	ishasalim31@gmail.com 9071693910

Course Structure (NEP 2020)

Discipline Specific Courses (DSC) & Open Elective (OE)

III Sem	IV Sem
Course Code - 221365	Course Code - 221465

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
PSYCHOLOGY – III Sem									
DSC(3) - 221365	Child Development	4	0	4:0:2	20	20	60	2: 30 Hours	150
DSC (3) - Lab	Psychology Practicals - 3	0	4		10	15	25	3 Hours	
OE (3) 22OEPSY301	Psychology and Mental Health	3	0	3:0:0	20	20	60	2: 30 Hours	100
PSYCHOLOGY – IV Sem									
DSC(4) - 221465	Developmental Psychology	4	0	4:0:2	20	20	60	2: 30 Hours	150
DSC(4) - Lab	Psychology Practicals - 4	0	4		10	15	25	3 Hours	
OE (4) 22OEPSY401	Psychology at Work	3	0	3:0:0	20	20	60	2: 30 Hours	100

DSC (3) Syllabus for B.A PSYCHOLOGY (Basic and Honors)

Semester III

Course Code: 221365	**Course Title:** DSC(3) Child Development (Theory) DSC(3) Lab - Psychology (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2:30 Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 – Elucidate and analyze the nature of Human Lifespan Development across stages; with special relevance to Child Development.
CO2 – Identify and describe the nature of Pre-natal Development in humans; further conceptualize the dynamics involved in the phase.
CO3 – Demonstrate the pattern of growth and maturation in different domains of development across Infancy and Childhood.
CO4 – Systematically analyze and comprehend the Socio-emotional and Moral development through Infancy and Childhood.
CO5 – Determine and deconstruct the nature, symptomatology and pattern of Developmental disorders.

Course Content

Content	Hours
UNIT – 1 **INTRODUCTION**	
a)Development – Meaning & Nature – Heredity and Environment. **b)Theories of child development** – Cognitive theories, Behavioral and socio-cognitive theories; Ecological model – Bronfenbrenner. **c)Methods and Designs** – Longitudinal, Cross – sectional, Sequential, Correlation. **d)Application of Child Psychology.**	**12 Hrs**
UNIT – 2 PRE-NATAL DEVELOPMENT	
a) Stages in prenatal development – Conception, Germinal stage, Embryonic stage and Fetal	**10 Hrs**

stage. **b)** Hazards- Environmental (Pollutants, Teratogens and Psychoactive drug, Infectious Diseases) and Incompatible Blood types. **c) Child birth** – Stages of child birth, Complications of child birth- Water Breaking Early, Perinatal Asphyxia, LBW (Low Birth Weight), Breech, Excessive bleeding, Umbilical cord issues. **d) New Born Assessment –** APGAR scale, Brazelton Neonatal Behavioural Assessment Scale. **e) Chromosomal and Gene linked abnormalities** – Chromosomal abnormalities - Down Syndrome; Abnormalities of the sex chromosomes - Kleinfelters, Fragile x, Turner's, XXX, XYY; Gene linked abnormalities - PKU, Sickle Cell Anaemia, Tay Sachs Disease.	
UNIT – 3 PHYSICAL, COGNITIVE AND LANGUAGE DEVELOPMENT **(Infancy, Babyhood & Childhood)**	
a) MOTOR DEVELOPMENT: Meaning; Reflexes, Sequence of motor development – Gross motor development & fine motor development. **b) PERCEPTUAL DEVELOPMENT -** Touch, Taste and Smell, Hearing, Vision. **c) COGNITIVE DEVELOPMENT** - Piaget's theory of cognitive development., Vygotsky's Theory of cognitive Development- Zone of Proximal Development and Scaffolding. **d) LANGUAGE DEVELOPMENT** – Pre-linguistic development – receptivity to language, first speech sounds. Phonological development; Semantic development; Grammatical Development, Pragmatic development; Bilingualism.	**12 Hrs**
UNIT – 4 EMOTIONAL, SOCIAL AND MORAL DEVELOPMENT **(Infancy, Babyhood & Childhood)**	
a) EMOTIONAL DEVELOPMENT - Development of emotional expression, Basic Emotions, Self-Conscious Emotions, Emotional self-Regulation, Acquiring Emotional Display Rules. b) **SOCIAL DEVELOPMENT -** Social Orientation, Development of attachment, sense of security, Cultural Influences - Self Awareness and Self Understanding. **c) MORAL DEVELOPMENT -** Kohlberg's theory of Moral development.	**11 Hrs**

UNIT – 5	DISORDERS OF CHILDHOOD	
ADHD, Conduct disorder, Oppositional defiance disorder, Childhood depression, Symptom disorders (Eneuresis, encopresis, sleep walking and tics); Pervasive developmental disorders – Autism, Intellectual Disability.		**11 Hrs**

References:

1.Carson, Butcher and Mineka, (2008) Abnormal Psychology. 13th edition, Pearson Education

2. John.W.Santrok (2014) - Child Development - 13th edition, Tata McGraw hill edition

3. Laura E. Berk (2013) - Child Development- 9th Edition, Easter economy edition, PHI publication

4. Levine, L.E. & Munsch,J (2014) Child Development: An Active Learnung Appraoch, 2nd Edition, Sage Publications. Inc

5. Papalia,D.E., & Olds, S.W., ***Human Development*, 5th Ed., 7th Ed., 9th Ed.,** 1992, 1998, Mc Graw Hill Publication, New Delhi.

6. Hurlock, B. E., ***Developmental Psychology, A life- span approach*, 5th Ed**, Tata Mc Graw Hill, New Delhi.

7. Hoffman, l., *Developmental Psychology Today*, 5th Ed., 1988, Mc Graw Hill Publications, USA.

8. Santrock, J.W., Life- span Development, 7ed.,1999, Mc Graw Hill, North America.

9. Laura C Berk, ***Child Development***, 7th Ed., (2007), Pearson Publication.

10. S. Venkateshan, ***Children with Developmental Disabilities,*** (2004), Sage Publication, India.

11. Lally, Martha, and Suzanned Valentine-French. (2017). ***Lifespan development: a psychological perspective*.**

12. Baltes, Paul & Lindenberger, Ulman & Staudinger, Ursula. (2006). Life Span Theory in Developmental Psychology.

Online / E-sources

1.) Duane F. Alwin, Linda A. Wray, A Life-Span Developmental Perspective on Social Status and Health, *The Journals of Gerontology: Series B*, Volume 60, Issue Special_Issue_2, 1 October 2005, Pages S7–S14, https://doi.org/10.1093/geronb/60.Special_Issue_2.S7

2.) Lally, Martha, and Suzanned Valentine-French. (2017). ***Lifespan development: a psychological perspective.*** https://open.umn.edu/opentextbooks/textbooks/540.

3.) Baltes, Paul & Lindenberger, Ulman & Staudinger, Ursula. (2006). Life Span Theory in Developmental Psychology. 10.1002/9780470147658.chpsy0111.

4.) Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of life-span development. *Psychological review*, *117*(1), 32–60.

https://doi.org/10.1037/a0017668

5.) Susan Krauss Whitbourne, PhD, University of Massachusetts, Amherst. (2012) LIFE SPAN DEVELOPMENT - a six-unit content developed by the American Psychological Association, December 2012

https://www.apa.org/ed/precollege/topss/lessons/life-development.pdf

BA/BSc III Semester With effect from Academic year 2022-23 and onwards

PRACTICALS: Total Hrs of Teaching 56 Hrs - 4 **hours per week.**

IA – 25 Marks **Semester End Exam – 25 Marks**

Maximum Marks: 50 (Minimum 6 Practical to be conducted)

1. Children's Self Concept Scale / Any Self-concept Rating Scale
2. Learning Styles Inventory
3. Three-Dimensional Parental Behaviour Inventory
4. Vineland Social Maturity Scale
5. Shyness Assessment Test for children
6. General Health Questionnaire
7. Emotional Maturity Scale
8. Family Environment Scale

STATISTICS

Correlation

- Spearman's Rank Difference Method
- Pearson's Product Moment

Course Articulation Matrix - 221365

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	3	3	3	2	1	1	3	-	3
CO 2	3	3	1	1	3	2		-	-	2	-	1
CO 3	3	3	1	1	3	2	-	-	-	2	-	1
CO 4	3	3	1	1	3	3	-	1	-	2	-	1
CO 5	3	3	2	2	3	3	1	1	1	3	-	2
Weighted Average	**3**	**2.8**	**1.2**	**1.6**	**3**	**2.6**	**1.5**	**1**	**1**	**2.4**	**0**	**1.6**

OE (3) Syllabus of Psychology (Except for B.A Streams)

Semester III

Course Code: 22OEPSY301	**Course Title (O.E): Psychology and Mental Health**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2:30 Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1 – Analyze and describe the spectrum of Mental Health through its fundamentals.
CO2 - Conceptualize and reflect upon various approaches to Mental Health stressors and determine the coping strategies.
CO3 - Identify and introspect the nature, symptoms and impact of emerging Mental Health issues on overall Mental Health.
CO4 – Synthesize and determine various Intervention strategies to manage Mental illness and enhance Mental Health wellbeing.

Course Content

Content	Hours
UNIT – 1 Introduction	
- a. Meaning and definition of Mental Health, Fundamentals of Mental Health. b. Factors affecting mental health: Physiological factors, Psychological factors and Social factors,	**11 Hrs**

c. Ethical issues	
UNIT – 2 Interpersonal approach to Mental Health	
a. Interpersonal approaches to mental health: communication and conflict – Non-violence communication, the four horsemen of the apocalypse. **b.** Cognitive distortions - personalization, catastrophizing, polarised thinking, shoulds and musts, mental filtering, fallacies (control, change, and heaven's reward), A-B-C model	**11 Hrs**
UNIT – 3 Mental Health issues	
a. Stress / Burnout b. Anxiety, fear, worry, phobia, depression c. Grief and trauma	**10 Hrs**
UNIT – 4 Intervention and Management	
a. Need for mental health intervention and strategies b. Coping Mechanisms: Grounding techniques, Mindfulness practices, Positive Management of emotions, Healthy Psychological and Social functioning (flourishing), Self care in mental health: A conceptual model.	**10 Hrs**

References

- Augustus, J.o., Bold, Justine., Williams, B. An Introduction to Mental Health, Sage Publications Ltd
- Gurumani, G.D., *Text Book of Mental Health and Hygiene*
- Lucock, M., Gillard, S., Adams, K., Simons, L., White, R., & Edwards, C. (2011). *Self - care in mental health services: a narrative review. Health & Social Care in the Community*, 19 (6)
- Papalia., &, C. D.E., Olds, S.W., & Feldmam, R.D. (2004). *Human Development*. 9th Edition. New Delhi: Tata Mc-Graw Hill Publishing Company Ltd.
- Piotrowski, N.A. (2010). *Psychology & Mental Health*. Salem Press.
- Robert Feldman (2011) *Essentials of Understanding Psychology* 10th Edition

Online/E-Resources

www.ipi.org.in/texts/ajit/dalal-psychology-of-health.pdf

- **https://egyankosh.ac.in › handle BPCG-173 Psychology for Health and Well being – eGyanKosh**

Course Code: 221465	**Course Title: Developmental Psychology** DSC(4) (Theory) DSC(4) Psychology Lab (Practical)
Course Credits: 06 (4:0:2)	**Hours of Teaching/Week:** 04 (Theory) + 04 (Practical)
Total Contact Hours: 56 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)

- Well-Being Concepts | HRQOL | CDC
- Psychological Health, Well-Being, and the Mind-Heart-Body Connection: A Scientific Statement From the American Heart Association | Circulation (ahajournals.org)

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	-	-	1	1	1	-	3	-	2
CO 2	3	3	1	-	-	1	1	1	1	3	-	2
CO 3	3	2	1	-	1	2	1	1	1	3	-	2
CO 4	3	2	1	1	2	2	1	1	-	3	-	2
Weighted Average	**3**	**2.2**	**1**	**0**	**1.5**	**1.5**	**1**	**1**	**1**	**3**	**0**	**2**

DSC (4) Syllabus for B.A Psychology (Basic and Honors)

Semester IV

Exam Duration: 2:30 Hours (Theory) 3 Hours (Practical)

Semester End Examination Marks: 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1 – Enumerate the characteristics and illustrate the critical nature of Puberty and Adolescence stages of human development.
CO2 – Concretely analyze the dynamics and changes involved in Early Adulthood.
CO3 – Describe the nature of Middle Adulthood and deduce the complexities that center the stage.
CO4 – Demonstrate and conceptualize the attributes and challenges of Late Adulthood.
CO5 – Comprehensively determine the aspects of senility and the progress of life towards cessation.

Course Content

Content	Hours
UNIT – 1 PUBERTY & ADOLESCENCE	
a) Definition – Puberty and Adolescence. **b) Biological & Physical changes:** Sexual maturation in girls and boys - growth spurt, primary and secondary sexual characteristics, Physical Health issues. **c) Psychological changes and Mental Health** Issues during Adolescence. **d) Identity formation** - Gender identity and crisis, and Self- concept. **e) 'New media':** Influence on Adolescent behavior - Addiction to Social Media, Virtual Gaming, Antisocial tendencies and Juvenile Delinquency.	**12 Hrs**

UNIT – 2 **EARLY ADULTHOOD**	
a) Early adulthood – Definition & Adjustment. **b) Health and Physical Development:** Health and Fitness during Early Adulthood. **c) Psycho-social development**: Single Lifestyle, Intimate Relationships - Marriage (Types of Marriage), Divorce (Reasons and Impact), co-habitation, LGBTQA+ issues; Responsible Parenthood, and Infertility (Causes).Work – choosing an occupation and importance of work. **d) Cognitive development** – Schaie's Model.	**10 Hrs**
UNIT – 3 **MIDDLE ADULTHOOD**	
a) Definition and Adjustment during Middle Adulthood. **b) Physical changes** – Changes in appearance, sensory abilities, physiological functioning, Changes in Sexuality and Health issues. **c) Cognitive Development** - Integrative thought, Practical problem solving and creativity. **d) Psycho-social Changes** – Midlife Crisis, Vocational Hazards - Occupational stress, burnout, unemployment and retirement; Changes in Relationships - Maturing children and Aging Parents.	**10 Hrs**
UNIT – 4 **LATE ADULTHOOD**	
a) Physical Changes: Sensory & Psychomotor Functioning – Vision, Hearing, Taste & Smell, Strength, Endurance, Balance &Reaction time. **b) Psychosocial Development** - Life Style Changes and Social Issues related to aging (Successful retirement, Loss of Spouse and Empty Nest Syndrome). **c) Health concerns** – Alzheimer's, Parkinson's, (Changes in cognitive abilities), and Psycho-physiological Illnesses (Diabetes Mellitus, Hyper-tension and Coronary Heart Diseases). **d)** Living arrangements for the elderly and Successful aging.	**12 Hrs**
UNIT – 5 **LATE ADULTHOOD (Old age)**	

a) **Spirituality and Wellbeing** in late adulthood. b) **Finding Meaning & purpose** - Life & Death c) **Death & Dying -** Facing death & Loss - Psychological Issues - Confronting one's death; Patterns of grieving (Kubler Ross stages of Dying or Grieving). d) **Issues related to Death** - Medical, Legal and Ethical e) **Care for the dying** – Palliative and Hospice Care.	**12 Hrs**

REFERENCES

1. Carson, Butcher and Mineka, (2008) Abnormal Psychology. 13th edition, Pearson Education
2. John.W.Santrok (2014) - Child Development - 13th edition, Tata McGraw hill edition
3. Laura E. Berk (2013) - Child Development- 9th Edition, Easter economy edition, PHI publication
4. Levine, L.E. & Munsch,J (2014) Child Development: An Active Learnung Appraoch, 2nd Edition, Sage Publications. Inc
5. Papalia,D.E., & Olds, S.W., ***Human Development*, 5th Ed., 7th Ed., 9th Ed.,** 1992, 1998, Mc Graw Hill Publication, New Delhi.
6. Hurlock, B. E., ***Developmental Psychology, A life- span approach*, 5th Ed**, Tata Mc Graw Hill, New Delhi.
7. Hoffman, l., *Developmental Psychology Today*, 5th Ed., 1988, Mc Graw Hill Publications, USA.
8. Santrock, J.W., Life- span Development, 7ed.,1999, Mc Graw Hill, North America.
9. Lally, Martha, and Suzanned Valentine-French. (2017). ***Lifespan development: a psychological perspective*.**
10. Baltes, Paul & Lindenberger, Ulman & Staudinger, Ursula. (2006). Life Span Theory in Developmental Psychology.

Online / E-sources

1.) Duane F. Alwin, Linda A. Wray, A Life-Span Developmental Perspective on Social Status and Health, *The Journals of Gerontology: Series B*, Volume 60, Issue Special_Issue_2, 1 October 2005, Pages S7–S14, https://doi.org/10.1093/geronb/60.Special_Issue_2.S7

2.) Lally, Martha, and Suzanned Valentine-French. (2017). ***Lifespan development: a psychological perspective.*** https://open.umn.edu/opentextbooks/textbooks/540.

3.) Baltes, Paul & Lindenberger, Ulman & Staudinger, Ursula. (2006). Life Span Theory in Developmental Psychology. 10.1002/9780470147658.chpsy0111.

4.) Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of life-span development. *Psychological review*, *117*(1), 32–60.

https://doi.org/10.1037/a0017668

5.) Susan Krauss Whitbourne, PhD, University of Massachusetts, Amherst. (2012) LIFE SPAN DEVELOPMENT - a six-unit content developed by the American Psychological Association, December 2012 https://www.apa.org/ed/precollege/topss/lessons/life-development.pdf

BA/BSc IV Semester With effect from Academic year 2022-23 and onwards

PRACTICALS: Total Hrs of Teaching 56 Hrs - 4 **hours per week.**

IA – 25 Marks **Semester End Exam – 25 Marks**

Maximum Marks: 50 (Minimum 6 Practical to be conducted)

1. College Student Problem Checklist
2. Life Satisfaction Scale
3. Social Intelligence Scale

4. Battle Ground Mobiles India - Addiction Test **(**PUBG addiction test)
5. Self Regulation Questionnaire
6. Social Adjustment scale for aged
7. Social Network Addiction Scale
8. Loneliness Inventory

STATISTICS

Tests of Difference

- 't' test
  - Independent Sample test
  - Paired Sample test

Course Articulation Matrix - 221465

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	3	3	3	1	1	1	3	-	3
CO 2	3	3	1	1	3	3	1	1	-	2	-	1
CO 3	3	3	1	1	3	2	1	1	-	2	-	1
CO 4	3	3	1	1	3	3	1	1	1	2	-	1
CO 5	3	3	2	2	3	3	1	1	1	3	-	2
Weighted Average	**3**	**2.4**	**1.2**	**2.6**	**3**	**2.8**	**1**	**1**	**1**	**2.4**	**0**	**1.6**

OE (4) Syllabus of B.A Psychology (Except B.A)

Semester IV

Course Code: 22OEPSY401	**Course Title O.E (4): Psychology at Work**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:** 40
Exam Duration: 2:30 Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1 – Conceptualize the nature and scope of Industrial Psychology.
CO2 – Elucidate and describe the attributes and challenges involved in Performance Appraisal and Work Motivation.
CO3 – Demonstrate and interpret the determinants of Leadership and Communication in Work setup.
CO4 – Enumerate the nature and sources of stress; further comprehend the intervention strategies to cope with Stress.

Course Content

Content	Hours
UNIT – 1 Industrial / Organizational Psychology	
a) Nature and Meaning, Goals, Role of a psychologist in Industries and Organization. b) Challenges at workplace: Stress, Burnout, Absenteeism, Work environment,Alcoholism, Substance abuse, Conflicts.	**11 Hrs**
UNIT – 2 Performance Appraisal & Motivation	
a) Definitions and Need for Performance Appraisal. Methods: Objective Performance Appraisal - Output measures, Computerized performance monitoring, Job related personal data, Essay methods, Critical incident method and Checklist method. b) Judgmental Performance Appraisal - Merit rating techniques, Behaviour Anchored Rating Scale and Behaviour Observation Scale. c) Management by objectives (MBO) and 360* Feedback. d) Meaning of work motivation. Types-Financial and Non-Financial motives.	**11 Hrs**
UNIT – 3 Leadership & Communication	

a) Definition and Nature of leadership. Traits and skills of effective leader. Styles of Leadership - Authoritarian, Democratic, Transactional and Transformational leaders. b) Communication: Meaning and Importance, Verbal and Non verbal communication, Strategies of effective communication.	**10 Hrs**
UNIT – 4 **Stress & Stress Management at Workplace**	
a) Definition of Stress, Nature & Causes of Stress b) Techniques to Manage Stress: Physical Activity, Sport and Exercise, Yoga, Meditation, Relaxation Techuniques, Wellness Programme.	**10 Hrs**

References:

1. Girishbala Mohanty (2001) - Industrial Psychology and Organizational Behavior, Kalyani Publishers, Ludhiana.

2. John W. Newstrom (2007) - Organizational Behaviour- Human Behaviour at work- 12th Edi. Tata McGraw-Hill Publishing Co. Ltd. ND

3. Schultz D.P & Schultz E.S. (2006) - Psychology and Work Today. An Introducation to Industrial and Organizational Psychology. 8th Edi. Pearson Education, Inc and Dorling Kinderssley Publishing Inc.

Online/e-Resources-Recommended for Reading

https://www.apa.org › topics › workplace Psychology in the workplace

https://www.staffordglobal.org › articles-and-blogs › ps Applying Psychology in the Workplace or Organisation

https://www.staffordglobal.org › articles-and-blogs › ps... Applying Psychology in the Workplace or Organisation

Course Articulation Matrix - 22OEPSY401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	2	1	-	1	1	-	1	1	3	-	1
CO 2	3	3	1	-	1	1	1	1	1	3	-	1
CO 3	3	3	1	-	1	1	1	1	1	3	-	1
CO 4	3	2	1	-	1	1	1	1	1	3	-	1
Weighted Average	**3**	**2.5**	**1**	**0**	**1**	**1**	**0.7**	**1**	**1**	**3**	**0**	**1**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and SemesterEnd Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks forthe final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance, the marks are 25 (10 + 15) and 25. Evaluated for a total of 50 Marks.

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

- The teachers concerned shall conduct test/seminar/case study/Assignment etc., the students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining

acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE (Controller of Examination) at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

PRACTICAL COMPONENT

Scheme of Valuation for III & IV Sem: Practical Experimentation

C1 and C2 (Practical) are internal tests to be conducted during 8th and 16th weeks of the semester respectively. C3 (Practical Examination) is conducted during the end of the semester for the duration of 3 hours. The students are assessed and evaluated by the External and Internal Examiners - on various skills associated with Psychology Practical – Administration, Procedure, Instructions, Analysis and Interpretation of results of the Subjects performance in the Experiment conducted. The Practical Component is valuated for 50 Marks (during each of the Semesters respectively).

The C1(Test) and C2 (Assignment – Case Study) components are - IA assessment. During the C1 and C2 elements the student is evaluated for 20 marks (collectively) as per the following scheme:

a.) C1 – Test on Experiments - 10 marks (On first Half of the Practical Portions)

b.) C2 – Test on Experiments / Assignment/Case Study/Statistics - 15 marks (On the second Half of Practical Syllabus + Record)

Though the C1 and C2 components are evaluated for 20 marks each for the ease of calculation, however the total marks scored by the student are then normalized to 10 under each component, (C1 and C2 Collectively – 20 + 5 Marks for Practical Record).

Record - 5 Marks; the Practical record has to be evaluated on 5 marks (IA) and then certified by the Head of the Department.

- The student is evaluated for 25 marks during C3 Examination as per the following scheme:

Heading	Marks
Experiment	5
Conduction	5
Group Discussion	5
Viva Voce	5
Statistics	5
TOTAL	**25**

General Pattern on Psychology PRACTICAL Question Paper (NEP-2020)

Term End Examination for Discipline Specific Paper

Scheme of Valuation for III & IV Sem: Practical Experimentation

Total marks = 50		
Internal assessment =25		
Content	Marks	
Test C1	10	
C2 Test/Assignment (Case Study/Reports/Seminar Presentations; Statistics etc) + Practical Record	10 05	Total 15
Total IA	**25**	
Practical examination =25		
Content	Marks	
Writing Plan and procedure (any one)	05	
Conduction / administration (any one)	05	
Discussion of results (any one)	05	
Statistics	05	
Viva voce	05	
Total Practical Examination	**25**	

Practical Exam Duration & Ordinance

- **The Exam duration for I.A Practicals (Test C1 component) is for 1 Hr and C3 the main Practical Examination is for 3 Hrs.**
- **The student is expected to reach the Examination venue 30 minutes before the schedule.**
- **If the student is delayed beyond 30 min of the given schedule of Practical Examination; then he/she is not entitled or allowed to write the Practical examination for that Semester and will be considered as absent.**

*** **Practical Record** - 5 Marks; Record submission is compulsory prior to the scheduled Examination date failing which the student is considered as not eligible to take up the Practical Examination. The student has to compulsorily submit the written Practical Record during C3 - Final Practical Examination. While, the student is considered as eligible for the C3 component of Psychology Practical Examination, only if the Practical record has been submitted by the student to be evaluated on 5 marks (IA) and then certified by the Head of the Department. In case of an incomplete record the Department has every authority to either consider or penalize the student by deducting the marks for their negligence and lack of involvement.

DSC - Question Paper Pattern (Theory – III & IV Sem)

PSYCHOLOGY B.A PROGRAMME

B.A PSYCHOLOGY - DSC (For III & IV Semesters)

Time: 2:30 Hours **Max. Marks: 60**

Part-A

I. Answer any five of the following questions. **5x2=10**

1.)…….

2.)…….

3.)…….

4.)…….

5.)…….

6.)…….

7.)…….

Part-B

II. Answer any Four of the following questions. **4x5=20**

8.)……..

9.)……..

10.)……

11.)…….

12.)……

13.)……

14.)……

Part-C

III. Answer any Four of the following questions. **3x10=30**

15.)……

16.)……

17.)……

18.)……

19.)……

20.)……

O.E Psychology - Question Paper Pattern (Theory III & IV Sem)

PSYCHOLOGY B.A PROGRAMME

B.A PSYCHOLOGY – O.E (For III & IV Semesters)

Time: 2:30 Hours **Max. Marks: 60**

Part-A

I. Answer any five of the following questions. **5x2=10**

1.)…….

2.)…….

3.)…….

4.)…….

5.)…….

6.)…….

7.)…….

Part-B

II. Answer any Four of the following questions. 4x5=20

8.)……..

9.)……..

10.)……

11.)…….

12.)……

13.)……

14.)……

Part-C

III. Answer any Four of the following questions. 3x10=30

15.)……

16.)……

17.)……

18.)……

19.)……

20.)……

Approved by the Board of Studies in Psychology (2022-2023) and forwarded to the Academic Council and the Governing Council for further reference and consent.

M. Sujata 12/9/2022

(Asst. Prof. Sujata. M.)

Chairperson
BOS/BOE in Psychology
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

(Dr. Mridula Singh)

Vice Chancellor Nominee, University of Mysore.

Dept. of Psychology
Maharani's College
University of Mysore
Mysuru-570 005

(Dr. Lancy D'Souza)

Dr. Lancy D'Souza, PhD.
Head
Department of Psychology
Maharaja's College
University of Mysore
Mysuru-570 005

(Dr. Archana Bhatt K)

Archana Bhat K

Department of Psychology

(Dr.Rekha)

(Siyana Salim)

(ABSENT)

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

Affiliated to University of Mysore

Re-accredited by NAAC with 'A' Grade, College with Potential for Excellence

DEPARTMENT OF PSYCHOLOGY

(Psychology to Enrich Behaviour)

BOARD OF STUDIES

2021-2022

✓

(Composition of the BOS Members for the Academic Session 2021-2022)

III - Board of Studies Meeting

B.A – Psychology

Program Code – V Sem UPSY - 2115	Program Code – VI Sem UPSY - 2116

Syllabus of V and VI Semesters

Choice Based Credit System

Date: 22/07/2021

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

Affiliated to University of Mysore

Department of Psychology

Motto: Enriching scientific thought & Promoting Pro-Social Behavior.

Vision: Thriving towards a scientifically driven environment for the development of Psychological literacy.

Mission: Enabling the 'Learner' to develop the Research attitude and explore new dimensions in Behavioral Sciences.

****

B.A PSYCHOLOGY – Under Graduate Programme

Choice Based Credit System (2021-2022)

Course Objectives

- **Promote higher learning and research orientation among students, through effective establishment of interface between the field of Psychology and its empirical nature.**

- **Kindling 'Self – Enhancing' skills among students through broader insight into the subject matter of Psychology.**
- **Motivate students to realize the significant role of Psychology in facilitating Mental Health services in current scenario.**
- **Develop a sense of 'Professional Integrity' and preparedness for future in the Learner.**
- **Create awareness towards the scope and wide range of career avenues/opportunities available in the realm of psychology.**

Learning Outcomes

- **Learner is embedded with theoretical and empirical knowledge of the field of Psychology through advanced learning technology.**
- **Research oriented learning equips the 'Pursuer' with innovative skills.**
- **Introspective approach through – Educational tours, Internship Programmes, Minor Projects etc; gears-up the Learner to explore the dynamics of Applied Psychology.**
- **Inspires Students to foresee various promising Career prospects in the field of Mental Health Sciences.**
- **Overall academic nurturing endows the 'Learner' with professional preparedness and eagerness to pursue a 'Career' in Psychology.**

Board of Studies Composition: 2021-2022

Advisory Board

Sl. No.	Category	Name	Designation	Address for Communication	E-mail and Mobile No.
1.	HoD	Smt. Sujata. M	Asst. Professor	Dept. of Psychology SBRR Mahajana First Grade College, Mysore	Sujatam.fgc@mahajana.edu.in
2.	Two Experts from Outside the parent University	1.) Dr Tony Sam George	Associate Professor, HoD & Dean, Humanities and Social Sciences	Dept. of Psychology Christ University Bangalore Phone: +919845079289	tony.sam.george@christuniversity.in

		2.) Dr Aneesh Kumar P	Asst. Professor	Dept. of Psychology Christ University, Bangalore	aneeshksree@gmail.com
3.	Nominee by the Vice Chancellor	Dr. Sampath Kumar	Associate Professor & HoD/Chairperson	Dept. of Studies in Psychology Manasagangotri, University of Mysore, Mysore	askmys@rediffmail.com
4.	One Person from Industry Corporate Sector / Allied area	Dr.Vekateshan	Associate Professor & HoD,	Dept. of Clinical Psychology All India Institute of Speech & Hearing Mysore	psyconindia@gmail.com
5.	Co-opted – Subject Expert from outside the college	Dr. Lancy D'Souza	Associate Professor & HoD,	Dept. of Psychology, Maharaja's College Mysore	lancyd@gmail.com
6.	Alumnus	Vaishnavi Patil	Research Scholar	Dept. Cognitive Neurosciences NIMHANS Bangalore	vasuki249@gmail.com

Board of Studies

Approved by the University of Mysore, Governing Council & Academic Council for the Academic Session: 2021-2022

Sl. No.	Name and address	Designation	Signature
1.)	Asst. Prof. Sujata. M HoD, Dept. of Psychology SBRR Mahajana First Grade College, Mysore Ph: 9886191174 Sujatam.fgc@mahajana.edu.in	Chairman	

2.)	**Dr. Sampath Kumar** **Associate Professor & HoD/Chairperson** **Dept. of Studies in Psychology** **Manasagangotri, University of Mysore, Mysore** **9480443269** **askmys@rediffmail.com**	**Member**	
3.)	**Dr Tony Sam George** **Associate Professor, HoD & Dean, Humanities and Social Sciences** **Dept. of Psychology** **Christ University Bangalore** **Ph: 9845079289** **tony.sam.george@christuniversity.in**	**Member**	
4.)	**Dr Aneesh Kumar P** **Asst. Professor** **Dept. of Psychology** **Christ University, Bangalore** **Ph: 08050795349** aneeshksree@gmail.com	**Member**	
6.)	**Dr. Lancy D'Souza** **Associate Professor & HoD,** **Dept. of Psychology, Maharaja's College, Mysore** **Ph: 6363858714** **lancyd@gmail.com**	**Member**	
7.)	**Vaishnavi Patil** **Research Scholar** **Dept. Cognitive Neurosciences** **NIMHANS Bangalore** **Ph: 8762529909** vasuki249@gmail.com	**Member**	

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA

Affiliated to University of Mysore

Re-accredited by NAAC with 'A' Grade, College with Potential for Excellence

PSYCHOLOGY (CBCS Syllabus – Revised)

V & VI Semesters

Program Code – V Sem UPSY - 2115	Program Code – VI Sem UPSY - 2116

Subject : Psychology **Subject code V Sem: 211519/29/39**

Semesters: V & VI **Subject Code VI Sem: 2116/ 49/59**

Model/Units	**Total – Units 4**		
Hours	**Theory**	**Practical - I Experimentation**	**Practical -II Internship/Project**
Hours per Week	**3 Hours**	**3 Hours**	**3 Hours**
Total Hours for 16 Weeks	**48 Hours**	**48 Hours**	**48 Hours**
IA Marks	**IA – Theory C1 (Th) & C2 (As)**	**IA-Practical C1(Th) & C2 (As)**	**IA - Internship / Project C1 (Th) & C2 (As)**

	10 + 10=20 Marks	**5 + 5 = 10 Marks**		**5 + 5 = 10 Marks**	
Exam Marks	**C3 Examination**	**C3 Examination**		**C3 Examination**	
	80 Marks	**Record**	**Experimentation**	**Report**	**Presentation**
		10 Marks	**30 Marks**	**10 Marks**	**30 Marks**
	100 Marks	**50 Marks**		**50 Marks**	
	TOTAL Marks (Theory + Practical I & II = 200 Marks) Each Semester				
Duration of the Examination	**Theory C3 Examination**	**Practical - I & II C3 Examination**		**I. A Theory & Practical (C1)**	
	3 Hours	**2 Hours (Each)**		**1 Hour**	

B.A Programme in Physics
Semester with Choice Based Credit System (CBCS)

L: Lecture T: Tutorial P: Practical

Sem	Type	Subject code	Course Theory - Choose Anyone Practical I & II - Compulsory	L + T + P = Tot.
V	DSE 1		Counselling (Theory)	3 + 0 + 0 = 3
V	DSE 2		Social Psychology (Theory)	3 + 0 + 0 = 3
V	DSE 3		Organizational Behaviour (Theory)	3 + 0 + 0 = 3
V	DSE - Pr I		Practical 5 - Experiments (Any Five)	0 + 0 + 3 = 3
V	DSE - Pr II		Practical 6 - Internship Programme	0 + 0 + 3 = 3

Sem	Type	Subject code	Course Theory - Choose Anyone Practical I & II - Compulsory	L + T + P = Tot.
VI	DSE 1		Abnormal Psychology (Theory)	3 + 0 + 0 = 3
VI	DSE 2		Health Psychology (Theory)	3 + 0 + 0 = 3
VI	DSE - Pr I		Practical 7 - Experiments (Any Five)	0 + 0 + 3 = 3
VI	DSE - Pr II		Practical 8 – Project Report	0 + 0 + 3 = 3

Sem	Type	Subject code	Course Generic Elective	L + T + P = Tot.
V	GE		Life Skills Psychology	2 + 0 + 0 = 2
VI	GE		Positive Psychology	2 + 0 + 0 = 2

DSE – Theory & Practical: Credit means the unit by which the course work is measured. One hour session of Lecture or Tutorial, per week 3 hrs for 16 weeks amounting to 3 credit per semester. While the Practical Component I & II for 3 hrs session each of the practical per week; for 16 week's amounting to total 3 credits (1.5 Credits for each of the Papers) per semester.

GE – Only Theory: One hour session of Lecture or Tutorial, per week 2 hrs for 16 weeks amounting to 2 credits in each Semester.

SEMESTER V

CHOICE BASED CREDIT SYSTEM SYLLABUS

B. A PSYCHOLOGY (LTP- 3:0:3)

Program Code – V Sem UPSY – 2115 **Subject code V Sem - 211519**

DISCIPLINE SPECIFIC ELECTIVE PAPER Total Hours: 48 Hrs

DSE 1 - COUNSELLING

Objective : This course familiarizes the students with the nature and process of Counselling, highlights major approaches to Counselling and provides an overview of Psychotherapeutic techniques associated with Counselling. Further the course also acquaints students towards the application of Counselling in various realms of life .

UNIT I INTRODUCTION 12 Hrs.

a) Counselling – Definition, Purpose and Goals of Counseling.
b) Qualities of a good Counselor,
c) Professional - Ethics & Issues.
d) Couselling Process - Stages of counseling, Counseling relationship, Counseling interview.

UNIT II THEORIES AND TECHNIQUES OF COUNSELLING 12 Hrs.

a) Psychodynamic approach- Freudian and Adlerian.
b) Behavioristic approach- Operant Conditioning, Behavior modification.
c) Humanistic- Client Centered.
d) Cognitive approach – Beck and Ellie's.

UNIT III GROUP COUNSELLING 12 Hrs.

a) Group counselling: Objectives of Group Counselling, Types of Group,
b) The process of Group Counselling & values of group counselling.

UNIT IV COUNSELLING APPLICATION 12 Hrs.

a) Counselling Applications: Crisis Intervention Counsellng, Career Counselling, Family Counselling, Counselling in School,
b) Counselling in De-Addiction Centers - Alcohol and Drug abuse.

Reference Books:

1) Theory and Practice of Counseling and Psychotherapy *Gerald Corey*; (2017) Edition 10th ; Publisher - Brooks Cole.

2) Counselling Skills: A practical guide for counsellors and helping professionals *John McLeod, Julia McLeod* (201); Second Edition, Publisher – Open University Press.

3) Introduction to Counselling and Psychotherapy: The Essential Guide, *Professor Stephen Palmer* (2000); 1st Edition, Publisher - Sage Publications Ltd

4) An Introduction to Counselling, *John Mcleod* (2013) 5th Edition, Publisher - Open University Press.

5) Counseling and Psychotherapy with Children and Adolescents: Theory and Practice for School and Clinical Settings, *H. Thompson Prout, Alicia L. Fedewa* (2015), 5th Edition, Publisher –Wiley.

Online sources for Reference:

1.) **A Comprehensive Guide To The Wonderful World of Psychology**

www.all-about-psychology.com/counseling-psychology.html

2) **Counselling Psychology in India: At the Confluence of Two Traditions**

www.researchgate.net/publication/229878386_Counselling_Psychology_in_India

3.) **Counselling Psychology**

www.apa.org/ed/graduate/specialize/counseling

4.) **Introduction to Counselling**

www.researchgate.net/publication/325844365_INTRODUCTION_TO_COUNSELING

5) **Counselling - Introduction**

www.ibdrelief.com/mind/support-and-help/counselling-introduction

SEMESTER V

CHOICE BASED CREDIT SYSTEM SYLLABUS

B.A PSYCHOLOGY (LTP- 3:0:3)

Program Code – V Sem UPSY- 2115 **Subject code V Sem: 211529**

Total Hours: 48 Hrs

DISCIPLINE SPECIFIC ELECTIVE PAPER

DSE 2 - SOCIAL PSYCHOLOGY

Objectives: To enable students to understand how human behavior is influenced by socio-cultural context. It focuses on how individual perceives one self and others in the social context and also on how social problems can be analyzed in terms of various social Psychological theories.

UNIT I INTRODUCTION 12 Hrs.

a) Definition and Scope of Social Psychology.

b) Social perception and Cognition (Attribution theory: Jones, Davis & Kelley's).

c) Perceiving Ourselves: Self-concept, Self-Esteem, Self-Presentation and Self-Expression.

d) Perceiving Others: Role of Nonverbal cues, Attribution of causality - Biases and Errors, Impression formation.

UNIT II SOCIAL INTERACTION & INTERPERSONAL ATTRACTION 12 Hrs.

a) Social interaction - meaning and Modes: Co-operation, Competition, Accommodation, Assimilation.

b) Interpersonal attraction – Meaning, Theories (Balance and Reward theories).

c) Sociometry.

UNIT III ATTITUDES, PRO-SOCIAL BEHAVIOR AND AGGRESSION 12 Hrs.

a) Definition, Nature and Function of Attitude, Attitude - Formation and Change.

b) Prejudice – Nature, Acquisition and Reduction of Prejudice.

c) Pro-social Behavior – Definition, Theoretical explanations of Pro-social behavior.

d) Aggression – Definition, Determinants of Aggression; Prevention and Control of Aggression.

UNIT IV GROUPS AND LEADERSHIP 12 Hrs.

a) Group – Definitions, Structure and Functions.

b) Group Process - Social facilitation, Social Loafing; De-individuation; Conformity; Group Think; Group Polarization.

c) Leadership: Definition, Types, Contingency approaches to Leadership and Characteristics of Effective Leadership.

Books for Reference:

1. Robert A.Baron, Donn Byrne & Nyla R. Branscombe. ***Social Psychology, 11th Ed*** (2007), Pearson Education, New Delhi.
2. Miles Hewstone & Wolfgang Stroebe, ***Introduction to Social Psychology, 3rd Ed,*** (2001), Blackwell Publication.
3. Rajendra Kumar Sharma & Rachana Sharma, ***Social Psychology*** (2013), Atlantic Publisher.
4. Myers David G. ***Exploring Social Psychology,*** (1994), New York, Mc Graw Hill.
5. David G. Myers, Jean M. Twenge. ***Exploring Social Psychology, 8th Edition*** (2017), McGraw-Hill
6. Douglas T. Kenrick, Steven L. Neuberg, Robert B. Cialdini. ***Social Psychology: Goals in Interaction, 4th Edition*** (2006), Allyn & Bacon.

Online sources for Reference:

1) **Social Psychology Studies Human Interactions**

www.apa.org/education-career/guide/subfields/social

2.) **A great resource for all things social psychology, all in one place - Social Psychology Network**
www.socialpsychology.org/social.htm

3.) **A list of profiles of major historical figures in social psychology**
www.socialpsychology.org/social-figures.htm

4.) **History and principles of social psychology**
opentextbc.ca/socialpsychology/chapter/defining-social-psychology-history-and-principles/

5.) **A succinct review of major historical figures in social psychology**
www.simplypsychology.org/social-psychology.html

SEMESTER V

CHOICE BASED CREDIT SYSTEM SYLLABUS

B.A PSYCHOLOGY (LTP- 3:0:3)

Program Code – V Sem UPSY - 2115 **Subject code V Sem: 211539**

DISCIPLINE SPECIFIC ELECTIVE PAPER **Total Hours: 48 Hrs**

DSE 3 - ORGANIZATIONAL BEHAVIOR

UNIT I INTRODUCTION 12 Hrs

a. Organizational Behavior - Definition , Nature, Origin
b. Importance of Organizational Behavior, Corporate social responsibility;
c. Organizational Behavior in the Indian context.

UNIT II WORK ATTITUDES 12 Hrs

a) Work related Attitudes – Definition & Types.
b) Job Satisfaction - Meaning & Theories and Measures of job satisfaction.
c) Organizational Commitment – Types & Enhancing Organizational Commitment.
d) Workplace prejudice – Nature & Strategies to overcome Workplace Prejudice

UNIT III MOTIVATION IN ORGANIZATION 12 Hrs

a) Motivation in Organization: Concept, Nature & Importance, Influencing factors.
b) Theories of Motivation – Need Hierarchy theory; Two –factor theory; Goal-setting Theory; Equity Theory; Expectancy theory.

UNIT IV GROUP DYNAMICS AND LEADERSHIP 12 Hrs

a. Group dynamics – Team and Team building, Characteristics of effective teams self managing teams and virtual teams
b. Potential team problems & characteristics of mature teams
c. Leadership – Nature and types, characteristics of successful leaders.
d. Corporate Leadership – Nature & examples.

Books for reference:

1.) **Duane P Schultz ,Sydney Ellen Schultz Psychology And Industry Today**

2.) **Organizational Behaviour, Human Behavior At Work 12th Edition- NEWSTROM**

3.) **Introduction to Industrial/Organizational Psychology, *Ronald E. Riggio (2018)* Publisher: Routledge**

4) Industrial/Organizational Psychology: An Applied Approach, *Michael G. Aamodt (2015), 8th Edition*, Publisher: Cengage Learning

5) The SAGE Handbook of Industrial, Work & Organizational Psychology, Volume 1: Personnel Psychology and Employee Performance, *Deniz S. Ones (Editor)*, *Neil Anderson (Editor*, *Chockalingam Viswesvaran (Editor)*, *Handan Kepir Sinangil (Editor)* (2018), 2nd Edition, Publisher: SAGE Publications

Online sources for Reference:

1. **Industrial and Organizational Psychology** www.apa.org/ed/graduate/specialize/industrial
2. **Article on Organizational Pyschology.** www.sciencedirect.com/topics/economics-econometrics-and-finance/organizational-psychology
3. Industrial and Organizational Psychology *Commons*™ network.bepress.com/social-and-behavioral-sciences/psychology/industrial-and-organizational-psychology/
4. **Industrial/Organizational Psychology and Management** www.apa.org/pubs/highlights/spotlight/topic-industrial
5. **Organizational Psychology Job Description: What You'll Do** www.allpsychologyschools.com/organizational-psychology/job-description/

SEMESTER V

(DSE) Practical – 5

Practical Code for DSE -1/2/3: 211519/ 211529/ 211539

Course duration: 16 weeks with 3 hours of lab work per week amounting to 1.5 credits.

Any 5 of the following experiments:

PRACTICALS DSE - 1/2/3

1. MRMT – Minesota Rate of Manipulation Test
2. Davis' Battery (DBDA) – Any two Sub-tests
3. Tweezer Dexterity Test
4. Mechanical Reasoning.
5. Size Weight Illusion.
6. Leadership scale.

7. Interpersonal Relationship Scales
8. Adolescent Problem Checklist
9. Instagram Addiction Test

Statistics: Critical ratio, 't'test

SEMESTER V

(DSE) Practical – 6

Practical Code for DSE -1/2/3: 211519, 211529, 211539

Internship Programm

Course duration: 16 weeks with 3 hours of lab work per week amounting to 1.5 credits.

This segment of the Practical component of V Sem syllabus is concerned with enabling the student experience application of Psychology in real life setups. The student is expected to pursue internship of 30 Hrs in a Hospital / NGO / Special Education Centers . During this period the student is expected to get acquainted with the practical implications of Psychology in various realms such as Clinical Setups / Special Schools / NGO's; to explore the scope of Psychology in Mental Health Services, understand how it caters to the Children with Special needs or realize the significance of Psychology facilitating the lifestyle changes or the Social Welfare causes endorsed by NGO's and help people in coping with challenges of life / crisis enhancing the true potential in people. The student has to conduct Case studies in anyone of the prescribed Professional setups. And, after the completion of Internship programme the student has to submit a documented report of his/her experiences including the case studies under the supervision of the Subject teacher. Further, the report will be evaluated and approved by the Head of the Department of Psychology provided it meets the expected standards of scientific work.

SEMESTER VI

CHOICE BASED CREDIT SYSTEM SYLLABUS

B.A PSYCHOLOGY (LTP- 3:0:3)

Program Code – V Sem UPSY - 2116 **Subject code V Sem: 211649**

Total Hours: 48 Hrs

DISCIPLINE SPECIFIC ELECTIVE PAPER

(Choose any one)

DSE 1 ABNORMAL PSYCHOLOGY

Objectives: Introduces students to study of human behavioral disorders. Examines the nature, clinical picture and etiology of psychopathology. Students are also introduced to various psychosocial therapeutic techniques.

UNIT I INTRODUCTION 12 Hrs.

a) Definition Abnormality, Historical background

b. Criteria of abnormality-Statistical, Social, Personal discomfort, maladaptive behavior, deviation from an ideal.

C. assification of Abnormal Behavior- DSM and ICD(Revised one).

c. Perspectives – Psychoanalytic, Behaviorstic, Cognitive, Humanistic.

d. Causes -Necessary, sufficient and contributory causes

UNIT II ANXIETY BASED DISORDERS & MOOD DISORDERS 12 Hr

a. Anxiety based disorders: Panic Disorder, Phobia, Generalized Anxiety disorder, Obsessive-Compulsive disorder, Post Traumatic Stress Disorder.

a. Unipolar mood disorders-normal depression, dysthymia, major depression - Causes

b. Bipolar disorders-cyclothymia, bipolar disorders (I&II); Causes; Treatment.

UNIT III SOMATOFORM AND DISSOCIATIVE DISORDERS 12 Hrs.

a. Somatoform Disorders: Somatization, Hypochondriasis, Somatoform Pain disorder, Conversion Disorder;

b. Dissociative Disorders : Dissociative Amnesia, Dissociative Fugue, Dissociative Identity Disorder and Depersonalization Disorder.

UNIT IV SCHIZOPHRENIA 12 Hrs.

a. Schizophrenia-General symptoms, Subtypes- Paranoid, Disorganized and Catatonic,

b. Causes - Biological, Psychosocial and cultural aspects & Treatment.

Books for Reference:

1. Carson Butcher Mineka, ***Abnormal Psychology & Modern Life,13th Ed***, 2008, Pearson Education, New Delhi.
2. Irwin G. Sarason & Barbara R. Sarason, ***Abnormal Psychology, 8th Ed*** (1998), Prentice-Hall, New Delhi.
3. Gerald C.Davison & John M.Neale, ***Abnormal Psychology,*** 2000, John Wiley & Sons, New York.S
4. Alloy,Riskind,Manos, ***Abnormal psychology-current perspectives-ninth edition***-.
5. Neale, Davidson,Hagga, ***Exploring Abnormal psychology-sixth edition***- -Wiley and sons.
6. David Sue, Sue and Sue.-third edition ***Understanding abnormal behaviour***- Hougthon Miff

Online sources for Reference:

1.) **Abnormal Psychology**

courses.lumenlearning.com/abnormalpsychology/

2.) **Understanding Abnormal Psychology**

www.verywellmind.com/what-is-abnormal-psychology-2794775

3.) **Abnormal Psychology – Discovering Psychology Series**

www.opentext.wsu.edu/abnormal-psych/wp-content/uploads/sites/41/2018/05/Abnormal-Psychology-2nd-Edition.pdf

4.) **Psychological Disorders**

www.spsrohini.com/sites/default/files/12 - Psychology - Psychological Disorders-Notes and Video link.pdf

5.) **Articles on Abnormal Psychology**

www.researchgate.net/publication/340536864_Abnormal_Psychology

SEMESTER VI

CHOICE BASED CREDIT SYSTEM SYLLABUS

B.A PSYCHOLOGY (LTP- 3:0:3)

Program Code – V Sem UPSY -2116 **Subject code V Sem: 211659**

Total Hours: 48 Hrs

DISCIPLINE SPECIFIC ELECTIVE PAPER

DSE 2 - HEALTH PSYCHOLOGY

Objectives: The course content attempts to equip the student with the basic interaction of biological, psychological and social factors related to health and illness. Here, the definition and methods of health psychology as well as the functioning and the disorders of the immune system are considered.

UNIT I INTRODUCTION 12 Hrs

a. Definition and Scope, Mind and Body relationship.
b. Bio-psycho-social model of Health – Advantages and Clinical implications; Reasoned Action models; Planned Behavior model; Health belief model.
c. Role of Health Psychologist.

UNIT II STRESS AND PSYCHOPHYSIOLOGICAL DISORDERS 12 Hrs

a. Nature, Types, Sources and Consequences;
b. Theoretical contributions to the study of stress: Fight or flight, Selye's General Adaptation Syndrome,
c. Psycho-physiological Disorders- types, symptoms and causes (in brief).
d. Stress Management Strategies.

UNIT III DISORDERS OF THE IMMUNE SYSTEM 12 Hrs

a. Immune system, Psycho-neuro-immunology, Pandemic – Novel Corona 19 and its impact.
b. AIDS: Causes and Consequences; Interventions to reduce risk behaviors; Coping with AIDS.
c. CANCER: Biomedical and Psychosocial factors, Managing the Cancer Crisis.

UNIT IV LIFESTYLE DISORDERS 12 Hrs

a) Life-Style Disorders: Definition and Nature

d) Hypertension: Physiological factors, psychological factors (Stress and Personality factors), management

e) Diabetes: Types, Implications, management.

f) Attitude change: Educational appeals & Fear appeals.

g) Health Enhancing Behaviors: Exercise, Diet and Weight control, Healthy Sleep, Relaxation and Mindfulness.

Books of References:

1. M. Robin Dimatteo., & Leslie R. Martin, (2007). ***Health Psychology.*** New Delhi., Pearson Publication.
2. Shelley E. Taylor, (2007).***Health Psychology (6th Ed.).*** Tata McGraw-Hill. Delhi.
3. Naima Khatoon, ***Health Psychology,*** Pearson Publication
4. Sarafino, E.P., ***Health Psychology: Biopsychosocial Interactions, IV edition,*** Wiley and sons.
5. Kaplan, R.M., Sallies, J.F. and Patterson,T.L., ***Health and Human Behavior, IV edition***, Mc Graw Hill International
6. Rice,P.L., ***Health Psychology***: Brooks Cole Publications

Online sources for Reference:

1.) Study of Health Psychology and Illness

www.verywellmind.com/what-is-health-psychology-2794907

2.) Health Psychology Promotes Wellness

www.apa.org/education-career/guide/subfields/health

3.) Introduction to Health Psychology

www.courses.lumenlearning.com/boundless-psychology/chapter/introduction-to-health-psychology/

4.) Article on Health Psychology

www.goodtherapy.org/learn-about-therapy/types/health-psychology

5.) Health Psychology Resources

http://web2.uwindsor.ca/courses/psychology/fsirois/HP_articles.html

SEMESTER VI

(DSE) Practical – 7

PRACTICALS DSE - 1/2: 211649 / 211659

Course duration: 16 weeks with 3 hours of lab work per week amounting to 2 credits.

Any 5 of the following experiments:

PRACTICALS DSE - 1/2/3

1. Multi-dimensional Assessment of Personality
2. Type A – Type B Personality
3. Locus of Control scale
5. Anxiety scale
6. Emotional Maturity
7. GHQ – General Health Questionnaire
8. Comprehensive Interest Inventory.
9. PSQI – Pittsburg Sleep Quality Index Scale
10. Global Adjustment Scale

Statistics: Chi Square.

SEMESTER VI

(DSE) Practical - 8

Project Work

Course duration: 16 weeks with 3 hours of lab work per week amounting to 2 credits.

This segment of the of VI Sem syllabus nurtures Research inclination in students. The Student is expected to choose a specific topic from the approved given list of various topics within the realm of Psychology. The student is expected to conduct an empirical research involving Research Objectives & Questions; Formulation of Hypothesis, Review of literature; developing a Research Design; Selection of Tools; Data Collection, Statistical Analysis of data and Drawing conclusions. Towards the completion of research the student has to compile the Research Document and submit 2 copies of the same along with a CD uploaded with files of work done and the pile of datasheets collected from sample; documented report, under the supervision of the Subject teacher. Further, the report will be evaluated and approved by the Head of the Department of Psychology provided it meets the expected standards of scientific work.

SEMESTER V
GENERIC ELECTIVE

LIFE SKILLS PSYCHOLOGY

B.A PSYCHOLOGY (LTP- 2:0:0)

Subject Code: 211589

Objectives: The paper aims at enhancing "Life Skills" through enriched theoretical and activity based experience among the seekers. Providing the learner an opportunity to realize the significance of "Life Skills" in their everyday life and nurture different ways for its application.

UNIT I INTRODUCTION 8 Hrs

a) Definition and Importance of Life Skills

b) Types of life skills - Thinking skills and Social skills.

c) Life Skills Training - Models.

UNIT II SKILLS FOR PERSONAL DEVELOPMENT 8 Hrs

a) Self-Awareness - Definition, Types of Self - Self Concept, Body Image, Self Esteem

b) Techniques used for Self Awareness: Johari Window, SWOT Analysis.

UNIT III SOCIAL SKILLS 8 Hrs

a) Communication Skills - Listening Skills, Technical Writing Skills - Job Application.

b) Non-verbal Communication - Body Language

c) Interpersonal Skills - Meaning of Interpersonal skills, Components of Interpersonal skills, Techniques of improving Interpersonal skills.

UNIT IV COPING SKILLS 8 Hrs

a) Coping with Emotions - Definition, Characteristics, Types: Wheel Model of coping,

Two-Dimensional Approach

b) Coping with Stress - Definition, Stressors - Sources of Stress - The General Adaptive Syndrome Model.

Reference Books:

1) The Life Coaching Handbook, *Curly Martin* **(** 2001); Publisher: Crown House Publishing.

2) The Power of Self-Coaching: The Five Essential Steps to Creating the Life You Want *Joseph J. Luciani* (2004); Publisher: Wiley.

3) Life Planning Workbook: The Ultimate Daily Planner with Self-Help Activities and Daily Goals. Create Your Ideal Life Plan And Design The Life Of Your Dreams, *Alexander, Victoria* (2015) EPUB, 205 KB.

Online Resources for Reference:

1) Understanding Life Skills
https://www.cbse.gov.in

2.) Life skill education for creative and productive citizens

http://www.jcreview.com/fulltext/197-1591168468.pdf

3.) Article on Significance of Life Skills Education

https://files.eric.ed.gov/fulltext/EJ1126842.pdf

4.) Meaning of Life Skills Education

https://www.getmyuni.com/articles/life-skills-education

5.) Life skills education school handbook - WHO | World Health ...
https://apps.who.int

SEMESTER VI

GENERIC ELECTIVE

POSITIVE PSYCHOLOGY

B.A PSYCHOLOGY (LTP- 2:0:0)

Subject Code: 211699

Objectives: Enabling students to appreciate and understand the meaning and conceptual approaches to positive psychology. Being able to understand the how positive emotional states contribute to resilience, happiness, and wellbeing. Learning the various pathways through which cognitive states and processes influence self-efficacy, optimism and wellbeing. And, enhance the student's ability to identify the applications of positive psychology.

UNIT I INTRODUCTION 8 Hrs

a) Introduction: Origin & Nature of Positive Psychology.

b) Perspectives on Positive Psychology: Western and Eastern.

UNIT II EMOTIONAL STATES 8 Hrs

a) Positive Emotional States and Processes: Happiness and Wellbeing (Psychological and Emotional),

b) Positive Emotions & Emotional Integrity.

c) Resilience.

d) Altruism.

UNIT III COGNITIVE STATES 8 Hrs

a) Cognitive States and Processes: (i) Self-efficacy, (ii) Optimism, (iii) Hope, (iv) Wisdom, (v) Flow.

UNIT IV MINDFULNESS 8 Hrs

a) Mindfulness - Meaning, Nature & Origin,

b) Implications & Practices.

Reference Books:

1) **Positive Psychology in Practice: Promoting Human Flourishing in Work, Health, Education, and Everyday Life, *Stephen Joseph* (2015); 2nd Edition, Publisher: Wiley**

2) **Flourishing: Positive Psychology and the Life Well-Lived *Corey L. M. Keyes, Jonathan Haidt* (2002), 1st Edition; Publisher: American Psychological Association (APA)**

3) **Positive Psychology: The Scientific and Practical Explorations of Human Strengths *C. (Charles) R. (Richard) Snyder, Dr. Shane J. Lopez (2006);* Publisher: Sage Publications, Inc.**

Online Resources for Reference:

1) **What is Positive Psychology & Why is It Important?**
   https://positivepsychology.com/what-is-positive-psychology-definition/
2) **What is Positive Psychology?**
   https://www.verywellmind.com/what-is-positive-psychology-2794902
3) **What is Positive Psychology and How can it help?**
   https://www.talkspace.com/blog/positive-psychology-definition-guide-what-is/
4) **Article on History of Health Psychology – Truth to be Told**
   https://scottbarrykaufman.com/wp-content/uploads/2015/01/Froh-2004.pdf
5) **Martin Seligman & Positive Psychology**
   https://www.pursuit-of-happiness.org/history-of-happiness/martin-seligman-psychology/

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DEPARTMENT OF PSYCHOLOGY

MODEL QUESTION PAPER UNDER CHOICE BASED CREDIT SEMESTER SYSTEM (CBCSS)

AND

CONTINUOUS ASSESSMENT GRADING PATTERN (CAGP) OF THE OPTIONAL SUBJECT

PSYCHOLOGY B.A PROGRAMME

B.A PSYCHOLOGY (For I, II, III, IV, V AND VI semesters)

Time: 3 Hours **Max. Marks: 80**

Part-A

I Answer any five of the following questions. **5x2=10**

1)…….
2)…….
3)…….
4)…….
5)…….
6)…….
7)…….

Part-B

II. Answer any Six of the following questions. **6x5=30**

8)……..
9)……..
10.)……
11.)…….
12.)……
13.)……
14.)……
15.)……

Part-C

III. Answer any Four of the following questions. **4x10=40**

16.)……
17.)……
18.)……
19.)……
20.)……
21.)……

UG BOARD OF STUDIES
Scheme of Valuation Practical (2021-2022)

PRACTICAL COMPONENT - I

Scheme of Valuation for V & VI Sem : Practical 5 & 7 (Practical Experimentation)

C1 and C2 (Practical) are internal tests to be conducted during 8th and 16th weeks of the semester respectively. C3 (Practical Examination) is conducted during the end of the semester for the duration of 3 hours. The students are assessed and evaluated by the External and Internal Examiners - on various skills associated with Psychology Practical – Administration, Procedure, Instructions, Analysis and Interpretation of results of the Subjects performance in the Experiment conducted.

The C1(Test) and C2 (Assignment) components are - IA assessment. During the C1 and C2 elements the student is evaluated for 10 marks (collectively) as per the following scheme:
a.) C1 – Experiment 5 marks (On first Half of the Practical Portions)
b.) C2 – Assignment 5 marks (On aspect of the Practical Syllabus Prescribed)

Though the C1 and C2 components are evaluated for 10 marks each for the ease of calculation, however the total marks scored by the student are then normalized to 5 under each component, (C1 and C2 Collectively – 10).

The student has to compulsorily submit the Practical Record during C3 - Final Practical Examination. While, for the C3 component, the Practical record has to be evaluated on 10 marks (IA) and then certified by the Head of the Department.

- The student is evaluated for 40 marks during C3 Examination as per the following scheme:

Heading	Marks
Experiment	25
Record (To be valued Internally)	10
Viva Voce	05
Total	40

- The experiment portion of evaluation is carried out as per the following scheme:

Heading	Marks
Part 1 Description of the Experiment from the options provided	10
Conducting the Experiment	05
Analysis of Results & Interpretation	10
Total	25

Education to Excel
SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
Affiliated to University of Mysore
Re-accredited by NAAC with 'A' Grade, College with Potential for Excellence

Department of Psychology

UG BOARD OF STUDIES
Scheme of Valuation Practical (2021-2022)
PRACTICAL COMPONENT - II

Scheme of Valuation for V & VI Sem: Practical 6 (Internship) & 8 (Project Work)

*** The above mentioned components of Practicum II are compulsory and include only Paper 6 - Internship

during V Sem and only Paper 8 - Project Work during VI Sem. However, the Scheme of Valuation for the Practicum II tends remain same for Paper 6 – V Sem & Paper 8 – VI Sem.

C1 and C2 (Internship & Project Work) are internal assessments to be conducted during 8th and 16th weeks of the semester respectively. C3 (Internship & Project Work Examination) is conducted during the end of the semester for the duration of 3 hours. The students are assessed and evaluated by the External and Internal Examiners - on various skills associated with Psychology Practical – Administration, Procedure, Instructions, Analysis and Interpretation of results of the Subjects performance in the Experiment conducted.

The C1 (Test) and C2 (Assignment) components are - IA assessment. During the C1 and C2 elements the student is evaluated for 10 marks (collectively) as per the following scheme:
a.) C1 – Assignment 5 marks (On any aspect associated with the Internship & Project Work)
b.) C2 – Seminar 5 marks (On any aspect of the Internship & Project Work)

Though the C1 and C2 components are evaluated for 10 marks each for the ease of calculation, however the total marks scored by the student are then normalized to 5 under each component, (C1 and C2 Collectively – 10).

The student has to compulsorily submit the compiled and documented Internship Report / Project Report during the C3 – Final Examination of that particular Semester. While, for the C3 component, the Internship Report/Project Report has to be evaluated on 10 marks (IA) and then certified by the Head of the Department.

- The student is evaluated for 40 marks during C3 Examination as per the following scheme:

Heading	Marks
Oral Presentation of the Internship Report / Project Report	30
Documentation of the Report (To be valued Internally)	10
Total	40

- The Oral Presentation portion of evaluation is carried out as per the following scheme:

Heading	Marks
Oral Presentation of the Case Study/Project Report – Using Power Point (PPT) (Criteria - Clarity of content on Slides, Dissemination, Discussion, Reflections and Time Management)	25
Viva Voce	05
Total	30

Approved by the Board of Studies in Psychology (2019-2021) and forwarded to the Academic Council and the Governing Council for further reference and consent.

(Asst. Prof. Sujata. M) **(Dr. Sampath Kumar)**

Vice Chansellor Nominee, University of Mysore

(Dr. Lancy D'Souza) **(Dr. Aneesh Kumar)**

PROPOSED LIST OF BOARD OF EXAMINERS - Department of Psychology

Academic Session: 2019-2021

Sl. No	Name	Designation	Address for Communication	E-mail and Mobile No.
	Dr.Lancy D'Souza	Associate Professor	Maharaja's College, Mysore, Karnataka.	lancyd@gmail.com 9986332616
2	Dr. Rekaha	Asst. Professor	Govt. Women's College, (Autonoumus) Mandya	rekhamsumesh@gmail.com 9986627024
3	Dr. Ranganath	Asst. Professor & HoD	Govt. First Grade College for Women, Mysore	Pr.ranganath224@gmail.com 9164918166
4	Dr. Mridula Singh	Professor	Maharaja's College, Mysore, Karnataka.	mridulasingh15@gmail.com 9448312327
5	Mrs. Nasreen Afza	Asst. Professor	Teresian College, Mysore.	nasreen.afza@yahoo.in 9900667334
6	Mrs. Rajani Eithal	Asst. Professor	Maharani's Arts & Commerce College for Women, Mysore, Karnataka.	rajani.aithal@gmail.com 9449263743

7	**Mr. Ginsen George**	**Asst.Professor &HoD**	**St. Philomina's College (Autonomous), Mysore**	**ginsongeorge24@gmail.com 9072442835**
8	**Mrs . Manonmani**	**Asst. Professor**	**Maharaja's College, Mysore, Karnataka.**	**manu236a@gmail.com 9448672866**
9	**Mr. Akhilash**	**Asst. Professor**	**Maharani's Govt. College Mysore**	**akishreyas@gmail.com 9035241572**
10	**Mr. Satish Chandra**	**Asst. Professor**	**Pallagatti Adavappa Arts & Commerce First Grade College, Tiptur, Karnataka**	**Satishchandrapac985@gmail.com 9481692732**
11	**Smt. Tejashwini B.P**	**Asst. Professor**	**Maharani's Arts & Commerce College for Women, Mysore, Karnataka.**	**bpthejaswini@gmail.com 09845821587**
12	**Dr. Ramakrishna Gowda**	**Associate Professor**	**Maharaja's College, Mysore, Karnataka.**	hmrgowda64@gmail.com **9164498877**
13	**Mr. Jhonson**	**Asst. Professor**	**Christ College, Mysore**	johns9931@yahoo.com **9448827722**

Approved by the Board of Studies in Psychology (2019-2021) and forwarded to the Academic Council and the Governing Council for further reference and consent.

(Asst.Prof. Sujata.M) **(Dr. Sampath Kumar)**

Vice Chansellor Nominee, University of Mysore

(Dr. Lancy D'Souza) **(Dr. Aneesh Kumar)**

DEPARTMENT OF SANSKRIT

Motto

संस्कृतं संस्कृतेर्मूलम्

Vision

As Sanskrit is the origin for our culture, making the students good Citizens by teaching that language.

Mission

- By fulfilling the needs to become good citizens.
- By creating awareness of Puranas and Shastras in the students.
- By giving illustrations of Upanishads, Ramayana, Mahabharatha, Bhagavadgita etc., during teaching and inculcating Moral Values in them.

Program Outcome (PO) Attributes

PO 1: Domain Knowledge

PO 2: Problem Analysis

PO 3: Design and Development of Solutions

PO 4: Investigation & Research

PO 5: Use of Modern Techniques/Tools

PO 6: Impact of Science on Society

PO 7: Environment and Sustainability

PO 8: Moral and Ethical Values

PO 9: Individual and Team Work with Time Management

PO 10: Communication

PO 11: Project Management and Finance

PO 12: Life-long Learning

Objectives: SANSKRIT LANGUAGE

- This course will help the students develop a fair idea of the works of great Sanskrit poets.
- They will be able to appreciate the styles and thoughts of individual poets focusing on the poetical, artistic, cultural and historical aspects of their works.
- This course will enhance competence in chaste classical Sanskrit and give them skills in translation and interpretation of poetic works.
- Students will be able to write Devnagari Scripts
- The course(subject) will enable students to familiarize themselves with some leading classical prose works and the individual literary styles of their authors.
- After the completion of this course the learner will be exposed to the socio-cultural conditions of the Indian society as reflected in the prescribed texts.
- They will acquire skills in advanced Sanskrit communication.

List of BoS Members 2021-22

1	HoD	**Dr. Shrinivas**	**Assistant Professor**	**Mahajana First Grade College**	**Shrinivas.fgc@mahajana.edu.in** **9964383565**
2	Nominee by the Vice Chancellor	**Dr .Narayana Bhatta K**	Professor & HOD	DoS In Sanskrit, Manasagangotri , Mysore.	**dr.k.narayanabhatta@gmail.com** **9449592581**

3	Two Experts from Outside the University	**1.** **Dr. M Rangaswamy**	Assistant Professor DOS in Sanskrit	Government Autonomous Sahyadri College Shivamogga 577203	**rangasscs1969@gmail.com** **9535016974**
		2. **Dr.Kumarasubrahmanya Bhat**	Associate Professor & HOD	DOS In Sanskrit, University College Hampanakatta Manglore 575001	**ksbamai@gmail.com** **9448869289**
4	Alumni	**Shree Sumukha Pranesh**	Wealth Manager	Branch Manager ICICI Securities C 201,A N Comforts ,Siddappa Layout Bangalore 61 .	**sumukhapranesh95@gmail.com** **8762380685**

Course Structure (NEP)

AECC (Sanskrit)

I Year

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Sanskrit – I Sem									
AECC(1)	**Sanskrit Poetry, Grammar and Comprehension** **BA/BSc/BCA** – 21SAN109 **BCom/BBA (All)** – 21SAN110	**2**	**2**	**2:1:0**	**20**	**20**	**60**	**2½ Hours**	**100**
Sanskrit – II Sem									
AECC(2)	**Sanskrit Prose, Grammar and Translation** **BA/BSc/BCA** – 21SAN209 **BCom/BBA (All)** – 21SAN210	**2**	**2**	**2:1:0**	**20**	**20**	**60**	**2½ Hours**	**100**

AECC (1) Syllabus for BA/Bsc/BCA SANSKRIT

Course Code: BA/BSc/BCA – 21SAN109	**Course Type & Title:** AECC(1) Sanskrit Poetry, Grammar and Comprehension
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1: Appreciate the Development of Sanskrit poetry Literature .

CO2: Qualities of Rama for Personality Development .

CO3: Character of Rama special features of Rama katha as Described in the Balakanda of Valmiki Ramayana.

CO4: Vocabulary building is helpful in Sanskrit sentences. Karakas Role in Sanskrit sentences.

Course Content:

Course Content	Hours
UNIT – 1	
A Short History of Sanskrit Literature – Written By T. K. Ramachandra Aiyar (Page 1-98)	**14**
UNIT – 2	
Selected shlokas from Valmiki Ramayana – Balakanda – Sarga 1 – 1 to 30 shloka	**14**
UNIT – 3	
Valmiki Ramayana – Balakanda – Sarga 1 – 31 to 60 shloka	**14**

UNIT – 4	14
• Vocabulary building - Samskrita Vyavahara Sahasri (page1-18) • Karaka prakarana – Samskrita Gadya Padya Vallari – (Page 201-204) • Comprehension - Shevadhi-2 (page 133)	

Text Book: Valmiki Ramayana – Balakanda – Sarga 1(1 to 60 shloka)

Recommended Books

1. A Short History of Sanskrit Literature – Written By T. K. Ramachandra Aiyar Published By R.S.VADHYAR&SONS, Book Sellers &Publishers KALPATHI:PALGHAT -678003, First Edition 1977
2. Srimad Ramayana – Valmiki.
3. Samskrita Vyavahara Sahasri – Samskrita Bharati, (Delhi-Bengalur) Page 1-18.
4. Samskrita Gadya Padya Vallari – (Page 201-204), Government of Karnataka, Karnataka Textbook Society (R) Bengaluru. RPT -2012-13.
5. Shevadhi-2 – Government of Karnataka, Bengaluru. RPT-2019. Page 133.

Digital Resources: www.archieve.org
https://www.wikipedia.org/

Course Articulation Matrix –21SAN109

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	2	1	2
CO 2	2	2	1	1	1	2	1	3	2	2	1	2
CO 3	2	2	1	1	1	2	1	3	2	2	1	2
CO 4	2	2	1	1	1	1	1	-	1	2	1	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**1**	**2**

AECC (2) Syllabus for BA/Bsc/BCA SANSKRIT

Course Code: BA/BSc/BCA - 21SAN209	**Course Type & Title:** AECC(2)) **Sanskrit Prose, Grammar and Translation**
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1 know the origin and development of Sanskrit Prose literature.

CO2. Know the Gist and message of Adi Parva

CO3. Know about content and and message of Sabha Parva. .

CO4. Apply the laws of sandhi (euphonic combinations) in a Sanskrit passage. Gender place an Important Role in the Formation of sentences.

Course Content:

Course Content	Hours
UNIT – 1	
Introduction to Sanskrit Gadya Literature - Samskrita Bhashashastra Mattu Sahitya Charitre – Dr K Krishnamurthy, Vidwan Ranganatha sharma and Vidwan H.K.Siddagangaiah. (page 591-638)	**14**
UNIT – 2	
Bharata Sangraha – By Lakshmana Suri – Adi Parva	**14**
UNIT – 3	
Bharata Sangraha – By Lakshmana Suri – Sabha Parva.	**14**

Unit-4	14
• Identifying Namapadas – Samskrit Shabdachandrika (page 1 to 12) • Identifying Sandhi – "Sandhihi" – G.Mahabaleshwara Bhat (Page 1-31) • Translation from Sanskrit to Kannada/English (Unseen Sentences)	

Text Book: - Bharata Sangraha – By Lakshmana Suri – Adi parva and Sabha Parva.

Recommended Books

1. Bharata Sangraha - Lakshmanasuri.
2. Samskrit Shabdachandrika (page 1 to 12) – Vidwan N.Ranganatha Sharma, Vidyabharati Grantha mala -3, Sringeri. 1995.
3. "Sandhihi" – G.Mahabaleshwara Bhat (Page 1-31) Samskrita Bharati, Bengaluru. RPT-2017.

Digital Resources: www.archieve.org https://www.wikipedia.org/

Course Articulation Matrix – 21SAN209

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	2	1	2
CO 2	2	2	1	1	1	2	1	3	2	2	1	2
CO 3	2	2	1	1	1	2	1	3	2	2	1	2
CO 4	2	2	1	1	1	1	1	-	1	2	1	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**1**	**2**

AECC (1) Syllabus for B.Com/BBA/BBA(H&H) BBA (Avi&In.Tour) SANSKRIT

Semester I Course Code: **BCom/BBA (All)** – 21SAN110	**Course Title:** AECC(1) Sanskrit Poetry, Grammar and Comprehension
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1. Appreciate the Development of Sanskrit poetry Literature .

CO2 Glimpses of the Karmayoga — The lesson incorporated in the Bhagavad Gita. Needless to say it is one of the most comprehensive tests of all literature that gives mankind the knowledge of high moral lesson and helps them find out the right path as Arjuna got it.

CO3. Importance of Karmayoga in Life as Described in Bhagavadgeeta

CO4. Vocabulary building is helpful in Sanskrit sentences. Karakas Role in Sanskrit sentences

Course Content:

Course Content	Hours
UNIT – 1	
A Short History of Sanskrit Literature – Written By T. K. Ramachandra Aiyar (Page 1-98)	**14**
UNIT – 2	
Selected portions from Bhagawad Gita Chapter 3 (1-20 Shlokas)	**14**
UNIT – 3	
Bhagawad Gita Chapter 3 (21-43 Shlokas)	**14**
UNIT – 4	14
Vocabulary building - Samskrita Vyavahara Sahasri (page1-18) • Karaka prakarana – Samskrita Gadya Padya Vallari – (Page 201-204) • Comprehension - Shevadhi-2 (page 133)	

Text Book: Text Book- Bhagawad Gita
Chapter 3

Recommended Books

1. A Short History of Sanskrit Literature – Written By T. K. Ramachandra Aiyar Published By R.S.VADHYAR&SONS, Book Sellers &Publishers KALPATHI:PALGHAT -678003, First Edition 1977
2. Srimad Bhagawadgita – Vyasa.
3. Samskrita Vyavahara Sahasri – Samskrita Bharati, (Delhi-Bengaluru) Page 1-18.
4. Samskrita Gadya Padya Vallari – (Page 201-204), Government of Karnataka, Karnataka Textbook Society (R) Bengaluru. RPT -2012-13.
5. Shevadhi-2 – (Page 133) Government of Karanataka, Bengaluru. RPT-2019.

Digital Resources: www.archieve.org
https://www.wikipedia.org/

Course Articulation Matrix – 21SAN110

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	3	1	1	1	2	1	3	2	2	1	2
CO 2	2	3	1	1	1	2	1	3	2	2	1	2
CO 3	2	3	1	1	1	2	1	3	2	2	1	2
CO 4	2	-	1	1	1	1	1	-	1	2	1	2
Weighted Average	**2**	2.2	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**1**	**2**

AECC (2) Syllabus for B.Com/BBA/BBA(H&H) BBA (Avi&In.Tour) SANSKRIT

Course Code: BCom/BBA (All)– 21SAN210	**Course Type & Title:** AECC(2) **Sanskrit Prose, Grammar and Translation**
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1: Introduction and specialties of Sanskrit Prose Literature .

CO2: Know the Gist and message of Udyogaparva .

CO3: Know about content and and message of Bheeshmaparva .

CO4: Apply the laws of sandhi (euphonic combinations) in a Sanskrit passage. Gender place an Important Role in the Formation of sentences .

Course Content:

Course Content	Hours
UNIT – 1	
Introduction to Sanskrit Gadya Literature - Samskrita Bhashashastra Mattu Sahitya Charitre – Dr K Krishnamurthy, Vidwan Ranganatha sharma and Vidwan H.K.Siddagangaiah. (page 591-638)	**14**
UNIT – 2	
Bharata Sangraha – By Lakshmana Suri – Udyoga parva.	**14**
UNIT – 3	
Bharata Sangraha – By Lakshmana Suri – Bhishma parva.	**14**

UNIT – 4	14
• Identifying Namapadas – Samskrit Shabdachandrika (page 1 to 12) • Identifying Sandhi – "Sandhihi" – G.Mahabaleshwara Bhat (Page 1-31) • Translation from Sanskrit to Kannada/English (Unseen Sentences)	

Text Book: Bharata Sangraha – By Lakshmana Suri – Udyoga parva and Bhishma parva

Recommended Books

- 1. Bharata Sangraha - Lakshmanasuri.
- 2. Samskrit Shabdachandrika (page 1 to 12) – Vidwan N.Ranganatha Sharma,
- Vidyabharati Grantha mala -3, Sringeri. 1995.
- 3. "Sandhihi" – G.Mahabaleshwara Bhat (Page 1-31) Samskrita Bharati,
- Bengaluru. RPT-2017.

- **Digital Resources:** www.archieve.org https://www.wikipedia.org/

Course Articulation Matrix – 21SAN210

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	2	1	2
CO 2	2	2	1	1	1	2	1	3	2	2	1	2
CO 3	2	2	1	1	1	2	1	3	2	2	1	2
CO 4	1	2	1	1	1	1	1	-	1	2	1	2
Weighted Average	1.75	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**1**	**2**

Continuous Formative Evaluation/Internal Assessment (AECC)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY
TOTAL MARKS	100

Continuous Assessment – 1 (C1)	20
Continuous Assessment – 2 (C2)	20
Semester End Examination (C3)	60

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.
b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.
c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.
e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.
f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1	**C2**	**TOTAL**
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
TOTAL	20	20	40

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.
- The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during

component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

QUESTION PAPER PATTERN
For Ability Enhancement Compulsory Course
(All Programs)

Max Marks 60 Exam Duration-2½ Hours

Qn. No.	Particulars		Marks	Total
	SECTION – A			
I	Multiple Choice Questions	10 out of 10	01	10
II	Reference to Context From Text Book only 1. 2. 3. 4.	2 out of 4	05	10
	SECTION – B			
III	Short Answer Questions (From Text Book) 1. 2. 3.	2 out of 3	05	10
IV	Questions from Grammar/Translation. as the case may be 1. 2. 3.	2 out of 3	05	10
	SECTION – C			
V	Essay type Answer Questions From Text Book only	2 out of 3	10	20
	Total			**60**

The BOS Meeting of Sanskrit (UG) was held on 04/12/2021. The Following Board members were present [ONLINE]

Sl. No.	Name	Signature with date
1	Dr. Shrinivas	04/12/2021
2	Dr .Narayana Bhatta K	11-12-2021
3	Dr.Kumarsubramanya Bhat	ASubrahmanya
4	Dr.Rangaswami M	13/12/2021
5	Shree Sumukha Pranesh	ABSENT

Place : MYSURU

Date: 04.12.2021

Signature of the Chairperson

Chairperson
BOS/BOE in Sanskrit
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru-570 012

DEPARTMENT OF SANSKRIT

Motto

संस्कृतं संस्कृतेर्मूलम्

Vision

As Sanskrit is the origin for our culture, making the students good Citizens by teaching that language.

Mission

- By fulfilling the needs to become good citizens.
- By creating awareness of Puranas and Shastras in the students.
- By giving illustrations of Upanishads, Ramayana, Mahabharatha, Bhagavadgita etc., during teaching and inculcating Moral Values in them.

Program Outcome (PO) Attributes

PO 1: Domain Knowledge

PO 2: Problem Analysis

PO 3: Design and Development of Solutions

PO 4: Investigation & Research

PO 5: Use of Modern Techniques/Tools

PO 6: Impact of Science on Society

PO 7: Environment and Sustainability

PO 8: Moral and Ethical Values

PO 9: Individual and Team Work with Time Management

PO 10: Communication

PO 11: Project Management and Finance

PO 12: Life-long Learning

Objectives: SANSKRIT LANGUAGE

- This course will help the students develop a fair idea of the works of great Sanskrit poets.
- They will be able to appreciate the styles and thoughts of individual poets focusing on the poetical, artistic, cultural and historical aspects of their works.
- This course will enhance competence in chaste classical Sanskrit and give them skills in translation and interpretation of poetic works.
- Students will be able to write Devanagari Scripts
- The course(subject) will enable students to familiarize themselves with some leading classical prose works and the individual literary styles of their authors.

- After the completion of this course the learner will be exposed to the socio-cultural conditions of the Indian society as reflected in the prescribed texts.
- They will acquire skills in advanced Sanskrit communication.

List of BoS Members-2022-23

1	HoD	**Dr. Shrinivas**	**Assistant Professor**	**Mahajana First Grade College**	**Shrinivas.fgc@mahajana.edu.in** **9964383565**
2	Nominee by the Vice Chancellor	**Dr. Guruprasad**	**Assistant professor & H O D**	**M I T First Grade college , Mananthavadi Road, Vidyaranyapuram , Mysuru, Karnataka 570008**	**guruprasaada@gmail.com** **82174 73433**
3	Two Experts from Outside the University	**1. Dr. M Rangaswamy**	Assistant Professor DOS in Sanskrit	Government Autonomous Sahyadri College Shivamogga 577203	**rangasscs1969@gmail.com** **9535016974**
		2. **Dr.Kumarasubrahmanya Bhat**	Associate Professor & HOD	DOS In Sanskrit, University College Hampanakatta Manglore 575001	**ksbamai@gmail.com** **9448869289**
4	Alumni	**Shree Sumukha Pranesh**	Wealth Manager	Branch Manager ICICI Securities	**sumukhapranesh95@gmail.com**

				C 201,A N Comforts ,Siddappa Layout Bangalore 61 .	**8762380685**

Course Structure (NEP)

AECC (Sanskrit)

II Year

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		Marks
Sanskrit – III Sem									
AECC(3)	Sanskrit Champu Kavya and Grammar **BA/BSc/BCA** – 22SAN309 **BCom/BBA (All)** – 22SAN310	**2**	**2**	**2:1:0**	**20**	**20**	**60**	**2½ Hours**	**100**
Sanskrit – IV Sem									
AECC(4)	Drama and Dramaturgy and छन्दः **BA/BSc/BCA** – 22SAN409 **BCom/BBA (All)** – 22SAN410	**2**	**2**	**2:1:0**	**20**	**20**	**60**	**2½ Hours**	**100**

AECC (3) Syllabus for BA/Bsc/BCA SANSKRIT

Course Code: BA/BSc/BCA – 22SAN309	**Course Type & Title:** AECC(3) Sanskrit Champu Kavya and Grammer
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1:. Know about origin and Development of Sanskrit champu kavyas

CO2: Goal for the future, Ability to take right Decisions, Ability to face downs in life, Maintain and follow Great Traditions of Indian Society.

CO3:. Understanding concepts

CO4:. Understanding the technique of chandass

Course Content:

Course Content	Hours
UNIT – 1	
Introduction to classical Sanskrit literature with special reference to Champu Kavya and its lakshanas. Introduction to Author and Text	**14**
UNIT – 2	
Introduction to Author and Text नीलकण्ठविजय चम्पूः-तृतीयाश्वासः, 24 श्लोक पर्यन्तम्	**14**
UNIT – 3	
नीलकण्ठविजय चम्पूः-तृतीयाश्वासः,25 श्लोकत: 73 श्लोक पर्यन्तम्	**14**
UNIT – 4 अनुष्टुप्, इन्द्रवज्रा, वसन्ततिलका,मालिनी,मन्दाक्रान्ता	14

Text Book: नीलकण्ठविजय चम्पूः-तृतीयाश्वासः

Recommended Books

1. Samskruta Bhashashastra Mattu Sahitya charitre :vidwan Dr.K Krishnamurty, Vidwan N Ranganath Sharma ,Vidwan H k siddagangayya :Pubished By - Dr.K Krishnamurty Pratisthana ® Mysuru ,Page No .663 to 704

2. नीलकण्ठविजय चम्पू: Pubished By- Prasaranga ,University of Mysuru

3. Kuvalayananda ,written by Appayya Dixit

Digital Resources: www.archieve.org

https://www.wikipedia.org/

Course Articulation Matrix –22SAN309

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	2	2	2
CO 2	2	2	1	1	1	2	1	3	2	2	2	2
CO 3	2	2	1	1	1	2	1	3	2	2	2	2
CO 4	2	2	1	1	1	1	1	-	1	2	2	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**2**	**2**

AECC (3) Syllabus for B.Com/BBA/BBA(H&H) BBA (AIR& TR)SANSKRIT

Course Code: BCom/BBA (All) – 22SAN310	**Course Type & Title:** AECC(3) Sanskrit Champu Kavya and Grammer
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1:. Know about origin and Development of Sanskrit champu kavyas

CO2:Goal for the future, Ability to take right Decisions, Ability to face downs in life, Maintain and follow Great Traditions of Indian Society.

CO3:Understanding concepts

CO4:Know about Alankara (figures of speech)

Course Content:

Course Content	Hours
UNIT – 1	
Introduction to classical Sanskrit literature with special reference to Champu Kavya and its lakshanas	**14**
UNIT – 2	
Introduction to Author and Text. भोजराजविरचित चम्पूरामायणम्-किष्किन्धाकाण्डः, 24 श्लोक पर्यन्तम्	**14**
UNIT – 3	
भोजराजविरचित चम्पूरामायणम्-किष्किन्धाकाण्डः, 25 त: 48 श्लोक पर्यन्तम्	**14**
UNIT – 4 उपमालङ्कारः,रूपकालङ्कारः,अनन्वयालङ्कारः,उत्प्रेक्षालङ्कारः,श्लेषालङ्कारः	14

Text Book: भोजराजविरचित चम्पूरामायणम्-किष्किन्धाकाण्डः

Recommended Books

1. Samskruta Bhashashastra Mattu Sahitya charitre :vidwan Dr.K Krishnamurty, Vidwan N Ranganath Sharma ,Vidwan H k siddagangayya :Pubished By - Dr.K Krishnamurty Pratistharna @ Mysuru, Page No. 663 to 704

2. भोजराजविरचित चम्पूरामायणम्-किष्किन्धाकाण्डः Pubished By- Prasaranga ,University of Mysuru

3. Kuvalayananda ,written by Appayya Dixit

Digital Resources: www.archieve.org

https://www.wikipedia.org/

Course Articulation Matrix – 22SAN310

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	2	1	2
CO 2	2	2	1	1	1	2	1	3	2	2	1	2
CO 3	2	2	1	1	1	2	1	3	2	2	1	2
CO 4	2	2	1	1	1	1	1	-	1	2	1	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**1**	**2**

AECC (4) Syllabus for BA/Bsc/BCA SANSKRIT

Course Code: BA/BSc/BCA – 22SAN409	**Course Type & Title:** AECC(4) Sanskrit Drama and Dramaturgy and छन्दः
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1: Know about origin and Development of Sanskrit Drama

CO2: Grasp about Enacting Drama, one should become the actor, Knowing Great Indian Traditions and Heritage .Art and Architecture. Culture. Believes. Character Building, Analyze and adopt the good Character in the life, Develop a New Ideas. Inculcate Communication Skills.

CO3: Understanding concepts

CO4: Understanding the technique of chandass

Course Content:

Course Content	Hours
UNIT – 1	
Unit-1 Introduction to Sanskrit Drama and Dramaturgy , origin and Development of Sanskrit Drama, Dasarupakas and their lakshanas , Important Drushya Kavyas (Dramas) and Dramatists in Sanskrit Literature	**14**
UNIT – 2	
Introduction to Author and Text दूतवाक्यं -25 श्लोक पर्यन्तम्	**14**
UNIT – 3	
दूतवाक्यं -26 श्लोकत: 53 श्लोक पर्यन्तम्	**14**
UNIT – 4 अनुष्टुप्, इन्द्रवज्रा, वसन्ततिलका,मालिनी,मन्दाक्रान्ता.	14

Text Book: दूतवाक्यं of भासः

Recommended Books

1. Samskruta Nataka, A R krishnashastry ,Prasaranga ,Manasagangotri ,Mysuru -1988 Page number 1 -58
2. दूतवाक्यं of भासः, Motilal Banarasidas Publishers ,Delhi-1998
3. वृत्तरत्नाकरः,भट्ट्केदारविरचितः, Motilal Banarasidas,Delhi-1993

Digital Resources: www.archieve.org
https://www.wikipedia.org/

Course Articulation Matrix – 22SAN409

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	2	1	2
CO 2	2	2	1	1	1	2	1	3	2	2	1	2
CO 3	2	2	1	1	1	2	1	3	2	2	1	2
CO 4	2	2	1	1	1	1	1	-	1	2	1	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**1**	**2**

AECC (4) Syllabus for B.Com/BBA/BBA(H&H) BBA (AIR& TR)SANSKRIT

Course Code BCom/BBA (All) – 22SAN410	**Course Type & Title:** AECC(4) Sanskrit Drama and Dramaturgy and छन्दः
Course Credits (L:T:P): 3 (2:1:0)	**No. of Teaching Hours/Week:** 02 Hours (Theory) 02 Hours (Tutorials)
Total Contact Hours: 28 Hours (Theory) 28 Hours (Tutorials)	**Formative Assessment Marks:** 40
Exam Duration: 2½ Hours	**Semester End Examination Marks:** 60

Course Outcomes (COs):

CO1:. Know about origin and Development of Sanskrit Drama

CO2: Grasp about Enacting Drama, one should become the actor, Knowing Great Indian Traditions and Heritage .Art and Architecture. Culture. Believes. Character Building, Analyze and adopt the good Character in the life, Develop a New Ideas. Inculcate Communication Skills.

CO3: Understanding concepts

CO4:Understanding the technique of chandass

Course Content:

Course Content Content	Hours
UNIT – 1	
Introduction to Sanskrit Drama and Dramaturgy , origin and Development of Sanskrit Drama, Dasarupakas and their lakshanas , Important Drushya Kavyas (Dramas) and Dramatists in Sanskrit Literature	**14**
UNIT – 2	
Introduction to Author and Text **प्रतिमा नाटकं - भासः(प्रथमाङ्कः)**	**14**
UNIT – 3	
प्रतिमा नाटकं - भासः(द्वितीय-तृतीयाङ्कौ)	**14**
UNIT – 4	**14**
अनुष्टुप्, इन्द्रवज्रा, वसन्ततिलका,मालिनी,मन्दाक्रान्ता	

Text Book: प्रतिमा नाटकं - भासः(प्रथम,द्वितीय,तृतीयाङ्काः)

Recommended Books

- Samskruta Nataka, A R krishnashastry ,Prasaranga ,Manasagangotri ,Mysuru -1988
- Page number 1 -58
- प्रतिमा नाटकं – भासविरचितम् , Motilal Banarasidas Publishers ,Delhi-1998

- वृत्तरत्नाकरः,भट्ट्केदारविरचितः, Motilal Banarasidas,Delhi-1993
- **Digital Resources:** www.archieve.org
- https://www.wikipedia.org/

Course Articulation Matrix – 22SAN410

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	2	2	1	1	1	2	1	3	2	2	1	2
CO 2	2	2	1	1	1	2	1	3	2	2	1	2
CO 3	2	2	1	1	1	2	1	3	2	2	1	2
CO 4	2	2	1	1	1	1	1	-	1	2	1	2
Weighted Average	**2**	**2**	**1**	**1**	**1**	**1.75**	**1**	**2.22**	**1.25**	**2**	**1**	**2**

Continuous Formative Evaluation/Internal Assessment (AECC)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY
TOTAL MARKS	100
Continuous Assessment – 1 (C1)	20
Continuous Assessment – 2 (C2)	20
Semester End Examination (C3)	60

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.
b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.
c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Program Coordinator/Principal. The Program Coordinator/Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.
e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.
f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1	**C2**	**TOTAL**
Session Test	20	-	20

Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
TOTAL	20	20	40

• Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

• The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

i) There shall be no minimum in respect of internal assessment marks.

j) Internal assessment marks may be recorded separately. A candidate, who has failed or rejected the result, shall retain the internal assessment marks.

QUESTION PAPER PATTERN
For Ability Enhancement Compulsory Course
(All Programs)

Max Marks 60 Exam Duration-2½ Hours

Qn. No.	Particulars		Marks	Total
	SECTION – A			
I	Multiple Choice Questions	10 out of 10	01	10
II	Reference to Context From Text Book only 1. 2. 3. 4.	2 out of 4	05	10
	SECTION – B			

III	Short Answer Questions (From Text Book) 1. 2. 3.	2 out of 3	05	10
IV	Questions from Grammar/Translation. as the case may be 1. 2. 3.	2 out of 3	05	10
SECTION – C				
V	Essay type Answer Questions From Text Book only	2 out of 3	10	20
Total				**60**

Mahajana Education Society (R)
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Jayalakshmipuram, Mysuru – 570 012 Karnataka, INDIA
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Date:10.09.02022

BoS Meeting Proceedings

The BoE meeting of **SANSKRIT** (UG) was held on **10.09.2022** The following Board members were present.

Sl. No.	Name	Signature with date
1	Dr. Shrinivas	10/9/2022
2	Dr. Guruprasad	10/09/2022
3	Dr.Kumarasubrahmanya Bhat	AKSubrahmanya 10.09.2022
4	Dr.M Rangaswamy	10/09/2022
5	Shri. Sumukha Pranesh	

Place - MYSURU
Date - 10/09/2022

Chairperson
BOS/BOE in Sanskrit
SBRR Mahajana First Grade College
(Autonomous)
Jayalakshmipuram, Mysuru

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DEPARTMENT OF SOCIOLOGY

NEP Syllabi for I& II Semester

2021-22

DSC (1) UNDERSTANDING SOCIOLOGY

Unit – 1 Sociology as Science	16
Chapter-1:Sociology as a study of Groups and Social Interaction - Definition, Scope and Need; Sociology as Science Vs. Sociology as Social Reform. **Chapter- 2** Foci of Sociology: Social Institutions, Social Inequality and Social Change. **Chapter -3** (C) Sociological Eye (Randall Collins), Sociological Imagination (C Wright Mills' distinction between trouble i.e. personal in nature and issue, i.e. public in nature). **Chapter- 4.** Sociological Perspectives: Functionalist, Conflict, Symbolic Interactionist, Feminist Chapter No. 5 Social Construction of Reality.	
Unit – 2 Culture and Socialisation	**16**
Chapter-6. Culture: Definition and Elements of Culture; Comparison between Culture and Civilisation; Acculturation: Robert Ezra Park's idea of Melting Pot; Cultural Contact, Cultural Shock, Counter Culture and Contra Culture. **Chapter-7**. Global Culture: Globalisation of Values; Cultural Imperialism. **Chapter-8.** Emerging Issues in Culture: Consumer Culture, Children as Consumers, Cyberculture, Netiquette in the age of Digital Living and Digital Divide. **Chapter-9**Socialisation: Theories of Self: Charles Horton Cooley and George Herbert Mead.	
Unit – 3 Social Change	**10**
Chapter -10 Changes due to Industrialisation, Rationalisation, Globalisation, McDonaldization (George Ritzer), Urbanisation and Information Explosion. **Chapter -11**. Consequences of Change: Changing age Structure of Societies: Ageing and Ageism; Technological Impact on Social Life; Changing Environment.	

DSC (2) Changing Social Institutions in India

	Unit – 1 Family and Marriage	16
ter 1 ges in **ter 2** een sp **ter 3** **ter 4** ce and **ter 5** **ter 6**	Family - Definitions of Family and Household; Changing the structure of family; size and composition Weakening of gender and age stratification - the democratisation of relationships: uses, parent-children; step-parenting Changes in caregiving of children and elderly Marriage – Definition; changing patterns of marital relations - cohabitation, separation, remarriage Changes in age of marriage, marriage decision making and regional variations Decrease in the number of children and voluntary childlessness	
	Unit – 2 Religion and Education	**13**
ter 7 sity -	Definition; secularisation vs resurgence of religion in the modern world, Challenge of eligious freedom vs state laws	

ter 8 mal ter 9 tuatin ter 10	Education: Definition; education as socialisation; types of education - formal and Functional view - manifest and latent functions; Conflict view - education as a tool for g inequality, Schooling and Life Chances (Max Weber's views) - increasing enrolment :Education and Employability - Technology and Digital Divide	
	Unit – 3 Economic and Political Institutions	**13**
ter 11 ter 12 dvanc ter 13 ter 14 ter15	:Definitions of Economy and Work, Gender stratification in work and its feminization :Job insecurity, Unemployment; Outsourcing - opportunities and threats; automation ement of technology : Definitions of Political Institution, Government, Governance and State :Status of Democracy in India, Challenges: Militancy, Fundamentalism, Regionalism :Globalisation and Social Welfare.	

OE (1) Indian Society: Continuity & Change

	Unit – 1 Tradition in Transition	**13**
Chapter 1: The Nature and Direction of Change in Indian Society **Chapter 2**: The Changing Face of Indian Social Institutions: Family, Caste, Polity and Economy **Chapter 3**:The Rural-Urban Divide: Infrastructure, Education, Health and Local Governance		
	Unit – 2 Movements for Social Justice	**16**
Chapter 4: A Background View: Role of the Constitution of India and Legislation **Chapter 5**: Backward Classes and Dalit Movements **Chapter 6:**New Social Movements: LGBTQ, Civil Rights, Ecological, Anticorruption Movements **Chapter 7:**Opportunities for Social Mobility for Scheduled Castes, Scheduled Tribes and Women		
	Unit – 3 India in the Globalization Era	**13**
Chapter 8: Globalization and Indian Culture: Impact on Food Habits, Language, Ideas and Life Styles **Chapter 9**:Globalisation and Social Values: Impact on Youth and their World View, Changing Landscape of Love and Marriage, Impact on Familial Relationships and Understanding Others		

II SEMESTER

DSC (3) Foundations of

Sociological Theories

	Unit – 1 Auguste Comte and Herbert Spencer	**14**
Chapter 1: Auguste Comte: Intellectual Context, Positivism, Law of Three Stages, Classification of Sciences.		

Chapter 2: Herbert Spencer: Theory of Social Evolution, Organic Analogy, Types of Society.	
Unit - 2 Karl Marx and George Simmel	**14**
Chapter 3: Karl Marx: Dialectical Materialism, Economic Determinism, Class Struggle, Alienation **Chapter 4:** Georg Simmel: Formal Sociology, Theory of Sociation, Theory of Conflict.	
Unit - 3 Emile Durkheim and Max Weber	**14**
Chapter 5: Emile Durkheim: Social Facts, Division of Labour in Society, Suicide, Sociology of Religion. **Chapter 6**: Max Weber: Social Action, Ideal Types, Bureaucracy, Types of Authority, Protestant Ethics and Spirit of Capitalism.	

DSC(4) Sociology of Rural Life in India

Unit – 1: Rural and Agrarian Social Structure	**16**
Chapter 1: Social Construction of Rural Societies: Myth and Reality (M N Srinivas) **Chapter 2:** Agrarian Social Structure: Land Tenure Systems (Colonial Period); Post-Independence Indian Land Reform Laws **Chapter 3:** Commercialisation of Agriculture, Commodification of Land	
Unit – 2: Themes of Rural Society in India	**14**
Chapter 4: Rural Caste and Class Structure **Chapter 5:** Gender and Agrarian Relations **Chapter 6:** Impact of Panchayat Raj System and Rural Politics **Chapter 7:** Actors in Market - Weekly Fairs, Trading Castes, Emerging Trading Classesand Key Role of Intermediaries	

Chapter 8: Emergence of Online and Virtual Commodity Markets - Features and Impact on Traditional Sellers and Buyers.	
Unit – 3: Rural Development	**12**
Chapter 9: Induced Intervention: PURA, MGNREGA, Swach Bharat Abhiyan, AksharaDasoha, Water and Land Development Efforts **Chapter 10:** Challenges to Sustainable Rural Development: Casteism, Factional Politics,Natural Calamities (Droughts and Floods), Utilisation of Water, Fertilisers and Pesticides	

OE (2) Social Development in India

Unit – 1 Social Change and Development	**16**
Chapter 1: Rethinking Development: From economic development to social development and Human Development Index (HDI). **Chapter 2:** Development: Concept - changes in values and social relations as development; S.C. Dube's contributions; Importance of Social Development. **Chapter 3**: Indian thinking about Social Development - Swami Vivekananda, Ravindranath Tagore, M.K. Gandhi and Dr B. R. Ambedkar.	
Unit - 2. Components of Social Development	**13**
Chapter 4: Political Freedom, Economic Facilities. **Chapter 5:** Social Opportunities, Transparency, Security.	
Unit - 3 Challenges to Social Development	**13**
Chapter 6: Sustainable and Inclusive Development, Environmental Sustainability. **Chapter 7:** Responsible Private Corporations, Redressing Regional Imbalance, Harnessing Demographic Dividend.	

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DEPARTMENT OF SOCIOLOGY

NEP Syllabi for III & IV Semester

2022-23

III SEMESTER

DSC (5) Social Stratification and Mobility

Unit – 1 Stratification - Features and Forms	**14**
Chapter No. 1. Basic characteristics of Stratification: Melvin M Tumin. **Chapter No.2.** Forms of Social Stratification - Caste, Class, Estate. **Chapter No.3.** Dimensions of Social Stratification - Income, Wealth, Power, Occupational Prestige, Schooling.	
Unit – 2 Perspectives on Stratification	**14**
Chapter No. 4. Functional Theory: Kingsley Davis and W E Moore's perspective and critique by Melvin M Tumin. **Chapter No.5.** Karl Marx's Theory: Class and Social Change. **Chapter No.6.** Weber's Theory: Class, Status and Power.	
Unit – 3 Social Mobility	**14**

Chapter No.7. Meaning of social mobility; forms of social mobility: horizontal and vertical, intergenerational and intragenerational mobility. **Chapter No.8.** Role of Education and Profession in the Rise of Middle Class. **Chapter No.9.** Mobility in Caste in Contemporary India.	

DSC **(6)**

Unit – 1 Introducing Urban Sociology	**14**
Chapter No. 1. Meaning of Urban Sociology and its importance; a brief history of Urban Sociology in India and world. **Chapter No.2.** Meaning of Urban, Urbanism and the City; Types of City: Metropolitan, Megacity and Global City. **Chapter No.3.** Urbanization and its Challenges: Rural-Urban Continuum, Suburbs, Urban Fringe, Urban Sprawl, Edge Cities.	
Unit – 2 Perspectives on Urban Society	**14**
Chapter No. 4. Ecological Theory (Chicago School). **Chapter No.5.** World and Global Cities (SaskiaSassen). **Chapter No.6**Spaces of Flows (Manuel Castells), Cities in the South.	
Unit – 3 Urban Policy	**14**
Chapter No.7. Inequalities: Caste, Class, Gated Communities and Social Exclusion. **Chapter No.8.** Urban Governance: 74th Amendment to the Indian Constitution, Urban Development and Planning. **Chapter No.9**. Urban Policy: Urbanization and Environmental Concerns, Smart cities.	

Sociology of UrbanLife in India

OE (3) Sociology of Tourism Management

Unit – 1 Sociology, Tourism, Tourists	**15**
Chapter No. 1. Definitions of Sociology, Culture, Tourism, Tourists, Tourist Gaze; Relation between Tourism, Leisure and Recreation; Sociology of Tourism. **Chapter No.2.** Types of Tourism: Cultural, Heritage, Medical, Food, Sports and Eco-Tourism. **Chapter No.3.**Tourism and Locals; Hosts and Guests: Mutual Impact.	
Unit – 2 Tourism System	**11**
Chapter No. 4. Development and Structure of the Tourist System - Motivation and Role of Tourist. **Chapter No.5.** Impact of Tourism on Host Place: Social, Economic, Climate and Environmental. **Chapter No.6.** Sustainable Tourism: Definitions of Sustainable and Sustainable Tourism; Sustainability of Tourism.	
Unit – 3 Tourism Management	**16**
Chapter No.7. Demand for Tourism at Individual and Market level; Tourism Consumer Behaviour: Roles and Decision Making Process; Accommodation: Definition and Management of Commercial Accommodation; Transportation as Tourist Product; Role of Intermediaries. **Chapter No.8.** Marketing for Tourism: Definition; Difference between Marketing and Selling; Tourism as a Service Industry: Product, Price, Promotion and Place. **Chapter No.9.** Information Technology and Tourism: ICT as a Business Tool; e-Tourism.	

OE (3) Sociology of Youth

Unit-1:Age Groups and Social Structure	**14**
Chapter 1:Age Differentiation, Age Group, Age Sets, Problems of Generations; Cultural Lag (W F Ogburn);Structural Lag(Riley) **Chapter 2**:Youth Cultures, Subcultures, CounterCulture, ContraCulture. **Chapter 3:**Response of Youth to Caste and Class Inequalities.	
Unit-2: Youth and Society	**14**
Chapter 4: Youth Leisure, Music. **Chapter 5**: Globalization of Youth Culture; Marketing Youth Culture. **Chapter 6**:Youth, Media and Society.	
Unit-3:Youth and Social Concern	**14**
Chapter 7:Youth, Protest and Violence: Social, Political and Economic Issues. **Chapter 8:**Youth, Peer Group and Drug Culture **Chapter 9**:Youth, Nationalism and Globalization	

IV SEMESTER

DSC (7)Sociology of Marginalized Groups

Unit – 1 Introduction	**16**
Chapter No. 1. Marginalization: Meaning and Nature; Types of Marginalization: Social, Political, Economic; Relationship between Marginalization and Social Exclusion. **Chapter No.2.** Causes of Marginalization; Marginalized Groups: Caste, Gender, People with Disabilities, Minorities, Tribes and Elderly. **Chapter No.3.** Socio-economic Indices of Marginalization: Poverty, Relative Deprivation, Exploitation, Discrimination, Educational Backwardness, Inequality and Untouchability.	
Unit – 2 Marginalization and Affirmative Action	**14**
Chapter No. 4. Views of Dr B R Ambedkar and Affirmative Principle in the Constitution of India (Constitutional Provisions). **Chapter No.5.** Scheduled Castes, Scheduled Tribes and Status of Women in these groups; Status of Transgenders. **Chapter No.6.** Status of Landless Agricultural Labourers, Status of Land Ownership among Scheduled Caste and Scheduled Tribes.	

Unit – 3 Marginalized Groups and Social Change	**12**
Chapter No.7. Social Mobility among Marginalized Groups: Education, Employment, Political Participation, Conversion, Migration. **Chapter No.8.** Challenges of Privatization and Response by Marginalized Groups. **Chapter No.9.** Social Justice in the context of Globalization	

DSC (8) Population and Society

Unit – 1 Introduction	**14**
Chapter No. 1. Relationship between society and population. **Chapter No.2.**Global Population Trends: role of fertility, mortality and migration; Power of Doubling. **Chapter No.3.** Age and Sex Composition in India and its Impact; Demographic Dividend.	
Unit – 2 Sources of Demographic Data	**14**
Chapter No. 4. Population Census: Uses and Limitations; Indian Censuses. **Chapter No.5.** Vital Registration System. **Chapter No.6.** National Sample Survey; Sample Registration System; National	
Unit – 3 Population Theories and Policy	**14**
Chapter No.7. Population Theories: Malthusian Theory, Optimum Theory of Population and Demographic Transition Theory. **Chapter No.8.** Need of Population Policy; Millennium Development Goals and Sustainable Development Goals. **Chapter No.9.** Population Policy of India; Programmes and their Evaluation.	

OE (4) Sociology of Leisure

Unit-1:Introduction	**14**
Chapter 1:Definition of Leisure and its attributes; the need for the study of leisure as a social activity. **Chapter 2**:Leisure, Recreation, Play, Pleasure and Leisure Identity; Leisure, Work and Post Work. **Chapter 3:**Types of Leisure: Serious, Casual, Postmodern, Therapeutic.	

Unit-2: Constraints on Leisure Participation	**14**
Chapter 4: Class Inequality and Exclusion from Leisure Participation. **Chapter 5**: Leisure Participation and Gender Relations- Leisure and Beauty System. **Chapter 6**:Leisure Participation, Age and Disability.	
Unit-3: Commodification of Leisure	**14**
Chapter 7:Cinema, OTTs, and Reality TV. **Chapter 8**: Leisure and Sports- Adding Leisurevalue like branded goods(Sony Walkman, iPod, Nike, Coke etc.); Malls as areas of leisure. **Chapter 9**:Social Media as leisure Activity- Role in Identity building.	

OE (4) Sociology of Food Culture

Unit-1: Introduction	**14**
Chapter 1: Sociological nature of Food and Eating; Sacred and Taboo Food, Sociality and Social Change. **Chapter 2**: Determinantsof Food Consumption- Types of Food; Vegetarian, Non-Vegetarian, Vegan and Flexitarian. **Chapter 3**:Local Food Culture and Taste for Exotic.	
Unit-2: Food from Domestic to Industry	**14**
Chapter 4: Industrialization of Food Production and Distribution.	

Chapter 5: Hotels Restaurants and Catering Sectors. **Chapter 6**: Cooking as duty and cooking for self-pleasure.	
Unit-3:Food and Risk Society	**14**
Chapter 7:Diet and Body: Social Appearance and Beauty. **Chapter 8**:Global Overview: Consumption: Pattern and Reasons; overeating, Undereating and Hunger. **Chapter 9**:GM Foods, Organic Foods and Modern food practices as a risk factor.	

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DEPARTMENT OF SOCIOLOGY

CBCS Syllabi for V& VI Semester

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BOARD OF STUDIES (BoS)

DEPARTMENT OF PHYSICAL EDUCATION

UG ☑

PG ☐

Revised NEP Syllabi for I Year (SEC - Health, Wellness and Yoga)

2022-23

DEPARTMENT OF PHYSICAL EDUCATION

MOTTO

Play, Perform and Excel

VISION

Develop physical culture among youth to create healthier society

MISSION

- To inculcate sportsman spirit that leads to team spirit and induce qualities of leadership among students.

- To organize programs aimed at promotions of sports.

- To ensure women participation in sports.

- To teach ancient Indian knowledge of Yoga and Self defence through experts.

- To spread sports culture in the society for sportive India.

Program Outcome (PO) Attributes

PO 1: Domain Knowledge

PO 2: Problem Analysis

PO 3: Design and Development of Solutions

PO 4: Investigation & Research

PO 5: Use of Modern Techniques/Tools

PO 6: Impact on Society

PO 7: Environment and Sustainability

PO 8: Moral and Ethical Values

PO 9: Individual and Team Work with Time Management

PO 10: Communication

PO 11: Project Management and Finance

PO 12: Life-long Learning

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Dr. HN.Bhaskar Physical Education Director	Department of Physical Education SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru - 12	**Bhaskarhn.fgc@mahajana.edu.in** **9845190967**
2	Member	Sri. Madhusudana.PS Physical Education Director	Department of Physical Education SBRR Mahajana First Grade College (A), Jayalakshmipuram, Mysuru	**madhusudhanaps@gmail.com** **7019659926**
3	Member	Sri. Jagadeesh	Physical Education SBRR Mahajana First Grade College,PG,Centre (A), Jayalakshmipuram, Mysuru	**8762102974**
4	Two Experts from other University	Dr. Amarnath.KK	Professor,University College of Physical Education, Bangalore University,Bangalore	**kkamarnathucpe@gmail.com** **9449751141**
5		Sri. C S Mohankumar	Director of Physical Education, Mandya University, Mandya.	**9901706753**
6	Nominee by the Vice Chancellor	Dr. C Venaktesh	Professor, DOS in PESS, University of Mysore, Mysore.	**9901203647**
7	Alumnus	Dr. M P Muralidhar	Physical Education Director, ATME College of |Engineering, VTU, Mysore	**Mpmuralidhar7@gmail.com** **9611551921**

Course Structure (NEP)

Skill Enhancement Course (SEC)

I Year

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Exam Duration (Practical)	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
Physical Education – I/II Sem									
SEC (Sem I/II)	Health, Wellness and Yoga **22HWY94**	**0**	**4**	**0:0:2 (2 Credit)**	**10**	**10**	**30**	**1 Hour**	**50**

Semester- I/II

Skill Enhancement Courses

Course Code: 22HWY94	**Course Title:** Health, Wellness and Yoga
Course Credits (L:T:P): 02 (0:0:2)	**Teaching Hours/Week:** 04 Hours
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 20
Exam Duration: 1 Hour (Practical)	**Semester End Examination Marks:** 30

Course Outcomes:

CO1 – Enhance the dimensions of health and wellness in coping with stress.

CO2 – Inculcate the knowledge of various exercises.

CO3- Assimilate the knowledge of Physical Education and Yoga.

Content of Practical Course	Hours
Unit 1: Introduction a. Meaning, Definition and Importance of Health & Wellness b. Dimensions of Health and Wellness c. Factors Influencing Health & Wellness Physical Fitness, Nutrition, Habits, Age, Gender, Lifestyle d. Health & Wellness through Physical Activities Sports, Games, Yoga, Recreation and Leisure Time Activities e. Causes of Stress and Stress relief through Exercise and Yoga **Unit 2: Practical – Exercises for Health and Wellness** a. Warm-Up and Cool-Down – General and Specific Exercises b. Physical Fitness Activities c. Stretching Exercises d. Strengthening Exercises e. Cardiovascular Exercises f. Flexibility and Agility Exercises g. Assessment of BMI h. Relaxation Techniques **Unit 3: Yoga** • Shitalikarna Vyayama • Suryanamaskara • Basic Set of Yoga Asanas • Basic Set of Pranayama & Meditation	**56**

Course Articulation Matrix – 22HWY94

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	1	1	2	3	3	1	2	3	3	1	2
CO2	3	1	1	2	3	3	1	2	3	3	1	2
CO3	1	1	1	2	1	3	1	2	2	3	1	2

Wt. Avg.	2.33	1	1	2	2.33	3	1	2	2.66	3	1	2

APPROVED BY THE FOLLOWING BoS MEMBERS

Board of Studies

Sl. No.	Name and address	Designation	Signature
1	Dr. H.N.Bhaskar HoD, Dept of Physical Education and Sports SBRR Mahajana First Grade College Mysuru **Contact No:** 9845190967 bhaskarhn.fgc@mahajana.edu.in	Chairman	
2	Sri Madhusudana P S Physical Education Director Dept of Physical Education and Sports, SBRR Mahajana First Grade College, Mysuru **Contact No:** 7019659926	Member	
3	Sri.Jagadish Physical Education Director Dept of Physical Education and Sports, SBRR Mahajana First Grade College, Mysuru **Contact No: 8762102974**	Member	
4	Dr. C.Venkatesh Professor DOS in PESS, University of Mysore Mysuru Contact No:9901203647	Member	
5	Dr. Amarnath KK Professor University College of Physical Education Bangalore University, Bengaluru-560056 **Contact No:** 9449751141 kkamarnathucpe@gmail.com	Member	Absent
6	Sri. C.S.Mohankumar Director of Physical Education Mandya University, Mandya **Contact No: 9901706753**	Member	
7	Dr.M. P. Muralidhar Physical Education Director ATME College of Engineering VTU, Mysuru **Contact No:9611551921** **mpmuralidhar7@gmail.com**	Member	

Head of the Department of Physical Education
SBRR Mahajana First Grade C
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BOARD OF STUDIES (BoS)

DEPARTMENT OF PHYSICAL EDUCATION

UG ✓

PG

Revised NEP Syllabi for I/II/III/IV Semester (SEC - Sports)

2022-23

DEPARTMENT OF PHYSICAL EDUCATION

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PO 11: Project Management and Finance

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6	Nominee by the Vice Chancellor	Dr. C Venaktesh	Professor, DOS in PESS, University of Mysore, Mysore.	**9901203647**
7	Alumnus	Dr. M P Muralidhar	Physical Education Director, ATME College of |Engineering, VTU, Mysore	**Mpmuralidhar7@gmail.com** **9611551921**

Course Structure (NEP)

Skill Enhancement Course (SEC)

I/II Year

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Exam Duration (Practical)	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
Physical Education – I/II Sem									
SEC (Sem I/II/ III/IV)	Sports **22SPO94**	**0**	**4**	**0:0:2 (2 Credit)**	**10**	**10**	**30**	**1 Hour**	**50**

Semester-I/II/III/IV

Skill Enhancement Course

Course Code: 22SPO94	**Course Title:** Sports
Course Credits (L:T:P): 02 (0:0:2)	**Teaching Hours/Week:** 04 Hours
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 20
Exam Duration: 1 Hour (Practical)	**Semester End Examination Marks:** 30

Course Outcome (CO): Plan, organize and execute sports events.

Content of Theory & Practical Course	Hours
Unit 1: Physical Education & Sports • Conditioning Exercises • Aerobics & Calisthenics • One Major Game and One Indigenous Game (Basic Skills) • One Track/Field Event • Intramural Competitions • Project/Record • Proficiency in Particular Sport Rules & Regulations, Marking and Ground Management, Officiating	**56**

Course Articulation Matrix – 22SPO94

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	1	1	1	1	2	1	1	2	1	2	1	2
Wt. Avg.	1	1	1	1	2	1	1	2	1	2	1	2

APPROVED BY THE FOLLOWING BoS MEMBERS

Board of Studies

Sl. No.	Name and address	Designation	Signature
1	Dr. H.N.Bhaskar HoD, Dept of Physical Education and Sports SBRR Mahajana First Grade College Mysuru **Contact No:** 9845190967 bhaskarhn.fgc@mahajana.edu.in	Chairman	
2	Sri Madhusudana.P S Physical Education Director Dept of Physical Education and Sports, SBRR Mahajana First Grade College, Mysuru **Contact No:** 7019659926	Member	
3	Sri.Jagadish Physical Education Director Dept of Physical Education and Sports, SBRR Mahajana First Grade College, Mysuru **Contact No: 8762102974**	Member	
4	Dr. C.Venkatesh Professor DOS in PESS, University of Mysore Mysuru Contact No:9901203647	Member	
5	Dr. Amarnath KK Professor University College of Physical Education Bangalore University, Bengaluru-560056 **Contact No:** 9449751141 kkamarnathucpe@gmail.com	Member	Absent
6	Sri. C.S.Mohankumar Director of Physical Education Mandya University, Mandya **Contact No: 9901706753**	Member	
7	Dr.M. P. Muralidhar Physical Education Director ATME College of Engineering VTU, Mysuru **Contact No:9611551921** **mpmuralidhar7@gmail.com**	Member	

Head of the Department of Physical Education
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Jayalakshmipuram, Mysuru-570 012

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DEPARTMENT OF NCC

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Revised NEP Syllabi for
I/II/III/IVSemester SEC - NCC

2022-23

DEPARTMENT OF NCC

Motto

Unity and Discipline

Vision

To take up Career in the Armed Forces

Mission

To Provide leadership in all Walks of Life and always be available for the service of the nation

NCC -Programme Outcomes

PO 1	**Domain Knowledge**
PO 2	**Problem Analysis**
PO 3	**Design & Development of Solutions**
PO 4	**Research and Investigation**
PO 5	**Modern Techniques & Tools**
PO 6	**Impact on Society**
PO 7	**Environment & Sustainability**
PO 8	**Moral & Ethical Values**
PO 9	**Individual & Teamwork**
PO 10	**Communication**
PO 11	**Project Management & Finance**
PO 12	**Life Long Learning**

Course Structure (NEP)

Skill Enhancement Course (SEC) - NCC

I/II Year

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Exam Duration (Practical)	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
NCC – I/II/III/IV Semester									
SEC	NCC 22NCC94	0	4	0:0:2 (2 Credit)	10	10	30	1 Hour	50

Semester-I/II/III/IV

Skill Enhancement Courses (SEC)

Course Code: 22NCC94	**Course Title:** NCC
Course Credits (L:T:P): 02 (0:0:2)	**Teaching Hours/Week:** 04 Hours
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 25
Exam Duration: 1 Hour (Practical)	**Semester End Examination Marks:** 25

Course Objective:

To develop Character, Comradeship, Discipline, Leadership, Secular Outlook, Spirit of Adventure and the Ideals of selfless Service among the youth of the Country.

Course Outcomes:

CO1: Acquire the concept of NCC
CO2: Improvised Outlookand Turnout
CO3: Work for the Social Well Being

Unit 1: Introduction to NCC, Aims and Objectives, Organisation structure, Ranks, NCC song, Incentives, Code of ethics and Conduct.

Unit 2: Drill-improve bearing and smartness, Turnout, Obedience to Orders, Types of Drill.

Unit 3: National integration, Health and Hygiene, Personality development and leadership, Social awareness and Community development, Environment awareness and Conservation.

Course Articulation Matrix – 22NCC94

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	1	2	2	2	2	2	-	2
CO2	2	1	1	-	-	1	1	2	3	2	1	2
CO3	2	1	1	1	1	2	2	2	3	2	1	2
Wtd. Avg.	**2**	**1**	**1**	**1**	**1**	**1.6**	**1.6**	**2**	**2.6**	**2**	**1**	**2**

Evaluation Pattern:

Assessment Criteria	Marks
CC 1 - Assignment	10
CC 2 - Viva	10
CC 3 – Semester End Examination (Practical)	30
Total	**50**

Mahajana Education Society (R.)

Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysore – 570 012

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College with Potential for Excellence

NATIONAL SERVICE SCHEME

UG ☑

PG ☐

Revised NEP Syllabi for I/II/III/IV Semester SEC - NSS

2022-23

NATIONAL SERVICE SCHEME

MOTTO

Not me But You

VISION

To build the youth with the mind and spirit to serve the society And work for the social uplift of the down-trodden masses of our Nation as a movement

MISSION

To promote social, economic, technological, and political change in order

To expand civilization beyond Earth, to settle space and to use the resulting resources to build a hopeful and prosperous future for humanity.

Program Outcomes (POs) for National Service Scheme

POs	Details of the Program Outcomes (POs)
PO1	Domain Knowledge
PO2	Problem Analysis
PO3	Design & Development of Solutions
PO4	Research & Investigation
PO5	Usage of Modern Tools and Techniques
PO6	Social Sciences & Society
PO7	Environment and Sustainability
PO8	Moral and Ethical Values
PO9	Individual and Teamwork.
PO10	Communication
PO11	Economics and Project Management
PO12	Lifelong Learning

Course Structure

I/II Year

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Total Marks
					IA		Exam	
		L	T/P		C1	C2	C3	
NSS – I/II/III/IV Semester								
SEC	22NSS94	0	4	0:0:2 (2 Credit)	10	10	30	50

Semester-I/II/III/IV Semester

Skill Enhancement Course

National Service Scheme

Course Code: 22NSS94	**Course Title:** National Service Scheme (NSS)
Course Credits (L:T:P): 02 (0:0:2)	**Teaching Hours/Week:** 04 Hours
Total Contact Hours: 56 Hours	**Formative Assessment:** 20 Marks
Exam Duration: 1 Hour (Practical)	**Semester End Examination:** 30 Marks

Course Outcomes:

CO1: Acquire the fundamentals concept of NSS

CO2: Understand the Volunteerism & Organization structure of NSS

CO3: Appreciate the culture of Campus Activities, Shramadhan and Awareness Program and its Benefits through working as a team or group.

CO4: Develop overall personality of volunteers, Off Campus Activities and make them as leaders and responsible Citizens of our nation.

Course Contents	Hours: 56
Unit – I : Fundamentals of NSS	
Introduction to NSS, Origin of NSS, Aims and Objectives of NSS, NSS Motto, NSS Emblem, NSS Badge, NSS Day, NSS Songs.	14
Unit - II : Volunteerism & Organization structure of NSS	
Volunteerism and NSS: Volunteerism– Meaning, definition, basic qualities of volunteers, need of volunteerism for National development. **Organization structure of NSS**- National level, State level, University and Institutional Level.	14
Unit - III : Campus Activities	
Shramadhan – Plantation, Cleaning, Watering, Weeding, Any other activities. **Awareness Programmes –** Seminar, Workshops, Celebration of National and International days, Personality Development Programmes, Group Activities, etc.,	14
Unit - IV : Off Campus Activities	

Rally, Jatha, Visit to Adopted villages, Swatchatha Programme, Visit and Conserving Ancient monuments and heritage site, Socio Economic Survey of village/slum, Nature Camp, Environmental Education, JOB Card (APL, BPL, Social security schemes), Women Empowerment Programme, Health Camps, Blood grouping awareness and Blood donation, Legal awareness Programme, Literacy Programme, Water Conservation Programme, One Day Special Camp in avillage (preferably in adopted village).	14

References:

a) Prof. B.K. Shivanna, "National Service Scheme" Printing Press KSOU, Mysore 2011

b) MadhuAhuja, Students Leaders in the National Service Scheme (NSSS) in Delhi : A case study 1986 (New Delhi : Dept. of Management and Extension, Lady Irwin College, University of Delhi, 1986)

c) Chattarjee, B., Social service opportunities for students in Slum Areas (reprint : Delhi

: Delhi School of Social Work, University of Delhi 1973)

d) Desai Bharat. H, A Social Psychological Study of the effectiveness of the National Service Scheme in developing some aspects of the Student Personality – (Ph. D Thesis submitted to university of Pune 1982)

e) Dikxit. P Sanjeeva, National Service Scheme in Andhra Pradesh, (Andhra University Press Publications, 1994)

f) Dilshad. M.B National Service Scheme in Karnataka, (Ph. D Thesis submitted to Karnataka University Dharwad, 1997)

g) Balan K., (1985), Youth Power in the Modern World, Ajanta Publications, NewDelhi

h) Jones Gill, (2009), Youth, Polity Press,UK

i) Kehily Jane Mary (Etd.) (2007), Understanding Youth:

Perspectives, Identitiesand Practices, Sage Publication,

London

j) Landis H. Paul, (2011), Adolescence and Youth: The Process of Maturing, SarupBook Publishers Pvt. Ltd., New Delhi

Course Articulation Matrix- 22NSS94

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	-	1	3	3	2	3	2	1	3
CO2	1	2	1	1	-	3	3	3	3	2	1	2
CO3	2	2	2	1	-	3	3	3	3	2	1	3
CO4	2	3	1	1	1	3	3	3	3	3	2	3
Weighted Average	**1.75**	**2.25**	**1.5**	**1**	**1**	**3**	**3**	**2.75**	**3**	**2.25**	**1.25**	**2.75**

Scheme of Valuation

Assessment Criteria	Marks
C1 – Unit 1 & 2 Assignment / Test / Quiz	**10**
C2 – Campus / off campus Activities Assignment / Test / Quiz	**10**
C3 - Participation – 10 marks Leadership & Responsibility – 10 marks Report Submission – 10 marks	**30**
Total	**50**

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DEPARTMENT OF RANGERS AND ROVERS

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P☐

Revised NEP Syllabi for I/II/III/IV Semester Rangers and Rovers (SEC)

2022-2023

DEPARTMENT OF RANGERS AND ROVERS

Motto

Service

Vision

To bring over all development in one's personality

Mission

To provide a value system based leadership building a better world and to play a constructive role in society.

Program Outcome (PO) Attributes

PO 1	**Domain Knowledge**
PO 2	**Problem Analysis**
PO 3	**Design & Development of Solutions**
PO 4	**Research and Investigation**
PO 5	**Modern Techniques & Tools**
PO 6	**Impact on Society**
PO 7	**Environment & Sustainability**
PO 8	**Moral & Ethical Values**
PO 9	**Individual & Teamwork**
PO 10	**Communication**
PO 11	**Project Management & Finance**
PO 12	**Life Long Learning**

Course Structure (NEP)

Skill Enhancement Course (SEC)

Course Type, Code and Title		Hours/ Week		L:T:P (Credits)	Maximum Marks			Exam Duration (Practical)	Total Marks
					IA		Exam		
		L	T/P		C1	C2	C3		
Rangers and Rovers – I/II/III/IV Semester									
SEC	RR BA/BCA/BSc/BCom/BBA 22RNR94	-	4	0:0:2	10	10	30	1 Hour	50

Skill Enhancement Courses (SEC): for semester I/II/III/IV

SEC Module

Course Code: 22RNR94	**Course Title:** Rangers and Rovers
Course Credits: 02 (0:0:2)	**Hours of Teaching/Week:** 4 Hour (Practical)
Total Contact Hours: 56 Hours	**Formative Assessment Marks:** 20
Exam Duration: 1 Hour (Practical)	**Semester End Examination Marks:** 30

Course Objective:

1. To practice national integration.
2. To develop personality through community services.
3. To work with and among people.
4. To gain leadership skills.
5. To enable students to have ethical sense.

Course Outcomes:

CO1: Assimilate the knowledge and inculcate the Leadership, good manners and ideals of disciplined responsible young citizens.

Content of the course		Hours
Unit- I	**Introduction and Knowledge** - Rovering and Rangering, Prayer & Flag Song, Flags, Promise and Law, Discipline and Uniform, First Aid, Knots, Make a scarf using the material available at your home.	16
Unit- II	**Skills :** Team building and leadership skills- Campfire/ Local Handicraft/ College level cleanliness drive/ rope work/ cooking/ first aid/ signaling/ skill oriented Games- In-door and Outdoor Games ,etc	20
Unit- III	**Group activities**: Community service-sustainable development/Bore well recharge / Food save warriors / Organize science exhibition / Road Safety awareness/Rain Water Harvesting/Local Festivals service/Prepare Seed Balls/Teaching Game etc.	20

Reference Books

1. Scouting for Boys
2. Rovering to Success
3. Girl Guiding in India
4. Ranger Handbook
5. Ranger Leader Handbook
6. Rover Scouting
7. All faith prayer
8. Pioneering Hand Book
9. B.P. Six Exercise
10. Camp Fire Book
11. Camping and Hiking
12. Drill and Marchpast
13. Knots and Pioneering
14. APRO – II
15. APRO – III
16. http://sdgs.scout.org

Reference books and materials available at http://shop.bsgkarnatka.org

Address: The Bharat Scouts and Guides, KarnatakaState Headquarters
#39, Shanthi Gruha, Palace RoadBangalore - 560001

Course Articulation Matrix – 22RNR94

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	1	2	3	3	2	2	1	2
Wtd. Avg.	**2**	**1**	**1**	**1**	**1**	**2**	**3**	**3**	**2**	**2**	**1**	**2**

ASSESSMENT:

Assessment Criteria	Marks
C1: Assignment	10
C2: Activities	10
C3: Semester End Examination (Practical)	30
TOTAL	**50**

EVALUATION PATTERN

C1	10 Marks (Assignment)
C2	10 Marks (Team building and leadership skills- Campfire/ Local Handicraft/ College level cleanliness drive/ rope work/ cooking/ first aid/ signaling/ skill oriented Games- In-door and Outdoor Games/ Community service-sustainable development/Bore well recharge / Food save warriors / Organize science exhibition /Road Safety awareness/Rain Water Harvesting/Local Festivals service/Prepare Seed Balls/Teaching Game etc.)
C3	30 Marks (Semester End Examination (Practical)
Total	50 Marks

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College with Potential for Excellence

BOARD OF STUDIES (BoS)

BACHELOR OF BUSINESS ADMINISTRATION

(Hospitality and Hotel Management)

UG ☑

PG ☐

NEP Syllabi for I and II Semester BBA (H&H) 2021-22

DEPARTMENT OF HOSPITALITY AND HOTEL MANAGEMENT

Motto

Guest satisfaction with ultimate services

Vision

Catering Technology for Faster and Better Services

Mission

Imparting Quality Education all the way through different services,

Equipping the students for a Demanding Career.

Empowering the students with Professional Touch to become Successful employees OR Entrepreneurs.

Program Outcomes (POs) for Bachelor of Business Administration

PO 1: Domain Knowledge - Acquire and apply knowledge of Hotel management in relevant areas.

PO 2: Problem Analysis – Recognize real-hospitality problems and guest's requirements to propose solutions for the same using basic principles of management.

PO 3: Design and Development of Solutions – Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: Investigation & Research – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting practical issues as per their level of understanding and knowledge.

PO 5: Use of Modern Techniques/Tools – Use hospitality resources, various software/platforms and appropriate machines/techniques to interpret concepts of hospitality services.

PO 6: Impact of Science on Society – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7: Environment and Sustainability – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: Moral and Ethical Values – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: Individual and Team Work with Time Management – Work productively in a team or as an individual while exhibiting time management skills as well as money value for the customers.

PO 10: Communication – Develop the caliber to convey various concepts of customer services effectively.

PO 11: Project Management and Finance – Set up Hotels/resorts and build entrepreneurship, project management and finance planning skills.

PO 12: Life-long Learning – Engage in the art of self-directed learning.

Objectives: Hospitality Management

1. To provide foundation of strong managerial skills to create hygienic and good quality hospitality system effectively.
2. Help students in analyzing the requirements for catering facilities; learn modern methods of hospitality and its applications.
3. Provide students with an option to specialize in various domains of Hotel Management.
4. To produce outstanding Chefs/Managers, who can apply the theoretical knowledge and practical in solving real-time problems and in developing standalone live experiences.
5. To build entrepreneurs by developing among students the managerial techniques, business developing skills and problem-solving skills.
6. To prepare students who wish to pursue further studies and career in Hotel Management and related subjects.

PSO (Program Specific Outcome):

The range of learning outcomes achieved by students in the program will vary according to their award. As students progress towards their final levels of study, they will be expected to demonstrate an increasingly sophisticated level of understanding, analysis and evidence of the synthesis of theory and practice and are expected to be able to –

PSO 1- Demonstrate an understanding of the functional areas of the hotel and hospitality industry. Use the practical vocabularies of a variety of business discipline in an appropriate manner. Handle issues from a variety of viewpoints. Understand and evaluate theoretical frameworks. Develop capabilities in working with and managing others.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Dr. Satish G Chetty HOD	Pooja Bhagwat Memorial PG centre, KRS road, Metagalli,MYSURU	satishchetty@gmail.com 8197358552
2	Member	Mrs. Gunarekha B S Assistant Professor	Pooja Bhagwat Memorial PG centre, KRS road, Metagalli,MYSURU	Gunarekha75@gmail.com 7760539900
3	Two Experts from Other University	Dr. Mahesh R Associate professor	University of Mysuru BIMS	Mahesh@bims.uni-mysore.ac.in 9886639536
4		Dr. D. Anand HOD	University of Mysuru BIMS	anand@bims.uni-mysore.ac.in 9845130340
5	Nominee by the Vice Chancellor	Prof. S J Manjunath Associate professor	University of Mysuru BIMS	Manjunath@bims.uni-mysore.ac.in 9448587801
6	Member	Mrs.Sunitha Srinivasan Associate professor	University of Mysuru	Gunarekha75@gmail.com 7760539900
7	One Person from Industry/ Corporate Sector/Allied Area	Mr. Nicholas Harry General Manager	Le Ruchi the Prince MYSURU	Nicholasharry.ruchi@gmail.com 9945811022
8	Alumnus	Mr. Suhas	C/O L&T Mysuru	suhaslnt@gmail.com 8197358552

Course Structure(NEP)

Discipline Specific Courses (DSC) and Open Elective (OE)

I Year

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
Hospitality and Hotel Management – I Sem									
216129	**DSC(1) -** Foundation course in food production I (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(1) Lab - Foundation course in food production I (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
216130	**DSC(2) -** Foundation course in food & beverage service I (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(2) Lab - Foundation course in food & beverage service I (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
216131	**DSC(3) -** Foundation course in front office (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(3) Lab - Foundation course in front office (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
OE(1)	Principles of Food Science **210EHNH101**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
Hospitality and Hotel Management – II Sem									
216229	**DSC(4) -** Foundation course in food production II (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(4) Lab - Foundation course in food production II (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
216230	**DSC(5) -** Foundation course in food & beverage service II (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(5) Lab - Foundation course in food & beverage service II (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
216231	**DSC(6) -** Foundation course in Accommodation Operation (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(6) Lab - Foundation course in Accommodation Operation (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
OE(2)	Nutrition **210EHNH201**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**

DSC (1) Syllabus for BBA Hospitality and Hotel Management

Semester I

Course Code: 216129	**Course Title:** **DSC(1) - Foundation course in food production I** DSC(1) Lab : **Foundation course in food production I**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03 (Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Establish and maintain high standard of sanitation, behavior, attitude, and safety procedures.

CO2: Develop basic discipline and respect towards higher hierarchy along with basic nomenclatures.

CO3: Explain the characteristics, functions of food sources of the major nutrients and understand/demonstrate nutritional cooking methods including how to maximize nutrient Retentions.

CO4: Understand how the food is cooked in different styles suiting the requirements, differences in growing practices and how to prepare a seasonal menu.

CO5: Develop skills integral to success in the food industry including different kinds of food preparations.

Course Content

Content	Hours
Unit – 1 INTRODUCTION TO COOKERY	**10 hrs.**

Levels of skills and experiences Attitude and behavior in the kitchen, Personal hygiene, Uniforms and protective clothing. Safety procedures in handling equipments. Culinary history and origin of modern cookery.	
UNIT-2 HEIRARCHY AREA OF DEPARTMENT AND KITCHEN	**08 hrs.**
Classical brigade. Modern staffing in various category kitchens. Roles of Executive chef and other chefs. Cooperation with other departments. List of culinary terms, explanation with examples	
UNIT-3 AIMS AND OBJECTS OF COOKING FOOD	**08 hrs.**
Aims and Objectives of cooking food. Various texture, various consistencies. Basic principles of cooking food. Vegetable and fruits cooking. Vegetable pigments and color changes. Cuts of vegetables, classification of fruits. Uses of fruits in cooking, salads and salad dressings.	
UNIT-4 METHODS OF COOKING FOOD	**08 hrs.**
Roasting, Grilling, Frying, Baking, Broiling, Poaching, Boiling, Principles of each of the cooking methods. Care and precaution to be taken. Selection of food for each type of cooking.	
UNIT-5 COMMODITIES – SHORTENING (FAT AND OIL)	**08 hrs.**
Role of shortening Varieties of shortening. Advantages and disadvantages of using various shortenings. Raising agents, classification and role of thickening agents. Sugar and its importance. Types of sugar. Cooking of Sugar.	

Text Books

1. The food lover's companion by Barrons
2. On food and cooking by Harold McGee
3. The professional chef by Wiley
4. Joy of cooking by Irma S
5. Mastering the Elements of Good Cooking by Samin Nosrat

Web links:

1. http//www.foodproduction.com
2. http//www.cookingmethods.com
3. http//www.history of cooking.com

Practical:

1 A Equipment – Identification, Description, Uses & Handling

B Hygiene – Kitchen etiquette, Practices & Knife handling

C Safety and security in the Kitchen

2 A Vegetables – classification

B Cuts – julienne, Macedonia's, burnoose, mignonette, dices, cubes, shred, mirepoix

3 Identification and Selection of ingredient

4 A Basic cooking methods and pre-preparations

B Blanching of tomatoes and capsicum

C Preparation of concussed

D Boiling (Potatoes, Beans, Cauliflower etc.)

E Frying – (deep frying, shallow frying, Sautein Aborigines, Potatoes etc)

F Braising – Onions, Leeks, Cabbage

G Such cooking (Rice, Pasta, Potatoes)

5 Simple Salads

A Coleslaw

B Potato Salad

C Beetroot Salad

D Green Salad

E Fruit Salad

F Preparation of Salad Dressings

Course Articulation Matrix - 216129

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12	PSO1
CO 1	2	1	1	1	1	1	2	1	1	2	1	2	2
CO 2	2	2	2	2	1	2	2	2	2	2	2	1	2
CO 3	2	1	2	2	1	2	1	2	1	1	1	2	2
CO 4	2	2	2	1	1	1	1	1	2	1	3	1	2
CO 5	3	2	1	1	1	2	1	2	2	2	1	2	3
WA	**2.1**	**1.8**	**1.6**	**1.5**	**1**	**1.8**	**1.8**	**1.6**	**1.5**	**1.8**	**1.8**	**1.6**	**2.1**

DSC (2) Syllabus for BBA Hospitality and Hotel Management

Semester I

Course Code: 216130	**Course Title:** DSC(2) - **Foundation Course in Food and Beverage Service-I** DSC(2) Lab : **Foundation Course in Food and Beverage Service-I**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03 (Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Pedagogy: Classroom, lecture, Tutorials, Power Pint, Assignments, Case studies, video tutorials

Course Outcomes: On successful completion of the course, the students will;

Course Outcomes

CO1: Acquire knowledge on the concepts of hospitality industry, basics of food and beverage service.

CO2: Learn different organization structure and several job opportunities in each department and respective sub departments.

CO3: Familiarize with different food and beverage outlets and ancillary department associated with it.

CO4: Gain knowledge on different type of meals, different cuisines and sequence of courses of meals.

CO5: Research and design on different means for different cuisines and meals.

Course Content

Content	Hours
Unit 1 INTRODUCTION TO FOOD AND BEVERAGE SERVICE	**08**
Role of catering establishment in the travel and tourism industry, classification of catering establishments – commercial (residential and non-residential) – welfare	

(industrial, institutional and transport) – career opportunities in each	
Unit 2 DEPARTMENTAL ORGANISATION AND STAFFING	**08**
Organisation of food and Beverages Service department of a hotel – principal staff of various types of F and B service operations – dirties and responsibilities of F and B service staff attributes of a good waiter – interdepartmental relationship (within F and B department and with other departments)	
Unit 3 FOOD AND BEVERAGES SERVICES AREAS	**08**
Types of F and B outlets – specialty restaurant – coffee shop – banquets / functions – room service – cafeteria – grill room – discotheques – night clubs – bar – outdoor catering – garden café/poolside – Ancillary departments – Pantry – food pickup areas – stores – linen room – plate room – wash up – kitchen stewarding	
Unit 4 TYPES OF MEALS AND MENU PLANNING	**08**
Types of meals – breakfast – lunch – dinner – supper – brunch – high tea – afternoon tea – origin of the menu – menu planning objectives – menu terminology – basic types of menus – general menu planning – sequence of course courses of French classical menu – tabled hotel menu (Indian and Continental) a la carte menu (Indian Continental and Chinese)	
Unit 5 PLANNING MENUS	**10**
Western and Indian – Covers and Accompaniments – Continental and Indian Breakfast menus – English, American; Continental and Indian-mise-en-place AND MISE-EN-PLACE (including the arrangement of sideboards). Laing tables for different meals and menus – laying table cloth folding serviettes	

Skill Development Activities

1. Video tutorials, updating with latest trends in hospitality industry.
2. Research on organizations structure and different kitchen layouts and configuration
3. Research about international kitchen practices followed along with steward etiquettes
4. Design and execute a sample menu for different cuisines sand different meals.

Text Books:

1. Professional Food and Beverage Service Management: Brain Varghese
2. Introduction F & B Service – Brown, Heppner & Design
3. Food & Beverage Service Management – Brain Verghese
4. Modern Restaurant Service – John Fuller, Hutchinson
5. Food & Beverage Service – Lillicrap and Cusins, ELBS
6. Food & Beverage Service Training Manual – Sudhir Andrews Tata McGraw Hill

Web Links:

1. http//www. Food and beverage service.com
2. http//www. Restaurantservices.com
3. http//www. International food service.com

Practical:

1. Familiarisation of equipment
2. Methods of cleaning care and maintenance of equipment including cleaning / polishing of EPNS items.
3. Arrangement of sideboards – different types and uses
4. Laying table cloth – relaying a table cloth
5. Laying various covers
6. Napkin folds – Lunch folds – Dinner folds – Breakfast folds
7. Preparing Restaurant menu cards

Course Articulation Matrix - 216130

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO 10	PO 11	PO 12	POS 1
CO 1	2	1	1	1	1	1	1	1	1	2	1	1	1
CO 2	2	2	2	1	1	1	2	2	2	2	1	2	2
CO 3	1	1	2	1	1	1	2	2	1	1	1	2	1
CO 4	2	2	2	2	2	1	1	2	1	3	1	1	2
CO 5	2	1	2	1	2	1	1	1	2	2	1	1	2
WA	1.8	1.4	1.8	1.2	1.4	1	1.4	1.6	1.4	2	1	1.4	1.6

DSC (3) Syllabus for BBA Hospitality and Hotel Management

Semester I

Course Code: 216131	**Course Title:** **DSC(3) - Foundation course in front office** DSC(3) Lab : **Foundation course in front office**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03 (Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Pedagogy: Classroom lecture, Tutorials, Power points, Assignment, Case studies, video tutorials.

Course Outcomes: On successful completion of the course, the students will;

CO1: Acquire knowledge on the concepts of hospitality industry, basic of front office operations.

CO2: Learn different organization structure and several job opportunities ine ach department and respective sub departments.

CO3: Familarize with different category of hotel classification, types of room, guests.

CO4: Gain knowledge on front office layouts, hierarchy and equipment.

CO5: To interpret and learn all the functions of front office in hotel.

Course Content

Content	Hours
Unit 1 Introduction to Tourism and Hotel Industry	**08**
Tourism and its importance, hospitality and its origin hotels and their evaluation and growth, a brief introduction to hotel core areas WRT to front office.	
Unit 2 Classification of Hotels	**10**
Based on size, star, location, lientele, ownership basis, types of rooms, types of meal plans, room rates, types of guests.	
Unit 3 Front Office Department	**08**
Section and layout of the front office, coordination of front Office WRT other	

departments, front office equipments – manual, semi-automated, automated. Functions procedure and different records.	
Unit 4 Front Office Organization	**08**
Functional areas, front office hierarchy, duties and responsibilities, personality traits of staff, rules of the house guest and staff.	
Unit 5 Bell Desk	**08**
Functions procedure and records. Type of luggage handling	

Skill Developments Activities:

1. Video tutorials, updating with latest trends in hospitality industry.
2. Research on organization structure and different kitchen layouts and configuration
3. Research about international kitchen practices followed along with steward etiquettes.
4. Design and execute a sample menu for different cuisines and different meals.

Text Books:

1. HOTEL FRONT OFFICE – A TRAINING MANUAL BY SUDHIR ANDREWS
2. HOTEL FRONT OFFICE – A TRAINING MANUAL BY SURVA DEEP GOSH
3. HOTEL FRONT OFFICE MANAGEMENT BY RK SINGH
4. FRONT OFFICE OPERATIONS BY BHATNAGAR

Web Links:

1. http//www.hotel front offices.com
2. http//www.activities at front office.com
3. http//www.front office hierarchy. com

Practical:

1. Appraisal of front office equipment and furniture
2. Rack, Front desk counter & bell desk
3. Filling up of various forms in the front desk
4. Welcoming of guest
5. Telephone handling
6. Role – play:
   a. Reservation
   b. Arrivals
   c. Luggage handling
   d. Message and mail handling
   e. Guest cycle

Course Articulation Matrix - 216131

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PSO1
CO 1	2	1	1	1	1	1	1	1	1	2	1	1	1
CO 2	2	2	2	1	1	1	2	2	2	2	1	2	2
CO 3	2	1	2	1	1	1	2	2	1	1	1	2	2
CO 4	2	2	2	1	2	1	1	2	1	3	1	1	1
CO 5	2	3	2	1	2	1	1	1	2	2	1	1	1
WA	**2.16**	**1.8**	**1.6**	**1**	**1.5**	**1**	**1.5**	**1.66**	**1.4**	**2**	**1**	**1.5**	**1.5**

OE(1) Syllabus for BBA Hospitality and Hotel Management

Semester I

Course Code: 21OEHNH101	**Course Title:** OE(1) Principles of Food Science
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Able to know about the different pulses and legumes.

CO2: Able to know about various types of flesh foods and importance

CO 3: Able to know milk and milk products and cereals

CO4: Acquire knowledge about cereals and pulses

CO5: Analyse dairy products and its importance

Course Content

UNIT – 1	**08 HOURS**
INTRODUCTION INTO FOOD SCIENCE: Definition of food, food science, food groups, food in relation to health, benefits of food. Introduction to cooking methods. Preliminary cooking methods, moist heat method, dry heat method, new ways of cooking	
UNIT – 2	**08 HOURS**
CEREALS AND CEREAL PRODUCTS: Wheat- composition, different products of what, wheat flour, maida, semolina etc. Rice-composition, different products of rice, rice flour, puffed rice, rice flakes etc. Cereal cookery-the role of cereal s in cookery. Storage and preservation of cereals and cereal products.	
UNIT – 3	**10 HOURS**
PULSES AND LEGUMES: Introduction, the nutritive value of pulses and legumes. Pulses cookery, the role of pulses in cookery. Anti nutritional factors present in pulse. Cooking method to inactivate them, storage and preservation of pulses.	
UNIT – 4	**08 HOURS**
MILK AND MILK PRODUCTS: Composition, physical properties, nutritive value. Milk processing , different types of milk products (full fat milk, skim milk, milk powder, cheese, yoghurt, curd, cultured milk). Milk cookery, the role of milk in milk cookery.	
UNIT – 5	**08 HOURS**
VEGETABLES-FRUITS AND FLESH FOODS: Classification, composition, nutritive value. Vegetable cookery, the role of vegetables in cookery. Storage and handling of vegetables and fruits. Eggs- composition, egg cooker, the role of egg in	

cookery. Quality of eggs. Meat-types of meats and meat products (basics), meat cookery, the role of meat in cookery. Poultry-composition and cookery.

Reference books;

1. Food science and technology 3Ed by Sharma A
2. Objective food science-11 edition by Harshad Kiran kalwat kumar
3. Essentials of food science by vaclavik vikie
4. Food science by srilakshmi

Web links:

http//www.youtube.com.watch?v=j2UPjOpkkac

http//www.youtube.com.watch?v=kf9ZRaZnu

http//www.youtube.com.watch?v=Y6kMD3sRp2Q

Course Articulation Matrix – 21OEHNH101

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1
CO 1	1	-	-	-	-	-	-	-	-	-	1	1	3
CO 2	2	-	-	-	-	-	-	-	-	-	2	2	3
CO 3	1	-	-	-	-	-	-	-	-	-	1	1	3
CO4	3	-	-	-	-	-	-	-	-	-	3	3	3
CO5	3	-	-	-	-	-	-	-	-	-	3	3	3
Weighted Average	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**

DSC (4) Syllabus for BBA Hospitality and Hotel Management

Semester II

Course Code: 216229	**Course Title:** **DSC(4) - Foundation course in Food Production II** DSC(4) Lab : **Foundation course in Food Production II**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03 (Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Understand how the food is cooked in different styles suiting the requirements, differences in growing practices and how to prepare GSSS.

CO2: Develop basic discipline and respect towards better way of cooking along with basic methods.

CO3: Explain the characteristics, functions of spices of the major regions and understand/demonstrate nutritional cooking methods including how to maximize nutrient Retentions.

CO4: Understand how the dairy products are cooked in different styles suiting the requirements, differences in growing practices.

CO5: Develop basic knowledge to know how the food industry functions and different kinds of food preparation departments.

Course Content

Content	Hours
Unit 1 SAUCES-GRAVIES-SOUPS-STOCK	**08**
Stock-definition, types, preparation, recipes, storage, care and precautions Sauces- Classification, recipes for mother sauces, storage and precautions	

Soups-Classification with examples, basic recipes with Consommé with 10 games Gravies- Classification, kinds and preparations	
Unit 2 COOKERY	**08**
Introduction to meat cookery cuts of beef/ veal, cuts of lamb/mutton, cuts of Pork, variety meats {offal} poultry (with menu example of each). Fish cooking: introduction to fish cookery, classification of fish with examples, cuts of fish with menu examples, selection of fish and shell fish, cooking of fish(effect of heat). RICE, CEREALS AND PULSES: introduction, classification and identification, cooking of rice, cereals and pulses, varieties of rice and other cereals. EGG COOKERY: introduction to egg cookery, structure of an egg, selection of egg, use of egg in cookery.	
Unit 3 BASIC INDIAN COOKERY: CONDIMENTS AND SPICES	**08**
Introduction of Indian food, spices used in Indian cookery, role of spice in Indian cookery, the Indian equivalent of spices(names, MASALAS: Blending of spices, different masala used in Indian cookery, wet masala, dry masala, composition of different masalas, varieties of masala available in regional areas, special masalas blends.	
Unit 4 BASIC COMMODITIES- MILK	**08**
Introduction, processing of milk, pasteurization-homogenized, types of milk, skimmed and condensed, nutritive value. CREAM: Introduction, processing of cream, types of cream. CHEESE: Introduction, classification of cheese, curing of cheese, uses of cheese. BUTTER: Introduction, processing of butter, types of butter.	
Unit 5 KITCHEN ORGANISATION AND LAYOUT	**10**
General layout of the kitchen in various organizations, layout of receiving areas, layout of service and wash up.	

Text Books:

1. Food production operations by Parvinder S Bali
2. The art and science of culinary preparations by Chesser (Acfei)
3. Cooking ingredients by Christian Ingram
4. Food and beverage service management by Brain Varghese

Web links:

1. http//www.foodproduction.com
2. http//www.cookingmethods.com
3. http//www.historyofcooking.com

Practical:

1. Stocks
2. Sauces and Gravies
3. Egg Cookery – Preparation of a variety of egg dishes boiled (soft and hard)
4. Soups
5. Meat, Fish, chicken, Mutton preparation

Course Articulation Matrix –216229

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	1	1	1	1	1	2	1	1	2	1	2	
CO 2	2	2	2	2	1	2	2	2	2	2	2	1	
CO 3	2	1	2	2	1	2	1	2	1	1	1	2	
CO 4	2	2	2	1	1	1	1	1	2	1	3	1	
CO 5	3	**2**	1	**1**	1	**2**	**1**	2	2	**2**	1	2	
Wtd. Avg.	2.1	1.8	1.6	1.5	1	1.8	1.8	1.6	1.5	1.8	1.8	1.6	

DSC (5) Syllabus for BBA Hospitality and Hotel Management

Semester II

Course Code: 216230	**Course Title:** DSC(5) - Foundation course in Food & Beverage Service II DSC(5) Lab : Foundation course in Food & Beverage Service II
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03 (Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Understand how the food is cooked in different styles suiting the requirements, differences in growing practices and how to prepare GSSS.

CO2: Develop basic discipline and respect towards better way of cooking along with basic methods.

CO3: Explain the characteristics, functions of spices of the major regions and understand/demonstrate nutritional cooking methods including how to maximize nutrient Retentions.

CO4: Understand how the dairy products are cooked in different styles suiting the requirements, differences in growing practices.

CO5: Develop basic knowledge to know how the food industry functions and different kinds of food preparation departments.

Course Content

Content	Hours
Unit 1 SAUCES-GRAVIES-SOUPS-STOCK	**10**
Stock-definition, types, preparation, recipes, storage, care and precautions Sauces- Classification, recipes for mother sauces, storage and precautions Soups-Classification with examples, basic recipes with Consommé with 10 games Gravies- Classification, kinds and preparations	

Unit 2 COOKERY	**08**
Introduction to meat cookery cuts of beef/ veal, cuts of lamb/mutton, cuts of Pork, variety meats {offal} poultry (with menu example of each). Fish cooking: introduction to fish cookery, classification of fish with examples, cuts of fish with menu examples, selection of fish and shell fish, cooking of fish(effect of heat). RICE, CEREALS AND PULSES: introduction, classification and identification, cooking of rice, cereals and pulses, varieties of rice and other cereals. EGG COOKERY: introduction to egg cookery, structure of an egg, selection of egg, use of egg in cookery.	
Unit 3 BASIC INDIAN COOKERY: CONDIMENTS AND SPICES	**08**
Introduction of Indian food, spices used in Indian cookery, role of spice in Indian cookery, the Indian equivalent of spices(names, MASALAS: Blending of spices, different masala used in Indian cookery, wet masala, dry masala, composition of different masalas, varieties of masala available in regional areas, special masalas blends.	
Unit 4 BASIC COMMODITIES- MILK	**08**
Introduction, processing of milk, pasteurization-homogenized, types of milk, skimmed and condensed, nutritive value. CREAM: Introduction, processing of cream, types of cream. CHEESE: Introduction, classification of cheese, curing of cheese, uses of cheese. BUTTER: Introduction, processing of butter, types of butter.	
Unit 5 KITCHEN ORGANISATION AND LAYOUT	**08**
General layout of the kitchen in various organizations, layout of receiving areas, layout of service and wash up.	

Text Books:

5. Food production operations by Parvinder S Bali
6. The art and science of culinary preparations by Chesser (Acfei)
7. Cooking ingredients by Christian Ingram
8. Food and beverage service management by Brain Varghese

Web links:

4. http//www.foodproduction.com
5. http//www.cookingmethods.com
6. http//www.historyofcooking.com

Practical:

1. Setting the table (cover) for Breakfast, Lunch, Hi-Tea and Dinner
2. Handling Restaurant reservations, receiving and seating the guest
3. Tray and Trolley Set-up
4. The procedure of service at the table
5. Presenting and en-cashing the bill
6. Service of Tobacco
7. Service of Beer

Course Articulation Matrix –216230

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	1	1	1	1	1	2	1	1	2	1	2	2
CO 2	2	2	2	2	1	2	2	2	2	2	2	1	2
CO 3	2	1	2	2	1	2	1	2	1	1	1	2	2
CO 4	2	2	2	1	1	1	1	1	2	1	3	1	2
CO 5	3	**2**	1	**1**	1	**2**	**1**	2	2	**2**	1	2	3
Wtd. Avg.	2.1	1.8	1.6	1.5	1	1.8	1.8	1.6	1.5	1.8	1.8	1.6	2.1

DSC (6) Syllabus for BBA Hospitality and Hotel Management

Semester II

Course Code: 216231	**Course Title:** DSC(6) - Foundation course in Accommodation Operation (Theory) DSC(6) Lab : Foundation course in Accommodation Operation (Practical)
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03 (Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Evaluate the importance of Hierarchy in hospitality industry

CO2: Analyse the importance of cleanliness

CO3: Analyse the cleaning methods of different surfaces

CO4: Analyse the importance of co-operation with other departments.

CO5: Evaluate the importance of housekeeping in terms of economy.

Course Content

Content	Hours
Unit 1 HOUSEKEEPING DEPARTMENT	**08**
Housekeeping, definition, Hierarchy in small, medium, large and chain hotels – Identifying Housekeeping Responsibilities – Personality traits of housekeeping Management personnel – duties and responsibilities of the housekeeping staff – layout of the housekeeping department	
Unit 2 CLELANING ORGANISATION AND CLEANING AGENTS	**08**
Principles of cleaning, hygiene and safety factors in cleaning – methods of	

organizing cleaning – Frequency and cleaning daily, periodic, special – Design features that simplify cleaning – Use and care of equipment – General criteria for selection- Classification – Use, care and storage – distribution and controls – Use of Eco-friendly products in Housekeeping	
Unit 3 COMPOSITION, CARE AND CLEANING OF DIFFERENT SURFACES	**08**
Metals – Glass Leather, Leatherettes, Rexines – Ceramics – Wood – Wall finishes – Floor finishes	
Unit 4 INTER DEPARTMENTAL RELATIONSHIP	**08**
With Front Office, F and B Service, F and B production, Maintenance, Accounts, Security, Human Resources and Stores and Purchase.	
Unit 5 THE ROLE OF HOUSEKEEPING IN HOSPITALITY OPERATION	**10**
Role of Housekeeping in Guest Satisfaction and Repeat Business	

Text Books:

1. **Managing Housekeeping Operations by Aleta A. Nitschke AH&LEI**
2. **Hotel Housekeeping Management & Operations by Sudhir Andrews**
3. **Hotel Housekeeping: A Training Manual by Sudhir Andrews**
4. **Hotel Housekeeping by Raghubalan**
5. **Theory and Practices of Professional Housekeeping by Sunita Srinivas**
6. **Organisation of Housekeeping Management by Dr. R.K. Singh**

Web links:

https://www.youturbe.com/watch?v=nx_fclhXhY
https://www.youturbe.com/watch?v=DAaZg2jGhHo
https://www.youturbe.com/watch?v=MLL6cUQNXzA
https://www.youturbe.com/watch?v=Ehg7WWb92q0
https://www.youturbe.com/watch?v=jiLsO1DXUVs

Practical:

1. Personal Hygiene in House Keeping
2. Telephone Handling
3. Brassoing
4. Bed making
5. Assignment on any House Keeping topic

Course Articulation Matrix –**216231**

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PSO1
CO 1	2	1	1	1	1	1	1	1	1	2	1	1	1
CO 2	2	2	2	1	1	1	2	2	2	2	1	2	2
CO 3	2	1	2	1	1	1	2	2	1	1	1	2	2
CO 4	2	2	2	1	2	1	1	2	1	3	1	1	1
CO 5	2	3	2	1	2	1	1	1	2	2	1	1	1
WA	**2.16**	**1.8**	**1.6**	**1**	**1.5**	**1**	**1.5**	**1.66**	**1.4**	**2**	**1**	**1.5**	**1.5**

OE(2) Syllabus for BBA Hospitality and Hotel Management

Semester II

Course Code: 21OEHNH201	**Course Title:** OE(2) Nutrition
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Able to know about the different varieties of nutritional values

CO2: Able to know about various types of foods

CO 3: Able to identify advantages of good food

CO4: Acquire knowledge about heat methods

CO5: Analyse nutritive values in food

Course Content

UNIT – 1	**08 HOURS**
PRINCIPLES OF NUTRITION: Basic concept of food nutrition and nutrients. Health and nutritional status-adequate, optimum and good nutrition. Balanced diet, malnutrition, under nutrition, phytochemicals, prebiotics, Probiotics. Food as a source of macro (carbohydrates, fat and protein) and micronutrients (vitamins and minerals). Physiological, psychological and social functions of food. Inter relationship between nutrition and health. Visible symptoms of good health.	
UNIT – 2	**08 HOURS**
BASIC FIVE FOOD GROUPS: Food and its functions, digestion, absorption and metabolism. Factors that affect digestion, absorption and metabolism. Basic five groups of food-Cereals and grains, pulses and legumes, milk and milk products. Fruits and vegetables. Fats and sugars, RDA and its uses.	
UNIT – 3	**10 HOURS**
USE OF FOOD IN HUMAN BODY: The process of digestion, absorption, transport, utilization of carbohydrates, lipids, proteins, minerals, vitamins and water in the human body	
UNIT – 4	**08 HOURS**
EFFECT OF HEAT ON THE NUTRITIVE VALUE OF FOODS: Effect of cooking and heat processing on various micro and macronutrients of cereals, legumes, oilseeds, nut fats, oils, milk/flesh, vegetables and fruits. Methods of cooking-physical and chemical changes that occur during cooking. Effect of cooking and heat processing on the nutritive values of different food products.	
UNIT – 5	**08 HOURS**
NUTRIENTS IN FOOD: Types of nutrients, macro and micro, basis for classification. Energy value of food macronutrients-food sources and functions. Micronutrients-vitamins and minerals, classification, sources, important function. Loss of nutrients in foods-reasons. Food fortification-definition, working and need with	

examples.

Reference books:

1. Food science and technology 3Ed by Sharma A
2. Objective food science-11 edition by Harshad Kiran kalwat kumar
3. Essentials of food science by vaclavik vikie
4. Food science by Srilakshmi

Web links:

http//www.youtube.com.watch?v=j2UPjOpkkac

http//www.youtube.com.watch?v=kf9ZRaZnu

http//www.youtube.com.watch?v=Y6kMD3sRp2Q

Course Articulation Matrix – 21OEHNH201

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1
CO 1	1	-	-	-	-	-	-	-	-	-	1	1	3
CO 2	2	-	-	-	-	-	-	-	-	-	2	2	3
CO 3	1	-	-	-	-	-	-	-	-	-	1	1	3
CO4	3	-	-	-	-	-	-	-	-	-	3	3	3
CO5	3	-	-	-	-	-	-	-	-	-	3	3	3
Weighted Average	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1	C2	Total

	Marks	Marks	Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance(the marks is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

  •The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

  g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

  h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

  i) There shall be no minimum in respect of internal assessment marks.

  j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours. The student will be evaluated on the basis of manual work, programme and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

C1 Component: 10 Marks : This will be based on a practical test. This should be completed by the 8th week of the semester.

C2 Component : 15 Marks : This will be based on practical test / assignment for 10 marks and 5 marks for practical record. This should be completed by the 16th week of the semester.

C3 Component:

Main Examination of 3 hours duration : Max Marks: 25 (20 + 5)
Three experiments will be given out of which two experiments are to be executed, each carrying 10 marks and 5 marks for viva.

The student is evaluated for 25 marks in **C3** as per the following scheme:

Assessment Criteria	Marks
Grooming	10
Journal	05
VIVA	05
TEST	05
Total	**25**

PATTERN OF QUESTION PAPER

DSC & OE

TIME : 2 ½ HOURS **MARKS: 60**

PART – A

Answer any FIVE of the following questions. Each question carries 2 marks.

(5x2= 10)

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------
7. ----------

PART – B

Answer any TWO of the following questions. Each question carries 10 Marks.

(2x10 =20)

8. ----------
9. ----------
10. ----------
11----------

PART – C

Answer any TWO of the following questions. Each question carries 15 Marks

(2X15=30)

12----------

13----------

14----------

15----------

BACHELOR OF BUSINESS ADMINISTRATION (HOTEL AND HOSPITALITY)

Proceedings of Board Studies meeting for BBA (Hotel and Hospitality) under New National Education Policy 2021-22 held on 21/12/2021 at 11.00 am at Department of Tourism and Hospitality Management, Pooja Bhagavat Mahajana Education Centre, Mysore.

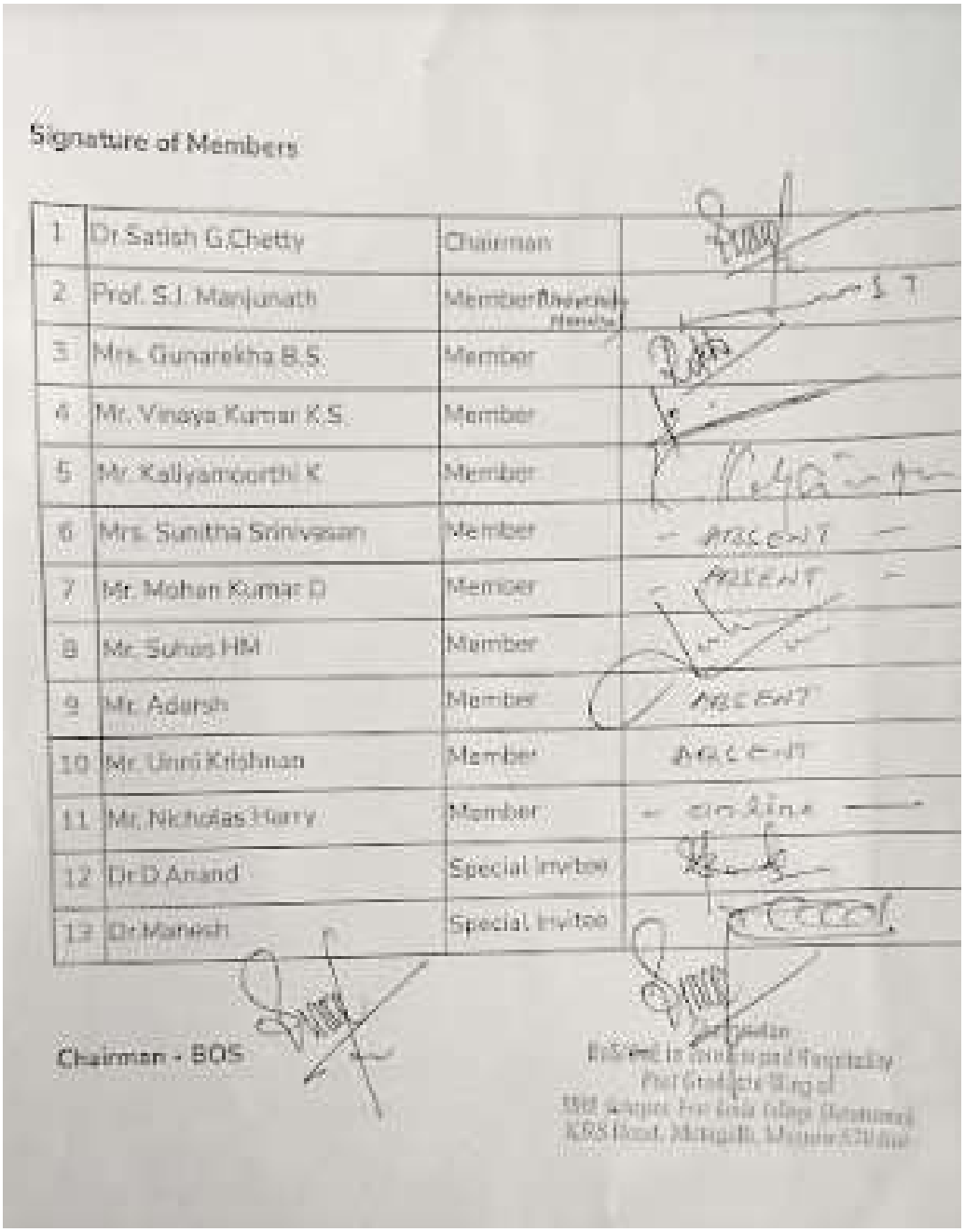
Members:

1	Dr.Satish G.Chatty	Chairman
2	Prof. S.J. Manjunath	Member
3	Mrs. Gunarekha B.S	Member
4	Mr. Vinaya Kumar K.S	Member
5	Mr. Kaliyamoorthi K	Member
6	Mrs. Sunitha Srinivasan	Member
7	Mr. Mohan Kumar D	Member
8	Mr. Suhas HM	Member
9	Mr. Adarsh	Member
10	Mr. Unni Krishnan	Member
11	Mr. Nicholas Harry	Member
12	Dr.D.Anand	Special Invitee
13	Dr.Mahesh	Special Invitee

Resolution:

1. It was unanimously resolved to approve the nomenclatures of the Four Years BBA (Hotel and Hospitality) course under the New National Education Policy 2021-22.
2. It was unanimously resolved to approve the detailed syllabi of the First and Second semesters of BBA (Hotel and Hospitality).
3. It was unanimously resolved to approve [illegible] examiners for the academic year of 2021- 2022.

Chairperson
BBA(HotL in Tourism and Hospitality
Post Graduate Wing of
SBRR Mahajana First Grade College (Autonomous)
KRS Road, Metagalli, Mysuru-570 016



Signature of Members

1	Dr Satish G.Chetty	Chairman	
2	Prof. S.J. Manjunath	Member	
3	Mrs. Gunarekha B.S	Member	
4	Mr. Vinaya Kumar K.S	Member	
5	Mr. Kalyanmoorthi K	Member	
6	Mrs. Sunitha Srinivasan	Member	PRESENT
7	Mr. Mohan Kumar D	Member	PRESENT
8	Mr. Suhas HM	Member	
9	Mr. Adarsh	Member	ABSENT
10	Mr. Unni Krishnan	Member	ABSENT
11	Mr. Nicholas Harry	Member	ONLINE
12	Dr.D.Anand	Special Invitee	
13	Dr.Mahesh	Special Invitee	

Chairman - BOS

Mahajana Education Society (R.)
Education to Excel
SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)
Jayalakshmipuram, Mysuru – 570 012
Affiliated to University of Mysore Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES (BoS)

BACHELOR OF BUSINESS ADMINISTRATION

(Hotel and Hospitality)

UG ☑

PG ☐

NEP Syllabi for III and IV Semester BBA (H&H)

2022-23

DEPARTMENT OF HOTEL AND HOSPITALITY

Motto

Guest satisfaction with ultimate services

Vision

Catering Technology for Faster and Better Services

Mission

Imparting Quality Education all the way through different services,

Equipping the students for a Demanding Career.

Empowering the students with Professional Touch to become Successful employees OR Entrepreneurs.

Program Outcomes (POs) for Bachelor of Business Administration

PO 1: **Domain Knowledge -** Acquire and apply knowledge of Hotel management in relevant areas.

PO 2: **Problem Analysis –** Recognize real-hospitality problems and guest's requirements to propose solutions for the same using basic principles of management.

PO 3: **Design and Development of Solutions –** Developing solutions and inferences for complex problems using critical and analytical thinking.

PO 4: **Investigation & Research** – Ability to formulate hypothesis, augment research questions and identify & refer relevant sources for examining or inspecting practical issues as per their level of understanding and knowledge.

PO 5: **Use of Modern Techniques/Tools** – Use hospitality resources, various software/platforms and appropriate machines/techniques to interpret concepts of hospitality services.

PO 6: **Impact of Science on Society** – To prepare competent human resource and to develop scientific attitude at local and global levels for social benefit.

PO 7: **Environment and Sustainability** – Apply the knowledge gained for conserving environment and to handle environmental issues with sustainable solutions.

PO 8: **Moral and Ethical Values** – Imbibe moral values and professional ethics to maintain the integrality in a professional scenario while being aware of the cultural diversities.

PO 9: **Individual and Team Work with Time Management** – Work productively in a team or as an individual while exhibiting time management skills as well as money value for the customers.

PO 10: **Communication** – Develop the caliber to convey various concepts of customer services effectively.

PO 11: **Project Management and Finance** – Set up Hotels/resorts and build entrepreneurship, project management and finance planning skills.

PO 12: **Life-long Learning** – Engage in the art of self-directed learning.

PSO 1: Demonstrate an understanding of the functional areas of the hotel and hospitality industry. Use the practical vocabularies of a variety of business discipline in an appropriate manner. Handle issues from a variety of viewpoints. Understand and evaluate theoretical frameworks. Develop capabilities in working with and managing others.

Objectives: Hotel and Hospitality

1. To provide foundation of strong managerial skills to create hygienic and good quality hospitality system effectively.
2. Help students in analyzing the requirements for catering facilities; learn modern methods of hospitality and its applications.
3. Provide students with an option to specialize in various domains of Hotel Management.
4. To produce outstanding Chefs/Managers, who can apply the theoretical knowledge and practical in solving real-time problems and in developing standalone live experiences.
5. To build entrepreneurs by developing among students the managerial techniques, business developing skills and problem-solving skills.
6. To prepare students who wish to pursue further studies and career in Hotel Management and related subjects.

List of BoS Members

Sl. No.	Category	Name & Designation	Address for Communication	e-Mail & Mobile No.
1	Chairperson	Dr. Satish G Chetty HOD	Pooja Bhagwat Memorial PG centre, KRS road, Metagalli,MYSURU	satishchetty@gmail.com 8197358552
2	Member	Mrs. Gunarekha B S Assistant Professor	Pooja Bhagwat Memorial PG centre, KRS road, Metagalli,MYSURU	Gunarekha75@gmail.com 7760539900
3	Two Experts from Other University	Dr. Mahesh R Associate professor	University of Mysuru BIMS	Mahesh@bims.uni-mysore.ac.in 9886639536
4		Dr. D. Anand HOD	University of Mysuru BIMS	anand@bims.uni-mysore.ac.in 9845130340
5	Nominee by the Vice Chancellor	Prof. S J Manjunath Associate professor	University of Mysuru BIMS	Manjunath@bims.uni-mysore.ac.in 9448587801
6	Member	Mrs.Sunitha Srinivasan Associate professor	University of Mysuru	Gunarekha75@gmail.com 7760539900
7	One Person from Industry/ Corporate Sector/Allied Area	Mr. Nicholas Harry General Manager	Le Ruchi the Prince MYSURU	Nicholasharry.ruchi@gmail.com 9945811022
8	Alumnus	Mr. Suhas	C/O L&T Mysuru	suhaslnt@gmail.com 8197358552

Course Structure(NEP)

Discipline Specific Courses (DSC) and Open Elective (OE)

II Year

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
Hotel and Hospitality – III Sem									
226329	**DSC(7)** Food and beverage production-III (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(7) Lab Food and beverage production-III (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
226330	**DSC(8)** Food and beverage service-III (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(8) Lab - Food and beverage service-III (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
226331	**DSC(9) -** Accommodation Operation (Theory)	**3**	**0**	**3:0:1 (5credits)**	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(9) Lab Accommodation Operation (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
OE(3)	Event management **220EHNH301**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**

Course Type, Code and Name		Hours/ Week		Credits	Maximum Marks			Exam Duration	Total Marks
					IA		Exam		
		L	T/P	L:T:P	C1	C2	C3		
Hotel and Hospitality – IV Sem									
226429	**DSC(10)** Tourism Development (Theory)	**4**	**0**	**4:0:0** (4credits)	**20**	**20**	**60**	**2 ½ Hours**	**100**
226430	**DSC(11)** Bakery and Confectionary (Theory)	**3**	**0**	**3:0:1** (5credits)	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(11) Lab Bakery and Confectionary (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
226431	**DSC(12) -** Hotel Accounts (Theory)	**3**	**0**	**3:0:1** (5credits)	**20**	**20**	**60**	**2 ½ Hours**	**150**
	DSC(12) Lab - Hotel Accounts (Practical)	**0**	**1**		**10**	**15**	**25**	**3 Hours**	
OE(4)	Food Safety and Quality Control **220EHNH401**	**3**	**0**	**3:0:0**	**20**	**20**	**60**	**2 ½ Hours**	**100**

DSC(7) Syllabus for BBA Hotel and Hospitality

Semester III

Course Code: 226329	**Course Title:** DSC(7) : **Food and beverage production-III** DSC(7) Lab : **Food and beverage production-III**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03(Theory) + 01(Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Illustrate the different types of cooking methods around the world.

CO 2: Knowledge of Food production and its importance in the contemporary world

CO 3: Knowledge of different meats and method of preparation

CO 4: Familiarize with different kinds of bakery items and its importance in acting as dessert.

CO 5: Types of pastry creams.

Course Content

Content	Hours
UNIT – 1	
ART OF COOKERY: Style of cooking-Oriental/Asian/European/Continental History and development of Modern cuisine, classical and contemporary Michelin star and its importance. Fusion cooking.	**08**
UNIT – 2	

BASIC PRINCIPLES OF FOOD PRODUCTION: Vegetable and fruit cookery Introduction, Classification of vegetables Pigment, color and cuts of vegetables Effects of heat on vegetables Salad and salad dressing	**10**
UNIT – 3	
STUDY OF MEAT COOKERY Introduction of meat cookery, cuts of beef/Veal, cuts of lamb/mutton. Cuts of pork, variety meats, specialty dishes of beef /mutton /pork.	**08**
UNIT – 4	
BAKERY AND PASTRY Short crust, laminated, choux, Rough Puff, uses of each pastries, care to be taken while preparing pastry, role of each ingredients, Temperature.	**08**
UNIT – 5	
PASTRY CREAMS Basic pastry creams, uses in confectionary, preparation and care in production. Storage and safety. Different ideas.	**08**

Textbooks:

1. **Oxford Food production by Parvinder S Bali.**
2. **Theory of Cookery by Krishna Arora.**
3. **Cooking recipes by Thangam Philip.**

Web links:

1. http//www.food&beverage production.com
2. http//www.sudhir Andrews notes on F&B.com
3. http//www.F&B production manuals.com

PRACTICAL :

Indian cuisine -10 Menus with four preparations in each.

Week 01 - Maharashtra cuisine

Week0 2 -Punjabi

Week 03 -West Bengal

Week04 - Gujarat

Week0 5 - Kashmiri

Week 06 - Tamil Nadu

Week0 7 - Assam

Week0 8 - Bihar

Week 09 - Kerala

Week 10– Andhra

Course Articulation Matrix – 226329

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	2	1	-	2	1	1	1	1	1	1	1	2
CO 2	1	1	2	-	1	-	-	-	1	-	-	1	2
CO 3	1	1	2	-	1	-	-	-	1	-	-	1	2
CO 4	2	1	1	2	1	1	2	1	2	1	1	-	2
CO 5	1	2	1	-	1	-	-	1	1	2	1	1	2
Weighted Average	1.4	1.4	1.4	0.4	1.2	0.4	0.6	0.6	1.2	0.8	0.6	0.8	2

DSC(8) Syllabus for BBA Hotel and Hospitality

Semester III

Course Code: 226330	**Course Title:** DSC(8) : **Food and Beverage Service- III** DSC(8) Lab : **Food and Beverage Service- III**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03(Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO 1: Illustrate the different types of wines around the world.

CO 2: Knowledge of spirits and its economical importance in the contemporary world.

CO 3: Knowledge of different non alcoholic beverages and its categories.

CO 4: Familiarize with different kinds of liqueur items and its importance in acting as dessert beverages.

CO 5: Types of cocktails and its presentations.

Course Content

Content	Hours
UNIT – 1	
WINES Introduction and Definition of wines, classification of wines. Table/ Still/ Natural/ Fortified/ Sparkling/ Aromatized Wines. Wine Producing countries of the world including India. Principal Wine regions – France, Germany, Italy, Spain, Portugal and New World	**08**
UNIT – 2	

SPIRITS Introduction and Definition of spirits _ Production of Spirits. Pot still and patent Still Methods – Whiskey, Rum, Gin, Brandy, Vodka, tequila Other spirits, Proof of spirits, Scales and services.	**10**
UNIT – 3	
NON ALCOHOLIC BEVERAGES Importance and varieties of Mock-tails, juices, shakes, smoothies. Aerated Beverages, popular nourishing and Sports Drinks.	**08**
UNIT – 4	
LIQUEURS Definition and production of Liqueurs. Different brands of Liqueurs Service of Liqueurs.	**08**
UNIT – 5	
COCKTAILS Definition, History and Classification of Cocktails. Cocktail Bar preparations and equipments. Service of Cocktails..	**08**

Textbooks:

1. Food and Beverage Service by Singaravelam
2. Food and Beverage Service and management by Bobby George.
3. On Site Food Service Management by Dennis R Reynold.

Web links:

a. http//www.food&beverage Service.com
b. http//www.sudhir Andrews notes on F&B.com
c. http//www.F&B Service manuals.com

PRACTCALS:

WEEK 1- Service of Wines
WEEK 2- Service of Whisky
WEEK 3 -Service of Rum
WEEK 4- Service of Gin
WEEK 5- Service of Brandy
WEEK 6- Service of Vodka
WEEK 7 -Service of Tequila
WEEK 8 -Service of Aperitifs
WEEK 9- Service of Liqueurs
WEEK10-Service of Cocktails

Course Articulation Matrix – 226330

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	2	1	-	2	1	1	1	1	1	1	1	2
CO 2	1	1	2	-	1	-	-	-	1	-	-	1	2
CO 3	1	-	-	1	1	1	1	-	-	1	1	1	2
CO 4	1	1	1	1	-	2	-	2	-	1	2	-	2
CO 5	1	2	1	-	1	-	-	1	1	2	1	1	2
Weighted Average	1.2	1.5	1.25	1	1.33	1 .66	1	1 .5	1 .5	1 .25	1 .25	1	2

DSC(9) Syllabus for BBA Hotel and Hospitality

Semester III

Course Code: 226331	**Course Title:** DSC(9) **Accommodation Operations** DSC(9) Lab : **Accommodation Operations**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03(Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Understand how accommodation is presented in different styles suiting the requirements.

CO2: Develop basic discipline and in hotel and resorts respecting towards better way of handling guest preferences.

CO3: Explain the characteristics, functions of front office and understand how to function smoothly.

CO4: Understand how the hierarchy is maintained in the star hotels.

CO5: Develop basic knowledge to know how the hotel industry functions with different kinds of reservations and registrations

Course Content

Content	Hours
UNIT – 1 INTRODUCTION TO HOSPITALITY	

Definition of Hospitality – Tourism and its importance with hospitality History and its origin – Hospitality and its growth Brief introduction to front office in the Hospitality sectors.	**08**
UNIT – 2 HOTELS AND FACILITIES	
Classification of Hotels – Size, Star, Location, Clientele, ownership Types of Rooms – Single, Double, twin, Suite, Meal Plans. Types of Rates – Rack, FIT, Crew, Group, Corporate, Weekend.	**10**
UNIT – 3 FRONT OFFICE DEPARTMENT	
Sections and layout of front office Coordination of front office with other departments of the hotel. Front office equipment (Non automated, Semi automated, Automated)	**08**
UNIT – 4 FRONT OFFICE ORGANIZATION	
Functional areas – Front office hierarchy Duties and responsibilities of staff and personal traits Rules of the House for Guests and staff	**08**
UNIT – 5 MAJOR FUNCTIONS	
Reservation and registrations process Procedures at Lobby and Bell Desk Check in and Checkout Procedures..	**08**

Textbooks:

1. Hotel front office by Sudhir Andrewa
2. Hotel front office training Manual by SG Ghosh
3. Hotel front office management by BK Chakravarthy

Web links:

1. http//www.accommodation operations.com
2. http//www.sudhir Andrews notes on front office.com
3. http//www.front office manuals.com

PRACTICALS:

1. Appraisal of front office equipment and furniture
2. Rack, Front desk counter & bell desk
3. Filling up of various forms in the front desk
4. Welcoming of guest
5. Telephone handling
6. Role-play:
    a. Reservation
    b. Arrivals
    c. Luggage handling
    d. Message and mail handling
    e. Guest cycle

Course Articulation Matrix – 226331

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	2	1	-	2	1	1	1	1	1	1	2	1
CO 2	1	1	2	-	1	1	-	-	1	-	-	1	1
CO 3	1	1	2	-	1	1	-	-	1	-	-	1	1
CO 4	1	1	2	1	1	1	2	1	2	1	-	1	1
CO 5	1	1	2	-	1	1	1	1	-	1	1	-	1
Weighted Average	**1.2**	**1.2**	**1.8**	**1**	**1.2**	**1**	**1.3**	**1**	**1.25**	**1**	**1**	**1 .25**	**1**

OE(3) BBA Hotel and Hospitality Syllabus for All Programs

(Except BBA)

Semester III

Course Code: 22OEHNH301	**Course Title:** OE(3) Event Management
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Illustrate the different types of written communications and the role of various communications.

CO 2: Acquire knowledge of presentation skills.

CO 3: Apply with protocols

CO4: Analyse types of Image, branding and advertising abilities

CO5: Acquire knowledge of different liquors and its licenses.

Course Content

UNIT – 1	**10 HOURS**
EVENT COMMUNICATION & PRESENTATION SKILLS Written communications, (Official, demi-official, Invoice, tender, proposal). Verbal communications	
UNIT – 2	**08 HOURS**
Presentation skills and use of computer in events	
UNIT – 3	**08 HOURS**
Protocols, Dress codes, staging, staffing	
UNIT – 4	**08 HOURS**
Image, Branding, Advertising, Publicity and Public relations	
UNIT – 5	**08 HOURS**
Relevant legislations, liquor licenses, trade acts, stake holders and official bodies, contracts.	

Text books:

1. The art of gathering by Priya Parker
2. Event planning by Alex Genadinik
3. Vent planning by Judy allen

Web links:

http//www.eventmanagement@youtube.com

http//www.hotel events.com

Http//www. Banquet events.com

Course Articulation Matrix – 22OEHNH301

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1
CO 1	1	-	-	-	-	-	-	-	-	-	1	1	3
CO 2	2	-	-	-	-	-	-	-	-	-	2	2	3
CO 3	1	-	-	-	-	-	-	-	-	-	1	1	3
CO4	3	-	-	-	-	-	-	-	-	-	3	3	3
CO5	3	-	-	-	-	-	-	-	-	-	3	3	3
Weighted Average	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**

DSC(10) Syllabus for BBA Hotel and Hospitality

Semester IV

Course Code: 226429	**Course Title:** DSC(9) **Tourism Development**
Course Credits:04 (4:0:0)	**Hours of Teaching/Week:** 04 (Theory)
Total Contact Hours:56 Hours (Theory)	**Formative Assessment Marks:** 40 (Theory)
Exam Duration: 2 ½ Hours (Theory)	**Semester End Examination Marks:** 60 (Theory)

Course Outcomes (COs):

CO1: Understand the concept of tourism and how tourism is presented in different styles suiting the requirements.

CO2: Develop basic knowledge of different types of tourism and its importance.

CO3: Explain the characteristics, functions of tourism organization and understand how it functions.

CO4: Understand how the tourism behaviors are maintained in the industry.

CO5: Develop basic knowledge of know how to organize transportations for different purposes.

Course Content

Content	Hours
UNIT – 1 THE CONCEPT OF TOURISM	
Definition of travel and tourism, Components of Tourism. Historical Development of Tourism, Tourism Products. Attraction and Amenities, Transports, Accommodations and entertainments	**08**
UNIT – 2 TYPES OF TOURISM	
Mass Tourism and Alternative Tourism, Leisure Tourism, Cultural and Health Tourism. Eco, Sustainable, Adventure, Pilgrimage and Business Tourism.	**10**
UNIT – 3 TOURISM ORGANIZATION	
Need for Organization, National tourism organization.	**08**

Importance of UNWTO, IATA, ICAO, UFTAA. Functions of WTTC, PATA, TAA, IATO, ITDC.	
UNIT – 4 TOURISM BEHAVIOURS	
Tourism systems, Travel Motivators. Types of Tourists –Domestic and International. Interactional Models – Cognitive and Normative models.	**08**
UNIT – 5 TRANSPORTATIONS	
Major seaport and Water Transportation Airlines and Airports in India. Road and rail transportation in India.	**08**

Textbooks:

- Tourism scopes by Zulfikar ahmed
- Development in tourism by Anok pandey
- Tourism studies by BK Chakravarthy

Web links:

- http//www.tourism operations.com
- http//www.Sikbir points on tourism.com
- http//www.Tourism manuals.com

Course Articulation Matrix – 226429

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	1	1	1	1	1	2	1	1	2	1	2	2
CO 2	2	2	2	2	1	2	2	2	2	2	2	1	2
CO 3	2	1	2	2	1	2	1	2	1	1	1	2	2
CO 4	2	2	2	1	1	1	1	1	2	1	3	1	2
CO 5	3	2	1	1	1	2	1	2	2	2	1	2	2
Weighted Average	**2.1**	**1.8**	**1.6**	**1.5**	**1**	**1.8**	**1.8**	**1.6**	**1.5**	**1.8**	**1.8**	**1.6**	**2**

DSC(11) Syllabus for BBA Hotel and Hospitality

Semester IV

Course Code: 226430	**Course Title:** DSC(9) **Bakery and confectionary** DSC(9) Lab : **Bakery and confectionary**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03(Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Understand how the cake is cooked in different ovens suiting the requirements, differences in texture, taste, aroma and color.

CO2: Develop basic knowledge of cake making processes.

CO3: Explain the characteristics, tastes and importance of chocolates in the contemporary world.

CO4: Understand how the dairy products are used in different styles of preparing biscuits and cookies

CO5: Develop basic knowledge to know how to handle and use creams and other dairy products.

Course Content

Content	Hours
UNIT – 1 CAKE	
Ingredients used in cake making Types and variants of flour and sugar Fats and oils used, Egg, Moistening agents, leavening agents	**08**
UNIT – 2 CAKE MAKING METHODS	
Sugar butter process, Genoese process, blending and ribbing method Pastry making principles and derivatives	**10**
UNIT – 3 CHOCOLATE	

Different forms of chocolates and cocoa Process of chocolate tempering Designs, garnishes, presentation of chocolates	**08**
UNIT – 4 COOKIES AND BISCUITS	
Method and preparation for making cookies/biscuits Factors affecting the quality of biscuits Famous brands of biscuits	**08**
UNIT – 5 CREAM AND ICE CREAMS	
various types of creams varieties of ice creams types of icing	**08**

Textbooks:

- Text book on bakery and confectionary by Ashok Kumar Y
- Bread and baking by Jeremy Hardy
- Classical bread making by Mathew Septimus

Web links:

- http//www.World bakers.com
- http//www.cookies and biscuits.com
- http//www.confectioners and bakers.com

Observation and Suggestions for the Board members-

To include:

Millets,

Indian Wines,

Bar tending,

Non-alcoholic beverages

Mock tails

Revenue Management

Michelin star

Fusion cooking

Course Articulation Matrix – 226430

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	2	1	-	2	1	1	1	1	1	1	1	2
CO 2	1	1	2	-	1	-	-	-	1	-	-	1	2
CO 3	1	-	-	1	1	1	1	-	-	1	1	1	2
CO 4	1	1	1	1	-	2	-	2	-	1	2	-	2
CO 5	1	2	1	-	1	-	-	1	1	2	1	1	2
Weighted Average	**1.2**	**1.5**	**1.25**	**1**	**1.33**	**1 .66**	**1**	**1 .5**	**1 .5**	**1 .25**	**1 .25**	**1**	**2**

DSC(12) Syllabus for BBA Hotel and Hospitality

Semester IV

Course Code: 226431	**Course Title:** DSC(12) **Hotel Accounts** DSC(12) Lab : **Hotel Accounts**
Course Credits:05 (3:0:1)	**Hours of Teaching/Week:** 03(Theory) + 01 (Practical)
Total Contact Hours: 42 Hours (Theory) 56 Hours (Practical)	**Formative Assessment Marks:** 40 (Theory) 25 (Practical)
Exam Duration: 2 ½ Hours (Theory) 3 Hours (Practical)	**Semester End Examination Marks:** 60 (Theory) 25 (Practical)

Course Outcomes (COs):

CO1: Understand how to organize accounts in the department supporting the management.

CO2: Develop basic knowledge of books and computers for calculations.

CO3: Explain the characteristics, importance of book keeping.

CO4: Understand how the revenue is generated and managed in safe hands.

CO5: Develop basic knowledge of trial balance and its importance.

Course Content

Content	Hours

UNIT – 1 MEANING AND DEFINITION	
Types, classification and principles of accounting Uniform system and contents of income statement Contents of financial statement, practical problems	**08**
UNIT – 2 PRIMARY BOOKS/JOURNALS	
Meaning and definition of primary books Format of journal, rules of debit and credits practical problems	**10**
UNIT – 3 SECONDARY BOOKS	
Ledger format and posting, practical problems of ledger Uses and classification of subsidiary books Purchase/sales/purchase return/sales return/cash book-double and triple	**08**
UNIT – 4 REVENUE MANAGEMENT	
Importance and steps to be used in revenue management Experts in revenue management Mismanagement of revenue management	**08**
UNIT – 5 TRIAL BALANCE	
Meaning, advantages, limitations, and practical problems Introduction of departmental accounting Allocation and appointment, advantages/drawback of allocation and problems	**08**

Textbooks:

- Accounting and auditing by Thomas r Weirich
- Accounts receivable management by John G Salek
- Accounting control by Steven M Bragg

Web links:

- http//www.trial balance.com
- http//www.hotel accounts.com
- http//www.book keeping in hotels.com

HOTEL ACCOUNTS: PRACTICALS

Week 1. Experiencing different books in accounting.

Week 2. Entries of primary and secondary books.

Week 3. Practicing of different ledger entries.

Week 4. Exercising debit and credit entries on board.

Week 5. Collecting data on foreign currencies.

Course Articulation Matrix – 226431

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1
CO 1	2	2	1	-	2	1	1	1	1	1	1	1	1
CO 2	1	1	2	-	1	-	-	-	1	-	-	1	1
CO 3	1	-	-	1	1	1	1	-	-	1	1	1	1
CO 4	1	1	1	1	-	2	-	2	-	1	2	-	2
CO 5	1	2	1	-	1	-	-	1	1	2	1	1	2
Weighted Average	**1.2**	**1.5**	**1.25**	**1**	**1.33**	**1 .66**	**1**	**1 .5**	**1 .5**	**1 .25**	**1**	**1**	**1.4**

OE(4) BBA Hotel and Hospitality Syllabus for All Programs

(Except BBA)

Semester IV

Course Code: 22OEHNH401	**Course Title:** OE(4) **FOOD SAFETY AND QUALITY CONTROL**
Course Credits: 03 (3:0:0)	**Hours of Teaching/Week:** 03 Hour (Theory)
Total Contact Hours: 42 Hours (Theory)	**Formative Assessment Marks:**40
Exam Duration:2 ½ Hours	**Semester End Examination Marks:**60

Course Outcomes (COs):

CO 1: Illustrate types of food with chemical combinations

CO2: Apply the knowledge and scope of food chemistry

CO 3: Analyse and classify the lipids and its importance

CO4: Demonstrate different vitamins and minerals

CO5: Apply the regulations of sanitation and contamination

Course Content

UNIT – 1 **10 HOURS**
Types of foods: Based on the Shelf Life, Fermented Foods, Alcoholic and Non-Alcoholic Beverages, Processed Foods, Nutraceuticals, Functional foods, Dehydrated Foods, Ready to Eat Foods, Organic Foods, Ethnic Foods, Pre and Probiotics in Fermented Foods and Beverages, GM Foods and their safety Physico- Chemical Characterization of Food
UNIT – 2 **08 HOURS**
importance of food and Scope of Food Chemistry. Water: Physical and Chemical properties, Water Activity Determination and its influence on Food Quality and Stability Carbohydrates: Chemical Reactions, Functional Properties of Sugars and Polysaccharides in Foods. Proteins: Nutritional Aspects – Amino Acids, Essential Amino Acid
UNIT – 3 **08 HOURS**
Lipids: Classification, and Use of Lipids in Foods, Physical and Chemical Properties, Essential Fatty Acids
UNIT – 4 **08 HOURS**
Vitamins and Minerals, in relation to Processing Effects. Enzymes in Foods associated with Processing, Food Deterioration
UNIT – 5 **08 HOURS**

Food Sanitation: Definition and Regulation of Food Sanitation, Sources of Contamination, Sanitation and hygiene. Indices of Food Sanitary Quality

Text books:

1. Food science by Jerold russ
2. Effects of science on food by Lorry W Bush
3. Science on food by Wallace bruce and brad

Web links:

4. http//www.foodscience.com
5. http//www.hotel food science on you tube.com
6. Http//www. Food values.com

Course Articulation Matrix – 22OEHNH401

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1
CO 1	1	-	-	-	-	-	-	-	-	-	1	1	3
CO 2	2	-	-	-	-	-	-	-	-	-	2	2	3
CO 3	1	-	-	-	-	-	-	-	-	-	1	1	3
CO4	3	-	-	-	-	-	-	-	-	-	3	3	3
CO5	3	-	-	-	-	-	-	-	-	-	3	3	3
Weighted Average	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**

Continuous Formative Evaluation/Internal Assessment (DSC & OE)

Total marks for each course shall be based on continuous assessments and semester end examinations. The pattern is 40:60 for IA and Semester End Theory Examinations respectively and 50:50 for IA and Semester End Practical Examinations respectively.

	THEORY	PRACTICAL
Total Marks	100 Marks	50 Marks
Continuous Assessment – 1 (C1)	20 Marks	10 Marks
Continuous Assessment – 2 (C2)	20 Marks	15 Marks
Semester End Examination (C3)	60 Marks	25 Marks

Evaluation Process of IA Marks shall be as follows:

a) The first component (C1) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course and within 45 working days of semester program.

b) The second component (C2) of assessment is for 20% marks. This shall be based on test, assignment, seminar, case study, field work, internship/industrial practicum/project work, quiz etc. This assessment and score process should be based on completion of remaining 50% of syllabus of the course of the semester.

c) During the 17th – 19th week of the semester, a semester end examination shall be conducted by the college for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.

d) In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the Principal. The Principal in consultation with the concerned teacher shall decide about the genuineness of the case and decide to conduct special test to such candidate on the date fixed by the concerned teacher, but before commencement of the concerned semester end examinations.

e) For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (A4 size), graph sheets etc., required for such tests/assignments and these be sealed/signed by the concerned department at the time of conducting tests/assignment/project work etc.

f) The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) of a course shall be as under:

	C1 Marks	C2 Marks	Total Marks
Session Test	20	-	20
Seminar/Presentation/Assignment/Activity/Case Study/Field Work/Project Work/Quiz etc.	-	20	20
Total	20	20	40

- For practical course of full credits, seminar shall not be compulsory. In its place, marks shall be awarded for Practical Record Maintenance(the marks is 25 (10 + 15) and 25. Evaluated for a total of 50 Marks).

- Conduct of Test, Seminar, Case study/Assignment etc., can be either in C1 or in C2 component as decided by the college and concerned department/teacher.

  •The teachers concerned shall conduct test/seminar/case study etc., The students should be informed about the modalities well in advance. The evaluated courses assignments during component I (C1) and component II (C2) of assessment are immediately provided to the candidates after obtaining acknowledgement in the register by the concerned teacher(s) and maintained by the Department. Before commencement of the semester end examination, the evaluated test, assignment etc., of C1 and C2 shall be obtained back to maintain them till the announcement of the results of the examination of the concerned semester.

  g) The marks of the internal assessment shall be published on the notice board of the department/college for information of the students.

  h) The internal assessment marks shall be communicated to the CoE at least 10 days before the commencement of the semester end examinations and the CoE shall have access to the records of such periodical assessments.

  i) There shall be no minimum in respect of internal assessment marks.

  j) Internal assessment marks may be recorded separately. A candidate who has failed or rejected the result, shall retain the internal assessment marks.

Scheme of Valuation for Practical Examinations

C1 and C2 are internal tests to be conducted during 8th and 16th weeks respectively of the semester. C3 is the semester-end examination conducted for 3 hours.

The student will be evaluated on the basis of manual work, programme and its execution. The student has to compulsorily submit the practical record for evaluation during C2. For C3, the record has to be certified by the Head of the Department.

The student is evaluated for 25 marks in C1 and C2 as per the following scheme:

C1 Component: 10 Marks : This will be based on a practical test. This should be completed by the 8th week of the semester.

C2 Component : 15 Marks : This will be based on practical test / assignment for 10 marks and 5 marks for practical record. This should be completed by the 16th week of the semester.

C3 Component:

Main Examination of 3 hours duration : Max Marks: 25 (20 + 5)
Three experiments will be given out of which two experiments are to be executed, each carrying 10 marks and 5 marks for viva.

The student is evaluated for 25 marks in **C3** as per the following scheme:

Assessment Criteria	Marks
Grooming	10
Journal	05
VIVA	05
TEST	05
Total	**25**

PATTERN OF QUESTION PAPER

DSC & OE

TIME : 2 ½ HOURS **MARKS: 60**

PART – A

Answer any FIVE of the following questions. Each question carries 2 marks.

(5x2= 10)

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------
7. ----------

PART – B

Answer any TWO of the following questions. Each question carries 10 Marks.

(2x10 =20)

8. ----------
9. ----------
10. ----------

11----------

PART – C

Answer any TWO of the following questions. Each question carries 15 Marks

(2X15=30)

12----------

13----------

14----------

15----------

PROCEEDINGS OF THE BOARD OF STUDIES MEETING FOR BBA (HOT AND HOSPITALITY) PROGRAM UNDER NEW NATIONAL EDUCATI POLICY 2021-2022 HELD ON 20/09/2022 AT 11.00 A.M. AT DEPARTMENT TOURISM AND HOSPITALITY MANAGEMENT, POOJA BHAGAV MEMORIAL MAHAJANA EDUCATION CENTRE, METAGALLI, KRS RO MYSURU-570 016

Chairperson of BOS has been authorized to carryout minor modification in the appro syllabus.

Members Present:

1.	Dr.Satish G.Chetty	Chairman	Present
2.	Prof. S.J.Manjunath	Member	Present
3.	Mrs.Gunarekha B.S	Member	Present
4.	Mr.Suhas	Member	Present
5.	Mrs.Sunitha Srinivasan	Member	Present online
6.	Mr.Nicolas Harry	Member	Present
7.	Dr.Mahesh R	Special Invitee	Present
8.	Dr.D.Anand	Special Invitee	Present

Resolution:

1. Approval of proposed syllabus for 3rd and 4th semester of BBA (Hotel and Hospitality)
2. Approval of list of examiners for the acadamic year 2022-2023.
3. Any other subject with the permission of the chair.

Signature of Members:

1.	Dr.Satish G.Chetty	Chairman	
2.	Prof. S.J.Manjunath	Member	
3.	Mrs.Gunarekha B.S	Member	
4.	Mr.Suhas	Member	ABSENT
5.	Mrs.Sunitha Srinivasan	Member	Online
6.	Mr.Nicolas Harry	Member	
7.	Dr.Mahesh R	Special Invitee	
8.	Dr.D.Anand	Special Invitee	

CBCS V SEMESTER SYLLABUS

DSE Course -1: Sociological Thinkers

Unit 1: Emergence of Sociology	**20Hrs**
a) Origin, and development of sociological thought. **b)** Role of enlightenment	
Unit 2: Founders	**25 Hrs**
a) Auguste Comte: Positivism - Law of three Stages - Classification of Sciences **b)** Herbert Spencer: Theory of Social Evolution - Types of Society	
Unit 3: **Max Weber &George Simmel**	**26 Hrs**
a) Social action b) Types of Authority c) Spirit of Capitalism d) Modern Society **e)** Culture of Money	
Unit –4: **Emile Durkheim&Karl Marx**	**25 Hrs**
a) Rules of Sociological Methods. b) Social Facts. c) Division of Labour. d) Theory of Suicide. e) Dialectical Materialism. f) Economic Determinism. g) Class Struggle.	

CBCSV Semester 2022-23

Generic Elective (GE) Paper-1: Gender & Society

Unit-1 Social Construction of Gender.	**10 Hrs**
a. Sex and Gender, Gender discrimination, Gender Sensitivity, Empowermentof Women.	
Unit-2 Gender Violence.	**10 Hrs**
a. Domestic violence, Harassment at the workplace. b. Gender and Development- History and Approaches WID, WAD, and GAD.	
Unit-3 Feminism.	**8 Hrs**
a. Feminism- meaning, origin and growth of feminist theories. b. Theories of feminism- Liberal, socialist and Eco-Feminism.	
Unit-4 Major Challenges and issues related to women.	**4 Hrs**
a. Major challenges and issues affecting women in India: Women and Education, Women and Health, Women and Workplace and Policies andProvisions for Women.	

CBCSVI Semester Syllabus

DSE Course -2: Social Research Methods

Unit-1: Social Research	20 Hrs
a. What is Social Research? b. Social Research v/s Research Problems. c. Stages of Social Research. d. Uses of Social Research. e. Ethics and Social Research.	
Unit-2: Basic Research Concepts	**25 Hrs**
a. Data research Technique: Concepts & Indicators, Variables & Constants, Hypothesis & Assumptions. b. Research Design: Explorative, Descriptive and Experimental.	
Unit-3: Tools of Data Collection	**26 Hrs**
a. Interview. b. Case studies. c. Observation. d. Photography & Video.	
Unit-4: Methods of Data Analysis	**25 Hrs**
a. Tabulation. b. Graphic Representation (Bar,Pie-Chart, Histogram). c. Coding & Tabulation. d. Ethical Issues in Data Collection.	

e. Report Writing.	

CBCSVI Semester 2022-23

Generic Elective (GE) Paper-1: Media & Society

Unit:1- Relationship between Society & Media	**10 Hrs**
a. History of Media. b. Importance of Media. c. Relationship between media and society.	
Unit:2- Mass Media	**10 Hrs**
a. Print, Electronic & New Media. b. Positive & Negative Role of Media and Society.	
Unit:3- Various Perspectives of Media	**8 Hrs**
a. The use and abuse of Media- Development issues- Media, Crime &Violence. b. Effects on Society.	
Unit:4- Impact of Media on Society.	**4 Hrs**
a. Women. b. Youth. c. Consumerism. d. Globalization.	

V SEMESTER

INTERNATIONAL AIR TICKETING AND FARE CONSTRUCTION

Total Credits: 4 **DSC-15**

Total Hours: 46

Learning Objectives:

1. To understand the basic concepts of Air Ticketing
2. To study the air fares and consolidators
3. To Know the CRS and GDS system in Air ticketing.

Learning Outcomes:

1. To make them to understand the Basic air ticketing and codes of the city.
2. To able to understand the Terminologies used in air ticketing and its consolidators in accommodation..
3. To familiarise the usage of CRS and GDS system in Airline Ticketing.

MODULE 1 **8hrs**

Introduction- Concepts-IATA Area Number-I, II and III-City Codes-Airport Codes-airline Codes-Standard meals and Codes- Insurance-Global indicators-sales Indicators- TIM-OAG-Miscellaneous charges order (MCO), prepaid ticket advice (PTA). CRS and GDS.

MODULE 2 **8hrs**

International Air Itinerary Planning: Meaning of itinerary - terminology used in itinerary - Types of Airline Fares – Special fares-Fare Construction; Meaning - significance of constructing correct Fare - Fare Rules - Fare Codes - Fare Selection –Consolidators in Air ticketing and accommodation.

MODULE 3 **06hrs**

Technical Aspects in Fare Construction: Types of Journeys- One way Trip-Round Trip-circle Trip-Open Jaw-Origin open jaw-Turn around open jaw-Stop over-Transfer point-ARNK-Alligators neck-one Country Rule.

MODULE 4 **12 hrs**

Basic Principles of International Fares and Ticketing-Currency System-Rule-NUC-MPM-TPM-EMA-EMS-HIP-AF-BHC-IROE-LCF-Problems on Inbound and outbound-Half RT fare ,fare box and ETicket.

MODULE 5 : **12hrs**

Amadeus: PNR Generation-Encoding and Decoding –Time Availability-Seat availability Time table-Requests-Meal-seat-Refund-cancellation.

Reference Books:

1. Philip G Davidoff, Doris S Davidoff and Deborah Cooper - Airfares and Ticketing
2. Jagmohan Negi – Air Travel Ticketing and Fare Construction
3. A.P. Rastogi - Air Travel Ticketing and Fare Construction
4. Jitendra K Sharma – Flight Reservation and Airline Ticketing
5. IATA hand book on Airline Ticketing

Weblink and Video content:

International Tourism –III

Total Credits: 5 **DSC 16**

Total Hours: 52

Learning Objectives:

1. To study the International Tourism and travel statistics.
2. To understand the North America tourism resources.

3. To Know the Tourism potentiality of South America and islands.

Learning Outcomes:

1. To familiarise the international tourism demand and its factors for growth.
2. To make them to understand the North America popular tourism destinations.
3. To able to understand the South America and Caribbean islands tourism destinations.

Module I: 10hrs

International Travel and Tourism Statistics Meaning, Definition, forms and types, Intra-regional and Inter-regional. Tourist trends- Regional and Global tourist movements, Tourist Arrivals/Receipts, challenges. Factors affecting- Demand and origin factors, destination & resource factors.

Module II: 12hrs

Physiological Features of North America, Central America and South America– Climatic regions-Topography-Human settlement-cultural aspects –Vegetation – Water bodies -Natural Resources.

Module III: 10hrs

Tourism resources of North America – Canada, USA, Hawaii islands, Mexico etc – Map Study. Module

Module IV: 10hrs

Tourism resources of Caribbean Islands – Bermuda, Cuba, Jamaica, West indies etc – Map Study.

Module V: 10hrs

Tourism resources of South America – Peru, Brazil, Argentina, Chilli, Colombia-Ecuador – Venezuela and major islands–French Guiana-Falkland islands Map Study .

Recommended Books for Reference:

1. Burton Rosemary, Travel Geography, Longman Edn. 1999.

2. Cooper, Chris and Bonifare, Worldwide Destinations, the Geography of Travel and Tourism, Butterworth.

3. Hudman, Lloyd and Jackson Ridhard, Geography of Travel and Tourism, Delmar Publisher, Edn. 1999.

4. Perlitz, Lee and Elliot, Steven, International Destinations, Prentice Hall, Edn. 2001.

5. Atlas of North America, South America and Caribbean Islands 6. Lonely Planet- USA, Canada, Mexico, Etc

Web link and Video Content:

Sustainable and Eco-Tourism

Total Credits: 5 **DSC 17**

Total Hours: 52

Learning Objectives:

1. To understand the concept of sustainable tourism.
2. To Study the Ecotourism and its impacts on community.
3. To know the Ecotourism resources of India.

Learning Outcomes:

1. To familiarise the conceptual clarity about Sustainable Tourism
2. To make them to understand the ecotourism principles and models and impacts on community development.
3. To able to understand the eco tourism planning and development

Module-1 **08hrs**

Concept of Sustainable Tourism-Meaning and definitions –Characteristics- Principles of sustainable tourism-Carrying capacity and its applications-Alternative tourism and its forms.

Module-2 **10hrs**

Importance of Eco-Tourism-Concept- definition-importance-stakeholders-pillars of ecotourism-types of Eco-Tourist-Principles of ecotourism-Ecotourism summit (Quebec declaration and Oslo)-Environmental education and ecotourism-Responsible tourism.

Module-3 **12hrs**

Impacts of Eco-Tourism- Socio-cultural-Economic-Environmental- Doxey Irritation Index Model-Environmental Impact Assessment-Need of EIA-EIA steps-Method and Usage of EIA-Sustainable and Ecotourism.

Module-4 **10hrs**

Ecotourism Resources of India-Biosphere reserves-National parks-wild life sanctuaries-Eco tourism activities-Eco-tourism projects and Community based ecotourism-.case study on ecotourism projects (Heritage and Natural).

Module-5 **12 hrs**

Ecotourism planning and Development- sustainable ecotourism model for development-Sustainable development strategies –classification of property rights-common property Resources- Ecotourism guidelines by Ministry of environment and forest-Methodology for developing New ecotourism activities without affecting existing ecology and environment.

Books for reference:

1. Sustainable Tourism – Harish Bhatt, B.S. Badan
2. Eco tourism – Ravee Chauhan
3. Hand Book of Environmental Guidelines for Indian Tourism – Ratandeep Singh
4. Eco tourism – Trends & challenges – Ravee Chauhan
5. Eco tourism and Mass tourism – P.C. Sinha

Web link and Video Content:

START-UP AND ENTREPRENEURSHIP SKILLS

Total Credits: 5 **DSE**

Total Hours: 54

Learning Objectives:

1. To Study the theoretical aspects of Entrepreneurship
2. To understand the Start up ideas and Market analysis
3. To know the various financial assistance and Business planning.

Learning Outcomes:

1. To familiarise the concept of entrepreneurship and entrepreneurship development
2. To make them to understand the start up ideas and idetintying the sources.
3. To able to recognise the financial sources and business model.

Module I: **12hrs**

Entrepreneurship- Definition, Role and expectation. Entrepreneurial motivations, Types; Characteristics, functions and importance of Entrepreneurship opportunities in tourism; Entrepreneurial traits and qualities; A brief study of forms of Business Organization – sole trading partnership, limited liability, co-operative, Partnership producers' companies – public private partnership – steps involved in establishing a new tourism enterprise.

Module II: **10 hrs**

Start-up Idea: How to get a start-up idea, Idea assessment. Identifying target segment and Market Segment: Understanding target segment, sizing the market. Analysing Environment and Competitive advantage: Analysing the environment, Understanding the industry (Porter's 5 force model), Competitive Advantage.

Module III: **12 hrs**

Building a Legal Structure: Introduction, Common legal mistakes, Types of Legal Structures, Entity registration process, choosing a base location, Selecting legal expert. Permits Registration and Compliances, Intellectual Property Rights, Importance and Types, IP registration process, Contracts: Key aspects, Founder and Employee agreement, Vender and customer contracts.

Module IV: **10hrs**

Understanding Financial Basics: Introduction to Financial Basics, MIS, Financial Key Performance Indicators, Working Capital Management: Introduction, Operating Cycle, Financing and Management of Working Capital, Vendor contracts, Financial management and long term investments, Capital Structure and Taxation, Break Even Analysis,

Module V: **10hrs**

Business Planning: Components of BP, Importance of BP, Elements of BP, Format of BP, building an effective BP, Marketing strategy for an effective BP, Building BP Projections. Funding Overview: Seeking external funding, Funding stages, Qualities to look for investors, approaching investors. Valuation: Decoding Valuation, Valuation and dilution, Cap tables. Pitching and Term sheet: Investors pitch, Components of a pitch, Term Sheet and Post Term Sheet, Program completion. Face book for business.

Reference:

1. Entrepreneurship Development by S. Anil Kumar, S.C. Poornima M.K.Abraham¬& K. Jayashree.

2. Entrepreneurship¬& Small Business Management by C.B. Gupta & Khanka.

3.Xcess' Board of Editors, Guide to Starting a Travel Agency and Tour Operation Business – The¬ Business of Tourism, XcessInfostorePvt. Ltd. (2013).

4. Roy A. Cook D.B.A, Laura J. Yale Ph.D. Emerita and Joseph J. Marqua, Tourism: The Business of¬ Travel (4th Edition), ISBN-13: 978-0137147298.

Web link and Video Content:

Foreign Exchange Management

Total Credits: 5 **DSE**

Total Hours: 54

Learning Objectives:

1. To understand the foreign exchange Market and its functions.
2. To study the foreign exchange risk and management
3. To know the international foreign exchange trade.

Learning Outcomes:

1. To able to understand the foreign market an exchange market, Participants and FEMA
2. To make them to know the foreign exchange rate determination and Balance of Trade.
3. To familiarise the financial swaps and foreign exchange documentation.

Module -I: **10hrs**

Foreign Exchange Market: meaning, nature and functions-participants in forex market-foreign exchange transactions-spot rate-forward rate-cross rate-quotations-bid-ask spreads, FEMA.

Module -II: **10hrs**

Exchange Rate Determinations: Measuring exchange rate movementsexchange rate equilibrium-factors that influence exchange rates-theories-BOP approach.

Module -III: **10hrs**

Foreign Exchange Risk and Management: Transactions ExposureEconomic Exposure-Translation Exposure-Arbitrage-Hedging and Internal and external Techniques of Managing Foreign Exchange Exposure.

Module -IV: **10hrs**

Financial Swaps: Introduction-Definition-Types-Interest Rate Swap-Currency Swap-Equity Swap-Some Aspects of Swap Management Swap Deals in India-Trading in Swaps.

Module -V: **14hrs**

International Financial Markets- Internal Money Market- International Credit Market- International Bond Market- International Stock Market- SEBI Guidelines-How Financial Markets Facilitate MNC functions. Financing of foreign trade-Foreign Trade Documentation-Modes Of Payment In International Trade- Methods Of Trade Financing- Export-Import Bank Of India.

Recommended Books for Reference:

1. Francis Cherunilam-International Trade and Export Management, Himalaya Publishing House

2. Keith Pilbeaam- Finance and Finanacial Markets, PalgrameMacMillan

3. Vyuptakesh Sharan-International Financial Management, Phl Learning

4. Jeff Madura-International Financial Management, Cengage Learning

5. Madhu Vij- International Financial Management, Anuraj Jain for Excel Books

Web link and Video Content:

CUSTOMER RELATIONSHIP MANAGEMENT

Total Credits: 5 **DSE**

Total Hours: 52

Learning Objectives:

1. To understand the airline Customer relationship Management.
2. To know the airline service quality and handling skills.
3. To identify the various technologies used CRM in Airports.

Learning Outcomes:

1. To understand the customer in the business air travel market.
2. To able to identify the importance of relationships, customer satisfaction, relationships in services,
3. To familiarise the various tools and technologies used in CRM at the airports.

Module-I: **10hrs**

AIRLINE CUSTOMER:Understanding customer, consumer behaviour, customer decision making roles and processes, consumer motivation, customer needs, customer wants – the customer in the business air travel market, the customer in the leisure air travel market, the customer in the air freight market.

Module-II: **12hrs**

CUSTOMER HANDLING SKILLS AND MANAGEMENT: Listening skills, telephone handling skills, communication, getting customer feedback, behaviour and personality factors to manage customers, managing stress – causes of job stress, five key skills for better time and task management, effective delegation.

Module-III: **10hrs**

CUSTOMER RELATIONSHIPS: Importance of relationships, customer satisfaction, relationships in services, relationship building, discriminating customers for relationships, service branding, and various technologies and tools used CRM in Airports.

Module-IV: **10hrs**

SERVICE QUALITY IN AVIATION: quality in services, SERVQUAL system, critical evaluation of SERVQUAL, initiating and managing quality.

Module-V: **10hrs**

Achieving High Customer Satisfaction Delivering, quality technical customer support, components of a successful service desk, trends influencing the service desk, technically savy customers, fee based support, global support, understanding customers needs and managing expectations, a caring attitude, developing the right mix of skills.

REFERENCE BOOKS:

1. Services marketing – theory and cases – Harsh Verma v
2. Customer service: career success through customer loyalty – Paul R. Timm

Web link and Video Content:

Human Resources Management

Total Credits: 5 **DSE**

Total Hours :52

Learning Objectives:

1. To understand the Human resources management functions and development.
2. To study the HR planning and appraisal process.
3. To understand the Industrial relations administration.

Learning Outcomes:

1. To familiarise the role of HRM in Aviation and Tourism sector.

2. To able to understand the HRM planning and Procurement, Methods and Evaluation-Human Resource Training.

3. To make them to understand the importance of Motivation, factors influencing Wage Fixation, Benefits and Services

Module I: **10 hrs**

Introductions to Human Resource Management Introductions- Definition, Nature, Scope, Objectives-Evolution and Development of HRM-Functions of HRM-Personnel Policy, Records and Reports.

Module II: **10 hrs**

Human Resource Planning and Procurement- Human Resource Planning – Meaning and importance of HRP, Need, process of HRP-Job Analysis- Meaning, Importance, purpose, Job Description and Job Specification- Recruitment and Selection –Importance, Process of Selection, Methods, Placement and Induction.

MODULE III: **10 hrs**

Human Resource Appraisal and Development Human Resource Appraisal – Meaning and importance of HRA, Methods and Evaluation-Human Resource Training- Meaning, Importance, Need, Methods and Evaluation.

Module IV: **10 hrs**

Human Resource Motivation and Compensation Human Resource Motivation-Meaning and importance of Motivation, Need, Types, Techniques, Theories of Motivation-Human Resource Compensation – Meaning, Importance, Objectives, Principals, factors influencing Wage Fixation, Methods of Compensation, Compensation Policy, Incentive Schemes, Benefits and Services-Human Resource Mobility- Importance and purpose, Promotion, Demotion, Transfer, Separation, Absenteeism, Labour Turnover.

Module V: **10 hrs**

Industrial Relations and Administration of Discipline –Meaning and importance, Objectives, Guidelines and Procedure- Management of Grievances – Meaning, Causes, Handling and Redressal Procedure- Labour Management Relations – Industrial Disputes, Types , Causes, Procedure for settlement, Government and Industrial relations programmes-Trade Unions – Features, Objectives, Principals, Functions of Trade Union.

Recommended Books for Reference:

1. K. Aswathappa, Human Resource Management, Tata Mc-Graw Hill New York.

2. C.S. Venkata Ratnam, Personnel Management, Tata Mc-Graw Hill New York.

3. C.B.Gupta, Human Resource Management, Sultan Chand & Sons, New Delhi.

4. Tripathi, Personnel Management & Industrial Relations, Sultan Chand & Sons, New Delhi.

5. P. Subba Rao, Human Resource Management & Industrial Relations, Himalaya Publishing House, Mumbai.

6. V.P. Michael, Human Resource Management & Industrial Relations, Himalaya Publishing House, Mumbai.

7. A.M. Sharma, personnel Management and Human Resource Management, Himalaya Publishing House, Mumbai.

Web link and Video Content:

STUDY TOUR -SEC1

The Students have to go for National/International Study Tour before the close of Fifth semester Examination (preferably after fourth semester examination) and submit a report before the close of Fifth semester examination. This shall carry4 credits and assessed by the Internal and External Examiners for 100 marks (50 marks for Report and 50 marks for Viva Voce Examination)

VI SEMESTER

TRAINNING COMPONETS and REPORT

Course Objective: To provide the practical exposure and on the job training to the students about the systems, procedures and practices being followed by the Aviation/tourism industry, in the backdrop of principles and concepts of Aviation and tourism management.

The students of the Sixth semester will be required to undergo 8 weeks compulsory 'On the Job Training' in the Tourism Industry. For this purpose the students will be placed with different tourism related organizations during the winter vacations immediately after their sixth Semester Examinations.

After completion of the Training, the students will have to submit the Training Reports based on their work during their Internship Training. The Training Reports will be evaluated by the Department council. (Marks Division See ANNEXTURE –III)

Tourism and Aviation Law

Total Credits: 4 **DSC 20**

Total hours: 44

Learning Objectives:

1. To understand the Tourism and Aviation law.
2. To study the recent amendments on International convention.
3. To know the recent development in International aviation law.

Learning Outcomes:

1. To make them to understand the Tourism related documents and conventions.
2. To familiarise the international conventions on aviation and Tourism industry
3. To able to understand the Aviation liability and recent agreements.

Module-I: **8hrs**

Tourism Bill of Rights -Tourism Code - Manila Declaration - Acapulco Document-Travel Insurance-Passport - Visa-Health Regulations - Customs and Currency Regulations.

Module-II: **10hrs**

International Conventions: Recent Amendments on -Warsaw Convention (1924)-Chicago Convention (1944)-Travel Contract (1961)- Athens Convention (1974)-ICAO -IATA general Condition of. Carriage (passenger and Cargo) -Bilateralism and Recent Developments, Liberal and Open Sky Policies.

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Module-III: **10hrs**

The Passport Act- Foreigners' Act- Recent Amendments on- Indian Contract Act 1872, Laws Relating to Environmental protection-FEMA 1999-The Arms Act- Narcotics Drugs Act Psychotropic Substances Act1985-Foreigners' Registration Act-The Explosives Act-Citizenship Act-Pollution Control Act-Wild Life Act.

Module IV: **8hrs**

Recent Developments in International Air Law**,** Globalization, Liberalization and Privatization in Civil Aviation, Environmental Concerns in Aviation, World Trade Organization, GATS and International Air Law, International Air Transport Organization.

Module V: **8hrs**

Aviation Liability: The Warsaw Convention of 1929, The Hague Protocol, 1955, Montreal Agreement of 1966, Guatemala City Protocol in 1971, Montreal Protocols of 1975, The IATA and ATA Inter-Carrier Agreement, 1997, Montreal Protocol No. 4 and Cargo Operations, Rome Convention on damage caused by foreign aircraft to third party on the surface, 1952, The Montreal Convention (1999).

Reference:

01. The Business of Travel Agency Operations and Administration-L. Foster

02. Travel Agency and Tour Operators: Concept and Principles-M. S Negi

03. Travel Industry-C Y Gee

04. Business of Tourism- Halloway J.C.

05. International Travel and Tourism- Lundberg 06. The Business of Tour Operations-Yale P.
07. Bare Acts

Web link and Video Content:

FUNDAMENTALS OF RESEARCH

Total Credits: 5 **DSE 3**
Total Hours: 52

Learning Objectives:

1. To understand the concept of Research.
2. To study the research design and methods.
3. To know the sampling tools and data collection methods and report writing.

Learning Outcomes:

1. To promote the understanding and skills of the students about the basic research concepts and tools,
2. To conduct research and data analysis and to further equip them in writing and presentation of the results in tourism business and research.

Module I: **10hrs**

Introduction to Research, Definition of Research – Characteristics – Purpose of research, Role of research in tourism business, requisites of a good scientific method –components of scientific approach, Types of Research, Research problem, Review of literature, Classification, Purpose and Sources of literature, Steps in Research.

Module II: **10hrs**

RESEARCH DESIGN: Definition, Types of research, Steps Involved in Research Process. Research Design-Various Methods of Research Design. hypotheses: meaning – types, Sources of hypotheses – functions/role of hypotheses.

Module III: **10hrs**

Sampling and Tools for Data Collection: Concept of Sample, Sample Size and Sampling Procedure, Various Types of Sampling Techniques, Sampling errors, Types of Data: Secondary and Primary, Various Methods of data Collection,

Module IV: **12hrs**

Processing of data: introduction – editing – classification and coding – transcription– tabulation and graphic representation, Statistical analysis of data: introduction –measures of central tendency, mean, mode and median.

Module V: **10hrs**

Data presentation, Report Writing: Introduction – types of reports – planning report-writing – research report format – steps in report of writing – documentation: footnotes and bibliography.

Reference:

1. Brunt, P. "Market Research in Travel & Tourism", Butterworth Heinemann: UK,1997.

2. Clark, M. Riley, M., Wilkie, E. and Wood, R.C. 'Researching and Writing Dissertations in Hospitality and Tourism', ITBP: UK,1998.

3. Jennings, G. 'Tourism Research', John Wiley & Sons,2001.

4. Poynter, J. 'How to research and write a thesis in Hospitality and Tourism: A step by step guide for college students, Wiley: UK1993.

5. Ritchie, J.R.B. and Goeldner, C.R. (eds) 'Travel, Tourism and Hospitality Research: A Handbook for Managers and Researchers', Wiley: UK.1994.

Web link and Video Content:

AVIATION SAFETY AND SECURITY

Total Credits: 4 **DSE-3**

Total Hours: 40

Learning Objectives:

1. To Study the Conceptual aspects of Aviation safety and security.

2. To know the Terminal and airside protection.

3.To understand the In flight safety and security Measures.

Learning Outcomes:

1.To able to understand the Mechanisms and terminologies of Aviation safety and security.

2. To make them understand the various procedure and process of Infligt safety and security.

3. To familiarise the Terminal and airside protection.

MODULE 1 **5hrs**

Aviation Safety and Security Management – Overview – Concept of safety - Definition of Safety – Evolutionof safety – Accidentcausation – People, context and safety - Error & violation - Safety culture - Bomb threats, types, procedures and handling

MODULE 2 **7hrs**

Three Areas of an Airport: Landside protection; threat situation against passengers,crew or infrastructure – situationagainst passengers,crew or infrastructure - public area - parking lots, adjacent hotels and airport access roads – perimeter safety.

MODULE 3 **10hrs**

Terminal protection - Passenger and cabin baggage - Unattended/suspicious baggage; Chemical, biological or radiological (CBR) – Any actual or potential situation • Prohibited articles screening - Staff and crew screening - Aircraft access control - Cargo and mail acceptance - Airport supplies security Deficiencies or threats reported Airport supplies facility controls - Insider threats

MODULE 4 **9hrs**

Airside Protection - Introduction (Airside Safety) - Airside Inspections - Runway - Taxiways and Taxi lanes - Grass Areas - Aprons - Airport Surroundings - Protection of ATC - protection of Navigation Aids - Prevention of Runway Incursions, Excursions and Confusion - Wildlife Hazards - Disabled Aircraft Removal.

MODULE 5 **9hrs**

In-flight Safety and security - Deficiencies and threats reported - In-flightsupplies facility controls – Flight Deck Access – Checking of Boarding Pass - Cabin baggage - Using electronic devices during flight - Cabin fires and common causes – In-flight Bomb threats, types, procedures

and handling – Hijacking; action and procedures - Unruly passengers Dangerous good classifications - Rules relating to carriage of dangerous goods

Reference Books:

1. Stephan Cusick, Antonio Cortos and Clarence Rodrigues - Commercial Aviation Safety
2. Seth Young – Airport Planning and Management
3. Kathleen Sweet – Aviation and Airport Security: Terrorism and Safety Concerns
4. IATA – Categories of Aviation Security Occurrences
5. ICAO – Aviation Safety handbook

Web link and Video Content:

Global Business Finance

Total Credits: 5 **DSE**
Total Hours: 52

Learning Objectives:

1. To understand the financial aspects in Tourism and Aviation sector.
2. To know the various financial sources and its significance in Tourism Business.
3. To study the various financing institutions for Tourism and aviation Projects.

Learning Outcomes:

1. To make them to understand the finance function and its goals.
2. To able to understand the sources of finance and its significance.
3.To know the legal obligations and declaration of dividend and financing the project.

Module - I **10Hrs**

Financial Management and planning Finance: Concept of Finance, Finance Functions, Meanings and Definitions of Financial Management; Evolution, Functions ,Goals and Scope of Financial Management, Financial Planning-meaning, Steps in Financial Planning, and Factors Affecting Financial Planning, Time value of money: compounding and discounting techniques.

Module –II **10Hrs**

Sources of Finance and Assessment of Requirements: Financial Needs & Sources of Finance of Tourism Business, Long-Term Sources of Finance- Equity shares, Features, Pros & Cons, Preference shares- Features, Pros & Cons, and Debentures - Features, Pros & Cons, Retained Earnings - Features, Pros & Cons, Public Deposits; Sources of short Term Finance and Venture Capital.

Module -III **10Hrs**

Capital structure and Financial Leverages: Capital structure –Meaning, Determination of Capital structure, Meaning of Financial Leverage, Types – Operating & Financial Leverage, Effects of Leverage, EBIT – EPS Analysis, Working capital Management Meaning & Concept of Working Capital, Need for Working Capital, Operating Cycle, Components of Working Capital, Estimation of Working Capital in Tourism Business, Financing current assets in Travel Business.

Module - IV **10Hrs**

Dividend Policy & Capital Budgeting: Concept & meaning of Dividend, Different types of Dividend Policies (Theories/Approaches- irrelevance & relevance), Determinants of Dividend Policy, Significance of Dividend Policy; Capital budgeting-Nature, Scope, Capital Budgeting techniques- Traditional (ARR and Payback Period), Discounted /Time Adjusted Techniques (NPV Method, IRR Method, & Profitability Index)

Module -V **10Hrs**

Financing of Tourism Projects Financing of Tourism Projects- National Financial Policies; Tourism Finance corporation of India (T.F.C.I.) – Overview, Financial & Advisory Services offered by TFCI, Financing of Tourism Projects by TFCI, FDI in Tourism and Aviation Sector in India, Case Studies of Financial Statements of: Thomas Cook, Yatra.com, Taj Group of Hotels, Oberoi Group of Hotels.

Recommended Books for Reference:

1. Banerjee P.: Fiscal Policy in India: Gyan Publishers Delhi 1986.

2. Horne J.V.: Financial Management and Policy

3. Kuchal S.C.: Financial Management

4. Pandey, I. M., Financial Management, Vikas Publishing House Pvt. Ltd., Noida, 2005, 9th Ed.

5. Khan, M.Y. and Jain, P.K., Financial management Text, Cases and Problems, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2007

6. Chris Guilding Financial Management for Hospitality Decision Makers (Hospitality, Leisure and Tourism)

Web link and Video Content:

REVENUE AND COST MANAGEMENT

Total Credits: 4

Hours: 40

Learning Objectives:

1. To understand the Airline revenue concept.
2. To know the Airline revenue yield Management aspects.
3. To study the various Airline revenue management techniques..

Learning Outcomes:

1. To make them to understand the airline operating ,passenger and cargo revenue system.
2. To able to understand the role of functional cost involved in airline revenue..
3. To know the airline cost classification and its impacts on Profit managements

MODULE 1 **6hrs**

Airline Revenue – Overview of airline revenue, Significance of Revenue Management in Airlines - Airline operating revenue; Revenue Drivers - Capacity – Passenger Yield – Load Factor Passenger – Cargo Ancillary revenue

MODULE 2 **8hrs**

Yield Management – Meaning of Yield Management – Strategies for Revenue Management; Seat Segmentation on a flight – Seat Inventory Control Approaches - setting booking limits on low fare seats – Revenue Management System – KPIs for Airline Revenue management; ADR, RevPAS, RevPOS.

MODULE 3 **10hrs**

Revenue Management Techniques – Overbooking – Overbooking terminology – Overbooking Models; Manual Approach – Deterministic Model – Risk Model – Cost Based Model - Flight leg optimization – Traffic Flow Control – Revenue Management Pricing Strategies; Forecast-based pricing – Rate Parity – Price per segment – Discount Codes for direct bookings.

MODULE 4 **8hrs**

Airline Cost – Overview – Cost Categorization – Administrative Cost; Administrative staff Salaries and other employee cost, – Advertising and promotions – Insurance – Customer service costs – Travel Agent and Tour operator commission - PassengerDiscounting.

MODULE 5 **8hrs**

Functional Costs – Flight Operating Costs; Flight Crew Salaries and other benefits, Fuel, oil, Maintenance and Repairs – Passenger food/ Catering services, Aircraft Rent, Parking charges, Landing and Take-off charges, Airport Hanger charges, other charges.

Reference Books:

1. **Curt Cramer and Andreas Thams, Airline Revenue Management, Springer Gabler Publications**
2. **Bijan Vasigh, Ken Fleming and Thomas Tacker Introduction to Air Transport Economics: From Theory to Applications, Routledge Publications, III edition**
3. **Gerald N Cook and Bruce Billig, Airline Operations and Management: A Management Textbook, Routledge Publications, I edition**
4. **Victor Hughes, Airline Management Finance: The Essentials (Managing Aviation Operations) Routledge Publications, I edition**

INFORMATION TECHNOLOGY IN TOURISM AND AVIATION

Total Credits: 3 **SEC 12**

Total Hours: 40

Objective:

- To know the influence of technology in tourism and aviation
- To learn the application of GIS, GDS, CRS
- To explore the role of social media in tourism and aviation and security threats in digital platform

Learning Outcomes:

- Learns the applicability of technology in tourism and aviation
- Learns the usage of GDS, GIS, CRS
- Learns the role of social media and problems and prospects of technology

Module– I **8hrs**

Introduction- Impacts of Technology on tourism and aviation – Virtual Tourism-GHPS – GIS - Use of ICT–E Marketing and promotion of tourism and aviation - Payment Systems.

Module –II **8hrs**

Global Distribution System: History & Evolution –GDS & CRS – Hotel Distribution System – Cases of AMADEUS-GALILEO SABRE, - Changing business models of GDS.

Module –III **8hrs**

Application of E – tourism: Business models – Business to business (B2B) - Mobile Applications – Online Travel Portals.

Module –IV **8hrs**

Social Media– Travel Blogs –Tourism Websites –Travel and Accommodation Review Sites (Trip Adviser, Expedia) – Challenges for conventional business models & Competitive strategies.

Module –V **8hrs**

Problems and Prospects –Security threats – Accessible Tourism Technology-Technology for Aviation and Hotels –Transports Technology (Monorail, Metrorail and Aviation)

REFERENCE BOOKS

1. Sheldon P. (2002) Tourism Information Technology, CABI.
2. Inkpen G. (2000), Information Technology for Travel and Tourism, Addison Wesley

3. Buhalis D. (2004) Etourism: Information Technology for Strategic Tourism Management, Prentice Hall India.
4. Poon A.(1998),Tourism Technology and Competitive Strategies, CABI.
5. Rayport J.F. & Jaworski B.J. (2002), Introduction to Ecommerce, McGraw-Hill.
6.Malvino A.P.(1995), Electronic Principles, McGraw-Hill.
7.Sampad Kumar Swain & Jitendra Mohan Mishra (2012),Tourism Principles, Oxford University Press.

Web link and Video Content:

ANEXTURE-III

THEORY COMPONENTS (C1, C2, C3) – 100 MARKS

SCHEME OF VALUATION C1 and C2 (Theory) Maximum Marks: 20

1. C1– One Assignment (5 marks) + One Test (5 marks) = 10marks
2. C2– One Assignment (5 marks) + One Test (5 marks) = 10marks

SCHEME OF VALUATION C3 (Theory)

DURATION: 3hrs **Maximum Marks: 80**

(There are three sections. Answer all questions adhering to internal choice)

1. Section A **10 X 2 = 20**

There are twelve questions each carrying 2 marks. Candidate has to answer any ten totaling 20 marks.

2. Section B **4 X 5 = 20**

There are six questions each carrying 5 marks. Candidate has to answer any four totaling 20 marks.

3. Section C **4 X 10 = 40**

There are six questions each carrying 10 marks. Candidate has to answer any four totaling40 marks. (Each main question can be split into sub-questions totaling 10marks)

SBRR Mahajana First Grade College (Autonomous), PG Wing

Pooja Bhagavat Memorial Mahajana Education Centre

KRS Road, Metagalli, Mysuru-570016.

DEPARTMENT OF M.C.A. - 2022-2023

MOTTO

Enter to Learn Depart to Serve

VISION

Build a Strong Research and Teaching Environment that Responds Swiftly to the Challenges of the 21st Century.

MISSION

1. To provide the highest quality education in Computer Science;
2. To perform research that advances the state-of-the-art in Computer Science;
3. To produce post graduates who are knowledgeable, articulate, principled, innovative, confident, and able to think critically;
4. To be engaged in local, State, and National issues to the benefit of both public and the private sector; and
5. To maintain a diverse college community.

SBRR Mahajana First Grade College (Autonomous), PG Wing

Pooja Bhagavat Memorial Mahajana Education Centre

KRS Road, Metagalli, Mysuru-570016

Master of Computer Application - Regulations

2022-2023

Preamble

Mahajana Post Graduate Centre is an exclusive PG wing of SBRR Mahajana First Grade College (Autonomous). The centre happens to be the largest PG Centre affiliated to University of Mysore.

It was established in July 2003 with the motto "Enter to Learn, Depart to Serve". The Centre is affiliated to University of Mysore and offers Post Graduation programmes in the areas of direct relevance and value to the current generation of students. The Centre offers Post Graduate degree in 12 disciplines and is poised to start new programmes in the years to come.

M.C.A. was started in the year 1999. It is a four semester full-time programme. The course is approved by University Grants Commission and affiliated to the University of Mysore. MCA programme is accredited by All India Council for Technical Education (AICTE).

1. Definitions

Course

Every course offered will have three components associated with the teaching-learning process of the course, namely

(i) Lecture – L (ii) Tutorial- T (iii) Practical - P, where
L stands Lecture session. **T** stands Tutorial session consisting participatory discussion

/ self study/ desk work/ brief seminar presentations by students and such other novel methods that make a student to absorb and assimilate more effectively the contents delivered in the Lecture classes.

P stands Practice session and it consists of Hands on experience / Laboratory Experiments / Field Studies / Case studies that equip students to acquire the much required skill component.

In terms of credits, every one hour session of L amounts to 1 credit per semester and aminimum of two hour session of T or P amounts to 1 credit per semester, over a period of one semester of 16 weeks for teaching-learning process. The total duration of a semester is 20 weeks inclusive of semester-end examination.

A course shall have either or all the three components. That means a course may have only lecture component, or only practical component or combination of any two or all the three components.

The total credits earned by a student at the end of the semester upon successfully completing the course are L + T + P. The credit pattern of the course is indicated as L: T: P.

If a course is of 4 credits then the different credit distribution patterns in L: T: P format could be

4 : 0 : 0,	1 : 2 : 1,	1 : 1 : 2,	1 : 0 : 3,	1 : 3 : 0,
2 : 1 : 1,	2 : 2 : 0,	2 : 0 : 2,	3 : 1 : 0,	3 : 0 : 1,
0 : 2 : 2,	0 : 4 : 0,	0 : 0 : 4,	0 : 1 : 3,	0 : 3 : 1,

The concerned BoS will choose the convenient credit pattern for every course based on the requirement. However, generally, a course shall be of 3 or 4credits.

Different courses of study are labelled and defined as follows:

Core Course

A course which should compulsorily be studied by a candidate as a core requirementis termed as a Core course.

A Core course may be a **Soft Core** if there is a choice or an option for the candidateto choose a course from a pool of courses from the main discipline /subject of study or from a sister/related discipline / subject which supports the main discipline / subject. In contrast to the phrase Soft Core, a compulsory core course is called a **Hard Core** Course.

Elective Course

Generally a course which can be chosen from a pool of courses and which may bevery specific or specialized or advanced or supportive to the discipline / subject of study or which provides an extended scope or which enables an exposure to some other discipline / subject/domain or nurtures the candidate's proficiency/ skill is called an Elective Course. Elective courses may be offered by the main discipline/ subject of study or by sister / related discipline / subject of study. A Soft Core course may also be considered as an elective.

An elective course chosen generally from an unrelated discipline / subject, with an intention to seek exposure is called an **open elective**.

An elective course designed to acquire a special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher is called a **Self Study.**

A core course offered in a discipline / subject may be treated as an elective by other discipline / subject and vice versa.

Project work/Dissertation work is a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A project work up to 4 credits is called Minor Project work. A project work of 6 to 8 credits is called Major Project Work. Dissertation work can be of 10-12 credits. AProject work/Dissertation work may be a hard core or a soft core as decided by the BoS concerned.

2. Eligibility for Admission

Candidates possessing a degree of University of Mysore, or of any other University, equivalent there to and complying with the eligibility criteria:

Passed BCA/ Bachelor Degree in Computer Science Engineering or equivalent Degree. **OR** Passed B.Sc./ B.Com./ B.A. with Mathematics at 10+2 Level or at Graduation Level (with additional bridge Courses as per the norms of the concerned University).

Admission to MCA course shall be open for candidates who have passed the Bachelor degree examinations with not less than 50% of the marks in the aggregate of all the years of the Degree examinations. However, in the case of candidates from Karnataka belonging to SC/ST and Category-I, the aggregate percentage of marks in the qualifying examinations shall not be less than 45%. Provided that for admission to MCA, the candidate shall have passed Bachelor Degree with not less than 50% of marks with Mathematics / Statistics / Computer Science / Computer Programming / Computer Application / Business Mathematics / Business Statistics as one of the optional or electives at degree level. Provided further that in respect of candidates who have studied and passed one of the subjects specified in the first proviso in the Pre-university course with 50% of marks in that subject shall also be considered for admission.

However, in the case of candidates belonging to SC/ST and Category-I, 45% of marksin that subject shall also be considered for admission.

3. Scheme of Instructions

3.1 A Masters Degree program is of 4 semesters-two year's duration for regular candidates. A regular candidate can avail a maximum of 8 semesters – 4 years (in one stretch) to complete Masters Degree (including blank semesters, if any). Whenever a candidate opts for blank semester(s)/DROP in a course or in courses or is compelledto DROP a course or courses as per the provision of the regulation, he/she has tostudy the prevailing courses offered by the department as per the prevailing scheme, when he/she continues his/her study.

3.2 A candidate has to earn a minimum of 80 credits, for successful completion of a Master's degree with a distribution of credits for different courses as given in the following table.

Course Type	**Credits**
Hard Core	44
Soft Core	A minimum of 28, not exceeding 32
Open Elective	A minimum of 4, not exceeding 8

Every course including project work/Dissertation work, practical work, field work, seminar, self study elective should be entitled as hard core or soft core or open elective by the BoS concerned.

3.3 A candidate can enroll for a maximum of 24 credits per semester with the approval of the concerned department.

4. Continuous Assessment, Earning of Credits and Award of Grades

The evaluation of the candidate shall be based on continuous assessment. The Structure for evaluation is as follows:

4.1 Assessment and evaluation processes happen in a continuous mode. However, for reporting purposes, a semester is divided into 3 discrete components identified as C1, C2, and C3.

4.2 The performance of a candidate in a course will be assessed for a maximum of 100 marks as explained below:

4.2.1 The first component (C1), of assessment is for 25 marks. This will be based on test/ assignment/seminar/quiz/group discussions. During the first half of the semester, the first 50% of the syllabus will be completed. This shall be consolidated during the 8th week of the semester. Beyond 8th week, making changes in C1 is not permitted.

4.2.2 The second component (C2), of assessment is for 25 marks. This will be based on test/ assignment/seminar/quiz/group discussions. The continuous assessment and scores of second half of the semester will be consolidated during the 16th week of the semester. During the second half of the semester the remaining units in the course will be completed.

4.2.3 The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) will be proposed by the teacher(s) concerned before the commencement of the semester and will be discussed and decided in the respective Departmental Council. The students should be informed about the modalities well in advance. The evaluated courses/assignments during component I (C1) and component II (C2) of assessment are immediately returned to the candidates after obtainingacknowledgement in the register maintained by the concern teacher for this purpose.

4.2.4 During the 18th -20th week of the semester, a semester-end examination of 2 hours duration shall be conducted for each course. This forms the third/final component of assessment (C3) and the maximum marks for the final component will be 50.

4.2.5 In case of a course with only practical component a practical examination will be conducted with two examiners (one internal and one external).

A candidate will be assessed on the basis of:

a) Knowledge of relevant processes
b) Skills and operations involved
c) Results / products including calculation and reporting.

If external examiner does not turn up then both the examiners will be internal examiners. The duration for semester-end practical examination shall be decided by the departmental council.

4.2.6 Scheme of Valuation for Practical Examination:

The student is evaluated for 50 marks in C3 as per the following scheme:

There will be two questions. A candidate has to prepare procedure for both the questions and execute any one of examiner's choice:

Procedure Development	:	10 x 2=20 Marks
Implementation	:	15 x 1=15 Marks

Viva	:	10 Marks
Record	:	05 Marks
Total	:	50 Marks

*For change of question = 5 Marks will be deducted per question.

4.2.7 If **X** is the marks scored by the candidate out of 50 in C3 in theory examination, if **Y** is the marks scored by the candidate out of 50 in C3 in Practical examination, and if **Z** is the marks scored by the candidate out of 50 in C3 for a course of (L=0):T:(P=0)type that is entirely tutorial based course, then the final marks (M) in C3 is decided as per the following table.

L.T.P distribution	Find mark M in C3
L:T:P	$\frac{[(L+T)*X]+[(T+P)*Y]}{L+2T+P}$
L:(T=0):P	$\frac{(L*X)+(P*Y)}{L+P}$
L:T:(P=0)	X
L:(T=0):(P=0)	X
(L=0):T :P	Y
(L=0): (T=0):P	Y
(L=0): T:(P=0)	Z

4.2.8 The details of continuous assessment are summarized in the following table:

Component	Syllabus in a course	Weightage	Period of Continuous assessment
C1	First 50%	25%	First half of the semester To be consolidated by 8th week
C2	Remaining 50%	25%	Second half of the semester.To be consolidated by 16th week
C3	Semester-end examination (All units of the course)	50%	To be completed during 18th-20th Week.
Final grades to be announced latest by 24th week			

4.2.9 A candidate's performance from all 3 components will be in terms of scores, and the sum of all three scores will be for a maximum of 100 marks (25 +25 + 50).

4.2.10 Finally, awarding the grades should be completed latest by 24th week of the semester.

4.3 Minor Project/Major Project/Dissertation Evaluation

Right from the initial stage of defining the problem, the candidate has to submit theprogress reports periodically and also present his/her progress in the form of seminars

in addition to the regular discussion with the guide. Components of evaluation are asfollows:

Component – I (C1): Periodic Progress and Progress Reports (25%)
Component – II (C2): Results of Work and Draft Report (25%)
Component– III (C3): Final Viva-voce and evaluation (50%).

The report evaluation is for 30% and Viva-voce examination is for 20%.

4.4 In case a candidate secures less than 30% in C1and C2 put together in a course, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course. In case a candidate's class attendance in a course is less than 75%, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

Teachers offering the courses will place the above details in the Department Council meeting during the last week of the semester, before the commencement of C3, and subsequently a notification pertaining to the above will be brought out by the Chairman of the Department before the commencement of C3 examination. A copy ofthis notification shall also be sent to the office of the Controller of Examinations.

4.5 In case a candidate secures less than 30% in C3, he/she may choose DROP/MAKEUP option.

In case a candidate secures more than or equal to 30% in C3, but his/her grade(G) = 4, as per section 4.7 below, then he/she may be declared to have been conditionally successful in this course, provided that such a benefit of conditional clearance based on G=4 shall not be availed for more than 8 credits for the entire programme of Master's Degree of two years.

A MAKE UP examination for odd semester courses will be conducted along with next regular odd semester examinations and for even semester courses along with a next regular even semester examinations. If a candidate is still unsuccessful, he/she may opt for DROP or again take up MAKE UP examination; however, not exceeding double the duration norm in one stretch from the date of joining the course.

4.6 A candidate has to re-register for the DROPPED course when the course is offered again by the department if it is a hard core course. The candidate may choose the same or an alternate core/elective in case the dropped course is soft core / elective course. A candidate who is said to have DROPPED project work/Dissertation has to re-register for the same subsequently within the stipulated period. **The details of any dropped course will not appear in the grade card.**

4.7 The grade and the grade point earned by the candidate in the subject will be as given below.

Marks(M)	Grade	Grade Point (GP = V x G)
30-39	4	V*4
40-49	5	V*5
50-59	6	V*6
60-64	6.5	V*6.5
65-69	7	V*7
70-74	7.5	V*7.5
75-79	8	V*8
80-84	8.5	V*8.5
85-89	9	V*9
90-94	9.5	V*9.5
95-100	10	V*10

Here, **P** is the percentage of marks (P = [(C1+C2)+M] secured by a candidate in a course which is rounded to nearest integer. **V** is the credit value of course. **G** is the grade and GP is the grade point.

4.8 A candidate can withdraw any course within in ten days from the date of notification of final results. Whenever a candidate withdraws a paper, he/she has to register for the same course in case it is hard core course, the same course or an alternate course if itis soft core/open elective.

A DROPPED course is automatically considered as a course withdrawn.

4.9 Overall Cumulative Grade Point Average (CGPA) of a candidate after successful Completion the required number of credits (80) is given by:

CGPA = **ΣGP / Total number of credits**

5. Classification of Results

The final grade point (FGP) to be awarded to the student is based on CGPA secured by the candidate and is given as follows.

CGPA	Numerical Index	Qualitative Index
4 <= CGPA < 5	5	Second Class
5 <= CGPA < 6	6	
6 <= CGPA < 7	7	First Class
7 <= CGPA < 8	8	
8 <= CGPA < 9	9	Distinction
9 <= CGPA < 10	10	

Overall percentage = 10* CGPA or is said to be 50% in case CGPA < 5

6. Medium of Instruction

The medium of instruction shall be English. However, a candidate will be permitted to write the examinations in either English or Kannada. This rule is not applicable to languages.

7. Provision for Appeal

If a candidate is not satisfied with the evaluation of C1 and C2 components, he / she can approach the grievance cell with the written submission together with all facts, the assignments, test papers etc., which were evaluated. He/she can do so before the commencement of semester-end examination. The grievance cell is empowered to revise the marks if the case is genuine and is also empowered to levy penalty as prescribed by the college on the candidate if his/her submission is found to be baseless and unduly motivated. This cell may recommend taking disciplinary/corrective action on an evaluator if he/she is found guilty. The decision taken by the grievance cell is final.

For every program there will be one grievance cell. The composition of the grievance cell is as follows.

1. The Controller of Examinations ex-officio Chairman / Convener
2. One senior faculty member (other than those concerned with the evaluation of the course concerned) drawn from the department/discipline and/or from the sister departments/sister disciplines.
3. One senior faculty member / course expert drawn from outside the department.

8. Any other issue not envisaged above, shall be resolved by the competent authority of the autonomous college, which shall be final and binding.

9. Any matter which is not covered under this regulation shall be resolved as per the College/Mysore University regulations.

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Programme Outcomes – M.C.A.

PO 1: Use emerging tools, techniques and skills necessary for computing in the real world.

PO 2: Identify, formulate and solve complex computing problems to achieve substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domains.

PO 3: Analyse problems, suggest appropriate solutions and justify propositions for effective decision making in the professional field.

PO 4: Develop strong critical thinking skills to assess why certain solutions might not work and to save time in coming up with the right approach in the field of computing.

PO 5: Create, select and apply appropriate techniques and latest Information Technology tools to forecast an outcome by utilizing data that is available.

PO 6: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.

PO 7: Develop and imbibe the principles of ethics and values in profession.

PO 8: Communicate effectively and efficiently as an individual, and as a member, or leader to present the technical knowledge in multi-disciplinary settings.

PO 9: Study and review literature, reports prepare documentation and make inferences to design better systems.

PO 10: Recognize and realize the need for, and develop an ability to engage in lifelong learning.

SBRR Mahajana First Grade College (Autonomous), PG Wing

Pooja Bhagavat Memorial Mahajana Education Centre

KRS Road, Metagalli, Mysuru-570016

Master of Computer Application

Programme Structure & Syllabus

w.e.f. 2022-2023

List of Hard Core Courses

Sl.No.	Course Title	Credit Pattern			Credits	Course Code
		L	T	P		
1	Mathematical Foundations for Computer Applications	4	0	0	4	22BH01
2	Advanced Computer Networks	3	1	0	4	22BH02
3	Data Structures and Algorithms	3	0	1	4	22BH03
4	Operating System	3	1	0	4	22BH04
5	Software Engineering	3	1	0	4	22BH05
6	Object Oriented Programming with Java	3	0	1	4	22BH06
7	Python Programming	3	0	1	4	22BH07
8	Minor Project	0	1	3	4	22BH08
9	Dissertation Work	0	2	10	12	22BH09

List of Soft Core Courses

Sl. No.	Course Title	Credit Pattern			Credits	Course Code
		L	T	P		
1	Data Communication and Networks	3	1	0	4	22BS01
2	Advanced Database Management System	3	0	1	4	22BS02
3	Cloud Computing	4	0	0	4	22BS03
4	System Analysis and Design	3	1	0	4	22BS04
5	Web Technologies	2	1	1	4	22BS05
6	Cryptography and Network Security	3	1	0	4	22BS06
7	Theory of Languages and Automata	3	0	1	4	22BS07
8	Probability and Statistics	3	1	0	4	22BS08
9	Fundamentals of Internet of Things	3	1	0	4	22BS09
10	Mobile Application Development with Android	3	0	1	4	22BS10
11	Linux Programming	3	0	1	4	22BS11
12	Information Retrieval	3	0	1	4	22BS12
13	Big Data Analytics	3	0	1	4	22BS13
14	Machine Learning using Python	3	0	1	4	22BS14
15	Advanced Java	3	0	1	4	22BS15
16	Management Information Systems	3	1	0	4	22BS16
17	Business Intelligence	3	1	0	4	22BS17
18	Entrepreneurship Development	3	1	0	4	22BS18
19	Communication Skills	3	1	0	4	22BS19
20	Professional Ethics and Human Values	3	1	0	4	22BS20
21	Cyber security	3	1	0	4	22BS21
22	Simulation and Modeling	3	0	1	4	22BS22
23	Artificial Intelligence	3	1	0	4	22BS23

List of Open Elective Courses

Sl.No.	CourseTitle	Credit Pattern			Credits	Course Code
		L	T	P		
1	World Wide Web	3	1	0	4	22BE01
2	E-Commerce	3	1	0	4	22BE02
3	Office Automation	3	1	0	4	22BE03

Note: We follow latest Edition Textbooks as References.

HC MATHEMATICAL FOUNDATIONS FOR COMPUTER APPLICATIONS 4:0:0

Objectives:

- Understand various concepts of mathematical logic.
- Implement set operations and functions in programming languages.
- Develop the skills to implement algebraic structures.
- Develop the basic skills of graph theory and its applications.

Outcomes:

- Develop an ability to implement various techniques of mathematical logic.
- Capability to apply the concepts of set theory.
- Ability to enhance the knowledge of algebraic structures towards computer applications.
- Ability to correlate the concepts of graph theory in computer applications.

Unit I: Mathematical Logic:

Statements and Notations, Connectives, Well-formed Formulas, Tautologies, equivalence of Formulas, Duality law, Normal Forms, The Predicate Calculus.

Unit II: Set Theory

Basic concepts, Some operations on Sets, Venn Diagrams, Cartesian Products, Relations and Ordering, Functions, Definition, Composition of functions, Inverse functions, Natural Numbers, Recursion, Recursion in Programming Languages.

Unit III: Algebraic Structures

Algebraic Systems, Examples and General Properties, Grammars and Languages, Polish Expressions and Their Compilation, Groups, Definitions and Examples, Subgroups and Homomorphism's.

Unit IV: Graph Theory

An Introductions to Graph Theory: Definitions and examples Sub graphs, Complements, and Graph Isomorphism, Vertex Degree : Euler Trails and Circuits.

Definitions, Properties and examples rooted trees, Trees and sorting. Weighted Trees and Prefix codes. Spanning trees- minimal spanning tree by Prim's and Krushkal's Algorithm.

References:

1. Discrete Mathematical Structures with Applications to Computer Science - Trembley, J.P. and Manohar, RTata McGraw Hill, New Delhi.
2. Discrete Mathematics and Its Applications - Keneth H. Rosen: Fifth Edition, McGraw-Hill.
3. Discrete and Combinatorial Mathematics, Ralph P. Grimaldi, 5th Edition, Pearson Education.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	3	3	2	1	1	1	-	1	2
CO 2	3	3	3	2	1	1	-	-	1	2
CO 3	3	3	3	2	2	1	-	-	1	1
CO 4	3	3	3	3	2	1	1	3	1	2
Weighted Average	3	3	3	2.25	1.5	1	1	3	1	1.75

1: Low, 2: Moderate, 3: High

HC ADVANCED COMPUTER NETWORKS 3:1:0

Objectives:

- To understand fundaments of Network hardware and software.
- To Teach the applications and services of Transport.
- To impart the structural mechanism of TCP/IP.
- To create the awareness on the concepts of IP Security.

Outcomes:

- To employ the mechanism of Reference models and TCP/IP.
- To understand the role of Transport Layer in computer networks.
- Employ the techniques of TCP/IP.
- Comprehend the internal working mechanism of IP Security.

Unit I: Introduction

Uses of Computer Networks, Network Hardware, Network Software, Reference Models- OSI, TCP/IP.

Unit II: Transport Layer

The Transport Service, Congestion Control, History of TCP/IP, TCP Applications and Services, Motivation for Performance Study of TCP/IP, TCP Performance, TCP/IP Fundamentals, TCP, UDP, IP, Performance Measurements of TCP/IP Networks.

Unit III: TCP/IP

TCP/IP Performance over Wireless Networks, Wireless Networks, Generic characteristics, Wireless Local Area Networks, Cellular Communications Networks, TCP Performance Issues over Wireless Links, Inappropriate Reduction of Congestion Window, Throughput Loss in WLANs, Throughput Loss in Cellular Communication Systems, Improving TCP Performance over Wireless Links, Splitting TCP Connections, Snooping TCP at Base Stations, Notifying the Causes of Packet Loss, Adding Selective Acknowledgments to TCP.

Unit IV: IP & System Security.

Overview, IP Security Policy, Encapsulating Security Payload, Combining Security Associations- Authentication Plus Confidentiality, Basic Combinations of Security Associations, Malicious Software, Types, Viruses, Antivirus Approaches, Distributed denial of service (DDoS) attacks.

References:

1. Computer Networks, Andrew S Tanenbaum, David. J. Wetherall, Pearson Education.
2. High Performance TCP/IP: Networking Concepts, Issues, and Solutions, Mahbub Hassan and Raj Jain, IST Edition, PHI Learning.
3. Network Security Essentials: Applications and Standards, William Stallings, 4th Edition, Prentice Hall.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	2	2	2	1	-	1	1	2
CO 2	3	2	2	2	2	1	1	1	1	2
CO 3	2	2	2	2	1	2	1	1	1	2
CO 4	3	3	3	2	2	2	3	3	2	2
Weighted Average	2.75	2.25	2.25	2	1.75	1.5	3	3	1.25	1.5

1: Low, 2: Moderate, 3: High

HC DATA STRUCTURES AND ALGORITHMS 3:0:1

Objectives:

- Impart the basic concepts of data structures and algorithms.
- Understand concepts about searching and sorting techniques.
- Know the basic concepts about stacks, queues, lists, trees and graphs.
- To gain knowledge on trees and graphs concepts.

Outcomes:

- Analyse algorithms and algorithm correctness.
- Summarize searching and sorting techniques.
- Describe stack, queue and linked list operation.
- Solve the problems by writing algorithms using fundamental data structures.

Unit I: Basics of Data Structures and Algorithms

Introduction to Data Structures: Basic Data Types - Abstract Data Types; Structure, operations on them and Implementation. Introduction to Algorithms: Fundamentals of Algorithmic problem solving, Problem types - Analysis of Algorithm Efficiency: Analysis framework - Orders of growth, asymptotic notations and basic efficiency classes.

Unit II: Stacks, Queues and Lists

Arrays: Single and Two dimensional - Stacks: Array representation, Expression evaluation, recursion – Queues: Linear queue, priority queues (heap), Linked lists: Singly linked, Doubly linked, Memory representation of lists

Unit III: Trees and Graphs

Trees: Basic Terminologies, Binary Trees and their memory representation, Binary Search Trees Graphs: Directed and Undirected graphs, Definitions, Representations, Weighted graphs, Traversals and searching BFS and DFS.

Unit IV: Algorithm Design

Divide and Conquer: General method, Binary search, Merge sort, Quick sort, Greedy Method General Method, Knapsack Problem, Minimum-Cost Spanning Trees - Kruskal's and Prim's algorithm, Single-Source Shortest Path Problem, Dijkstra's algorithm, Dynamic Programming : General Method, All Pair Shortest Paths(Floyd-Warshall algorithm); Travelling Salesman Problems.

References:

1. Fundamentals of Computer Algorithms – Ellis Horowitz, SartajSahini, SanguthevarRajasekaran 2nd Edition, Computer Science Press.
2. Data Structures with C - Seymour LipschutzSchaum's Outline Series
3. Classical Data Structures – DebasisSamanta, 2nd Edition, PHI Learning Pvt.Ltd.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	3	2	1	--	--	-	1	3
CO 2	3	2	2	2	3	-	-	--	-	1
CO 3	3	2	2	2	2	-	-	-	-	1
CO 4	2	3	2	2	2	1	2	1	1	1
Weighted Average	2.5	2.5	2.25	2	2	1	2	1	1	1.5

1: Low, 2: Moderate, 3: High

HC OPERATING SYSTEM 3:1:0

Objectives

- Understand the fundamental principles of operating system, processes and their communication.
- Understand the concepts of process management.
- Understand the concepts of Memory Management.
- Know the concepts of file systems and the disk management in Operating Systems.

Outcomes

- Understand the usage of the operating system components and its services.
- Employ the concepts of process management.
- Employ the concepts of Memory Management
- Apply the file handling concepts in OS perspective.

Unit I:

Introduction -Computer System Organization – Computer system architecture – Operating system operations - Operating systems services-System calls- Types of system calls – Operating system structure. Processes-process concept- process scheduling-operation on processes. Threads – Overview, Multithreading models – Threading issues.

Unit II:

Process Scheduling - Scheduling criteria-Scheduling algorithms – Thread scheduling - Multiple-processor scheduling. Process Synchronization – Critical Section problem – Peterson's solution – Semaphores Classical problems of synchronization - critical regions – Introduction to Monitors.

Unit III:

Deadlocks – System model - Deadlock Characterization - Deadlock handling - Deadlock Prevention - Deadlock avoidance - Deadlock Detection - Deadlock Recovery.

Memory Management – Swapping - Contiguous Memory allocation -Segmentation Paging.

Virtual Memory Management - Demand paging – Copy on write - Page Replacement - Thrashing.

Unit IV:

File System – File concept – Access methods – Directory structure – Directory and disk structure - File Systems structures - Directory Implementation - Allocation Methods - Free Space management.

Linux System – Linux history, Design Principles, Kernel modules.

References:

1. Operating Systems Concepts - Abraham Silberschatz Peter B Galvin, G.Gagne, 9th Edition, John Wiley & Sons.
2. Modern operating Systems-Andrew S.Tanenbaum, Third Edition, PHI Learning Pvt. Ltd.
3. Operating Systems: A Concept-based Approach - D M Dhamdhere, Second Edition, Tata McGraw-Hill Education.
4. Operating Systems-H M Deital, P J Deital and D R Choffnes3rd edition, Pearson Education.
5. Operating Systems: Internals and Design Principles-William Stallings, Seventh Edition, Prentice Hall.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	2	1	-	-	--	-	3	2	1
CO 2	-	3	1	2	-	-	-	3	2	1
CO 3	-	3	1	2	-	-	-	3	2	1
CO 4	1	3	1	2	2	2	2	3	2	1
Weighted Average	1	2.75	1	2	2	2	2	3	2	1

1: Low, 2: Moderate, 3: High

HC SOFTWARE ENGINEERING 3:1:0

Objectives

- Understand the importance of domain knowledge and its work around.
- Know the importance team work and stewardship.
- Analyze and implement solutions to complex problems involving computers.
- A solid understanding to the methods of Software Quality Assurance.

Outcomes

- Gain an understanding to work in one or more significant application domains.
- Develop an ability to work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
- Demonstrate an understanding of and apply the current theories, models, and techniques that provide a basis for the software lifecycle.
- Demonstrate an ability to ensure Software Quality Assurance.

Unit I: Software, Software Engineering and Process Models

The Nature of Software, The Unique Nature of WebApps, Software Engineering, The Software Process, Software Engineering Practice, Software Myths, Prescriptive Process Models.

Unit II: Agile Development

Agile process model, Agility and Cost of Change, Agile Process, Extreme Programming, User stories, Brief introduction to Scrum.

Unit III: Requirements Modelling & Design

Requirements Analysis, Scenario – Based Modelling, UML Models that supplement the Use Case, Data Modelling Concepts, Requirements Modelling Strategies, Flow-oriented Modelling, Creating a behavioural model, Design concepts, Design Model.

Unit IV: Software Quality Assurance & Testing

Software Quality Assurance : Elements of Software Quality Assurance, SQA Tasks, Goals, Metrics, Formal Approaches to SQA,Statistical SQA, Software Reliability.

Software Testing : Verification & Validation, Software Testing Strategy—The Big Picture, Test strategies for conventional software, OO software and WebApps, Validation Testing, System testing, The Debugging process, White box testing, Black box testing.

References:

1. Software Engineering, A Practioner's Approach - Roger S Pressman, 7th Edition, McGraw Hill Education Pvt. Limited.
2. Software Engineering - Ian Sommerville, 8th Edition, Pearson Education Ltd.
3. Fundamentals of software engineering - Rajib Mall, Phi learning Pvt. Ltd, 3rd edition.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	1	2	2	2	1	2	1	3	2
CO 2	2	1	2	2	2	1	1	1	2	1
CO 3	2	2	3	2	3	1	1	1	2	1
CO 4	2	1	2	2	1	1	2	1	2	2
Weighted Average	2.25	1.25	2.25	2	2	1	1.5	1	2.25	1.5

1: Low, 2: Moderate, 3: High

HC OBJECT ORIENTED PROGRAMMING WITH JAVA 3:0:1

Objectives:

- Gain knowledge about basic of Java language syntax and semantics.
- Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.
- Gain knowledge on multi-threads programming.

Outcomes:

- Use the syntax and semantics of java programming language and basic concepts of OOP.
- Apply the class fundamentals, arrays, inheritance and polymorphism to develop reusable programs.
- Apply the concepts of packages, interfaces and exception handling to develop efficient and error free codes.
- Build applications using the concepts of multithreading and files.

Unit – I

An Overview of Java: Object-Oriented Programming, A First Simple Program, A Second Short Program, Two Control Statements, Using Blocks of Code, Lexical Issues, The Java Class Libraries, Data Types, Variables, and Arrays: Java Is a Strongly Typed Language, The Primitive Types, Integers, Floating-Point Types, Characters, Booleans, A Closer Look at Literals, Variables, Type Conversion and Casting, Automatic Type Promotion in Expressions, Arrays, A Few Words About Strings.

Unit – II

Introducing Classes: Class Fundamentals, Declaring Objects, Assigning Object Reference Variables, Introducing Methods, Constructors, The this Keyword, Garbage Collection, The finalize() Method, A Stack Class, A Closer Look at Methods and Classes: Overloading Methods, Using Objects as Parameters, A Closer Look at Argument Passing, Returning Objects, Recursion, Introducing Access Control, Understanding static, Introducing final, Arrays Revisited, Inheritance: Inheritance Basics, Using super, Creating a Multilevel Hierarchy, Constructors, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, Using final with Inheritance.

Unit – III

Packages and Interfaces: Packages, Access Protection, Importing Packages, Interfaces, Exception Handling: Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built-in Exceptions, Creating Your Own Exception Subclasses, Chained Exceptions, Using Exceptions.

Unit – IV

Multithreaded Programming: The Java Thread Model, The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread Priorities, Synchronization. I/O Basics, Reading Console Input, Writing Console Output, ThePrintWriter Class, Reading and Writing Files.

References

1. Herbert Schildt, Java 2, The Complete Reference, Tata McGrawHill.
2. E. Balaguruswamy, Programming with JAVA A Primer, McGrawHill Education. Pvt. Ltd.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	2	1	1	1	-	-	-	-
CO 2	3	2	3	3	1	-	-	-	-	-
CO 3	3	3	3	3	1	-	-	-	-	-
CO 4	3	2	1	1	1	-	2	2	2	2
Weighted Average	3	2.25	2.25	2	1	1	2	2	2	2

1: Low, 2: Moderate, 3: High

HC PYTHON PROGRAMMING 3:0:1

Objectives:

- Understand programming paradigms brought in by Python.
- To learn to use python for text processing, with a focus on Regular Expressions, List and Dictionaries.
- To explore various modules and libraries to cover the landscape of Python programming.

Outcomes:

- Develop algorithmic solutions to simple computational problems.
- Read, write, execute by hand simple Python programs.
- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.

Unit-1 INTRODUCTION TO PYTHON

Structure of Python Program, Branching and Looping, Functions, Lists, tuples, string functions, list comprehensions.

Unit-2 SEQUENCE DATATYPES AND OBJECT-ORIENTED PROGRAMMING

Sets, Dictionaries, Classes: Classes and Instances, Inheritance, Exceptional Handling, Modules, Introduction to Regular Expressions using "re" module.

Unit-3 USING NUMPY & PANDAS

Basics of NumPy, Computation on NumPy, Aggregations, Computation on Arrays, Comparisons, NumPy's Structured Array.

Introduction to Pandas Objects, Data indexing and Selection, Operating on Data in Pandas, Handling Missing Data, Combining Data Sets.

Unit-4 VISUALIZATION AND MATPLOTLIB

Basic functions of matplotlib-Simple Line Plot, Scatter Plot-Density and Contour Plots-Histograms, Binnings and Density-Customizing Plot Legends, Colour Bars-Three- Dimensional Plotting in Matplotlib

References:

1. The Python Tutorial : https://docs.python.org/3/tutorial/index.html
2. Python Data Science Handbook - Essential Tools for Working with Data, Jake VanderPlas , O'Reily Media,Inc, 2016
3. An Introduction to Python and Computer Programming, Zhang.Y, Springer Publications,2016
4. NumPy : https://numpy.org/
5. Pandas : https://pandas.pydata.org/
6. Matplotlib : https://matplotlib.org/
7. Core Python Applications Programming, 3rd Edition by Wesley J. Chun
8. Python, The complete Reference, Martin C. Brown, McGraw Hill Education.
9. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	2	2	2	2	1	1	-	-	2
CO 2	2	2	2	2	2	1	1	-	-	1
CO 3	3	2	2	1	2	-	-	3	1	1
CO 4	3	2	2	2	2	-	-	-	-	1
Weighted Average	2.5	2	2	1.75	2	1	1	3	1	1.25

1: Low, 2: Moderate, 3: High

HC MINOR PROJECT 0:1:3

Objectives:

- To offer students a glimpse into real world problems and help the students learn how to apply the tools and techniques they learned in the respective courses.
- To help students develop openness to new ideas in computer science and create very precise specifications for the execution of the project idea.
- To promote team working skills, problem solving skills, and presentation skills among students working on the project.

Outcomes:

- Understanding the emerging trends of new technologies by conducting a survey of several available literatures in the preferred field of study.
- Develop real time Projects by comparing the several existing solutions for a research challenge.
- Demonstrate an ability to work in teams and manage the process of building the project within the stipulated time.
- Report and present the findings of the research study/project conducted in the preferred domain.

Students need to implement different kinds of problems using Java based Frameworks, Python, PHP, MYSQL, Cloud tools, IoT tools, Dot NET, CASE tools, Open source tools and Mobile application oriented tools, as well as data mining/machine learning tools and techniques.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	-	3	-	2	2	2	-	-	3
CO2	3	-	-	3	2	2	2	-	-	3
CO3	-	-	-	-	2	2	2	3	-	3
CO4	-	3	-	-	2	2	2	-	3	3
Weighted Average	3	3	3	3	2	2	2	3	3	3

1: Low, 2: Moderate, 3: High

HC DISSERTATION WORK 0:2:10

Objectives:

- Able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.
- An ability to conduct experiments, interpret data and provide well informed conclusions.
- An ability to select modern computing tools and techniques and use them with dexterity.

Outcomes:

- Develop basic algorithm steps as a solution to a real-life problem.
- Implement algorithms using latest tools that contribute to the software solution of the project using different tools.
- Analyse, interpret, test and validate experimental results.
- Develop research/technical report with enhanced writing/communication skills following ethical practices.

Students need to implement different kinds of problems using Java based Frameworks, Python, PHP, MYSQL, Cloud tools, IoT tools, Dot NET, CASE tools, Open source tools and Mobile application oriented tools, as well as data mining/machine learning tools and techniques.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	3	3	2	-	2	-	-	-	3
CO2	3	3	3	2	3	2	-	-	-	3
CO3	-	-	3	2	-	2	-	-	3	3
CO4	-	-	-	-	-	2	3	2	3	3
Weighted Average	3	3	3	2	3	2	3	2	3	3

1: Low, 2: Moderate, 3: High

SC DATA COMMUNICATION AND NETWORKS 3:1:0

Objectives:

- Understand the basics of data communication components.
- Learn the protocols of Data link layer.
- Understand different network layer services and routing protocols
- Know the different techniques involved transport layer and application layer

Outcomes:

- Understand and implement various types of transmissions in wired and wireless communications
- Study and develop the aspects of communication channels of Data Link Layer.
- Understand Design & apply various routing protocols of the Networks Layer.
- Design applications using the protocols of Transport & application Layer.

Unit I: Data Communications

Components, Data Representation, Data Flow, Networks –Network Criteria and Network Models, OSI model, TCP/IP Protocol suite, Multiplexing, Transmission media-Guided and Unguided media.

Unit II: Data link layer

Introduction, Framing, Flow and error control, Protocols-Noiseless Channels and Noisy Channels, Multiple Access: Medium Access Sub Layer-ALOHA, CSMA/CD, Wired LAN – Ethernet, Wireless LAN – IEEE 802.11

Unit III: Network layer

Network Layer: Internet Protocol – IPv4, Ipv6, IPv4 addresses, IPv6 addresses, Transition from IPv4 to IPv6, Routing algorithms, Unicast Routing protocols-Internet Structure, Brief intoduction to RIP, OSPF and BGP, Unicasting vs. Multicasting.

Unit IV: Transport Layer and Application Layer

Transport layer services- Process to process communication, Addressing, Transport layer protocols-Services, Port numbers, UDP and TCP, Application Layer: Client/Server Paradigm, Standard Applications : WWW and HTTP, FTP, Electronic Mail, TELNET, SSH, DNS, Introduction to P2P networks.

References:

1. Data Communications and Networking with TCPIP Protocol Suite - Behrouz A. Forouzan, 6th Edition, McGraw Hill.
2. Computer Networks - Andrew S Tanenbaum, 5th Edition. Pearson Education, PHI.
3. Data communications and Computer Networks - P.C .Gupta, PHI.
4. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
5. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
6. Computer Networking: A Top-Down Approach Featuring the Internet - James F. Kurose & Keith W. Ross, 3rd Edition, Pearson Education.
7. Data and Computer Communication- William Stallings, Sixth Edition, Pearson Education.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	-	3	-	-	-	-	2	-	2
CO2	-	-	3	-	-	-	-	2	-	1
CO3	3	2	-	3	-	2	-	2	-	3
CO4	3	2	-	3	3	-	3	2	3	3
Weighted Average	3	2	3	3	3	2	3	2	3	2.25

1: Low, 2: Moderate, 3: High

SC ADVANCED DATABASE MANAGEMENT SYSTEM 3:0:1

Objectives:

- Learning data modelling using the entity-relationship and developing database designs.
- Understand the use of Structured Query Language (SQL) and learn SQL syntax.
- Apply normalization techniques to normalize the database.
- Understand how NoSQL databases are often more scalable and provide superior performance.

Outcomes:

- Determine the basic concepts, E-R Mapping and SQL basic commands.
- Demonstrate the techniques of SQL, FD and Normalization.
- Develop Indexing, ACID and Transaction.
- Describe NoSQL database and PostgreSQL.

Unit I

Levels of abstraction in a DBMS, structure of a DBMS, people who work with databases, entity, entity types, entity sets, attributes, keys, relationship sets, participation constraints, weak entities and Enhanced Entity Relationship Model - Relational Database Design by ER- and EER-to-Relational Mapping, Basic Retrieval Queries in SQL, INSERT, DELETE, and UPDATE Statements in SQL, Additional features of SQL.

Unit II

Data definition, constraints and schema changes in SQL, Joins in SQL, views in SQL, Aggregate Functions and Clauses. Informal design guidelines for relational schemas, functional dependencies & types, normal forms- first, second, third, boyce-codd, forth & fifth normal forms.

Unit III

Sequential file organization, heap file organization, clustered indexes primary and secondary indexes, hash based indexing and B+ tree-based indexing. ACID properties - consistency and isolation, atomicity and durability, transaction on schedules, concurrent execution of transactions, serializability, lock-based concurrency control, strict two phase locking.

Unit IV

Introduction to NoSQL Systems, CAP Theorem, Document-Based NOSQL Systems, NoSQL Key-Value Stores, Column-Based or Wide Column NOSQL Systems. A brief introduction on PostgreSQL.

References

1. Fundamentals of Database Systems by Navathe and Elmasri –Pearson Education, Fifth Edition.
2. Database Systems Concepts, 3rd edition by Abraham Silberschatz, Henry Korth and S. Sudarshan, Tata McGraw Hill.
3. Principles of database systems by Ullman, Computer Science press.
4. DBMS by Prof. S.Nandagopalan, 7th Revised Edition.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO 1	2	2	2	1	1	-	-	-	-	-
CO 2	2	3	3	2	1	1	-	-	-	-
CO 3	3	3	3	2	2	1	2	1	1	1
CO 4	2	3	2	2	3	2	2	-	1	2
Weighted Average	2.25	2.75	2.5	1.75	1.75	1.33	2	1	1	1.5

1: Low, 2: Moderate, 3: High

SC CLOUD COMPUTING 4:0:0

Objectives:

- Ability to understand various basic concepts related to Cloud Computing technologies.
- Demonstrate the architecture and concept of different cloud models: IaaS, PaaS, SaaS
- Learn cloud services for individuals.
- Understand the technologies for data security in cloud.

Outcomes:

- Demonstrate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications.
- Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud.
- Identify the cloud services for the individuals
- Acquire the knowledge on the core issues of cloud computing such as security, privacy, and interoperability.

Unit I:

Introduction: Cloud Computing in a Nutshell, Layers and Types of Clouds, Desired Features of Cloud, Cloud Infrastructure Management, Challenges and Risks. Migrating into a Cloud- The Seven-Step Model of Migration into a Cloud.

Unit II:

Software as a Service (SaaS): Evolution of SaaS, Challenges of SaaS Paradigm, New Integration Scenarios, SaaS Integration of Products and Platforms, SaaS Integration Services, Business – to Business Integration Services.

Infrastructure As a Services (IaaS): Introduction, Background & Related Work, Virtual Machines Provisioning and Manageability, Virtual Machine Migration Services, Provisioning in a Cloud Context- Amazon Elastic Computer Cloud, Aneka.

Platform As a service (PaaS): Aneka Cloud Platform, Hybrid Cloud Implementation, Aneka Hybrid Cloud Architecture.

Unit III:

The Enterprise Cloud Computing Paradigm- Background, Business Drivers Toward a Marketplace for Enterprise Cloud Computing, The Cloud Supply Chain.

Unit IV:

Data Security in the Cloud- Introduction, Current State, Cloud Computing and Identity, The Cloud, Digital Identity, and Data Security. Cloud Data Security – Case Study.

References:

1. Cloud Computing: Principles and Paradigms - RajkumarBuyya, James Broberg,Andrzej M Goscinski, Wiley publication.
2. Cloud Computing: A Practical Approach - Toby Velte, Anthony Velte, McGraw-Hill Osborne Media.
3. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud - George Reese, O'Reilly Publication.
4. Cloud Computing Explained: Implementation Handbook for Enterprises - John Rhoton, Recursive Press.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	1	2	3	3	2	3	3	3
CO2	2	-	1	2	2	3	2	2	2	2
CO3	2	1	1	1	2	1	1	2	2	2
CO4	1	-	2	3	2	1	1	2	-	1
Weighted Average	1.75	1	1.25	2	2.25	2	1.5	2.25	2.33	2

1: Low, 2: Moderate, 3: High

SC SYSTEM ANALYSIS AND DESIGN 3:1:0

Objectives:

- Understand the basics of system concepts and learn the feasibility study of the system.
- Learn the data analysis of a new system and tools associated in structured analysis.
- Understand the concepts of system testing and standards related to Documentation and management
- Understand the concepts of system security and recovery management

Outcomes:

- Gather data for analysis and specify the requirements of a system.
- Design system components and environments.
- Build general and detailed models that assist programmers in implementing a system.
- Design a user interface for data input and output, as well as controls to protect the system and its data.

Unit I:

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open & closed system and man-made information systems.

System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success.

Initial Investigation: Determining user's requirements and analysis, fact finding process and techniques.

Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, identification of system objectives and feasibility report.

Unit II:

Cost/Benefit Analysis: Data analysis cost and benefit analysis of a new system and categories determination.

Tools of structured Analysis: Logical and Physical models, context, diagram, data dictionary, data diagram, IPO and HIPO charts, Gantt charts and pseudo codes. Flow charts- system flow chart, run flow charts etc., decision tree and decision tables.

Unit III:

Input/ Output and Form Design: Input and output form design methodologies, menu, screen design and layout consideration.

Management standards: Programming and operating standards.

Documentation standards: User and programming manual.

System testing & quality: System testing, quality assurance and software maintenance.

Unit IV:

System security: Data Security, Disaster/ recovery and ethics in system development.

Organization of EDP: Introduction, Job Responsibilities & duties of EDP Personnel- EDP manager, System Analyst, Programmers, Operators etc. Selection of Data Processing Resources: purchase, lease, rent-advantages and disadvantages.

References:

1. System Analysis and Design- Awad, Elias M- 2nd Edition, Galgotia Publication Pvt.Ltd.
2. System Analysis & Design - V K Jain, Dreamtech Press

3. Modern System Analysis &Design - A Hoffer, F George, S Valaciah Low Priced Edition, Pearson Education.
4. Information Technology & Computer Applications -V.K.Kapoor, Sultan Chand & Sons, New Delhi.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	3	-	-	-	2	-	3	-
CO2	3	-	3	-	2	2	-	3	3	-
CO3	3	-	3	2	-	-	2	3	3	3
CO4	3	3	3	2	2	2	2	3	3	3
Weighted Average	3	3	3	2	2	2	2	3	3	2

1: Low, 2: Moderate, 3: High

SC WEB TECHNOLOGIES 2:1:1

Objectives:

- To help students understand the basis of Internet and how communication happens over the World Wide Web.
- To help students understand the basic building blocks of web pages using HTML and CSS.
- To help students understand and use Java script and the Document Object Model.
- To help students understand the use of web frameworks and content management systems for creating and managing websites faster and easier.

Outcomes:

- Develop an ability to implement HTML5 pages using fundamental tags.
- Able to develop style sheet using CSS for a given problem.
- Able to extend JavaScript to validate a form with event handler for a given problem.
- Able to develop websites using web frameworks and content management systems

Unit I

Introduction to Internet, WWW, Web Browsers, and Web Servers, URLs, MIME, HTTP, Security. Quick introduction to HTML5 : basic text formatting, presentation elements, phrase elements, lists, Tables – attributes, grouping elements, basic links, email link, Image, Audio, Video, image maps , Forms.

Unit II

Cascading Style Sheet : Introduction, Levels of Style Sheet and specification formats, embedded style sheet, External Style Sheet, inline Style Sheet, Box Model, selector forms, Class and ID method, DIV and SPAN tags, Inheritance with CSS.

Unit III

JavaScript: JavaScript in HTML, Language Basics – Variables, operators, statements, functions, Data type conversions, reference types, Document object Model : methods, HTML DOM Elements, changing HTML and CSS, Events and event handling, event listener, form validation. Browser Object Model : Window, screen, history, popup alert, timing, cookies.

Unit IV

Brief introduction to Web Frameworks, MVC pattern, Push-based vs. pull-based, Three-tier organization, Examples for General-purpose website frameworks. Brief introduction to Content Management System, Advantages of CMS, Examples of widely used CMS, Creation of a simple website using WordPress.

References:

1. Internet and World Wide Web: How to Program - Paul Deitel, Harvey Deitel, Abbey Deitel, 5th Edition - 2018, Pearson Education.
2. HTML & CSS: The Complete Reference - Thomas Powell, 5th Edition – 2015, McGraw Hill Education.
3. HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery) - DT Editorial Services, 2nd Edition – 2016, Dreamtech Press.
4. Learning PHP, MySQL & JavaScript with j Query, CSS & HTML5 - Robin Nixon, 4th Edition – 2015, O'Reilly.
5. https://www.w3schools.com/
6. https://en.wikipedia.org/wiki/Web_framework
7. https://en.wikipedia.org/wiki/Content_management_system

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	3	2	2	2	-	2	2	1
CO2	3	3	3	3	3	2	-	2	2	1
CO3	3	3	3	3	3	2	-	2	2	2
CO4	3	3	3	3	3	3	2	2	3	3
Weighted Average	2.75	2.75	3	2.75	2.75	2.25	2	2	2.25	1.75

1: Low, 2: Moderate, 3: High

SC CRYPTOGRAPHY AND NETWORK SECURITY 3:1:0

Objectives:

- Understand the principles Computer Security.
- Learn conventional cryptosystem.
- Know public key cryptosystem
- Have a detailed knowledge about authentication, hash functions and application level security mechanisms.

Outcomes:

- Implement the principles and practices of cryptographic techniques.
- Build simple cryptosystems by applying encryption algorithms.
- Comprehend secure identity management (authentication), message authentication, and digital signature techniques.
- Employ the authentication protocol and web security methods.

Unit I: Computer Security Concepts and Classical Encryption Techniques

Introduction-computer security concepts, attacks, security services, security mechanisms; Classical encryption techniques-symmetric cipher models, substitution techniques, transposition techniques, rotor machines

Unit II: Block Ciphers-DES and Introduction to Public Key Cryptography

Symmetric ciphers-Block cipher principles; DES-Algorithm, strengths and weaknesses of DES, attacks on DES and defense, multiple encryptions; Asymmetric ciphers-Essential mathematics, public key cryptography,

Unit III: RSA, MAC and Digital Signatures

RSA, Diffie Hellman key exchange, random number generation, Data integrity and authentication Hash functions; MAC; Digital signatures;

Unit IV: Key Management, Authentication and System Security

Key management; Authentication, Web and system security, Web security; IP security; E mail security; System security-intruders, malicious software, firewalls

References:

1. Cryptography and Network Security -Principles and Practice - William Stallings, PEARSON.
2. Cryptography and Network Security -AtulKahate, Tata McGraw Hill.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	3	3	3	3	3	2	-	1	2	3
CO2	3	3	3	3	3	2	-	1	2	3
CO3	3	2	3	3	3	2	1	1	2	3
CO4	3	2	3	3	3	3	1	1	2	3
Weighted Average	3	2.5	3	3	3	2.25	1	1	2	3

1: Low, 2: Moderate, 3: High

SC THEORY OF LANGUAGES AND AUTOMATA 3:0:1

Objectives:

- Introduce concepts in automata theory and theory of computation.
- Identify different formal language classes and their relationships.
- Design grammars and recognizers for different formal languages.
- Prove or disprove theorems in automata theory using its properties.

Outcomes:

- Acquire a fundamental understanding of the core concepts in automata theory and formal languages.
- Design grammars and automata (recognizers) for different language classes.
- Identify formal language classes and prove language membership properties.
- Prove and disprove theorems establishing key properties of formal languages and automata.

Unit I:

Brief introduction to Formal Proof: Deductive Proofs, Poving equivalences about sets, the contrapositive, Proof by contradiction, Counterexamples, Central concepts of automata theory: Alphabets, strings, languages.

Finite Automata: Deterministic Finite Automata, Nondeterministic Finite Automata, Equivalence of DFA and NFA, Finite Automata with Epsilon transitions.

Unit II:

Regular Expressions, Finite Automata and Regular Expressions: Converting DFAs to regular expressions by eliminating states, converting regular expressions to automata, Applications of regular expressions, Brief overview of algebraic laws of regular expressions.

Properties of Regular Languages: The pumping lemma for regular languages, Applications of the pumping lemma, Closure properties and decision properties of regular languages (proofs not necessary), Minimization of DFAs

Unit III:

Context-Free Grammars, Parse Trees, Applications of context-free grammars, Ambiguity in grammars and languages.

Pushdown Automata : Definition, Languages of a PDA, Equivalence of PDAs and CFGs, Deterministic Pushdown Automata.

Normal Forms for Context-free grammars

Unit IV:

The pumping lemma for context-free languages, Closure properties of context-free languages (proofs not necessary).

Brief introduction to Turing Machine: Notation for Turing Machine, Instantaneous descriptions for Turing Machines, Transition Diagrams for Turing Machine. Definition of Post's Correspondence Problem.

References:

1. Introduction to Automata Theory, Languages and Computation - Hopcroft J. E and Ullman,J.D, Narosa Publishing House, Delhi.
2. Introduction to Languages and Theory of Computation, -John C Martin3rd edition. TMH Publication.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	2	3	3	3	1	-	-	-	2	2
CO2	2	3	3	3	1	2	-	2	1	2
CO3	2	3	3	3	1	-	-	-	1	2
CO4	2	3	3	3	1	2	2	2	1	2
Weighted Average	2	3	3	3	1	2	2	2	1.25	2

1: Low, 2: Moderate, 3: High

SC PROBABILITY AND STATISTICS 3:1:0

Objectives:

- Extend and formalize knowledge of the theory of probability and random variables.
- Introduce new techniques for carrying out probability calculations and identifying probability distributions.
- Understand the concepts and techniques in Mathematical Expectation.
- Understand the Statistical hypotheses and its significance.

Outcomes:

- Apply axioms and theorems to describe events and compute probabilities also identify the types of random variables and calculate relevant probabilities.
- Analyse the different Techniques in Continuous Probability Distribution.
- Describe an appropriate statistical model for the given data and compute population parameters using appropriate estimators.
- Describe the Tests of Hypotheses, Types of errors, test for Significance, regression and curve fitting

Unit I:

Probability: The concept of probability, the axioms and theorems, conditional probability, Independent Event's, Bayes Theorem. Random Variables and Probability Distributions:

Random variables, discrete probability distributions and Distribution functions: Bernoulli, Binomial, Hyper Geometric, Geometric, Poisson, Uniform.

Unit II:

Continuous Probability distribution and Distributions functions: Exponential, Normal, Uniform, Concepts of Chi square, t joint Distributions, Independent random variables, Functions of random Variables.

Unit III:

Mathematical Expectation:Definition, Functions of Random variables. The variance and Standard Deviation, Moments, Moment Generating Functions, Covariance, Correlation Coefficient. Sampling Theory &Estimation:Population and sample, Random Sampling with and without replacement, the sample mean, sampling distribution of means, proportions, differences. The sample variance, the sample distribution of variances, Point estimates, Interval estimates. Variance analysis.

Unit IV:

Tests of Hypotheses and Significance: Statistical Decisions, Statistical hypotheses, Null Hypotheses, Tests of hypotheses and significance, Type I and Type II errors, level of significance, Tests involving the Normal distribution, One-Tailed and Two-tailed, Special tests of Significance for large and small samples, The Chi-square test for goodness of fit. Introduction to regression and curve fitting.

References:

1. Fundamentals of Statistics - S C Gupta and V K Kapoor.
2. Fundamentals of Statistics - S C Gupta.
3. Probability and Statistics with Reliability, Queuing and ComputerApplications -Jusgir S Trivedi, Prentice Hall of India.
4. Probability, Random Variables and Stochastic Processes - Papoulis and S. UnnikrishnaPillai, McGraw Hill, 4th Edition.
5. Probability and Statistics for Engineers- Richard A Johnson, Prentice Hall India.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	2	3	3	2	3	1	-	-	2	2
CO2	2	3	3	3	3	-	2	-	2	2
CO3	2	3	3	3	3	1	-	-	1	2
CO4	2	3	3	3	3	-	2	2	2	2
Weighted Average	2	3	3	2.75	3	2	2	2	1.75	2

1: Low, 2: Moderate, 3: High

SC FUNDAMENTALS OF INTERNET OF THINGS 3:1:0

Objectives:

- Learn the impact of IoT applications and architectures in real world.
- Illustrate the various methods of deploying smart objects and connect them to network.
- Infer the role of IoT in Industry.
- Understand the role of IoT in Smart and Connected Cities and Public Safety.

Outcomes:

- Interpret the impact of IoT networks in new architectural models.
- Compare and contrast the deployment of smart objects and technologies to connect them as network.
- Elaborate the need of IoT Access Technologies.
- Identify the application of IoT in Smart and Connected Cities and Public Safety.

Unit I: Basics of IoT

Introduction to IoT, Genesis of IoT, IoT and Digitization, IoT Impact, Convergence of IT and OT, IoT Challenges, IoT Network Architecture and Design, Drivers Behind New Network Architectures, A Simplified IoT Architecture, The Core IoT Functional Stack.

Unit II: Smart Objects and Access Technologies

Smart Objects: The "Things" in IoT, Sensors, Actuators, and Smart Objects, Sensor Networks, Connecting Smart Objects, Communications Criteria, IoT Access Technologies (Any Three)

Unit III: IoT in Industry

IoT in Industry: Smart and Connected Cities-An IoT Strategy for Smarter Cities, Smart City IoT Architecture, Smart City Security Architecture, Smart City Use-Case Examples-Smart Traffic Control.

Unit IV: Public Safety

Overview of Public safety, An IoT Blueprint for public safety, Emergency Response IoT Architecture, IoT Public Safety Information Processing.

References:

1. IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things- David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, 1st Edition, Pearson Education.
2. Internet of Things- Srinivasa K G, CENGAGE Leaning India.
3. Internet of Things (A Hands-on-Approach)-Vijay Madisetti and ArshdeepBahga, 1stEdition, VPT.
4. Internet of Things: Architecture and Design Principles - Raj Kamal,1stEdition, McGraw Hill Education.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	3	2	2	2	-	-	-	2	2
CO 2	2	2	2	2	2	-	-	-	2	2
CO 3	3	3	3	2	2	2	-	-	2	2
CO 4	2	3	2	1	2	2	1	1	2	2
Weighted Average	2.5	2.75	2.25	1.75	2	2	1	1	2	2

1: Low, 2: Moderate, 3: High

SC MOBILE APPLICATION DEVELOPMENT WITH ANDROID 3:0:1

Objectives:

- Learn to build simple android applications.
- Get an understanding of essentials of application design and user interface design.
- Understand different android APIs used to store and manage the data through SQLite.
- Understanding different android networking and web APIs to share the data between the applications.

Outcomes:

- Build sample android application.
- Develop user interfaces for android applications.
- Develop android applications to share data between different applications.
- Deploy android applications.

Unit I: Introduction to Android

History of Mobile Software Development, Open Handset Alliance, Android Platform Android SDK, Building a sample Android application, Anatomy of Android applications, Android terminologies.

Unit II: Android Application Design Essentials

Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings , Using Intent Filter, Permissions , Managing Application resources in a hierarchy , Working with different types of resources.

Unit III: Android User Interface Design Essentials

User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation.

Unit IV: Using Android APIs

Brief Introduction on these: Using Android Data and Storage APIs, Managing data using SQLite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Using Android Telephony APIs, Deploying (selling) your Android application

References:

1. "Android Wireless Application Development", Lauren Darcey and Shane Conder, 2nd edition, Pearson Education.
2. "Professional Android 2 Application Development", Reto Meier, Wiley India.
3. "Beginning Android", Mark L Murphy, Wiley India.
4. "Pro Android", Sayed Y Hashimi and Satya Komatineni, Wiley India.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	3	2	3	2	2	2	1	2	2
CO 2	3	3	3	3	3	2	2	2	2	2
CO 3	3	3	3	3	2	3	2	2	3	3
CO 4	3	3	3	3	3	2	2	2	3	3
Weighted Average	3	3	2.75	3	2.50	2.25	2	1.75	2.5	2.5

1: Low, 2: Moderate, 3: High

SC LINUX PROGRAMMING 3:0:1

Objectives:

- Understand and make effective use of Linux utilities and Shell scripting language (bash) to solve Problems.
- Implement in C some standard Linux utilities such as ls, mv, cp etc. using system calls.
- Develop the skills necessary for systems programming including file system programming, process and signal management, and interprocess communication.
- Develop the basic skills required to write network programs using Sockets.

Outcomes:

- Work confidently in Linux environment with an understanding of the architecture and shell programming.
- Work with sed/awk and gain ability to write programs using file and directory related system calls
- Ability to handle processes using process related system calls
- Ability to write communicating programs using different IPC mechanisms and Berkeley sockets.

Unit I:

A brief history of Unix and Linux, Architecture, Features.

Unix/Linux Shell : Linux shell commands for getting help: Commands for getting help :whatis, man, info, apropos.

Useful unix/linux shell commands :pwd, whoami, who, ls, env, echo, history, passwd, cat, more, less, file, chmod, chown, cp, mv, mkdir, rmdir, whereis, which, locate, ln.

Quick overview of basic Linux Utilities: File handling utilities, links: hard and symbolic links, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters: grep, Text processing utilities and Backup utilities.

Shell programming with Bourne again shell(bash)- Introduction, shell responsibilities, tab completion, pipes and Redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples.

Unit II:

Sed and Awk:

Sed: Scripts, Operation, Addresses, Commands.

Awk: Execution, Fields and Records, Scripts, Operation, Patterns, Actions, Associative Arrays, String and Mathematical functions, System commands in awk, Applications.

System Calls:

Files and Directories: File Concept, File types, File System Structure, file metadata: inodes, kernel support for files, system calls for file I/O operations: open, create, read, write, close, lseek, dup2, file status information: stat family, fcntl, file permissions: chmod, fchmod, file ownership: chown, lchown, symbolic and hard links: symlink, link, unlink.

Directories: Creating, removing and changing Directories: mkdir, rmdir, chdir, obtaining current working directory: getcwd, Directory contents, Scanning Directories: opendir, readdir, closedir, rewinddir functions.

Unit III:

Process : Process concept, Layout of a C program image in main memory. Process environment :environment list, environment variables, getenv, setenv, Kernel support for process, process identification, process control : process creation, replacing a process image, waiting for a process, process termination, zombie process, orphan process, system call interface for process

management-fork, vfork, exit, wait, waitpid, exec family, Process Groups, Sessions and Controlling Terminal, Differences between threads and processes.

Unit IV:

Inter process Communication: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pies-creation, IPC between related processes using unnamed pipes, FIFO: creation, IPC between unrelated processes using FIFOs(Named pipes), differences between unnamed and named pipes, popen and pclose library functions.

Sockets: Introduction to Berkeley Sockets, IPC over a network, Client-Server model, Socket address structures (unix domain and Internet domain), Socket system calls for connection oriented protocol and connectionless protocol, example: client/server programs-Single Server-Client connection, Comparison of IPC mechanisms.

References:

1. Linux “man” pages and “info” pages.
2. The Linux Documentation Project : http://www.tldp.org/
3. Unix Concepts and Applications - Sumitabha Das, 4th Edition, TMH.
4. Beej's Guide to Network Programming : https://beej.us/guide/bgnet/
5. Advanced Programming in the UNIX Environment - , Richard W. Stevens, Stephen A. Rago, Second Edition, Addison-Wesley.
6. Unix Network Programming - Richard W. Stevens , PHI.
7. System Programming using C++ - T. Chan, PHI.
8. Beginning Linux Programming - N. Mathew, R. Stones, 4th Edition, Wrox, Wiley India Edition.
9. C Programming Language - Brian W. Kernighan, Dennis M. Ritchie, PHI.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	1	-	-	2	-	2	1	1
CO 2	3	2	1	-	-	-	-	2	1	1
CO 3	3	2	1	1	-	-	2	2	1	1
CO 4	3	2	1	1	2	-	2	2	1	1
Weighted Average	3	2	1	1	2	2	2	2	1	1

1: Low, 2: Moderate, 3: High

SC INFORMATION RETRIEVAL 3:0:1

Objectives:

- Become familiar with difference between Information retrieval and data Base Management Systems.
- Learn different indexing techniques used in retrieval system.
- Understand the concepts of cluster analysis.
- Understand the text classification techniques.

Outcomes:

- Locate relevant information in large collections of data.
- Impart features of retrieval systems for Text data.
- Analyze the performance of retrieval systems using test collection.
- Implement different clustering algorithms.

Unit I: Boolean retrieval and classical models

An example information retrieval problem, A first take at building an inverted index, Processing Boolean queries; The term vocabulary and postings lists: Document delineation and character sequence decoding, Determining the vocabulary of terms, Faster posting list intersection via skip pointers, Positional postings and phrase queries. Index construction – Blocked sort-based indexing, Single-pass in-memory indexing, Distributed indexing, dynamic indexing, other types of indexes.

Unit-II: Computing scores in a complete search system

Efficient scoring and ranking, components of an information retrieval system, vector space scoring and query operator interaction, information retrieval system evaluation, Standard test collections, Evaluation of unranked and ranked retrieval results, Assessing relevance, A broader perspective: System quality and user utility, Results snippets

Unit-III: Data Cluster analysis

Introduction to Cluster Analysis, Different Types of clustering's, Different types of clusters, Kmeans – the basic K-means algorithm, additional Issues, K – means and different types of clusters, Strengths and weaknesses, K – means as an optimization Problem, DBSCAN – Center based approach, The DBSCAN Algorithm, Strengths and weaknesses, Fuzzy Clustering, Minimum spanning tree clustering

Unit-IV: Text classification and naive bayes

The text classification problem, Naive bayes text classification, properties of Naive bayes, feature selection; Support vector machines and machine learning on documents - Support vector machines: The linearly separable case, Issues in the classification of text documents, Machine – learning methods in ad hoc information retrieval; Web search basics – Background and history, Web characteristics, Advertising as the economic model, The search user experience;

References:

1. Introduction to information Retrieval – Christopher D.Manning, PrabhakarRaghavan, HinrichSchutze, Cambridge University Press.
2. Introduction to Data Mining – Pang – Ning Tan, Vipin Kumar, Michael Steinbach, Pearson.
3. Information Retrieval: Algorithms and Heuristics - David A. Grossman, Ophir Frieder, Second Edition, Springer.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	-	2	2	2	2	1	1
CO 2	-	3	3	2	2	-	2	2	1	1
CO 3	1	3	3	2	2	-	2	2	1	1
CO 4	1	3	3	2	2	-	2	2	1	1
Weighted Average	1	3	2.75	2	2	2	2	2	1	1

1: Low, 2: Moderate, 3: High

SC BIG DATA ANALYTICS 3:0:1

Objectives:

- Understand the Big Data Ecosystem.
- Introduce the students to Hadoop.
- To understand the concepts of Map Reduce and MongoDB
- To understand data Analysis using R

Outcomes:

- Apply the Data Analytics Life Cycle to real life cases.
- Process Data with Hadoop.
- Apply the necessary techniques for data analytics.
- Demonstrate Data Analysis using R.

Unit I: Introduction to Big Data Analytics.

Big Data Overview, State of the Practice in Analytics, Key Roles for the New Big Data Ecosystem, Examples of Big Data Analytics, Data Analytics Lifecycle Overview, Phase 1: Discovery, Phase 2: Data Preparation, Phase 3: Model Planning, Phase 4: Model Building , Phase 5: Communicate Results, Phase 6: Operationalize.

Unit II: Introduction to Hadoop

Introducing Hadoop, Why Hadoop?, Why not RDBMS? RDBMS versus Hadoop, Distributed Computing Challenges, History of Hadoop, Hadoop Overview, Use Case of Hadoop, Hadoop Distributors, HDFS (Hadoop Distributed File System), Processing Data with Hadoop, Managing Resources and Applications with Hadoop YARN (Yet Another Resource Negotiator), Interacting with Hadoop Ecosystem.

Unit III: Introduction to MAPREDUCE Programming and Mongo DB

Introduction, Mapper, Reducer, Combiner, Partitioner, Searching, Sorting, Compression, Introduction to MongoDB, Situation where MongoDB is useful, Terms Used in RDBMS and MongoDB, Data Types in MongoDB, MongoDB Query Language.

Unit IV: Review of Basic Data Analytic Methods Using R

Introduction to R, Exploratory Data Analysis.

REFERENCES:

1. Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, EMC Education Services, John Wiley & Sons, Inc.
2. Big Data and Analytics, 2ed, Seema Acharya, Subhashini Chellappan, Wiley.
3. Data Science and Analytics, V.K.Jain, Khanna Publishing.
4. Big Data Analytics, M. Vijayalakshmi, Radha Shankarmani, Wiley

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	2	2	2	3	1	2	-	-	-
CO 2	3	3	2	3	3	1	2	1	2	1
CO 3	3	2	3	3	3	2	2	2	3	3
CO 4	3	2	3	3	3	2	2	2	3	3
Weighted Average	3	2.25	2.5	2.75	3	1.5	2	1.25	2	1.75

1: Low, 2: Moderate, 3: High

SC MACHINE LEARNING USING PYTHON 3:0:1

Objectives:

- Understanding the importance of Machine Learning and demonstrate the use of data frames in Python
- Analyze the process of model building and evaluation
- Comprehend various classification problems
- Discuss the libraries required to implement the techniques of Machine Learning.

Outcomes:

- Identify the need for Machine Learning using Python, appropriate data frames and its operations.
- Ability to build and validate linear regression models
- Ability understand different classification techniques and build classification models
- Ability to use unsupervised learning techniques to cluster data and Apply Scikit library for Machine Learning.

UNIT – I: Introduction to Machine Learning

Introduction to Analytics and Machine Learning, Need for Machine Learning, Framework for Developing Machine Learning Models, Python for Machine Learning, Python Stack for Data Science, Getting Started with Anaconda Platform, Introduction to Python.

Descriptive Analytics: Working with Data Frames in Python, Handling Missing Values, Exploration of Data using Visualization

UNIT – II: Linear Regression

Simple Linear Regression, Steps in Building a Regression Model, Building Simple Linear, Regression Model, Model Diagnostics, Multiple Linear Regression.

UNIT – III: Classification Problems

Classification Overview, Binary Logistic Regression, Credit Classification, Gain Chart and Lift Chart, Classification Tree (Decision Tree Learning).

UNIT – IV: Advanced Machine Learning and Clustering

Scikit-Learn Library for Machine Learning Advanced Machine Learning Algorithms. Clustering: Overview, How Does Clustering Work?, K-Means Clustering, Creating Product Segments Using Clustering, Hierarchical Clustering.

References

1. Machine Learning using Python, Manaranjan Pradhan, U Dinesh Kumar, Wiley India Pvt. Ltd., 2019
2. Practical Programming: An introduction to Computer Science Using Python, second edition, Paul Gries, Jennifer Campbell, Jason Montojo, The Pragmatic Bookshelf, 2013.
3. Learning with Python: How to Think Like a Computer Scientist Paperback – Allen Downey , Jeffrey Elkner, 2015.
4. Python Data Science Handbook: Essential tools for working with data, Jake Vander plas, O'Reilly Publishers,1st Edition.
5. Hands-On Machine Learning with Scikit-Learn and TensorFlow Concepts, Tools, and Techniques to Build Intelligent Systems, Aurelien Geron, O'Reilly Publisher , I edition, 2017

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	3	3	3	3	3	2	2	2	3	3
CO2	3	3	3	3	3	2	2	2	3	3
CO3	3	3	3	3	3	3	2	2	3	3
CO4	3	3	3	3	3	2	2	2	3	3
Weighted Average	3	3	3	3	3	2.25	2	2	3	3

1: Low, 2: Moderate, 3: High

SC ADVANCED JAVA 3:0:1

Objectives:

- Define JDBC and describe the various JDBC drivers.
- List the advantages and explain the life cycle of a servlet.
- Understand various types of properties in Java beans.
- To Know the applications of Java Server Pages.

Outcomes:

- Develop component-based Java software using JavaBeans.
- Develop server-side programs in the form of servlets.
- Implement Entity Java bean in stateless and stateful environment.
- Employ the concepts of EJB and JAR files.

Unit I: J2EE overview and JDBC

The ABC of Programming Languages, Taking Programming Languages up a notch, Distributive Systems – Real Time Transmissions, Software objects, Web services, The Tier – Clients, Resources and Components, J2EE Multi – Tier Architecture, Client tier implementation, Enterprise Application Strategy, A new Strategy, The Enterprise Application.

Unit II: Servlets

Introduction, Life cycle of servlet, A simple Java servlet, Anatomy of Java servlet – Deployment Descriptor, Reading Data from a client, Reading HTTP Request Headers, Sending Data to a client and writing the HTTP Response Header, Cookies and Tracking Sessions

Unit III: Java Server Pages

Introduction, JSP tags – Variables and Objects, Methods, Control statements, Loops, Tomcat, Request String, User Sessions, Cookies, Session objects

Unit IV: Enterprise JavaBeans

Introduction, EJB containers, classes and interfaces, Deployment Descriptors – Anatomy, Environment Elements, Referencing EJB and other resources, query element; Session Java Bean-Stateless and stateful, creating a session java bean; Entity Java Bean – Container Managed Persistence, Bean Managed Persistence; The JAR File

References:

1. The Complete Reference J2EE, Jim Keogh, 1st edition, McGraw Hill Education.
2. Core and Advanced Java, Black Book, Dreamtech Press.

Course articulation matrix:

PO	Program Outcomes									
CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**
CO 1	3	2	-	1	3	-	-	2	-	2
CO 2	3	2	2	2	3	2	-	2	2	3
CO 3	3	3	3	2	3	2	2	2	2	3
CO 4	3	2	2	1	3	2	2	2	2	3
Weighted average	**3**	**2.25**	**1.75**	**1.5**	**3**	**2**	**2**	**2**	**1.5**	**2.75**

1: Low, 2: Moderate, 3: High

SC MANAGEMENT INFORMATION SYSTEMS 3:1:0

Objectives:

- Understand the role information system in business.
- Learn different functional business management systems.
- Understand e-commerce applications and decision support systems.
- Analyzing security and ethical challenges in IT.

Outcomes:

- Explain the role of IS in business.
- Ability to explain different enterprise management and functional management systems in business.
- Identify the applications of e-commerce and issues of e-commerce.
- Understand decision support systems.

Unit I: Information System Concepts

Information Systems in Business: Introduction, The real world of Information Systems, The fundamental role of IS in business, Trends in IS, Types of Information systems, Managerial challenges of IT.

System Concepts: A foundation, Components of an Information System, Information System Resources, Information System activities, Recognizing Information Systems.

Unit II: Enterprise Business Systems and Functional Business System

Enterprise Business Systems: Introduction, Cross-functional enterprise applications, Enterprise application integration, Transaction processing systems, Enterprise collaboration systems. Functional Business Systems: Introduction, Marketing systems, Manufacturing systems, Human resource systems, Accounting systems, financial management systems.

Customer relationship management: Introduction, Introduction to CRM, The three phases of CRM, Benefits and challenges of CRM, Trends in CRM, Enterprise resource planning: Introduction, Introduction to ERP, Benefits and challenges of ERP, Trends in ERP. Supply chain Management: Introduction, Introduction to SCM, The role of SCM, Benefits and challenges of SCM, Trends in SCM

Unit III: Electronic Commerce and Decision Support Systems

Electronic commerce fundamentals: Introduction, The scope of e-commerce, Essential e-commerce, processes, Electronic payment processes.

e-C ommerce applications and issues: E-commerce application trends, Business-to- Consumer e-commerce, Web store requirements, Business-to-Business e-commerce, e-commerce marketplaces, Clicks and bricks in ecommerce.

Decision Support Systems- Decision support in business: Introduction, Decision support trends, Decision support systems (DSS), Management Information Systems, On-line analytical processing, Using DSS, Executive information systems, Enterprise portals and decision support, Knowledge management systems, Business and Artificial Intelligence (AI), An overview of AI, Expert systems.

Unit IV: Security and Ethical Challenges, Security Management in IT

Security and Ethical Challenges: Security, Ethical and societal challenges of IT: Introduction, Ethical responsibility of business professionals, Computer crime, Privacy issues, other challenges, Health issues, societal solutions. Security management of IT: Introduction, Tools of security management, Internetworked security defenses, other security measures, System Controls and audits.

References:

1. Management information systems- managing information technology in the internet worked enterprise, James A. O'Brien, George M. Marakas, 7th edition, Tata McGraw-Hill Publishing Company Limited.
2. Management information systems, S Sadogopan, 2nd edition, PHI.
3. Information systems for modern management, Robert G. Murdick, 3rdeditionPHI.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	2	2	1	1	2	2	2	1
CO2	2	-	2	2	2	2	2	2	2	1
CO3	1	2	3	3	2	1	2	2	2	1
CO4	1	2	3	3	2	1	2	2	2	1
Weighted Average	1.5	2	2.5	2.5	1.75	1.25	2	2	2	1

1: Low, 2: Moderate, 3: High

SC BUSINESS INTELLIGENCE 3:1:0

Objectives:

- Understand the basics of Business Intelligence and its evolution.
- Know the concepts of querying, reporting and OLAP architecture.
- Learn about the Business Intelligence lifecycle and its methodologies.
- Get an overview of various technologies associated with Business Intelligence.

Outcomes:

- Acquire the knowledge on Business Intelligence methodologies.
- Comprehend the User models of Business Intelligence in real time scenarios.
- Employ the lifecycle strategies on various BI capabilities.
- Compare and contrast various BI implementations in major companies.

Unit I: Introduction and Basics

Understanding Business Intelligence: Limited Resources, Limitless Decisions, Business Intelligence Defined: No CIA Experience Required, BI's Big Four, The BI Value Proposition, A Brief History of BI, Data collection from stone tablets to databases, BI's Split Personality: Business and Technology, BI: The people perspective; Meeting the BI Challenge: The BI Spectrum- Enterprise versus departmental BI, Strategic versus tactical business intelligence, Power versus usability in BI tools, Reporting versus predictive analytics

Unit II: Business Intelligence User Models and OLAP

Basic Reporting and Querying: Querying and reporting in context, Reporting and querying toolkit characteristics, Self-Service Reporting and Querying, Building and using ad-hoc queries, building simple on-demand self-service reports, Adding capabilities through managed querying/reporting, Data Access: Classical BI: pull-oriented information access, Emerging BI: pushing critical insights to users. OLAP: Online Analytical Processing: OLAP in Context, OLAP Application Functionality, OLAP Architecture: The OLAP Cube, OLAP access tools. OLAP versus OLTP

Unit III: The BI Lifecycle

The BI Big Picture: So Many Methodologies, So Little Time, Starting at the beginning, The exception to the rule: Micro-BI, Customizing BI for Your Needs: Your not-so-clean slate, Initial activities, Selecting BI products and technologies, Taking a Closer Look at BI Strategy: The Big Picture, Your Current BI Capabilities (or Lack Thereof), Assessing your business infrastructure, Assessing the technology stack, top to bottom, Keep the good stuff, Throw out the bad stuff

Unit IV: BI and Technology

Data Warehouses and BI, consolidating information across silos, Structuring data to enable BI, Data Models, Dimensional data model, Other kinds of data models, Data Marts, Operational Data Stores, The BI Software Marketplace - A little history, Mergers and acquisitions Major Software Companies in BI – Oracle, Microsoft, SAP, IBM

References:

1. Business Intelligence For Dummies- Swain Scheps, 1st edition, Wiley publishing.
2. Business Intelligence and Analytics: Systems for Decision Support, Ramesh Shardha. 10th edition, Pearson, 2014.
3. Business analytics for managers: taking business intelligence beyond reporting, Gert H.N, 2nd edition, Wiley Publishing.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	2	1	1	2	-	2	2	1	1
CO 2	3	2	1	2	2	-	2	2	1	1
CO 3	3	3	1	2	2	2	2	2	1	1
CO 4	3	3	1	1	2	2	2	2	1	1
Weighted Average	2.75	2.5	1	1.5	2	2	2	2	1	1

1: Low, 2: Moderate, 3: High

SC ENTREPRENEURSHIP DEVELOPMENT 3:1:0

Objectives:

- To know the fundaments of entrepreneurship
- To learn importance of women and rural entrepreneurship
- To understand different motivating factors for entrepreneurs
- To know essence and characteristics of management

Outcomes:

- Analyze the history and need for entrepreneurship
- Employ the functions of women and rural entrepreneurship
- Inculcating the behaviors of entrepreneurs
- Comprehend the need and importance of management

Unit I: Entrepreneur & Entrepreneurship

Introduction, Evolution of the concept of Entrepreneur, Characteristics of successful entrepreneurs, the charms of becoming of an Entrepreneur, The Entrepreneurial Decision Process, Functions of Entrepreneur, Need for an Entrepreneur, Types of Entrepreneurs, Concept of Entrepreneurship, Growth of Entrepreneurship in India.

Unit II: Women and Rural Entrepreneurship

Concept of Women Entrepreneur, Functions of Women Entrepreneurs, Growth of Women Entrepreneurship in India, Problems of Women Entrepreneur, Developing Women Entrepreneurship, Meaning of Rural Entrepreneurship, Need for Rural Entrepreneurship, Rural Entrepreneurship/Industrialization in Retrospect, Problems of Rural Entrepreneurship. How to develop Rural Entrepreneurship.

Unit III: Entrepreneurial Motivation

Meaning of Entrepreneurial Motivation, Motivational Cycle or Process, Entrepreneurial Motivating Factors, Entrepreneurial Motivational Behavior – Creativity, Self-Efficacy, Locus of control, Risk taking, Leadership, Communication

Unit-IV: Management

Meaning of Management, Characteristics of Management, Difference between Management and Administration, Management as Science, Art and Profession, Importance of Management, Scope of Management, Functions of Management, Management Process, Principles of Management.

References:

1. Entrepreneurial Development, S.S Khanka, 1st edition, S.Chand Publication.
2. Dynamics of Entrepreneurship Development, Vasant Desai,6th edition, Himayala Publishing House.
3. Entrepreneurship: New Venture Creation,David H. Holt, Pearson Publication.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	3	2	2	2	1	1	1	1
CO2	1	-	1	1	2	2	1	2	1	2
CO3	-	-	2	1	-	2	1	1	1	1
CO4	-	3	1	1	1	1	1	3	2	1
Weighted Average	1.5	3	1.75	1.5	1.66	1.75	1	1.75	1.25	1.25

1: Low, 2: Moderate, 3: High

SC COMMUNICATION SKILLS 3:1:0

Objectives:

- The factors governing good communication and how good communication skills can be developed.
- How good communication skills are a critical building block to both personal and business success.
- How to use effective communication skills in business.
- The need to modify communication depending on business situation and circumstances.

Outcomes:

- Understand and apply knowledge of human communication and language processes as they occur across various contexts from multiple perspectives.
- Understand and evaluate key theoretical approaches used in the interdisciplinary field of communication.
- Find, use, and evaluate primary academic writing associated with the communication discipline.
- Communicate effectively orally and in writing.

Unit I

Importance of communication, its basic model, formal and informal communications, barriers to communication, feedback and its effectiveness, Non- Verbal communication.

Unit II

Oral communication, Speaking: Paralanguage: Sounds, stress, intonation- Art of conversation – Presentation skills, – Public speaking- Expressing Techniques, understanding your audience, importance of listening, role of visual aids, persuasive communication.

Unit III

Written communication – Good writing – Styles and Principles – Text, Email, Memorandums, reports, Letters, resume writing.

Unit IV

Group Discussion, Interview skills- types of interviews, telephonic interview, Time management, Stress management.

References

1. Business Communication for Success, University Of Minnesota Libraries Publishing Edition, 2015.
2. Soft skills: know yourself & know the world, Dr. Alex K.
3. Basic Management skills for all, S J McGrath E H, 9th Edition, PHI Learning.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	-	-	-	-	2	-	3	3	2	3
CO 2	-	-	3	3	2	3	-	3	3	3
CO 3	-	3	3	-	2	2	-	3	3	3
CO 4	3	-	3	3	-	2	-	3	3	3
Weighted Average	3	3	3	3	2	2.33	3	3	2.75	3

1: Low, 2: Moderate, 3: High

SC PROFESSIONAL ETHICS AND HUMAN VALUES 3:1:0

Objectives:

- Understand the fundamentals of Human values.
- Know the concepts of engineering ethics and responsibilities.
- Learn about the Business Intelligence lifecycle and its methodologies.
- Get an overview of Global issues and its practices.

Outcomes:

- Implement the aspects of Human Values.
- Interpret the ethics of engineering and its associated responsibilities.
- Employ the code of ethics in their profession.
- Display the awareness of Global issues in Ethics.

Unit I: Human Values

Objectives, Morals, Values, Ethics, Integrity, Work ethics, Respect for others, living peacefully, Honesty, Courage, Valuing time, Cooperation, Commitment, Self-confidence, Challenges in the work place, Spirituality.

Unit II: Engineering Ethics, Safety, Responsibilities and Rights.

Overview, Senses of engineering ethics Variety of moral issues, Moral dilemma, Moral autonomy Profession, Models of professional roles, Responsibility, Self-control, Self-interest, Self-respect, Safety definition, Safety and risk, Risk analysis, Confidentiality, Employee rights, Whistle Blowing.

Unit III: Engineering as Social Experimentation

Engineering as experimentation, Engineers as responsible experimenters, Codes of ethics, Industrial standards, A balanced outlook on law, Case-Study.

Unit IV: Global Issues

Globalization, Multinational corporations, Environmental ethics, Computer ethics, Weapons development, Engineers as managers, Engineers as advisors in planning and policy making, Moral leadership.

References:

1. A Textbook on Professional Ethics and Human Values - R. S. Naagarazan, New age international publishers.
2. Human Values and Professional Ethics, Dr. Gurpreet Singh Uppal, 1st edition.
3. Human Values, Tripathi A. N., 3rd edition, New Age International Pvt Ltd Publisher.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	-	-	-	-	2	3	2	-	3
CO2	-	2	-	-	3	2	3	2	-	3
CO3	-	-	3	-	-	2	3	2	-	3
CO4	3	-	-	3	-	2	3	2	3	3
Weighted Average	3	2	3	3	3	2	3	2	3	3

1: Low, 2: Moderate, 3: High

SC CYBER SECURITY 3:1:0

Objectives:

- Understand cybercrime, legal issues and cyber offences.
- Make the students understand the various crimes using mobiles.
- Learn the tools and methods employed for committing cyber-crime.
- Impart the various topics relating to Computer Forensics.

Outcomes:

- Understand the concept of cybercrime and offenses.
- Analyze the problems relating to cyber-crimes using mobile phones.
- Demonstrate the various attacks of cyber-crime.
- Understand and apply Computer Forensics at problem areas.

Unit I: Cybercrime and Cyber offenses

Cybercrime: Introduction, Cybercrime definition and origins of the word, Cybercrime and information security, who are Cybercriminals, Classifications of cybercrimes, Cybercrime: The legal perspectives, Cybercrimes: An Indian perspective, Cybercrime and the Indian ITA 2000, a global Perspective on cybercrimes.

Cyber offenses: Introduction, How criminal plan the attacks, Social Engineering, Cyber stalking, Cybercafé and Cybercrimes, Botnets: the Fuel for Cybercrime.

Unit II: Cybercrime: Mobile And Wireless Devices

Cybercrime: Mobile and Wireless Devices: Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit Card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Devices, Registry Settings for Mobile Devices, Authentication Service Security, Attacks on Mobile/Cell Phones, Mobile Devices: Security Implications for Organizations, Organizational Measures for Handling Mobile Devices-Related Security Issues, Organizational Security Policies and Measures in Mobile Computing Era, Laptops.

Unit III: Tools and Methods Used in Cybercrime

Introduction, Phishing, Password Cracking, Key loggers and Spywares, Virus and Worms, Trojan Horses and Backdoors, Steganography, DoS and DDoS Attacks, SQL Injection, Buffer Overflow, Attacks on Wireless Networks.

Unit IV: Computer Forensics

Introduction, Historical background of cyber forensics, Digital forensics science, the need for computer forensics, cyber forensics and digital evidence, forensics analysis of email, digital forensics life cycle, Computer forensics and steganography, Forensics and social networking: The security/privacy threats, Challenges in computer forensics.

References:

1. Cyber Security, Nina Godbole, SunitBelapure, 1st edition, Wiley Publication.
2. Cyber Security & Global- Kennetch J. Knapp, Information Science Reference.
3. Information Systems Security, Nina Godbole, 1st edition, Wiley India.
4. Principles of Information Security, Michael E. Whitman,Herbert J. Mattord, 6th edition, Cengage Learning.
5. Cryptography and Network Security, William Stallings, 4th edition, Pearson Publication.

Course articulation matrix:

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	2	2	1	2	2	1	1	1	1
CO2	3	2	3	3	2	2	1	1	1	1
CO3	2	2	-	2	2	1	1	1	1	-
CO4	1	2	2	2	2	1	1	1	1	-
Weighted Average	2	2	2.33	2	2	1.5	1	1	1	1

1: Low, 2: Moderate, 3: High

SC SIMULATION AND MODELING 3:0:1

Objectives:

- To make students understand the basic principles of Simulation, system components and its applications.
- To learn Properties of Random numbers, algorithms to generate Random numbers and Tests for Random numbers. .
- To understand different methods for random Variant generation.
- To learn Model Building, Verification and Validation of simulation models and also understand the different types of simulations with respect to output analysis.

Outcomes:

- Analyze the different Components of System and identify the Applications of Simulation.
- Implement different algorithms associated with generation of Random numbers and test for Random numbers.
- Implement different methods of generating the Random Variants.
- Analyze the different techniques in Verification and Validation of simulation models and the output analysis for different types of Simulations.

Unit I: Introduction to Simulation

Definition of Simulation, Simulation as an Appropriate and In appropriate tool, Applications of Simulation; Systems and System Environment, Components of a system, Model of a system, types and examples; discrete and continuous systems.

Unit II: Random Number Generation

Properties of Random Numbers, Generation of Pseudo-Random Numbers, Techniques for Generating Random Numbers, Tests for Random Numbers (Algorithms and Problems)- Frequency tests, Runs Tests, Gap tests.

Unit III: Random Variate Generation

Inverse Transform Technique, Direct Transformation for the normal Distribution; Convolution Method, Acceptance-Rejection Technique.

Unit-IV: Verification and Validation of Simulation Models

Model Building, Verification and Validation, Verification of Simulation Models, Calibration and Validation of models – Validating Input – Output Transformations; Output Analysis for a Single Model – Types of Simulations with Respect to Output Analysis, Output Analysis for Terminating Simulations, Output Analysis for steady state Simulations – Replication Method

References:

1. Discrete Event System Simulation – Jerry Banks, John S Carson II, Barry L Nelson, David M Nicol, Pearson Education Asia.
2. System Simulation - Geoffrey Gordon, Prentice Hall India.
3. System Simulation with Digital Computers - N. Deo, PHI.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	2	1	1	1	1	1	-	1	2	2
CO2	3	3	3	3	3	-	-	1	1	1
CO3	2	2	2	2	2	-	-	-	1	1
CO4	2	2	2	1	2	-	2	-	1	1
Weighted Average	2.25	2	2	1.75	2	1	2	1	1.25	1.25

1: Low, 2: Moderate, 3: High

SC ARTIFICIAL INTELLIGENCE 3:1:0

Objectives:

- To understand and identifying the problems where AI is required.
- To compare and contrast different AI techniques.
- To understand the concepts of knowledge Representation.
- To understand the NLP techniques.

Outcomes:

- Express the modern view of AI and its foundation.
- Illustrate Search Strategies with algorithms and Problems.
- Implement Proportional logic and apply inference rules.
- Apply suitable techniques for NLP and Game Playing.

Unit-I: INTRODUCTION

Introduction to AI, The Foundations of AI, AI Technique -Tic-Tac-Toe. Problem characteristics, Production system characteristics, Production systems: 8-puzzle problem. Intelligent Agents: Agents and Environments, Good Behavior: The concept of rationality – The nature of Environments, The Structure of Agents.

Unit-II: LOCAL SEARCH ALGORITHM

Searching: Uninformed search strategies – Breadth first search, depth first search. Generate and Test, Hill climbing, simulated annealing search, Constraint satisfaction problems, Greedy best first search, A* search, AO* search.

Unit-III : KNOWLEDGE REPRESENTATION

Propositional logic - syntax & semantics - First order logic. Inference in first order logic, propositional Vs. first order inference, unification & lifts, Clausal form conversion, Forward chaining, Backward chaining, Resolution.

Unit-IV: GAME PLAYING, PLANNING and NLP

Overview, Minimax algorithm, Alpha-Beta pruning, Additional Refinements. Classical planning problem, Natural Language Processing: Language Models, Text classification, Information Retrieval, Information Extraction.

Reference Books:

1. Artificial Intelligence, E. Rich and K. Knight, , 3rd Edition, TMH.
2. Artificial Intelligence A Modern Approach, S. Russell and P. Norvig, 3rd Edition, Pearson Education.
3. Introduction to Artificial Intelligence, Eugene Charniak and Drew McDermott, 2nd Edition, Pearson Education.
4. Artificial Intelligence Structures and Strategies for Complex Problem Solving, George F Luger, 4th Edition, Pearson Education.
5. Artificial Intelligence: A New Synthesis, N.L. Nilsson, Morgan Kaufmann.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	3	3	3	3	3	3	2	2	2	3
CO2	3	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	2	2	2	3
CO4	3	3	3	3	3	3	2	2	3	3
Weighted Average	3	3	3	3	3	3	2.25	2	2.5	3

1: Low, 2: Moderate, 3: High

OE WORLD WIDE WEB 3:1:0

Objectives:

- To provide the conceptual and technological development in the field of Internet and web designing.
- To provide a comprehensive knowledge of Internet, its applications and the TCP/IP protocols widely deployed to provide Internet connectivity worldwide.
- To understand how the World Wide Web with its widespread usefulness has become an integral part of the Internet.
- To provide an overview of basic concepts of web design.

Outcomes:

- Understand the working scheme of the Internet and World Wide Web.
- Evaluate the various protocols of the Internet.
- Comprehend and demonstrate the application of Hypertext Mark-up Language (HTML).
- Apply the various security tools and understand the need of security measures.

Unit I

Introduction to Internet, Evolution and History of Internet, Growth of Internet, Internet Services, How Internet Works, Anatomy of Internet, Internet addressing, Internet vs. Intranet, and Impact of Internet.

Unit II

Internet Technology and Protocol: ISO-OSI Reference Model, Data Transmission, Switching, Routers, Gateways, and Network Protocols

Internet Connectivity: Different types of connections, Levels of Internet Connectivity and Internet Service Provider.

Unit III

Web Page Design-HTML: An Introduction, HTML Categories, HTML Fonts, HTML colors, HTML Lists, HTML Tables, HTML Links, HTML Forms, Adding Pictures and Image Attributes.

Unit IV

Computer Networks, Internet & Web Security: Computer Networks, Network Components, Network Topologies, Types of Network Architecture, Network Security, Firewall, Digital Signature, Authentication, Authorization , Copyright issues and Virus.

References

1. Internet Technology and Web Design by Instructional Software Research and Development (ISRD) Group, Tata MC Graw Hill.
2. Programming the World Wide Web, 4th Edition by Robert W. Sebesta.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	1	1	-	-	-	-	2	-	2
CO 2	2	1	1	2	-	-	-	2	-	2
CO 3	2	1	1	2	1	-	-	2	2	2
CO 4	2	2	2	2	1	1	2	2	2	2
Weighted Average	2	1.25	1.25	2	1	1	2	2	2	2

1: Low, 2: Moderate, 3: High

OE E-COMMERCE 3:1:0

Objectives:

- To impart knowledge on E-Commerce.
- To provide an overview of various applications connected with E-Commerce.
- To enable the learner for aiming careers in special software development involving E-Commerce technologies.
- Understand the security issues in E – commerce.

Outcomes:

- Analyse the impact of E-commerce on business models and strategy
- Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational structures.
- Assess electronic payment systems and its securities.
- Recognize and discuss global E-commerce issues.

Unit 1: Introduction to E-Commerce

Definition, Scope of E-Commerce, Hardware requirements, E-Commerce and Trade Cycle,

Electronic Markets, Electronic Data Interchange and Internet Commerce.

Unit 2: Business to Business E-Commerce

Electronic Markets, Electronic Data Interchange (EDI): Technology, Standards (UN/EDIFACT), Communications, Implementations, Agreements, Security, EDI and Business, Inter-Organizational Ecommerce. Business models for E-commerce, Business Process Re-Engineering.

Unit 3: Business to Consumer E-Commerce and E-Business

Consumer trade transaction, Web metrics, Elements of E-Commerce, Industry impacts of E-business. Integrating Intranet and internet web applications across multiple networks. Internet bookshops, Software supplies and support, Electronic Newspapers, Internet Banking, Virtual Auctions, Online Share Dealing, Gambling on the net, E-Diversity, Case studies through internet.

Unit 4: Security Issues

How criminals plan attacks, passive attack, Active attacks, cyber stalking, Secure Electronic Transaction (SET) Protocol, Electronic cash over internet, Internet Security, Search engines, Intelligent agents in E-Commerce Electronic payment systems

References

1. E-Commerce: Strategy, Technologies & Applications, David Whitley, McGraw Hill.
2. E-commerce: The Cutting Edge of Business, K. K. Bajaj and Debjani Nag, 2nd Edition, McGraw Hill.
3. Handbook of Electronic Commerce, Shaw et al., Springer.
4. Global Electronic Commerce- Theory and Case Studies, C. Westland and T. H. K. Clark, University Press.
5. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, SunitBelapure and Nina Godbole, Wiley India.

Course articulation matrix:

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	2	2	2	2	2	1	2	2	2
CO2	2	2	2	2	2	1	1	2	1	1
CO3	2	-	1	1	2	1	1	2	1	1
CO4	2	-	2	2	2	1	1	2	1	2
Weighted Average	1.75	2	1.75	1.75	2	1.25	1	2	1.25	1.5

1: Low, 2: Moderate, 3: High

OE OFFICE AUTOMATION 3:1:0

Objectives:

- Provide a basic introduction to computers and computing environment.
- Enable the students in crafting professional documents using word pre-processors.
- Enable students use spreadsheets for tabulating and calculating data and create graphical representations of data.
- Enable students to design professional presentations.

Outcomes:

- Understand the basics of computer hardware and software.
- Prepare documents of different types.
- Ability to develop and use spreadsheets for tabulating and analysing for productivity.
- Prepare presentations.

Unit I

Introduction to Computers, Basic Anatomy of Computers and Introduction to MS-Office.

Unit II

MS-Word – Word Basics, Formatting Features, Menu, Commands, Tool Bars and their Icons, Mail Merge and Macros Creating Tables.

Unit III

MS-Excel - Introduction, Menu, Commands, Tool Bars and their Icons, and Functions.

Unit IV

MS-Power Point – Menu, Toolbar, Navigating in PowerPoint, Working with PowerPoint and Introduction to MS-Access.

References:

1. MS Office for Everyone – Sanjay Saxena, Vikas Publishing House.
2. Step by Step Microsoft Office XP, PHI.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO1	1	1	1	1	1	-	-	-	-	1
CO2	1	1	1	1	1	1	2	-	2	1
CO3	1	1	1	1	1	1	2	-	2	1
CO4	1	1	1	1	1	1	2	3	2	1
Weighted Average	1	1	1	1	1	1	2	3	2	1

1: Low, 2: Moderate, 3: High

COURSE RELATED RESEARCH ARTICLES:

Software Engineering

1. Taking the emotional pulse of software engineering —A systematic literature review of empirical studies, Mary Sánchez-Gordón , Ricardo Colomo-Palacios https://academic.oup.com/gigascience/articlepdf/doi/10.1093/gigascience/giz054/28698071/giz054.pdf
2. Software engineering for scientific big data analysis, Bjorn A. Gru¨ning , Samuel Lampa, Marc Vaudel and Daniel Blankenberg, https://www.researchgate.net/publication/333326758_Software_engineering_for_scientific_big_data_analysis
3. Software Engineering for Machine Learning: A Case Study, Saleema Amershi, Andrew Begel, Christian Bird, Robert DeLine, https://ieeexplore.ieee.org/abstract/document/8804457

Data Communication and Networks:

1. Comprehensive review for energy efficient hierarchical routing protocols on wireless sensor networks, Springer,2018, https://link.springer.com/article/10.1007/s11276-018-1696-1
2. A Survey on Recent Advances in Transport Layer Protocols, Michele Polese and et al, IEEE 2019, https://ieeexplore.ieee.org/abstract/document/8786240

Cloud Computing:

1. Research on Key Technologies of Cloud Computing, Shufen Zhang, Hongcan Yan, XuebinChen, Published by Elsevier, https://www.sciencedirect.com/science/article/pii/S1875389212015994
2. Open Source Solution for Cloud Computing Platform Using OpenStack, Rakesh Kumar, Neha Gupta, Shilpi Charu, Kanishk Jain, Sunil Kumar Jangir, https://www.researchgate.net/publication/263581733_Open_Source_Solution_for_Cloud_Computing_Platform_Using_OpenStack
3. The Challenges of Cloud Computing Management Information System in Academic Work, T.Rodmunkong,P.Wannapiroon,and P.Nilsook, https://www.researchgate.net/publication/273897590_The_Challenges_of_Cloud_Computing_Management_Information_System_in_Academic_Work

Cryptography and Network Security:

1. A Review Paper on Cryptography, Abdalbasit Mohammed Qadir and Nurhayat Varol, IEEE 2019, https://www.researchgate.net/profile/Abdalbasit_Mohammed/publication/334418542_A_Review_Paper_on_Cryptography/links/5db07f61299bf111d4c01521/A-Review-Paper-on-Cryptography.pdf
2. Security Evaluation of Computer Network Based on Hierarchy, Linbin Wen, International Journal of Network Security,2019,. http://ijns.jalaxy.com.tw/contents/ijns-v21-n5/ijns-2019-v21-n5-p735-740.pdf

Internet of Things:

1. A Study on Internet of Things based Applications, Deeksha Jain, P. Venkata Krishna and V. Saritha, https://www.researchgate.net/publication/227172798_A_Study_on_Internet_of_Things_based_Applications
2. IoT enabled Smart Fog Computing for Vehicular Traffic Control, Akashdeep Bhardwaj, Sam Goundar, https://eudl.eu/pdf/10.4108/eai.31-10-2018.162221
3. A Review of Smart Parking Using Internet of Things (IoT), Sahil Rupani, Nishant Doshi, https://www.sciencedirect.com/science/article/pii/S1877050919317235

Information Retrieval

1. Query expansion techniques for information retrieval: A survey, Hiteshwar Kumar Azad, Akshay Deepak, https://www.sciencedirect.com/science/article/pii/S0306457318305466
2. A Deep Look into neural ranking models for information retrieval, Jiafeng Guo, Yixing Fan, Liang Pang, Liu Yang, Qingyao AiHamed Zamani, Chen Wu, W. Bruce Croft, Xueqi Cheng, https://www.sciencedirect.com/science/article/pii/S0306457319302390
3. Fuzzy Information Retrieval Based on Continuous Bag-of-Words Model, Dong Qiu , Haihuan Jiang and Shuqiao Chen, https://www.mdpi.com/2073-8994/12/2/225

Big Data Analytics

1. Big data analytics as an operational excellence approach to enhance sustainable supply chain performance, Surajit Bag, Lincoln C. Wood, Lei Xud, Pavitra Dhamija, Yaşanur Kayikci, https://www.sciencedirect.com/science/article/pii/S0921344919304653
2. Big data analytics and firm performance: Findings from a mixed-method approach Patrick Mikalef, Maria Boura, George Lekakos, John Krogstie, https://www.sciencedirect.com/science/article/pii/S014829631930061X
3. The role of big data analytics in industrial Internet of Things, Muhammad Habib ur Rehman, Ibrar Yaqoo, Khaled Salah, Muhammad Imran, Prem Prakash Jayaraman, Charith Perera, https://www.sciencedirect.com/science/article/pii/S0167739X18313645

Machine Learning

1. Computer generated images vs. digital photographs: A synergetic feature and classifier combination approach, Eric Tokuda, Helio Pedrini and Anderson Rocha, Elsevier Journal of Vis. Commun, Image R., Vol. 24, 2013, pp. 1276-1292. https://www.sciencedirect.com/science/article/abs/pii/S1047320313001557
2. Very Deep Convolutional Networks for Large-Scale Image Recognition, Karen Simonyan and Andrew Zisserman, https://arxiv.org/pdf/1409.1556.pdf

Cyber security:

1. Cyber Security, Rohit , Anvesh Babu , Ranjith Reddy, Sciendo, HOLISTICA Vol 10, Issue 2, 2019, https://sciendo.com/article/10.2478/hjbpa-2019-0020

2. Detecting cyber threats through social network analysis: short survey, Kirichenko Lyudmyla, Radivilova Tamara, Carlsson Anders, 2017, https://www.researchgate.net/publication/316766488_Detecting_cyber_threats_through_social_network_analysis_short_survey

ADDITIONAL WEB RESOURCES

1. Programming Paradigms

https://see.stanford.edu/Course/CS107

2. Introduction to Robotics

https://see.stanford.edu/Course/CS223A

3. Programming Methodology

https://see.stanford.edu/Course/CS106A

4. Programming Abstractions

https://see.stanford.edu/Course/CS106B

5. Programming for the Puzzled

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-s095-programming-for-the-puzzled-january-iap-2018/

6. Machine Learning

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-867-machine-learning-fall-2006/

7. Machine Learning for Healthcare

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-s897-machine-learning-for-healthcare-spring-2019/

8. Introduction to Deep Learning

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-s191-introduction-to-deep-learning-january-iap-2020/

9. Advanced Data Structures

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-851-advanced-data-structures-spring-2012/

10. Kotlin Tutorial

https://www.w3schools.com/kotlin/index.php

11. Python Programming

https://www.w3schools.com/python/default.asp

12. Angular JS

https://www.w3schools.com/angular/default.asp

13. Cyber Security

https://www.w3schools.com/cybersecurity/index.php

14. Data Scientist

https://www.codecademy.com/learn/paths/data-science

15. Analyze data with Python

https://www.codecademy.com/learn/paths/analyze-data-with-python

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SBRR Mahajana First Grade College (Autonomous), PG Wing

Accredited by NAAC with A Grade

Pooja Bhagavat Memorial Mahajana Education Centre,

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M.C.A

QUESTION PAPER PATTERN

Duration: 2 Hours **Max Marks**: 50

(There are 5 questions. All questions must be answered.)

Question 1

There are 10 objective questions each carries 1 mark 10 ×1=10

Question 2

There are 2 main questions (a) and (b) each carrying 10 marks. Candidate has to answer any one (a or b). This covers unit 1 of the syllabus. (Each main question can be split into sub- questions totaling 10 marks) 10 ×1=10

Question 3

There are 2 main questions (a) and (b) each carrying 10 marks. Candidate has to answer any one (a or b). This covers unit 2 of the syllabus. (Each main question can be split into sub- questions totaling 10 marks) 10 ×1=10

Question 4

There are 2 main questions (a) and (b) each carrying 10 marks. Candidate has to answer any one (a or b). This covers unit 3 of the syllabus. (Each main question can be split into sub- questions totaling 10 marks) 10 ×1=10

Question 5

There are 2 main questions (a) and (b) each carrying 10 marks. Candidate has to answer any one (a or b). This covers unit 4 of the syllabus. (Each main question can be split into sub- questions totaling 10 marks) 10 ×1=10

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Department of MCA

Board of Studies

Sl. No.	Category	Name	Designa-tion	Address for communication	e-Mail and Mobile No.
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2	Faculty of the depart-ment	Smt. Rachana C R	Associate Professor & Head		rachanacr@gmail.com 8095645644
		Smt. Yashaswini J	Assistant Professor		yashuj.krn@gmail.com 9538779281
		Dr. Anisha Kumar	Assistant Professor		anisha-kumar2010@gmail.com 9845992829
		Mr. Manjunath K S	Assistant Professor	Computer Science Department, S.B.R.R. Mahajana First Grade College, Jayalakshmipuram, Mysuru – 570012.	manju-nathks102@gmail.com 9900852285
3	Two Experts from Outside the College	Dr. Yuvaraju B N	Professor	Department of Computer Science and Engineering, National Institute of Engineering, Mysuru.	yuva-rajumysore@gmail.com 9483101919
		Dr. R. K. Bha-rathi	Associate Professor	Department of Computer Applications, JSS Science and Technology University, Mysuru.	rkbharathi@sjce.ac.in 9343034571
4	Nominee by the Vice Chancellor	Dr. Suresha	Professor	Department of Studies in Computer Science, University of Mysore, Mysuru.	sureshasuvi@gmail.com 9449810894
5	One Person from Industry / Corporate Sector / Allied area	Mr. K.S. Manjunatha	Founder and CEO	iQuest, 331-B, KIADB Hebbal Industrial Area, Mysuru-570018.	manju29dec@gmail.com 9686144882
6	Alumnus	Mr. Raghavendra G N	Assistant Professor	Computer Science Department, Amrita Vishwavidyapeeth-am, Mysuru.	raghu.suntvs@gmail.com 9964146596

APPROVED BY THE FOLLOWING BoS MEMBERS

Name of the Members	Signature of the Member	Name of the Members	Signature of the Member
Smt. Rachana C.R		Dr.Suresha	
Mr. Basanth Kumar H B		Mr. Manjunath K S	
Smt. Yashaswini J		Dr. Yuvaraju B N	
Dr. Anisha Kumar		Dr. R K Bharathi	
Mr. Raghavendra G N	ABSENT	Mr. K S Manjunatha	ABSENT

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)
POST GRADUATE WING
(Accredited by NAAC with 'A' grade)
Pooja Bhagavat Memorial Mahajana Education Centre.
Affiliated to University of Mysore.

M.Sc. in Computer Science
2022-2023

Motto: Enter to Learn, Depart to Serve.

Vision:

To Build a strong research and teaching environment that responds swiftly to the challenges of the 21st century.

The **Mission** of the Computer Science Department is to:

1. Provide the highest quality education in Computer Science;
2. Perform research that advances the state-of-the-art in Computer Science;
3. Produce post graduates who are knowledgeable, articulate, principled, innovative, confident, and able to think critically;
4. Be engaged in local, State, and National issues to the benefit of both public and the private sector; and
5. Maintain a diverse college community.

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M.Sc. in Computer Science Regulations 2022-2023

Preamble

Mahajana Post Graduate Centre is an exclusive PG wing of SBRR Mahajana First Grade College (Autonomous). The centre happens to be the largest PG Centre affiliated to University of Mysore.

It was established in July 2003 with the motto "Enter to Learn, Depart to Serve". The Centre is affiliated to University of Mysore and offers Post Graduation programmes in the areas of direct relevance and value to the current generation of students. The Centre offers Post Graduate degree in 12 disciplines and is poised to start new programmes in the years to come.

M.Sc. in Computer Science was started in the year 2008. The programme is approved by University Grants Commission and affiliated to the University of Mysore. It is a four semester full time programme.

1. Definitions

Course

Every course offered will have three components associated with the teaching-learning process of the course, namely
(i) Lecture – L (ii) Tutorial- T (iii) Practical - P, where

L stands Lecture session. **T** stands Tutorial session consisting participatory discussion / self study/ desk work/ brief seminar presentations by students and such other novel methods that make a student to absorb and assimilate more effectively the contents delivered in the Lecture classes.

P stands Practice session and it consists of Hands on experience / Laboratory Experiments / Field Studies / Case studies that equip students to acquire the much required skill component.

In terms of credits, every one hour session of L amounts to 1 credit per semester and a minimum of two hour session of T or P amounts to 1 credit per semester, over a period of one semester of 16 weeks for teaching-learning process. The total duration of a semester is 20 weeks inclusive of semester-end examination.

A course shall have either or all the three components. That means a course may have only lecture component, or only practical component or combination of any two or all the three components.

The total credits earned by a student at the end of the semester upon successfully completing the course are L + T + P. The credit pattern of the course is indicated as
L: T: P.

If a course is of 4 credits then the different credit distribution patterns in L: T: P format could be

4 : 0 : 0,	1 : 2 : 1,	1 : 1 : 2,	1 : 0 : 3,	1 : 3 : 0,
2 : 1 : 1,	2 : 2 : 0,	2 : 0 : 2,	3 : 1 : 0,	3 : 0 : 1,
0 : 2 : 2,	0 : 4 : 0,	0 : 0 : 4,	0 : 1 : 3,	0 : 3 : 1,

The concerned BoS will choose the convenient credit pattern for every course based on the requirement. However, generally, a course shall be of 3 or 4credits.

Different courses of study are labelled and defined as follows:

Core Course

A course which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.
A Core course may be a **Soft Core** if there is a choice or an option for the candidate to choose a course from a pool of courses from the main discipline /subject of study or from a sister/related discipline / subject which supports the main discipline / subject. In contrast to the phrase Soft Core, a compulsory core course is called a **Hard Core** Course.

Elective Course

Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline / subject of study or which provides an extended scope or which enables an exposure to some other discipline / subject/domain or nurtures the candidate's proficiency/ skill is called an Elective Course. Elective courses may be offered by the main discipline/ subject of study or by sister / related discipline / subject of study. A Soft Core course may also be considered as an elective.

An elective course chosen generally from an unrelated discipline / subject, with an intention to seek exposure is called an **open elective**.
An elective course designed to acquire a special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher is called a **Self Study.**

A core course offered in a discipline / subject may be treated as an elective by other discipline / subject and vice versa.

Project work/Dissertation work is a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A project work up to 4 credits is called Minor Project work. A project work of 6 to 8 credits is called Major Project Work. Dissertation work can be of 10-12 credits. A Project/Dissertation work may be a hard core or a soft core as decided by the BoS concerned.

2. Eligibility for Admission

Candidates possessing a degree of University of Mysore, or of any other University, equivalent there to and complying with the eligibility criteria:
The candidates who have passed B.Sc with Computer Science / Computer Applications / Vocational Computer Applications / Computer Maintenance / Computer Systems as an optional course / BCA with minimum 45% marks in Cognate subject are eligible (relaxed to 40% in case of SC, ST and Category I Candidates). The candidates should have also studied Mathematics as a major or a minor subject in their B.Sc. / BCA degree.

3. Scheme of Instructions

3.1 A Masters Degree program is of 4 semesters-two year's duration for regular candidates. A regular candidate can avail a maximum of 8 semesters – 4 years (in one stretch) to complete Masters Degree (including blank semesters, if any). Whenever a candidate opts for blank semester(s)/DROP in a course or in courses or is compelled to DROP a course or courses as per the provision of the regulation, he/she has to study the prevailing courses offered by the department as per the prevailing scheme, when he/she continues his/her study.

3.2 A candidate has to earn a minimum of 76 credits, for successful completion of a Master's degree with a distribution of credits for different courses as given in the following table.

Course Type	**Credits**
Hard Core	A minimum of 42, but not exceeding 52
Soft Core	A minimum of 16
Open Elective	A minimum of 4

Every course including project work, practical work, field work, seminar, self study elective should be entitled as hard core or soft core or open elective by the BoS concerned.

3.3 A candidate can enrol for a maximum of 24 credits per semester with the approval of the concerned department.

3.4 Only such candidates who register for a minimum of 18 credits per semester in the first two semesters and complete successfully 76 credits in total of the 4 semesters be considered for declaration of ranks, medals and are eligible to apply for student fellowship, scholarship, free ships and hostel facilities.

3.5 In excess to the minimum of 76 credits for masters degree in the concerned discipline / subject of study, a candidate can opt to complete a minimum of 18 extra credits to acquire **add on proficiency diploma** in that particular discipline /subject along with the masters degree. In such of the cases where in, a candidate opts to earn at least 4 extra credits in different discipline / subjects in addition to a minimum of 76 credits at masters level as said above then an **add on proficiency certification** will be issued to the candidate by listing the courses studied and grades earned.

3.6 A candidate admitted to Masters Program can exercise an option to exit with Bachelor Honors Degree / PG diploma after earning 40 credits successfully.

4. Continuous Assessment, Earning of Credits and Award of Grades

The evaluation of the candidate shall be based on continuous assessment. The Structure for evaluation is as follows:

4.1 Assessment and evaluation processes happen in a continuous mode. However, for reporting purposes, a semester is divided into 3 discrete components identified as C1, C2, and C3.

4.2 The performance of a candidate in a course will be assessed for a maximum of 100 marks as explained below:

4.2.1 The first component (C1), of assessment is for 15 marks. This will be based on test/ assignment/seminar/quiz/group discussions. During the first half of the semester, the first 50% of the syllabus will be completed. This shall be consolidated during the 8th week of the semester. Beyond 8th week, making changes in C1 is not permitted.

4.2.2 The second component (C2), of assessment is for 15 marks. This will be based on test/ assignment/seminar/quiz/group discussions. The continuous assessment and scores of second half of the semester will be consolidated during the 16th week of the semester. During the second half of the semester the remaining units in the course will be completed.

4.2.3 The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) will be proposed by the teacher(s) concerned before the commencement of the semester and will be discussed and decided in the respective Departmental Council. The students should be informed about the modalities well in advance. The evaluated courses/assignments during component I (C1) and component II (C2) of assessment are immediately returned to the candidates after obtaining acknowledgement in the register maintained by the concern teacher for this purpose.

4.2.4 During the 18th -20th week of the semester, a semester-end examination of 3 hours duration shall be conducted for each course. This forms the third/final component of assessment (C3) and the maximum marks for the final component will be 70.

4.2.5 In case of a course with only practical component a practical examination will be conducted with two examiners (one internal and one external).

A candidate will be assessed on the basis of:
a) Knowledge of relevant processes
b) Skills and operations involved
c) Results / products including calculation and reporting.
If external examiner does not turn up then both the examiners will be internal examiners. The duration for semester-end practical examination shall be decided by the departmental council.

4.2.6 Scheme of Valuation for Practical Examination:

The student is evaluated for 70 marks in C3 as per the following scheme:
There will be two questions. A candidate has to prepare procedure for both the questions and execute:

Procedure Development	:	10 x 2=20 Marks
Implementation	:	15 x 2=30 Marks

Viva	:	10 Marks
Record	:	10 Marks
Total	**:**	**70 Marks**

*For change of question, 10 Marks will be deducted per question.

4.2.7 If **X** is the marks scored by the candidate out of 70 in C3 in theory examination, if **Y** is the marks scored by the candidate out of 70 in C3 in Practical examination, and if **Z** is the marks scored by the candidate out of 70 in C3 for a course of (L=0):T:(P=0)type that is entirely tutorial based course, then the final marks (M) in C3 is decided as per the following table.

L.T.P distribution	Find mark M in C3
L:T:P	$\frac{[(L+T)*X]+[(T+P)*Y]}{L+2T+P}$
L:(T=0):P	$\frac{(L*X)+(P*Y)}{L+P}$
L:T:(P=0)	X
L:(T=0):(P=0)	X
(L=0):T :P	Y
(L=0): (T=0):P	Y
(L=0): T:(P=0)	Z

4.2.8 The details of continuous assessment are summarized in the following table:

4.2.9

Component	Syllabus in a course	Weightage	Period of Continuous assessment
C1	First 50%	15%	First half of the semester To be consolidated by 8th week
C2	Remaining 50%	15%	Second half of the semester. To be consolidated by 16th week
C3	Semester-end examination (All units of the course)	70%	To be completed during 18th - 20th Week.
Final grades to be announced latest by 24th week			

4.2.10 A candidate's performance from all 3 components will be in terms of scores, and the sum of all three scores will be for a maximum of 100 marks (15 +15 + 70).

4.2.11 **Finally, awarding the grades should be completed latest by 24th week of the semester**.

4.3 Minor/ Major Project Evaluation

Right from the initial stage of defining the problem, the candidate has to submit the progress reports periodically and also present his/her progress in the form of seminars in addition to the regular discussion with the guide. Components of evaluation are as follows:

Component – I (C1): Periodic Progress and Progress Reports (15%)
Component – II (C2): Results of Work and Draft Report (15%)
Component– III (C3): Final Viva-voce and evaluation (70%).

The report evaluation is for 40% and Viva-voce examination is for 30%.

4.4 In case a candidate secures less than 30% in C1and C2 put together in a course, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course. In case a candidate's class attendance in a course is less than 75%, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

Teachers offering the courses will place the above details in the Department Council meeting during the last week of the semester, before the commencement of C3, and subsequently a notification pertaining to the above will be brought out by the Chairman of the Department before the commencement of C3 examination. A copy of this notification shall also be sent to the office of the Director & Controller of Examinations.

4.5 In case a candidate secures less than 30% in C3, he/she may choose DROP/MAKEUP option.
In case a candidate secures more than or equal to 30% in C3, but his/her grade(G) = 4, as per section 4.7 below, then he/she may be declared to have been conditionally successful in this course, provided that such a benefit of conditional clearance based on G=4 shall not be availed for more than 8 credits for the entire programme of Master's Degree of two years.

In case a candidate secures less than 30% in C3, he/she may choose DROP/MAKE-UP option. The candidate has to exercise his/her option to DROP/MAKE UP immediately within 10 days from the date of notification of results.

A MAKE UP examination for C3 shall be conducted in all the semesters.
Candidates can register for the MAKE UP examination within 10 days from the date of notification of results. The MAKE UP examination will be conducted within one month of the notification of the results.

If a candidate is still unsuccessful, A MAKE UP Examination for odd semester courses will be conducted along with next regular odd semester examinations and for even semester courses along with next regular even semester examinations; however, not exceeding double the duration norm in one stretch from the date of joining the course.

4.6 A candidate has to re-register for the DROPPED course when the course is offered again by the department if it is a hard core course. The candidate may choose the same or an alternate core/elective in case the dropped course is soft core / elective course. A candidate who is said to have DROPPED project work has to re-register for the same subsequently within the stipulated period. **The details of any dropped course will not appear in the grade card.**

4.7 The grade and the grade point earned by the candidate in the subject will be as given below.

Marks(M)	Grade	Grade Point (GP = V x G)
30-39	4	V*4
40-49	5	V*5
50-59	6	V*6
60-64	6.5	V*6.5
65-69	7	V*7
70-74	7.5	V*7.5
75-79	8	V*8
80-84	8.5	V*8.5
85-89	9	V*9
90-94	9.5	V*9.5
95-100	10	V*10

Here, **P** is the percentage of marks (P = [(C1+C2)+M] secured by a candidate in a course which is rounded to nearest integer. **V** is the credit value of course. **G** is the grade and GP is the grade point.

4.8 A candidate can withdraw any course within in ten days from the date of notification of final results. Whenever a candidate withdraws a paper, he/she has to register for the same course in case it is hard core course, the same course or an alternate course if it is soft core/open elective.
A DROPPED course is automatically considered as a course withdrawn.

4.9 Overall Cumulative Grade Point Average (CGPA) of a candidate after successful Completion the required number of credits (76) is given by:

CGPA = ΣGP / Total number of credits

5. Classification of Results

The final grade point (FGP) to be awarded to the student is based on CGPA secured by the candidate and is given as follows.

CGPA	Numerical Index	Qualitative Index
4 <= CGPA < 5	5	Second Class
5 <= CGPA < 6	6	
6 <= CGPA < 7	7	First Class
7 <= CGPA < 8	8	
8 <= CGPA < 9	9	Distinction
9 <= CGPA < 10	10	

Overall percentage = 10* CGPA or is said to be 50% in case CGPA < 5

6. Medium of Instruction

The medium of instruction shall be English. However, a candidate will be permitted to write

the examinations in either English or Kannada. This rule is not applicable to languages.

7. Provision for Appeal

If a candidate is not satisfied with the evaluation of C1 and C2 components, he / she can approach the grievance cell with the written submission together with all facts, the assignments, test papers etc., which were evaluated. He/she can do so before the commencement of semester-end examination. The grievance cell is empowered to revise the marks if the case is genuine and is also empowered to levy penalty as prescribed by the college on the candidate if his/her submission is found to be baseless and unduly motivated. This cell may recommend taking disciplinary/corrective action on an evaluator if he/she is found guilty. The decision taken by the grievance cell is final.

For every program there will be one grievance cell.

The composition of the grievance cell is as follows.

1. The Controller of Examinations ex-officio Chairman / Convener
2. One senior faculty member (other than those concerned with the evaluation of the course concerned) drawn from the department/discipline and/or from the sister departments/sister disciplines.
3. One senior faculty member / course expert drawn from outside the department.

8. Any other issue not envisaged above, shall be resolved by the competent authority of the autonomous college, which shall be final and binding.

9. Any matter which is not covered under this regulation shall be resolved as per the College/ University of Mysore regulations

Programme Outcomes – M.Sc. Computer Science

PO 1: Apply the theoretical knowledge of Mathematics to design and developmodels to solve real-time problems.

PO 2: Apply skills learnt in emerging technologies to construct and implement software systems of varying complexities.

PO 3: Communicate and engage effectively with diverse systems, processes andpeople to construct computer based solutions to problems.

PO 4: Recognize the need for and develop effective communication skills to engage in continuing professional development.

PO 5: Demonstrate the understanding of the concepts learnt relating to professional, ethical, legal, and social issues and responsibilities in real-life.

PO 6: Develop strong programming skills to implement research projects

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Scheme and Syllabi for M.Sc. in Computer Science

w.e.f. 2022-23

I Semester

Sl. No	Course Title	Type	Credits			Corse Code
			L	T	P	
1	Discrete Mathematical Structures	HC	3	1	0	22J1H1
2	Advanced Data Structures	HC	3	1	0	22J1H2
3	Database Technologies	HC	3	0	1	22J1H3
Soft Core Courses (Choose at most 2 Courses)						
1	Java Programming	SC	3	0	1	22J1S1
2	Operating Systems	SC	3	1	0	22J1S2
3	Web Technologies	SC	2	1	1	22J1S3
4	Computer Graphics	SC	2	1	1	22J1S4
5	Computer Architecture	SC	4	0	0	22J1S5
6	Numerical Algorithms	SC	4	0	0	22J1S6

II Semester

Sl. No	Course Title	Type	Credits			Corse Code
			L	T	P	
1	Design And Analysis of Algorithms	HC	2	1	1	22J2H1
2	Python Programming	HC	3	0	1	22J2H2
3	Data Communication & Networks	HC	3	1	0	22J2H3
Soft Core Courses (Choose at most 2 Courses)						
1	System Software	SC	3	0	1	22J2S1
2	Communication Skills	SC	4	0	0	22J2S2
3	Professional Ethics and Values	SC	3	1	0	22J2S3
4	Pattern Recognition	SC	3	1	0	22J2S4

5	Big Data Analytics	SC	3	0	1	22J2S5
	World Wide Web	OE	3	1	0	22J2E1

III Semester

Sl. No	Course Title	Type	Credits			Corse Code
			L	T	P	
1	Theory of Languages	HC	3	1	0	22J3H1
2	Machine Learning	HC	3	0	1	22J3H2
3	Minor Project	HC	0	1	3	22J3H3
Soft Core Courses (Choose at most 2 Courses)						
1	Artificial Intelligence	SC	3	1	0	22J3S1
2	Digital Image Processing	SC	3	0	1	22J3S2
3	C# Programming	SC	3	0	1	22J3S3
4	Android Programming	SC	3	0	1	22J3S4
5	Software Engineering	SC	3	1	0	22J3S5
	E-Commerce	OE	3	1	0	22J3E1

IV Semester

Sl. No	Course Title	Type	Credits			Corse Code
			L	T	P	
1	Dissertation	HC	0	2	10	22J4H1
Soft Core Courses (Choose at most 2 Courses)						
1	Compiler Construction	SC	3	1	0	22J4S1
2	Advanced Database Management System	SC	2	1	1	22J4S2
3	Data Mining	SC	3	0	1	22J4S3
	Office Automation	OE	3	1	0	22J4E1

HC DISCRETE MATHEMATICAL STRUCTURES [3:1:0]

Objectives:

- Learn the fundamentals of counting theory, set theory, logic, quantifiers, and relations.
- Learn different proof techniques like direct or indirect, proof by contradiction, check the validity of a given argument.
- Understand the concepts of functions and relations to solve a given problem.
- Learn the concepts of graph theory and applications.

Outcomes:

- Apply the concepts of set theory, logic, quantifiers and relations in specifying and solving problems.
- Identify the quantifiers and their uses and Make use of fundamentals of logic theory.
- Apply the mathematical induction principle and different methods to solve the given problem.
- Make use of basic concepts of graph theory to solve the given problem.

Unit I

Principles of Counting: The Rules of Sum and Product, Permutation, Combinations, combinations with repetition and Problems.

Sets and Subsets: Set Operations, Membership table method and Venn diagram method and the Laws of Set Theory, Addition principle-Counting and Venn Diagrams, A First Word on Probability.

Unit II

Fundamentals of Logic: Basic Connectives and Truth Tables, Logic Equivalence – The Laws of Logic theory, Logical Implication – Rules of Inference. Argument – Definition, validity and invalidity.

The Use of Quantifiers: Quantifiers, Definitions, Argument representation using quantifiers, validity.

Proofs of Theorems- Direct and Indirect method - contradiction and contra positive method.

Unit III

Relations and Functions: Properties of the Integers: Mathematical Induction, The Well Ordering Principle- Mathematical Induction (Alternative form) (problems), Recursive Definitions

Cartesian Products and Relations, Functions – Plain and One-to-One, Onto Functions – Stirling Numbers of the Second Kind, Special Functions, The Pigeon-hole Principle, Function Composition and Inverse Functions.

Unit IV

An Introductions to Graph Theory: Definitions and examples Sub graphs, Complements, and Graph Isomorphism, Vertex Degree : Euler Trails and Circuits.

Graph coloring and Chromatic Numbers. Definitions, Properties and examples rooted trees, Trees and sorting. Weighted Trees and Prefix codes. Spanning trees- minimal spanning tree by Prim's and Krushkal's Algorithm.

References

1. Discrete and Combinatorial Mathematics, Ralph P. Grimaldi, 5th Edition, Pearson Education.
2. Discrete Mathematics and its Applications, Kenneth H. Rosen, 7th Edition, McGraw Hill.

3. Discrete Mathematical Structures with Applications to Computer Science by Tremblay and Manohar, McGraw-Hill Publications.
4. A Treatise on Discrete Mathematical Structures, Jayant Ganguly, Sanguine-Pearson.
5. Discrete Mathematical Structures –by Dr. D.S. Chandrashekhariah.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	1	2	1	1	1
CO 2	3	1	2	1	1	1
CO 3	3	2	2	1	1	2
CO 4	3	2	2	1	1	1
Weighted Average	3	1.5	2	1	1	1.25

1: Low, 2: Moderate, 3: High

HC ADVANCED DATA STRUCTURES [3:1:0]

Objectives:

- Learn about and understand different data structures like dictionaries, hash tables, priority queues, and different types of search trees.
- Understand how the above data structures can be represented.
- Understand how different operations like insertion, deletion, searching, etc. can be implemented in the above mentioned data structures.
- Understand string matching algorithms and operations on tries.

Outcomes:

- Understand the ADT specification of dictionary data structure, priority queue and binary search trees.
- Perform insertion, deletion and searching operation on dictionary, priority queue and binary search trees.
- Perform the sorting using external sorting.
- Identify the applications of string matching algorithms and tries.

Unit I

Dictionaries, linear list representation, skip list representation, operations insertion, deletion and searching, hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, comparison of hashing and skip lists.

Unit II

Priority Queues — Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, External Sorting- Model for external sorting, Multi-way merge, Poly-phase merge.

Unit III

Search Trees , Binary Search Trees, Definition, ADT, Implementation, Operations- Searching, Insertion and Deletion, AVL Trees, Definition, Height of an AVL Tree, Operations — Insertion, Deletion and Searching, Introduction to Red —Black and Splay Trees, B-Trees, B-Tree of order m, Comparison of Search Trees

Unit IV

Pattern matching and Tries: Pattern matching algorithms-Brute force, the Boyer —Moore algorithm, the Knuth-Morris-Pratt algorithm, Standard Tries, Compressed Tries and Suffix tries.

References

1. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India), 2nd edition, Universities Press Orient Longman.
2. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and Mount, Wiley student edition, John Wiley and Sons.
3. Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education, Second Edition.
4. Data structures and algorithms in C++, 3rd Edition, Adam Drozdek, Thomson.
5. Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	1	2	1	1	1
CO 2	1	2	2	1	2	1
CO 3	3	2	2	1	1	2
CO 4	2	2	1	1	1	1
Weighted Average	2.25	1.75	1.75	1	1.25	1.25

1: Low, 2: Moderate, 3: High

HC DATABASE TECHNOLOGIES [3:0:1]

Objectives:

- Learn and practice data modelling using the entity-relationship and developing database designs.
- Understand the use of Structured Query Language (SQL) and learn SQL syntax.
- Apply normalization techniques to normalize the database.
- Comprehend the needs of database processing and learn techniques for controlling the consequences of concurrent data access.

Outcomes:

- Comprehend data models and schemas in DBMS.
- Use SQL- the standard language of relational databases.
- Understand the functional dependencies and design of the database.
- Understand the concept of Transaction and Query processing.

Unit I

Overview of Database Systems and Entity- Relationship Model

A historical perspective, file system versus a DBMS, advantages of a DBMS, levels of abstraction in a DBMS, structure of a DBMS, users of databases, entity, entity types, entity sets, attributes, keys, relationships, relationship sets and additional features of ER-model-key constraints, participation constraints and weak entities.

Unit II

Relational model, Relational Algebra and Structured Query Language

Relational model- Concepts, relational constraints and relational database schemas. Relational algebra - Basic and additional relational operations with examples. Data definition, constraints and schema changes in SQL, Basic queries in SQL: insert, delete and update statements and joins in SQL, views in SQL.

Unit III

Database Design, Overview of storage and indexing

Informal design guidelines for relational schemas, functional dependencies, normal forms, general definitions of first, second, third and boyce-codd normal forms.

File organization and indexing: sequential file organization, heap file organization, clustered indexes primary and secondary indexes, hash based indexing and B+ tree-based indexing.

Unit IV

Overview of transaction management

The ACID properties, consistency and isolation, atomicity and durability, transaction on schedules, concurrent execution of transactions, motivation for concurrent execution, serializability, anomalies due to interleaved execution, lock-based concurrency control, strict two phase locking and performance of locking.

References

1. Fundamentals of Database Systems by Navathe and Elmasri –Pearson Education, Fifth Edition.
2. Database Systems Concepts, 3rd edition by Abraham Silberschatz, Henry Korth and S. Sudarshan, Tata McGraw Hill.
3. Principles of database systems by Ullman, Computer Science press.

4. DBMS by Prof. S.Nandagopalan, 7th Revised Edition.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	2	2	1	1	1
CO 2	2	3	3	1	2	2
CO 3	1	2	1	1	1	1
CO 4	1	2	1	1	1	-
Weighted Average	1.25	2.25	1.75	1	1.25	1

1: Low, 2: Moderate, 3: High

SC JAVA PROGRAMMING [3:0:1]

Objectives:

- To gain an understanding of the object oriented paradigm and concepts in general.
- Learn the basics of the Java environment and the programming language.
- To learn how to implement different object oriented concepts in Java.
- To learn about using files and creating packages.

Outcomes:

- Understand different aspects of object oriented paradigm and programming fundamentals.
- Build programs using programming basics, class fundamentals and reusable code using inheritance and polymorphism.
- Model solutions using files and interfaces.
- Develop efficient and error free applications using packages and exceptions..

Unit 1: Object-Oriented Programming (OOPS) concepts:

Classes & Objects, Pillars Of Object Oriented Programming, OOPS concepts and terminology, Encapsulation & Examples, Abstraction & Examples, Inheritance: Advantages of OOPS, About Java, Execution Model Of Java, Bytecode, First Java Program, Compiling and Interpreting Programs, The JDK Directory Structure, Data types and Variables: Primitive & non-Primitive Datatypes & Declarations, Variables & Types, Numeric & Character Literals, String formatting and Parsing, String Literals, The Dot Operator.

Unit 2: Methods:

Methods: Method Structure, Declaration Of Methods, Calling Of Methods, Defining Methods, Method Parameters Scope, static methods, Operators and Expressions:

Expressions, Operator Precedence, The Cast Operator, Control Flow Statements, While and do-while Loops, for Loops, The continue Statement, The break Statement, Objects and Classes: Defining a Class, Creating an Object, Accessing Class Members, Instance Data and Class Data, Defining Methods, Constructors, Access Modifiers, Inheritance & Polymorphism: Inheritance in Java, Types Of Inheritance, Method Overloading, Run-time Polymorphism, Method Overriding, super keyword.

Unit 3 : Java Files and I/O:

Streams, Reading and Writing to Files (only txt files), Input and Output Stream classes, using the file class, Using Streams, creation of files, reading/writing characters, bytes, Interfaces and Abstract Classes: Interface: Defining Interfaces, Separating Interface and Implementation, Implementing and Extending Interfaces, Abstract Classes.

Unit 4 : Packages:

Package, Advantages of using a Package, Types Of Packages, Naming Convention, Steps For Creating Packages, The import Statement, Static Imports, CLASSPATH and Import, Defining Packages, Package Scope, Exception Handling: Exceptions Overview, Exception Keywords, Catching Exceptions, The finally Block, Exception Methods, Declaring Exceptions, Defining and Throwing Exceptions, Errors and Runtime Exceptions, Assertions.

References

1. Programming with JAVA- A Primer, E. Balagurusamy, Tata Mc-Graw-Hill.
2. JAVA for you- P Koparkar, Tata Mc-Graw-Hill.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	3	2	1	2	3
CO 2	1	3	2	1	2	3
CO 3	1	3	3	1	2	3
CO 4	1	3	3	1	2	3
Weighted Average	1	3	2.5	1	2	3

1: Low, 2: Moderate, 3: High

SC OPERATING SYSTEMS [3:1:0]

Objectives:

- To learn about the fundamental principles of operating system, processes and their communication
- To learn about various operating system issues related to process management management like threads, process scheduling, synchronisation and deadlocks.
- To learn about various memory management techniques, including virtual memory, paging and segmentation.
- To know about disk and file management and the distributed file system concepts.

Outcomes:

- Able to comprehend the operating system components and its services
- Able to understand how process is created and various process related components of the operating system.
- Able to comprehend how memory management and virtual memory management is done.
- Able to understand different file and directory structures and how files are stored in secondary storage.

Unit I

Introduction -Computer System Organisation – Computer system architecture – Operating system operations - Operating systems services-System calls- Types of system calls – Operating system structure.

Processes-process concept- process scheduling-operation on processes. Threads – Multithreading models – Threading issues.

Unit II

Process Scheduling - Scheduling criteria-Scheduling algorithms – Thread scheduling - Multiple-processor Scheduling.

Process Synchronization – Critical Section problem – Peterson's solution - Semaphores-Classical problems of synchronization - critical regions – Introduction to Montors.

Unit III

Deadlocks – System model - Deadlock Characterization - Deadlock handling - Deadlock Prevention - Deadlock avoidance - Deadlock Detection - Deadlock Recovery.

Memory Management – Swapping - Contiguous Memory allocation -Segmentation Paging.

Virtual Memory Management - Demand paging – Copy on write - Page Replacement - Thrashing.

Unit IV

File System – File concept – Access methods – Directory structure – Directory and disk structure - File Systems structures - Directory Implementation - Allocation Methods - Free Space management.

Case Study : Linux System – Linux history, Design Principles, Kernel modules.

References

1. "Operating Systems Concepts", Abraham Silberschalz Peter B Galvin, G.Gagne, 9th Edition, John Wiley & Sons.
2. "Modern operating Systems", Andrew S.Tanenbaum, Third Edition, PHI.
3. "Operating Systems: A Concept-based Approach", D M Dhamdhere, Second Edition, Tata McGraw-Hill.

4. "Operating Systems", H M Deital, P J Deital and D R Choffnes, 3rd edition, Pearson Education.
5. "Operating Systems: Internals and Design Principles", William Stallings, Seventh Edition, Prentice Hall.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	3	1	1	1	1
CO 2	1	3	1	1	1	1
CO 3	1	3	1	1	1	1
CO 4	1	3	1	1	1	1
Weighted Average	1	3	1	1	1	1

1: Low, 2: Moderate, 3: High

SC WEB TECHNOLOGIES [2:1:1]

Objectives:

- To help students understand the basis of Internet and also the basic building blocks of web pages using HTML and CSS.
- To help students understand and use Java script and the Document Object Model.
- To help students understand and use PHP for back-end, especially database connectivity.
- To help students understand the use of web frameworks and content management systems for creating and managing websites faster and easier.

Outcomes:

- Develop an ability to implement HTML5 pages using fundamental tags.
- Develop style sheet using CSS for a given problem.
- Illustrate JavaScript to validate a form with event handler for a given problem.
- Determine PHP in the back-end for database connectivity, web frameworks and content management systems.

Unit I

Introduction to Internet, WWW, Web Browsers, and Web Servers, URLs, MIME, HTTP, Security. Quick introduction to HTML5 : basic text formatting, presentation elements, phrase elements, lists, Tables – attributes, grouping elements, basic links, email link, Image, Audio, Video, image maps , Forms.

Unit II

Cascading Style Sheet : Introduction, Levels of Style Sheet and specification formats, embedded style sheet, External Style Sheet, inline Style Sheet, Box Model, selector forms, Class and ID method, DIV and SPAN tags, Inheritance with CSS. Responsive Web Design.

Unit III

JavaScript: JavaScript in HTML, Language Basics – Variables, operators, statements, functions, Data type conversions, reference types, Document object Model : methods, HTML DOM Elements, changing HTML and CSS, Events and event handling, event listener, form validation. Browser Object Model : Window, screen, history, popup alert, timing, cookies.

Unit IV

PHP: Forms PHP, Form Handling, PHP MySQL connectivity.

Brief introduction to Web Frameworks and Content Management System, creation of a simple website using WordPress.

References

1. Internet and World Wide Web: How to Program - Paul Deitel, Harvey Deitel, Abbey Deitel, 5th Edition - 2018, Pearson Education.
2. HTML & CSS: The Complete Reference - Thomas Powell, 5th Edition – 2015, McGraw Hill Education.
3. HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery) - DT Editorial Services, 2nd Edition – 2016, Dreamtech Press.
4. Programming PHP: Creating Dynamic Web Pages - Kevin Tatroe, Peter MacIntyre, Rasmus Lerdorf, 3rd Edition – 2013, O'Reilly.
5. Learning PHP, MySQL & JavaScript with j Query, CSS & HTML5 - Robin Nixon, 4th Edition – 2015, O'Reilly.
6. https://www.w3schools.com/html/

7. https://www.w3schools.com/css/
8. https://www.w3schools.com/js/
9. https://www.w3schools.com/php/
10. https://en.wikipedia.org/wiki/Web_framework
11. https://en.wikipedia.org/wiki/Content_management_system

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	-	3	-	1	1	1
CO 2	-	3	-	1	1	1
CO 3	1	3	2	1	1	1
CO 4	1	3	2	1	1	1
Weighted Average	1	3	2	1	1	1

1: Low, 2: Moderate, 3: High

SC COMPUTER GRAPHICS [2:1:1]

Objectives:

- To provide an overview of various device level algorithms.
- To provide an understanding of homogeneous coordinates and various 2D and 3D transformations
- To provide an introduction to 3D concepts like projections, curves.
- To make the students understand how to implement the computer graphics concepts using OpenGL.

Outcomes:

- Able to identify and use various graphics hardware, basic coordinate representations, functions and scan conversion algorithms.
- Able to implement various filled area primitives, 2D transformations and viewing
- Able to implement 2D clipping algorithms 3D geometric transformations.
- Able to implement 3D viewing, spline curves and visible surface detection

Unit I

Graphics hardware: Video display devices, Raster-scan systems, Graphics software : Coordinate representations, Graphics functions, standards, Introduction to OpenGL.

Graphics Output Primitives: Coordinate reference frames, Two-Dimensional reference frame in OpenGL, OpenGL Point Functions, Line Functions, Curve functions.

Scan-Conversion: Line-Drawing Algorithms: DDA, Bresenhams, Setting frame-buffer values, Circle-Generating algorithms : Midpoint Circle Algorithm.

Unit II

Filled area primitives: Scan-line polygon fill algorithm, Boundary fill algorithm, Flood fill algorithm, Inside-outside tests. Brief overview on Ant aliasing methods.

2D geometrical transformations: Basic two-dimensional geometric transformations, Homogeneous Coordinates and Matrix Representation, Inverse Transformations, Brief overview of Composite transformations, Reflection, Shear, OpenGL functions for two-dimensional geometric transformations, Programming examples.

2D viewing: Windows and viewports, Two-dimensional viewing pipeline, clipping window, Normalization and viewport transformations, Brief overview of OpenGL 2D viewing functions.

Unit III

2D Clipping Algorithms: Point clipping, Line clipping: Cohen- Sutherland and Liang-Barsky Line clipping, polygon fill-area clipping: Sutherland-Hodgman algorithm, Text clipping.

3D geometrical transformations: 3D translation, 3D scaling. 3D rotation: coordinate-axis rotations, general 3D rotations, Other 3D transformations, Affine transformations, OpenGL geometric transformation functions.

Unit IV

Three-dimensional viewing: Overview, Three-dimensional viewing pipeline, Projection transformations, 3D viewing functions.

Spline representations : Interpolation and Approximation splines, parametric and Geometric continuity conditions, Bezier spline curves, B-Spline curves.

Visible surface detection : Classification of visible surface detection algorithms, Back- Face detection, Depth buffer method.

References

1. Computer Graphics with OpenGL, Donald D. Hearn, M. Pauline Baker, Warren Carithers, Fourth Edition, Pearson India Education Services.
2. Computer Graphics Principles & Practice in C, Foley, Vandam, Feiner, Hughes, Pearson Education.
3. Open GL Super Bible : Comprehensive Tutorial and Reference, Richard S Wright and Jr. Michael Sweet, 7th Edition, Pearson Education.
4. Computer Graphics, Roy A. Plastock, Gordon Kalley, Schaum's Outlines, McGraw Hill.
5. Computer Graphics 2nd Edition (Paperback) by Steven Harrington, Tata McGraw Hill.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	3	1	1	1	1
CO 2	3	3	1	1	1	1
CO 3	3	3	1	1	1	1
CO 4	3	3	1	1	1	1
Weighted Average	3	3	1	1	1	1

1: Low, 2: Moderate, 3: High

SC COMPUTER ARCHITECTURE [4:0:0]

Objectives:

- To conceptualize the basics of organizational and architectural issues of a digital computer.
- To analyse performance issues in processor and memory design of a digital computer.
- To comprehend various data transfer techniques in digital computer.
- To analyse processor performance improvement using instruction level parallelism

Outcomes:

- Develop an ability to understand the concept of cache mapping techniques.
- Develop an ability to understand basics of organizational and architectural issues of a digital computer.
- Acquire knowledge and understanding the theory of Digital Design and Computer Organization to provide an insight to basic computer components.
- Develop an ability to conceptualize instruction level parallelism.

Unit I : Parallel Computer Models

The state of Computing - Evolution of Computer Architecture, System Attributes to Performance. Multiprocessors and Multicomputer Shared Memory Multiprocessors, Distributed – Memory Multicomputer Multivector and SIMD Computers – Vector Supercomputers, SIMD supercomputers conditions of Parallelism – Data and Resource Dependencies, Hardware and software parallelism.

Unit II : Processor and Memory Hierarchy

Process Technology – Instruction Pipelines, Processors and Coprocessors, Instruction Set Architectures, Representative CISC Processors, Representative RISC Processors, Superscalar Processors. Memory Technology, Inclusion, Coherence and Locality. Cache Memory organization – Cache Addressing modes, Direct mapping and Associative caches, Set Associative Cache. Shared – Memory organizations – Interleaved Memory organization

Unit III : Pipelining

Linear Pipeline processors – Asynchronous and Synchronous Models, Instruction Pipeline Design – Mechanisms for instruction Pipelining, Arithmetic Pipeline Design – Computer Arithmetic Principles, Arithmetic Pipeline Stage, Multifunctional Arithmetic Pipelines

Unit IV : Multiprocessors

Multiprocessor system Interconnects – Hierarchical Bus system, Cache Coherence Problem. Message – Passing Mechanisms – Message – Routing Schemes, Deadlock and Virtual Channels, Multithreaded Architecture – Multithreading Principles, Issues and Solutions

References

1. Advanced Computer Architecture – Kai Hwang – Tata McGraw Hill.
2. Parallel Computer Architecture, David E Culler, J.P.Singh and Anoop Guptha.
3. Computer Architecture and Organization – John. P. Hayes – Third Edition –Tata McGraw Hill.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	1	1	1	1	1
CO 2	1	1	1	1	-	-
CO 3	1	1	1	1	-	-
CO 4	1	1	1	1	-	-
Weighted Average	1	1	1	1	1	1

1: Low, 2: Moderate, 3: High

SC NUMERICAL ALGORITHMS [4:0:0]

Objectives:

- To introduce the different types of errors in computing
- Finding the roots of the non-linear equations, Numerical integration and Ordinary differential equations.
- Finding solutions of simultaneous linear algebraic equations.
- Introducing interpolation and statistical methods .

Outcomes:

- Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions.
- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Derive numerical methods for various mathematical operations and tasks such as solution of non-linear equations, numerical integration and ordinary differential equations.
- Gain an understanding of interpolation and statistical methods.

Unit I

Introduction to Numerical Computing: Introduction, Numeric Data, Analog Computing, Digital Computing, Process of Numerical Computing and Characteristics of Numerical Computing.

Approximations and Error in Computing: Introduction, Significant Digits, Inherent Errors, Numerical Errors, Modelling errors, Blunders, Absolute and relative Errors, Blunders and Error Propagation.

Roots of Nonlinear Equations: Bisection method, False position method, Newton Raphson method and Secant method.

Unit II

Numerical Integration: Trapezoidal rule, Simpson's 1/3rd rule and Simpson's 3/8th rule.

Ordinary Differential Equations: Euler's method, Modified Euler's method, Runge-Kutta II and IV order methods.

Unit III

Solutions of Simultaneous Linear Algebraic Equations: Gauss Elimination method, Gauss Jordan method and LU Decomposition method.

Iterative methods: Jacobi's iterative method and Gauss-Seidel iterative method.

Unit IV

Interpolation: Newton-Gregory forward interpolation, Newton-Gregory backward interpolation, divided differences, Newton's divided difference and Lagrange's interpolation.

Statistical methods: Introduction, Definitions, Classifications, Frequency Distribution, Mean – Arithmetic Mean for grouped and ungrouped data and Geometric Mean for grouped and ungrouped data.

References

1. Numerical Methods – E Balaguruswamy, Tata McGraw-Hill.
2. Engineering Mathematics Vol. III - A by Dr. K.S. Chandrashekar, Sudha Publcations.
3. Computer Oriented Numerical Methods by Rajaraman V.
4. Fundamentals of Mathematical Statistics by Gupta and Kapoor

5. Probability and Statistics for engineers and scientists by Ronald E. Walpole and Raymond H Mayers
6. Mathematical Statistics by John Freund.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	1	-	-	1	-
CO 2	3	-	1	-	-	-
CO 3	3	-	-	-	-	-
CO 4	3	-	-	1	-	1
Weighted Average	3	1	1	1	1	1

1: Low, 2: Moderate, 3: High

HC DESIGN AND ANALYSIS OF ALGORITHMS [2:1:1]

Objectives:

- Comprehend the performance analysis of an algorithm.
- Understand time and space complexity of various data structures.
- Comprehend time and space complexities of an algorithm.
- Learn different design strategies like divide and conquer, transfer and conquer, greedy, dynamic programming, backtracking and branch and bound

Outcomes:

- Compare between different data structures. Pick an appropriate data structure for a design situation. Analyze Performance of algorithms using asymptotic analysis.
- Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize divide-and-conquer algorithms. Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
- Describe the greedy paradigm and dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.
- Describe the backtracking paradigm and branch and bound paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.

Unit I : Introduction

Algorithms, structured algorithms, analysis of algorithms, complexity analysis and profiling, asymptotic complexity, review of stack, queues, Recursion, heaps and heap sort, case studies(complexity analysis and profiling)- prime and Fibonacci numbers, GCD and LCM, sorting algorithms- selection sort, bubble sort and insertion sort.

Unit II : Divide and conquer & Transfer and conquer

Divide and conquer general method, binary search, Maximum and minimum element in list, merger sort, quick sort. Transfer and Conquer – solution to simultaneous equations by triangularization, diagonalization algorithms.

Unit III : Greedy method and Dynamic programming

Greedy method-General method, optimal storage on tapes, knapsack problem, optimal merge pattern, Minimum cost spanning trees (prim's algorithm and Kruskal's algorithm), single source shortest paths. Dynamic Programming-General methods, multistage graphs, all pair's shortest paths, Travelling salesman problem, 0/1 Knapsack problem

Unit IV : Backtracking and Branch and Bound

General method for backtracking, 8-queen Problem, sum of subsets problem, Graph Colouring problem.

Branch and Bound general method, 0/1 knapsack problem, travelling salesman problem.

References

1. "Fundamentals of Computer Algorithms" Ellis Horowitz, Sartaj Sahni and Sanguthevar, Rajasekaran Galgotia Publications.
2. "Introduction to the Design & Analysis of Algorithms", Anany V. Levitin Pearson Education, 3rd edition.

3. “Introduction to Algorithms”, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	-	1	-	1	-
CO 2	3	1	-	1	2	-
CO 3	3	-	-	-	2	1
CO 4	3	-	-	-	2	-
Weighted Average	3	1	1	1	1.75	1

1: Low, 2: Moderate, 3: High

HC PYTHON PROGRAMMING [3:0:1]

Objectives:

- Understand programming paradigms brought in by Python.
- To learn to use python for text processing, with a focus on Regular Expressions, List and Dictionaries.
- To explore various modules and libraries to cover the landscape of Python programming.

Outcomes:

- Demonstrate the use of the built -in objects of Python
- Demonstrate significant experience with the Python program development environment.
- Understand and implement the basic methods of python modules like NumPy, and Pandas.
- Visualize data using Matplotlib module.

Unit-1 Introduction to Python

Structure of Python Program, Branching and Looping, Numbers, Strings, Lists, tuples, functions, built-in methods for strings, lists, tuples. List comprehensions.

Unit-2 Sequence Datatypes and Object-Oriented Programming

Sets, Dictionaries, Classes: Classes and Instances, Inheritance, Exceptional Handling, Introduction to Regular Expressions using "re" module.

Unit-3 Using NumPy and Pandas

Basics of NumPy: Computation on NumPy, Aggregations, Computation on Arrays, Comparisons, Masks and Boolean Arrays, Fancy Indexing, Sorting Arrays, Structured Data: NumPy's Structured Array.

Introduction to Pandas Objects: Data indexing and Selection, Operating on Data in Pandas, Handling Missing Data, Hierarchical Indexing, Combining Data Sets

Unit-4 Data Visualization with Matplotlib

Basic functions of Matplotlib: Simple Line Plot, Scatter Plot, Density and Contour Plots, Histograms, Binnings and Density, Customizing Plot Legends, Colour Bars, Three-Dimensional Plotting in Matplotlib.

References:

1. The Python Tutorial : https://docs.python.org/3/tutorial/index.html
2. Python Data Science Handbook - Essential Tools for Working with Data, Jake VanderPlas , O'Reily Media,Inc, 2016
3. An Introduction to Python and Computer Programming, Zhang.Y, Springer Publications,2016
4. NumPy : https://numpy.org/
5. Pandas : https://pandas.pydata.org/
6. Matplotlib : https://matplotlib.org/
7. Core Python Applications Programming, 3rd Edition by Wesley J. Chun
8. Python, The complete Reference, Martin C. Brown, McGraw Hill Education.
9. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	2	1	1	2	3
CO 2	3	3	1	1	3	3
CO 3	-	3	1	1	2	1
CO 4	2	2	1	1	2	3
Weighted Average	2	2.5	1	1	2.25	2.5

1: Low, 2: Moderate, 3: High

HC DATA COMMUNICATION & NETWORKS [3:1:0]

Objectives:

- Understand the basics of data communication components.
- Learn the protocols of Data link layer.
- Understand different network layer services and routing protocols
- Know the different techniques involved transport layer and application layer

Outcomes:

- Understand and implement various types of transmissions in wired and wireless communications
- Study and develop the aspects of communication channels of Data Link Layer.
- Understand Design & apply various routing protocols of the Networks Layer.
- Design applications using the protocols of Transport & application Layer.

Unit I: Data Communications

Components, Direction of Data Flow, Networks –Network Criteria and Network Types, TCP/IP Protocol suite, OSI Model, Multiplexing, Transmission media-Guided and Unguided media.

Unit II: Data link layer

Introduction, Data-Link Control-Framing, Error control, Protocols-Noiseless Channels and Noisy Channels, Medium Access Sub Layer-ALOHA, CSMA/CD, Wired LAN – Ethernet, Wireless LAN – IEEE 802.11

Unit III: Network layer

Network Layer: Internet Protocol – IPv4, Ipv6, IPv4 addresses, IPv6 addresses, Transition from IPv4 to IPv6, Routing algorithms, Unicast Routing protocols-Internet Structure, Brief intoduction to RIP, OSPF and BGP, Unicasting vs. Multicasting.

Unit IV: Transport Layer and Application Layer

Transport layer services- Process to process communication, Addressing, Transport layer protocols-Services, Port numbers, UDP and TCP, Application Layer: Client/Server Paradigm, Standard Applications : WWW and HTTP, FTP, Electronic Mail, TELNET, SSH, DNS, Introduction to P2P networks.

References:

1. Data Communications and Networking with TCPIP Protocol Suite - Behrouz A. Forouzan, 6th Edition, McGraw Hill.
2. Computer Networks - Andrew S Tanenbaum, 5th Edition. Pearson Education, PHI.
3. Data communications and Computer Networks - P.C .Gupta, PHI.
4. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
5. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
6. Computer Networking: A Top-Down Approach Featuring the Internet - James F. Kurose & Keith W. Ross, 3rd Edition, Pearson Education.
7. Data and Computer Communication- William Stallings, 6th Edition, Pearson Education.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	3	3	-	2	2
CO 2	1	-	3	2	-	-
CO 3	1	3	3	3	-	-
CO 4	1	2	3	2	3	3
Weighted Average	1	2.66	3	2.33	2.5	2.5

1: Low, 2: Moderate, 3: High

SC SYSTEM SOFTWARE [3:0:1]

Objectives:

- To understand the design of an assembler for a simple machine architecture.
- To understand the need and design of a macro processing facility.
- To learn about loading, different loading schemes and issues related to it, and implementation of a loader.
- To get an overview of compiler functions and learn about basic lexical analysis and parsing.

Outcomes:

- Develop an Ability to master the design of assembler.
- Able to understand various issues related to processing macros.
- Able to understand different loaders schemes, and related issues.
- Develop ability to write simple lexical analyser and parser with Lex and Yacc.

Unit I

Introduction, general machine structure, general approach to a new machine, assemblers, general design procedure, design of assembler- statement of problem, data structure, format of data bases, algorithm, look for modularity.

Unit II

Macro language and the macro processor – macro instructions, features of a macro facility, macro instruction arguments, conditional macro expansion, macro calls within macros, macro instructions defining macros, implementation of a restricted facility.

Unit III

Loaders, Loader schemes, design of an absolute loader, design of a direct linking loader- specification of problem, specification of data structures, format of data bases, algorithm.

Unit IV

Introduction to Compilers : Language Processors, Structure of a Compiler.

Introduction to Lex and Yacc: The Simplest Lex Program, Recognizing Words With LEX, Symbol Tables, Grammars, Parser-Lexer Communication, A YACC Parser, The Rules Section, Running LEX and YACC, Using LEX, Using YACC – Grammars, What YACC Cannot Parse, A YACC Parser - The Definition Section, The Rules Section, Symbol Values and Actions

References

1. “Systems Programming”, John J. Donovan, Tata McGraw-Hill.
2. Compilers: Principles, Techniques, and Tools, Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, 2nd Edition, Pearson.
3. Lex & Yacc, John R. Levine, Tony Mason, Doug Brown, 2nd Edition, O'Reilly.
4. System Software: An introduction to system programming, Leland L.Beck and D.Manjula, 3rd edition.
5. Systems Programming and Operating Systems, D. M. Dhamdhere, Second Revised Edition, Tata McGraw-Hill.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	2	2	1	1	3
CO 2	1	2	2	1	1	3
CO 3	1	3	2	1	1	3
CO 4	3	3	2	1	1	3
Weighted Average	1.5	2.5	2	1	1	3

1: Low, 2: Moderate, 3: High

SC COMMUNICATION SKILLS [4:0:0]

Objectives:

- The factors governing good communication and how good communication skills can be developed.
- How good communication skills are a critical building block to both personal and business success.
- How to use effective communication skills in business.
- The need to modify communication depending on business situation and circumstances.

Outcomes:

- Understand and apply knowledge of human communication and language processes as they occur across various contexts from multiple perspectives.
- Understand and evaluate key theoretical approaches used in the interdisciplinary field of communication.
- Find, use, and evaluate primary academic writing associated with the communication discipline.
- Communicate effectively orally and in writing.

Unit I

Importance of communication, its basic model, formal and informal communications, barriers to communication, 6 C's of Communication, feedback and its effectiveness, Non- Verbal communication - Etiquettes.

Unit II

Oral communication, Speaking: Paralanguage: Sounds, stress, intonation- Art of conversation – Presentation skills, – Public speaking- Expressing Techniques, importance of listening, role of visual aids, persuasive communication, Group Discussion.

Unit III

Written communication – Effective writing – Paragraph – Essay- Reports – Letters- Articles – Notices, Agenda & Minutes, Email Etiquetttes.

Unit IV

Interview sills: Types of Interviews – Preparing for interview – Preparing a CV – Structuring the interview- Mock Interview - Quick Tips.

References

1. Soft skills: know yourself & know the world, Dr. Alex K.
2. Communication for results – C Hamilton & Parker.
3. Instrument of Communication – P Meredith.
4. Basic Management skills for all – E H McGrath.
5. Managerial Communication – P M Timm.
6. Thesis and Assignment writing – Anderson.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	-	-	2	3	1	-
CO 2	1	-	3	-	2	2
CO 3	-	3	3	3	-	-
CO 4	1	2	3	3	2	3
Weighted Average	1	2.5	2.75	3	1.66	2.5

1: Low, 2: Moderate, 3: High

SC PROFESSIONAL ETHICS AND HUMAN VALUES [3:1:0]

Objectives:

- Understand the fundamentals of Human values.
- Know the concepts of engineering ethics and responsibilities.
- Learn about the Business Intelligence lifecycle and its methodologies.
- Get an overview of Global issues and its practices.

Outcomes:

- Implement the aspects of Human Values.
- Interpret the ethics of engineering and its associated responsibilities.
- Employ the code of ethics in their profession.
- Display the awareness of Global issues in Ethics .

Unit I: Human Values

Objectives, Morals, Values, Ethics, Integrity, Work ethics, Respect for others, living peacefully, Honesty, Courage, Valuing time, Cooperation, Commitment, Self-confidence, Challenges in the work place, Spirituality.

Unit II: Engineering Ethics, Safety, Responsibilities and Rights.

Overview, Senses of engineering ethics Variety of moral issues, Moral dilemma, Moral autonomy Profession, Models of professional roles, Responsibility, Self-control, Self-interest, Self-respect, Safety definition, Safety and risk, Risk analysis, Confidentiality, Employee rights, Whistle Blowing.

Unit III: Engineering as Social Experimentation

Engineering as experimentation, Engineers as responsible experimenters, Codes of ethics, Industrial standards, A balanced outlook on law, Case-Study.

Unit IV: Global Issues

Globalization, Multinational corporations, Environmental ethics, Computer ethics, Weapons development, Engineers as managers, Engineers as advisors in planning and policy making, Moral leadership.

References:

1. A Textbook on Professional Ethics and Human Values - R. S. Naagarazan, New age international publishers.
2. Human Values and Professional Ethics, Dr. Gurpreet Singh Uppal, 1st edition.
3. Human Values, Tripathi A. N., 3rd edition, New Age International Pvt Ltd Publisher.

Course articulation matrix:

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	-	1	2	3	1
CO 2	1	1	1	2	3	1
CO 3	1	1	1	2	3	1
CO 4	1	1	1	2	3	1
Weighted Average	1	1	1	2	3	1

1: Low, 2: Moderate, 3: High

SC PATTERN RECOGNITION [3:1:0]

Objectives:

- Understand pattern recognition systems.
- Learn the different techniques of estimations and component analysis.
- Learn the different supervised & unsupervised learning techniques.

Outcomes:

- Acquire the knowledge on basics of pattern recognition systems
- Demonstrate the techniques of estimations and component analysis.
- Implement different supervised learning techniques.
- Implement different unsupervised learning techniques.

Unit I : Introduction

Machine perception, Pattern recognition systems, Design cycle, Learning and adaptation.
Introduction, Bayesian decision theory - Continuous features, Classifiers Discriminate functions and Decision surfaces, Normal density and Discriminant functions for the Normal Density, Bayes decision theory- Discrete features

Unit II : Maximum Likelihood and Bayesian Parametric Estimation

Introduction, Maximum likelihood estimation, Bayesian estimation, Bayesian parametric estimation, Sufficient statistics, Problems of dimensionality, Component Analysis and Discriminants

Unit III : Nonparametric Techniques

Introduction, Density estimation, Parzen windows, K-Nearest Neighbour estimation, The nearest neighbor rule, Metrics and Nearest Neighbour Classification, Fuzzy Classification, Basics of Neural networks, Support vector machines

Unit IV : Unsupervised Learning

Mixture Densities and Identifiability, Maximum – Likelihood Estimates, Application to Normal Mixtures, Unsupervised Bayesian Learning, Data Description and Clustering, Criterion Functions for Clustering, Hierarchical clustering, Online clustering, Graph Theoretic Methods,

References

1. Pattern Classification, R.O Duda, P.E. Hart and D.G. Stork, 2nd Edition, Wiley publications
2. Pattern Recognition and Image Analysis, Earl Gose, Richard, Johnsonbaugh, Steve Jost, PHI.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	-	-	-	1	-
CO 2	3	-	-	-	3	1
CO 3	3	1	-	-	3	-
CO 4	3	-	1	1	3	-
Weighted Average	3	1	1	1	2.5	1

1: Low, 2: Moderate, 3: High

SC BIG DATA ANALYTICS [3:0:1]

Objectives:

- Understand the Big Data Ecosystem.
- Introduce the students to Hadoop.
- To understand the concepts of Map Reduce and MongoDB
- To understand data Analysis using R

Outcomes:

- Apply the Data Analytics Life Cycle to real life cases.
- Process Data with Hadoop.
- Apply the necessary techniques for data analytics.
- Demonstrate Data Analysis using R.

Unit I: Introduction to Big Data Analytics.

Big Data Overview, State of the Practice in Analytics, Key Roles for the New Big Data Ecosystem, Examples of Big Data Analytics, Data Analytics Lifecycle Overview, Phase 1: Discovery, Phase 2: Data Preparation, Phase 3: Model Planning, Phase 4: Model Building , Phase 5: Communicate Results, Phase 6: Operationalize.

Unit II: Introduction to Hadoop

Introducing Hadoop, Why Hadoop?, Why not RDBMS? RDBMS versus Hadoop, Distributed Computing Challenges, History of Hadoop, Hadoop Overview, Use Case of Hadoop, Hadoop Distributors, HDFS (Hadoop Distributed File System), Processing Data with Hadoop, Managing Resources and Applications with Hadoop YARN (Yet Another Resource Negotiator), Interacting with Hadoop Ecosystem.

Unit III: Introduction to MAPREDUCE Programming and Mongo DB

Introduction, Mapper, Reducer, Combiner, Partitioner, Searching, Sorting, Compression, MongoDB: Uses of MongoDB, Terms Used in RDBMS and MongoDB, Data Types in MongoDB, MongoDB Query Language.

Unit IV: Review of Basic Data Analytic Methods Using R

Introduction to R, Exploratory Data Analysis.

REFERENCES:

1. Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, EMC Education Services, John Wiley & Sons, Inc.
2. Big Data and Analytics, 2ed, Seema Acharya, Subhashini Chellappan, Wiley.
3. Data Science and Analytics, V.K.Jain, Khanna Publishing.
4. Big Data Analytics, M. Vijayalakshmi, Radha Shankarmani, Wiley

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	-	3	1	-	1	1
CO 2	-	3	1	-	1	1
CO 3	1	3	1	-	1	1
CO 4	1	3	1	1	1	1
Weighted Average	1	3	1	1	1	1

1: Low, 2: Moderate, 3: High

OE WORLD WIDE WEB [3:1:0]

Objective:

- To provide the conceptual and technological development in the field of Internet and web designing.
- To provide a comprehensive knowledge of Internet, its applications and the TCP/IP protocols widely deployed to provide Internet connectivity worldwide.
- To understand how the World Wide Web with its widespread usefulness has become an integral part of the Internet.
- To provide an overview of basic concepts of web design.

Outcomes:

- Understand the working scheme of the Internet and World Wide Web.
- Evaluate the various protocols of the Internet.
- Comprehend and demonstrate the application of Hypertext Mark-up Language (HTML).
- Apply the various security tools and understand the need of security measures.

Unit I

Internet: introduction, Evolution and History of Internet, Growth of Internet, Internet Services, How Internet Works, Anatomy of Internet, Internet addressing, Internet vs. Intranet, and Impact of Internet.

Unit II

Internet Technology and Protocol: ISO-OSI Reference Model, Data Transmission, Switching, Routers, Gateways, and Network Protocols

Internet Connectivity: Different types of connections, Levels of Internet Connectivity and Internet Service Provider.

Unit III

Web Page Design-HTML: An Introduction, HTML Categories, HTML Fonts, HTML colors, HTML Lists, HTML Tables, HTML Links, HTML Forms, Adding Pictures and Image Attributes.

Unit IV

Computer Networks, Internet & Web Security: Computer Networks, Network Components, Network Topologies, Types of Network Architecture, Network Security, Firewall, Digital Signature, Authentication, Authorization , Copyright issues and Virus.

References

1. Internet Technology and Web Design by Instructional Software Research and Development (ISRD) Group, Tata MC Graw Hill.
2. 2. Programming the World Wide Web, 4th Edition by Robert W. Sebesta.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	1	1	-	-	1
CO 2	1	1	1	-	-	-
CO 3	1	1	2	1	1	-
CO 4	1	2	2	1	1	-
Weighted Average	1	1.25	1.5	1	1	1

1: Low, 2: Moderate, 3: High

HC THEORY OF LANGUAGES [3:1:0]

Objectives:

- To learn about the core concepts of automata theory and formal languages.
- To learn fundamentals of Regular and Context Free Grammars and Languages.
- To understand the relation between Regular Language and Finite Automata.
- To understand the relation between Contexts free Languages and PDA.

Outcomes:

- Acquire a fundamental understanding of the core concepts in automata theory and formal languages
- Develop ability to model grammars and automata (recognizers) for different language classes.
- Develop an ability to identify formal language classes and prove language membership properties.
- Develop an ability to prove and disprove theorems establishing key properties of formal languages and automata.

Unit I: Introduction to Automata and Languages

Brief introduction to Formal Proof: Deductive Proofs, Proving equivalences about sets, the contra positive, Proof by contradiction, Counterexamples, Central concepts of automata theory: Alphabets, strings, languages.

Finite Automata: Deterministic Finite Automata, Nondeterministic Finite Automata, Equivalence of DFA and NFA, Finite Automata with Epsilon transitions.

Unit II: Regular Expression and Regular Languages

Regular Expressions, Finite Automata and Regular Expressions: Converting DFAs to regular expressions by eliminating states, converting regular expressions to automata, Applications of regular expressions, Brief overview of algebraic laws of regular expressions.

Properties of Regular Languages : The pumping lemma for regular languages, Applications of the pumping lemma, Closure properties and decision properties of regular languages (proofs not necessary), Minimization of DFAs

Unit III: Context Free Grammars

Context-Free Grammars, Parse Trees, Applications of context-free grammars, Ambiguity in grammars and languages.

Normal Forms of Context-free grammars

Unit IV: Pushdown Automata and Context Free Languages

Pushdown Automata : Definition, Languages of a PDA, Equivalence of PDAs and CFGs, Deterministic Pushdown Automata.

The pumping lemma for context-free languages, Closure properties of context-free languages (proofs not needed).

References

1. “Introduction to Automata Theory, Languages and Computation”, Hopcroft J.E and Ullman,J.D, Narosa Publishing House, Delhi.
2. “Introduction to Languages and Theory of Computation”, John C Martin ,Yd edition, TMH Publication.

3. "Formal Languages and Automata theory", Basavaraj S. Anami, Karibasappa K G, Wiley India.
4. "Formal Languages and Automata Theory", C K Nagpal, Oxford University press.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	1	1	-	-	1
CO 2	3	1	1	1	-	1
CO 3	2	1	1	1	1	1
CO 4	3	1	1	-	1	1
Weighted Average	2.75	1	1	1	1	1

1: Low, 2: Moderate, 3: High

HC MACHINE LEARNING [3:0:1]

Objectives:

- Understanding the importance of Machine Learning and demonstrate the use of data frames in Python
- Analyze the process of model building and evaluation
- Comprehend various classification problems
- Discuss the libraries required to implement the techniques of Machine Learning.

Outcomes:

- Identify the need for Machine Learning using Python, appropriate data frames and its operations.
- Ability to build and validate linear regression models
- Ability understand different classification techniques and build classification models
- Ability to use unsupervised learning techniques to cluster data and Apply Scikit library for Machine Learning.

UNIT – I: Introduction to Machine Learning

Introduction to Analytics and Machine Learning, Need for Machine Learning, Framework for Developing Machine Learning Models, Using Python for Machine Learning, Python Stack for Data Science, Getting Started with Anaconda Platform, Introduction to Python.

Descriptive Analytics: Working with Pandas Data Frames in Python, Handling Missing Values, Exploration of Data using Visualization

UNIT – II: Linear Regression

Simple Linear Regression, Steps in Building a Regression Model, Building Simple Linear, Regression Model.

UNIT – III: Classification Problems

Classification Overview, Binary Logistic Regression, Gain Chart and Lift Chart, Classification Tree (Decision Tree Learning).

UNIT – IV: Advanced Machine Learning and Clustering

Scikit-Learn Library for Machine Learning, Advanced Machine Learning Algorithms.

Clustering: Overview, How Does Clustering Work?, K-Means Clustering, Hierarchical Clustering.

References

1. Machine Learning using Python, Manaranjan Pradhan, U Dinesh Kumar, Wiley India Pvt. Ltd., 2019
2. Practical Programming: An introduction to Computer Science Using Python, second edition, Paul Gries, Jennifer Campbell, Jason Montojo, The Pragmatic Bookshelf, 2013.
3. Learning with Python: How to Think Like a Computer Scientist Paperback – Allen Downey , Jeffrey Elkner, 2015.
4. Jake Vander plas, "Python Data Science Handbook: Essential tools for working with data", O'Reilly Publishers,1st Edition.
5. Hands-On Machine Learning with Scikit-Learn and TensorFlow Concepts, Tools, and Techniques to Build Intelligent Systems, Aurelien Geron, O'Reilly Publisher , I edition, 2017

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	3	1	-	1	1
CO 2	3	3	1	-	1	1
CO 3	3	3	1	1	1	1
CO 4	3	3	1	1	1	1
Weighted Average	2.5	3	1	1	1	1

1: Low, 2: Moderate, 3: High

HC MINOR PROJECT 0:1:3

Objectives:

- To offer students a glimpse into real world problems and help the students learn how to apply the tools and techniques they learned in the respective courses.
- To help students develop openness to new ideas in computer science and create very precise specifications for the execution of the project idea.
- To promote team working skills, problem solving skills, and presentation skills among students working on the project.

Outcomes:

- Understanding the emerging trends of new technologies by conducting a survey of several available literatures in the preferred field of study.
- Develop real time Projects by comparing the several existing solutions for a research challenge.
- Demonstrate an ability to work in teams and manage the process of building the project within the stipulated time.
- Report and present the findings of the research study/project conducted in the preferred domain.

Students need to implement different kinds of problems using Java based Frameworks, Python, PHP, MYSQL, Cloud tools, IoT tools, Dot NET, CASE tools, Open source tools and Mobile application oriented tools, as well as data mining/machine learning tools and techniques.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	3	-	-	-	-
CO 2	1	3	-	-	-	3
CO 3	-	-	3	3	-	3
CO 4	-	-	-	3	2	3
Weighted Average	1	3	3	3	2	3

1: Low, 2: Moderate, 3: High

SC ARTIFICIAL INTELLIGENCE [3:1:0]

Objectives:

- To provide an overview of artificial intelligence (AI) principles and approaches.
- To develop a basic understanding of the building blocks of AI in terms of intelligent agents like Search, Knowledge representation, inference, logic, and learning.
- To provide an overview of knowledge representational structures like slot and fillers.
- To have knowledge of expert systems, learning and planning which plays a considerable role in some applications.

Outcomes:

- Understand the basic concepts of AI.
- Understand the fundamentals of knowledge representation, inference and theorem proving.
- Represent knowledge of the world using logic and infer new facts from that knowledge.
- Explain how Artificial Intelligence enables capabilities that are beyond conventional technology.

Unit I: Introduction

AI Problems, AI Techniques, Defining the Problem as State Space Search, Production Systems, Problem Characteristics, Production System Characteristics, Issues in the Design of Search Programs.

Unit II: Heuristic Search Techniques and Knowledge Representation

Generate and Test, Hill climbing, BFS, DFS, Knowledge Representation Issues, Approaches to Knowledge Representation, Procedural Versus Declarative Knowledge, Inferential Versus Inheritable Knowledge, Normal Forms in Predicate Logic and Clausal Forms, Introduction to Non-monotonic Reasoning, Logics for Non-monotonic Reasoning.

Unit III: Knowledge Representational Structures

Weak Slot and Filler Structures: Semantic Nets, Frames.

Strong Slot and Filler Structure: Conceptual Dependency, Scripts.

Unit IV: Game Playing, Planning and Expert Systems

Game Playing: Minimax Search Procedure, Adding Alpha-Beta Cut Offs, Planning-Goal Stack Planning, Expert Systems: Expert System Versus Conventional Computer, Expert System Shells, and Explanation Based Learning.

References

1. “Artificial Intelligence”, Rich Elaine Knight Kevin – Tata McGraw Hill.
2. “Introduction to Artificial Intelligence and Expert system”, Patterson W Dan – Prentice Hall.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	3	2	2	2	3
CO 2	3	3	3	2	1	3
CO 3	3	3	3	2	1	3
CO 4	3	3	3	2	1	3
Weighted Average	3	3	2.75	2	1.25	3

1: Low, 2: Moderate, 3: High

SC DIGITAL IMAGE PROCESSING [3:0:1]

Objectives:

- Understand the fundamentals of digital image processing.
- Learn the different Image enhancement techniques.
- Understand the image segmentation techniques.

Outcomes:

- Demonstrate the concepts of digital image processing.
- Learn different techniques employed for the enhancement of images using spatial domain.
- Learn different techniques employed for the enhancement of images using frequency domain.
- Implement the techniques of image segmentation.

Unit I: Introduction and Digital Image Fundamentals

Introduction to Digital Image Processing, The Origins of Digital Image Processing, Examples of Fields that use Digital Image Processing, Fundamental steps in Digital Image Processing, Components of Image Processing System, Elements of Visual Perception, Image Sampling and Quantization, Some Basic Relationships Between Pixels, Linear and Nonlinear Operations

Unit II: Image Enhancement in the Spatial Domain

Some Basic Gray Level Transformations, Histogram Processing, Enhancement using Arithmetic/Logic Operations, Basics of Spatial Filtering, Smoothing Spatial Filters, Sharpening Spatial Filters.

Unit III: Image Enhancement in the Frequency Domain

Introduction to the Fourier Transform and the Frequency Domain, Smoothing Frequency Domain Filters, Sharpening Frequency Domain Filters, Homomorphic Filtering.

Unit IV: Image Segmentation

Detection of Discontinuities, Edge Linking and Boundary Detection, Thresholding, Region-based Segmentation, Segmentation by Morphological Watersheds.

Reference

1. Digital Image Processing – Rafel C. Gonzalez and Richard E. Woods, 2nd Edition, Pearson Education.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	-	1	-	2	-
CO 2	3	-	-	1	3	-
CO 3	3	1	-	1	3	1
CO 4	3	1	-	-	3	-
Weighted Average	3	1	1	1	3.5	1

1: Low, 2: Moderate, 3: High

SC C# PROGRAMMING [3:0:1]

Objectives:

- To provide an overview of the .NET framework.
- Understand Object-Oriented Paradigm using C# programming.
- Learn extended OOP's concept in C# environment.
- Understand the concepts of interfaces and multithreading.

Outcomes:

- Acquire the knowledge of .NET framework.
- Develop an ability to write programs in C#.
- Implement the extended OOP's concept in C# environment.
- Develop applications using standard C# libraries.

Unit I

Understanding .NET: The C# Environment: The .Net Strategy, The Origins of .Net Technology, The .NET Framework, The Common Language Runtime, Framework Base Classes, Benefits of the .NET Approach.

Overview of C#: Introduction, A Simple C# Program, Namespaces, Adding Comments, main Returning a Value, Using Aliases for Namespace Classes, passing String Objects to Write Line Method, Command Line Arguments, Main with a Class, Providing Interactive Input, Using mathematical Functions, Multiple main Methods, Compile Time Errors, Program Structure, Program Coding Style.

Methods in C#

Introduction, Declaring Methods, The Main Method, Invoking Methods, Nesting of Methods, Method Parameters, Pass by Value, Pass by Reference, The Output Parameters, Variable Argument Lists, Method Overloading.

Arrays, Strings, Structures and Enumerations.

Unit II

Classes and Objects: Introduction, Basic Principles of OOP, Defining a Class, Adding Variables, Adding Methods, Member Access Modifiers, Creating Objects, Accessing Class members, Constructors, Static Members, Static Constructors, Private Constructors, Copy Constructors, Destructors, Member Initialization, The this Reference, Nesting of Classes, Constant Members, Read-only Members, Properties, Indexers.

Operator Overloading: Introduction, Over loadable Operators, Need for Operator Overloading, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Comparison Operators.

Unit III

Inheritance: Introduction, Classical Inheritance, Containment Inheritance, Defining a Subclass, Visibility Control, Defining Subclass Constructors, Multilevel Inheritance, Hierarchical Inheritance.

Run-Time Polymorphism: Overriding methods, Hiding Methods, Abstract Classes, Abstract Methods, Sealed Classes, and Sealed Methods.

Managing Errors and Exceptions: Introduction, Debugging, Types of Errors, Exceptions, Syntax of Exception handling Code, Multiple Catch Statements, Using Finally Statements, Nested Try Blocks, Throwing Our Own Exceptions, Checked and Unchecked Operators.

Unit IV

Interfaces: Introduction, Defining an Interface, Extending an Interface, Implementing Interfaces, Interfaces and Inheritance, Abstract Class and Interfaces.

Multithreading in C#: Introduction, Understanding the System. Threading Namespace, Creating and Starting a Thread, Scheduling a Thread, Synchronizing Threads, Thread Pooling.

Delegates and Events: Introduction, Delegates, Delegate Declaration, Delegate Methods, Delegate Instantiation, Delegate Invocation, Multicast Delegates, Events.

References

1. PROGRAMMING IN C# - A PRIMER by E Balaguruswamy, Third Edition, and Tata McGraw-Hill.
2. C# 4.0: The Complete Reference by Herbert Schildt, Tata McGraw-Hill.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	-	3	1	-	-	2
CO 2	-	2	1	1	-	1
CO 3	1	3	2	-	1	1
CO 4	1	3	2	-	-	2
Weighted Average	1	2.75	1.5	1	1	1.5

1: Low, 2: Moderate, 3: High

SC ANDROID PROGRAMMING [3:0:1]

Objectives:

- Learn to build simple android applications.
- Get an understanding of essentials of application design and user interface design.
- Understand different android APIs used to store and manage the data through SQLite.
- Understanding different android networking and web APIs to share the data between the applications.

Outcomes:

- Build sample android application.
- Develop user interfaces for android applications.
- Develop android applications to share data between different applications.
- Deploy android applications.

Unit I: Introduction to Android

History of Mobile Software Development, The Open Handset Alliance, The Android Platform Android SDK, Building a sample Android application, Anatomy of Android applications, Android terminologies.

Unit II: Android Application Design Essentials

Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings , Using Intent Filter, Permissions , Managing Application resources in a hierarchy , Working with different types of resources.

Unit III: Android User Interface Design Essentials

User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation.

Unit IV: Using Android APIs

Using Android Data and Storage APIs, Managing data using SQLite, Sharing Data between Applications with Content Providers , Using Android Networking APIs , Using Android Web APIs , Using Android Telephony APIs , Deploying (selling) your Android application

References:

1. "Android Wireless Application Development", Lauren Darcey and Shane Conder, 2nd edition, Pearson Education.
2. "Professional Android 2 Application Development", Reto Meier, Wiley India.
3. "Beginning Android", Mark L Murphy, Wiley India.
4. "Pro Android", Sayed Y Hashimi and Satya Komatineni, Wiley India.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	2	3	2	-	1	1
CO 2	3	3	2	-	1	2
CO 3	3	3	2	1	2	2
CO 4	3	3	3	1	2	2
Weighted Average	2.75	3	2.25	1	1.5	1.75

1: Low, 2: Moderate, 3: High

SC SOFTWARE ENGINEERING [3:1:0]

Objectives:

- Understand the importance of domain knowledge and its work around.
- Know the importance team work and stewardship.
- Understand the phases in a software project.
- Understand the fundamental concepts of requirements engineering and Analysis Modelling.
- Learn various testing and maintenance measures.

Outcomes:

- Identify the key activities in managing software project and compare different process models.
- Able to develop software using contemporary agile approaches
- Gain the ability to work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
- Compare and contrast the various testing and maintenance approaches.

Unit I: Software, Software Engineering and Process Models

The Nature of Software, The Unique Nature of WebApps, Software Engineering, The Software Process, Software Engineering Practice, Software Myths, Prescriptive Process Models.

Unit II: Agile Development

Introduction to Agile development, Agility and Cost of Change, Agile Process, Extreme Programming, User stories, Brief introduction to Scrum.

Unit III: Requirements Modeling & Design

Requirements Analysis, Scenario – Based Modeling, UML Models that supplement the Use Case, Data Modeling Concepts, Requirements Modeling Strategies, Flow-oriented Modeling, Creating a behavioural model, Design concepts, Design Model.

Unit IV: TESTING

Software Quality Assurance: Elements of Software Quality Assurance, Software testing fundamentals-Internal and external views of Testing-white box testing- basis path testing-control structure testing-black box testing- Regression Testing – Unit Testing – Integration Testing – Validation Testing – System Testing and Debugging.

References

1. “Software Engineering – A Practitioner’s Approach”, Roger S. Pressman, Seventh Edition, Mc Graw-Hill.
2. “Software Engineering”, Ian Sommerville, 9th Edition, Pearson Education Asia.
3. “Fundamentals of Software Engineering”, Rajib Mall, Third Edition, PHI.
4. “Software Engineering - A Precise Approach”, Pankaj Jalote, Wiley India.
5. “Software Engineering”, Kelkar S.A.,PHI.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	1	3	1	1	1	1
CO 2	1	3	2	2	1	1
CO 3	1	2	2	2	1	-
CO 4	1	1	2	-	1	1
Weighted Average	1	2.25	1.75	1.25	1	1

1: Low, 2: Moderate, 3: High

OE E-COMMERCE [3:1:0]

Objectives:

- To impart knowledge on E-Commerce.
- To provide an overview of various applications connected with E-Commerce.
- To enable the learner for aiming careers in special software development involving E-Commerce technologies.
- Understand the security issues in E – commerce.

Outcomes:

- Study the impact of E-commerce on business models and strategy
- Describe the Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational structures.
- Assess electronic payment systems and its securities.
- Recognize, discuss and derive possible solutions to global E-commerce issues.

Unit 1: Introduction to E-Commerce

Definition, Scope of E-Commerce, Hardware requirements, E-Commerce and Trade Cycle, Electronic Markets, Electronic Data Interchange and Internet Commerce.

Unit 2: Business to Business E-Commerce

Electronic Markets, Electronic Data Interchange (EDI): Technology, Standards (UN/EDIFACT), Communications, Implementations, Agreements, Security, EDI and Business, Inter-Organizational Ecommerce. Business models for E-commerce, Business Process Re-Engineering.

Unit 3: Business to Consumer E-Commerce and E-Business

Consumer trade transaction, Web metrics, Elements of E-Commerce, Industry impacts of E-business. Integrating Intranet and internet web applications across multiple networks. Internet bookshops, Software supplies and support, Electronic Newspapers, Internet Banking, Virtual Auctions, Online Share Dealing, Gambling on the net, E-Diversity, Case studies through internet.

Unit 4: Security Issues

How criminals plan attacks, passive attack, Active attacks, cyber stalking, Secure Electronic Transaction (SET) Protocol, Electronic cash over internet, Internet Security, Search engines, Intelligent agents in E-Commerce Electronic payment systems

References

1. E-Commerce: Strategy, Technologies & Applications, David Whitley, McGraw Hill.
2. E-commerce: The Cutting Edge of Business, K. K. Bajaj and Debjani Nag, 2nd Edition, McGraw Hill.
3. Handbook of Electronic Commerce, Shaw et al., Springer.
4. Global Electronic Commerce- Theory and Case Studies, C. Westland and T. H. K. Clark, University Press.
5. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Sunit Belapure and Nina Godbole, Wiley India.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	-	1	2	2	2	-
CO 2	-	2	3	2	2	-
CO 3	1	2	2	1	1	1
CO 4	1	-	2	2	1	-
Weighted Average	1	1.25	2.25	1.75	1.5	1

1: Low, 2: Moderate, 3: High

HC DISSERTATION [0:2:10]

Objectives:

- Able to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.
- An ability to conduct experiments, interpret data and provide well informed conclusions.
- An ability to select modern computing tools and techniques and use them with dexterity.

Outcomes:

- Develop basic algorithm steps as a solution to a real-life problem.
- Implement algorithms using latest tools that contribute to the software solution of the project using different tools.
- Analyse, interpret, test and validate experimental results.
- Develop research/technical report with enhanced writing/communication skills following ethical practices.

Students need to implement different kinds of problems using Java based Frameworks, Python, PHP, MYSQL, Cloud tools, IoT tools, Dot NET, CASE tools, Open source tools and Mobile application oriented tools, as well as data mining/machine learning tools and techniques.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	3	2	-	-	-
CO 2	-	-	3	-	3	-
CO 3	1	3	-	-	2	-
CO 4	-	-	3	3	3	3
Weighted Average	2	3	2.66	3	2.66	3

1: Low, 2: Moderate, 3: High

SC COMPILER CONSTRUCTION [3:1:0]

Objectives:

- To introduce principal structure of compiler, basic theories and methods used for different parts of compiler.
- To impart knowledge of fundamentals of language translator, structure of a typical compiler, parsing methods etc.
- To design various phases of compiler such as Lexical analyser, parser etc.
- To distinguish different optimization techniques in the design of compiler.

Outcomes:

- Explain the concepts and different phases of compilation and Interpret language tokens using regular expressions and design lexical analyzer.
- Build top down parsing, bottom up parsing and parse tree representation of the input.
- Perform context sensitive analysis, semantic analysis and type checking
- Experiment the optimization techniques to intermediate code and generate machine code for high level language program.

Unit 1

Introduction to compiler, A high level view of compilation, General Structure of a compiler, an overview of compilation technology.

Introduction and Lexical Analysis (Scanning)

Regular Languages/Expressions, finite state machines, building regular expressions from finite automation.

Unit 2

Syntax Analysis (Parsing)

Expression Syntax, Context Free Grammers, Top-Down Parsing, Bottom-Up Parsing.

Unit 3

Semantic Analysis

Context-Sensitive Analysis, Attribute Grammers, Symbol Tables, Type Checking.

Unit 4

Intermediate Representations

Properties, taxonomy, graphical IRs, Linear IRs, storage management, the procedure abstraction, linkage convention, run-time storage organization, code optimization, code generation

Reference:

1. Compilers, principles, techniques and tools, Aho, A.V., Sethi R and Ullman J.,D., Addison Wesley.
2. “Engineering a compiler”, Keith Cooper, Linda Torczon, Morgan Kaufmann.
3. The Essence of Compilers, Hunter R., Prentice Hall.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	2	3	-	-	1	1
CO 2	3	3	-	1	1	1
CO 3	3	3	1	-	-	1
CO 4	2	3	1	-	-	1
Weighted Average	2.5	3	1	1	1	1

1: Low, 2: Moderate, 3: High

SC ADVANCED DATABASE MANAGEMENT SYSTEM [2:1:1]

Objectives:

- To evaluate emerging architectures for database management systems.
- To develop an understanding the manner in which relational systems are implemented and the implications of the techniques of implementation for database performance.
- To assess the impact of emerging database standards on the facilities which future database management systems will provide.

Outcomes:

- Critically assess new developments in database technology.
- Evaluate the contribution of database theory to practical implementations of database management systems.
- Implement the various types of database systems.
- Interpret the impact of emerging database standards.

Unit I: Database Design Methodology, Query Processing and Physical Design

Database Design and Implementation process, UML diagrams as an aid to Database Design Specification, Overview of Query Processing : Measures of Query cost, Algorithms for SELECT and JOIN Operations, Pipelining : Implementation of Pipelining, Evaluation algorithms for pipelining, Overview of Query Optimization, Physical Database Design in Relational Databases.

Unit II: Transaction Processing Concepts, Object and Object-Relational Databases

Introduction to Transaction Processing: Transaction and System Concepts, Desirable Properties of Transactions, Transaction Support in SQL.

Concepts for Object Databases: Overview of Object-Oriented Concepts, Object Identity, Object Structure, and Type Constructors, Encapsulation of Operations, Methods, and Persistence, Type Hierarchies and Inheritance. Overview of the Object Model of ODMG, Overview of SQL and its Object-Relational Features, Evolution of Data Models and Current Trends.

Unit III: Security, Advanced Modelling and Distribution

Database Security : Security issues, Enhanced Data Models for Advanced Applications: Active Database Concepts and triggers, Distributed Databases: Distributed Database Concepts, Data Fragmentation, Transparency, Distributed Transactions, Types of Distributed Database Systems, Overview of Concurrency Control Distributed Databases.

Unit IV: Emerging Technologies

Overview of Data Mining Technology, Emerging Database Technologies and Applications: Mobile Databases, Multimedia Databases, Geographic Information Systems (GIS).

References:

1. Fundamentals of Database Systems – Fifth Edition – Ramez Elmasri, Shamkant B Navathe.
2. Database System Concepts – Abraham Siberschatz, Henry F. Korth, S. Sudarshan, Fifth Edition- McGraw – Hill.
3. Database Systems – Thomas Connolly, Carolyn Becg – Third Edition – Pearson Education.
4. An Introduction to Database Systems – Eight Edition- Date C J - Addison Wesley.
5. Strategic Database Technology – Simon A R, Morgan Kaufmann.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	2	1	-	1	1
CO 2	3	3	2	-	2	2
CO 3	3	3	3	1	2	3
CO 4	3	3	2	-	2	2
Weighted Average	3	2.75	2	1	1.75	2

1: Low, 2: Moderate, 3: High

SC DATA MINING [3:0:1]

Objectives:

- To get an understanding of methods and applications of Data mining.
- Understand the rules related to association, classification and clustering analysis.
- Compare and contrast between different classification and clustering algorithms

Outcomes:

- Identify data mining problems and recognise types of data and preprocessing needed.
- Employ the concepts of Association Analysis
- Identify problems suitable for Classifications and Apply different classification algorithms
- Identify problems appropriate for Clustering and Apply different clustering algorithms.

Unit I:

Introduction to data mining, Challenges, Data Mining Tasks.

Data: Types of Data, Data Quality, Data Pre-processing, Measures of Similarity and Dissimilarity.

Unit II:

Association Analysis: Association Analysis: Problem Definition, Frequent Item set Generation, Rule generation. Alternative Methods for Generating Frequent Item sets, FP-Growth Algorithm, Evaluation of Association Patterns.

Unit III:

Classification: Decision Trees Induction, Method for Comparing Classifiers, Rule Based Classifiers, Nearest Neighbor Classifiers, Bayesian Classifiers.

Unit IV:

Clustering Analysis: Overview, K-Means, Agglomerative Hierarchical Clustering, DBSCAN, Cluster Evaluation, Density-Based Clustering, Graph Based Clustering, Scalable Clustering Algorithms.

References:

1. “Introduction to Data Mining”, Pang-Ning Tan, Michael Steinbach, Vipin Kumar Pearson.
2. “Data Mining -Concepts and Techniques”, Jiawei Han, Micheline Kamber, Jian Pei, Morgan Kaufmann Publisher, 3rd Edition.
3. “Mastering Data Mining” Michael.J.Berry, Gordon.S.Linoff, Wiley Edition, second edition.
4. “Principles of Data Mining”, David Hand, Heikki Mannila and Padhraic Smyth, The MIT Press.
5. “Data Mining Techniques”, Arun K Pujari, University Press.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	3	1	1	2	1
CO 2	3	3	1	1	2	1
CO 3	3	3	1	1	2	1
CO 4	3	3	1	1	2	1
Weighted Average	3	3	1	1	2	1

1: Low, 2: Moderate, 3: High

OE OFFICE AUTOMATION [3:1:0]

Objectives:

- To provide a basic introduction to computers and computing environment.
- To enable the students in crafting professional documents using word pre-processors.
- To enable students use spreadsheets for tabulating and calculating data and create graphical representations of data.
- To enable students to design professional presentations.

Outcomes:

- To understand the basics of computer hardware and software.
- To prepare documents of different types.
- Ability to develop and use spreadsheets for tabulating and analysing for productivity.
- To prepare presentations.

Unit I

Introduction to Computers, Basic Anatomy of Computers and Introduction to MS-Office.

Unit II

MS-Word – Word Basics, Formatting Features, Menu, Commands, Tool Bars and their Icons, Mail Merge and Macros Creating Tables.

Unit III

MS-Excel - Introduction, Menu, Commands, Tool Bars and their Icons, and Functions.

Unit IV

MS-Power Point – Menu, Toolbar, Navigating in PowerPoint, Working with PowerPoint and Introduction to MS-Access.

References:

1. MS Office for Everyone – Sanjay Sanena, Vikas Publishing House.
2. Step by Step Microsoft Office XP, PHI.

Course Articulation Matrix

PO / CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	2	2	1	1	1	1
CO 2	2	2	1	1	1	1
CO 3	2	2	1	1	1	1
CO 4	2	2	1	1	1	1
Weighted Average	2	2	1	1	1	1

1: Low, 2: Moderate, 3: High

SBRR Mahajana First Grade College (Autonomous), PG Wing

Accredited by NAAC with A Grade

Pooja Bhagavat Memorial Mahajana Education Centre,

Affiliated to University Of Mysore

M.Sc. in Computer Science

QUESTION PAPER PATTERN

Duration: **3 Hours** Max Marks: **70**

(There are 5 questions. All questions must be answered.)

Question 1

There are 10 objective questions each carries 1 mark. 10 ×1=10

Question 2

There are 2 main questions (a) and (b) each carrying 15 marks. Candidate has to answer any one (a or b). This covers unit 1 of the syllabus. (Each main question can be split into sub- questions totalling 15 marks) 15 ×1=15

Question 3

There are 2 main questions (a) and (b) each carrying 15 marks. Candidate has to answer any one (a or b). This covers unit 2 of the syllabus. (Each main question can be split into sub- questions totalling 15 marks) 15 ×1=15

Question 4

There are 2 main questions (a) and (b) each carrying 15 marks. Candidate has to answer any one (a or b). This covers unit 3 of the syllabus. (Each main question can be split into sub- questions totalling 15 marks) 15 ×1=15

Question 5

There are 2 main questions (a) and (b) each carrying 15 marks. Candidate has to answer any one (a or b). This covers unit 4 of the syllabus. (Each main question can be split into sub- questions totalling 15 marks) 15 ×1=15

****

Department: M.Sc. Computer Science
Board of Studies

Sl. No.	Category	Name	Designa-tion	Address for communica-tion	e-Mail and Mobile No.
1	Chairperson	Mr. Basanth Kumar H B	Assistant Professor	Department of Studies in Computer Science, SBRR Mahajana First Grade College, PG Wing, KRS Road, Metagalli, Mysuru – 570016.	basanth.10@gmail.com 9611882250
2	Faculty of the department	Smt. Rachana C R	Associate Professor & Head		rachanacr@gmail.com 8095645644
		Smt. Shobha D	Assistant Professor		shob-hadgps@gmail.com 8867769209
		Mr. Prasanna David	Assistant Professor		prasannada-vid@gmail.com 9980095772
		Smt. Shruthi Prabhakar	Assistant Professor		shruthiprab-hakar412@gmail.com 9980715577
		Smt. Shruthy Poonacha S	Assistant Professor	Computer Science Department, S.B.R.R. Mahajana First Grade College, Jayalaksh-mipuram, Mysuru – 570012.	shruthypoonacha@gmail.com 9886367273
3	Two Experts from Outside the College	Dr. Deepu R	Professor	Department of CSE, ATME College of Engineering, Mysuru-Kanakapura-Bangalore Road, Mysuru– 570028.	dr.deepur_cs@atme.edu.in 9845490505
		Dr. Srinath S	Associate Professor & Head of the Department	Department of CSE, SJCE, JSS Science and Technol-ogy University,	srinath@sjce.ac.in 9844823201

				Mysuru-570006.	
4	Nominee by the Vice Chancellor	Dr. D. S. Guru	Professor	Department of Studies in Computer Science, University of Mysore, Mysuru.	dsg@compsci.uni-mysore.ac.in 9620228005
5	One Person from Industry / Corporate Sector / Allied area	Mr. Sunil Kumar	Managing Director	#103 MIG, Kamakshi Hospital Road, Block I, Ramakrish-nanagar, Mysuru, Karnataka 570023.	suniln@intrella.in 9036453696
6	Alumnus	Mr. Praveena N J	Senior Engineer	#784, 6th Cross, Paduka Mandir Road, Uttarahalli, Bengaluru.	praveennj4@gmail.com 9916096159

APPROVED BY THE FOLLOWING BoS MEMBERS

Name of the Members	Signature of the Member	Name of the Members	Signature of the Member
Mr. Basanth Kumar H B		Dr. D. S. Guru	
Smt. Rachana C R		Dr. Srinath S	
Smt. Shobha D		Dr. Deepu R	
Mr. G. Prasanna David		Mr. Sunil Kumar	
Smt. Shruthi Prabhakar		Mr. Praveena N J	ABSENT
Smt. Shruthy Poonacha			

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)
POST GRADUATE WING
(Accredited by NAAC with 'A' grade)

Pooja Bhagavat Memorial Mahajana Education Centre.

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MBA (Autonomous) Regulations w.e.f. 2022 – 2023

DEPARTMENT OF STUDIES IN BUSINESS ADMINISTRATION

PROGRAMME CURRICULUM & REGULATIONS GOVERNING

MASTER OF BUSINESS ADMINISTRATION (MBA) DEGREE COURSEPROGRAMME

W.E.F 2021

AS PER UGC GUIDELINES ON ADOPTION OF CHOICE BASED CREDITSYSTEM

1. Programme Title

The Programme shall be called 'Master of Business Administration Degree Programme'. The duration of the Programme is two years consisting of four semesters; two semesters in each year. A candidate joining the Programme shall pursue prescribed Programme of studies.

2. Eligibility for Admission

Any graduate or postgraduate in arts, science, commerce, business management, allied sciences, engineering and technology, medical sciences of this University or from any other university considered equivalent thereto shall be eligible for admission to the Programme. Further the applicant shall have a minimum of 50% in the qualifying examination. A relaxation of 5% is available for SC/ST & Cat-I candidates. Selection of candidates to the Programme shall be done as per rules of the University and Government of Karnataka.

3. Programme Content and Instruction

Programme content: The Programme comprises of course of study, internship, project work and field work as prescribed.

Pedagogy includes lectures, case studies, group discussions, quizzes, seminars, computer practical, summer internship, factory visits etc.

a) Courses in the programme are of three types: Core (C), Foundation (F) and Electives (E):

Core (C): Core Course is the course, which is to be compulsorily studied by a student as a core requirement to complete the programme. Business Familiarization Report (BFR) and Project Report are part of the core courses.

Foundation (F): Foundation (F) courses are the courses based upon the contents that lead to knowledge enhancement that are mandatory for all disciplines.

Elective (E): Elective Course is a course, which can be chosen from a group of papers**.**

b) **Internship and Business Familiarization Report (BFR):** In the beginning of the

third semester, the students shall undertake team based internship in a business firm and prepare a Business Familiarization Report under the guidance of a faculty member. The report shall be submitted before the commencement of the third semester examinations.

i) Internship in a year cannot be for a continuous period of more than 4 weeks in a given academic year.

ii) Internship undergone during academic classes shall not be considered

iii) Each students shall maintain internship dairy

iv) Certificates (Color Photocopy) of each internship shall be submitted to the department along with there port

Details to mention on the Certificate:

i) Students name and registration number

ii) Name of the institution/organization and duration of internship with date

iii) Date, seal and signature of the authority.

c) **Project:** Each candidate shall carry out the project work independently as per Scheme of Teaching and Examinations under the guidance of one of the faculty members of the Department in the Institution of study.

The topic and title of the dissertation shall be chosen by the candidate in consultation with the guide. The subject and topic of the dissertation shall be from the major field of studies of the candidate. Modification of only the title but not the field of work may be permitted at the time of final submission of dissertation report during IV semester. If dissertation has to be carried out in any industry/R&D labs/business organizations, outside the campus, permission shall be taken from the HoD to that effect.

4. Attendance andConduct

The Programme is a full time Programme and students **SHALL NOT** take up any employment/course, part time or full time during their study. Students found violating this rule shall be removed from the Programme. Minimum attendance of 75% of actual working hours is required in each course. A student who does not satisfy the requirements of attendance and conduct shall not be permitted to appear for the examination in the concerned course.

5. (a)Evaluation

Evaluation of each course is divided into continuous assessment (CA) and end term examination with marks allocated as shown in the table. Continuous assessment will be carried out in two stages: One after the eight weeks of instructions designated as C1, the

second, after sixteen weeks of instruction designated as C2. The end of term examination designated as C3 will be held between eighteenth and twentieth week of the semester. Marks will be awarded on the basis of continuous assessment that include announced and surprise tests, term papers / seminars / quizzes / case discussions, viva and practical's.

The breakup of marks will be as follows:

a. C1 (Covering the first two units) – 15Marks

b. C2 (Covering the next twou nits) – 15Marks

c. C3 (Covering all the units) – 70 Marks

Total **100Marks**

Term end examination (C3) will be of 3 Hours duration for each subject.

Setting questions papers and evaluation of answer scripts.

I. Questions papers in three sets shall be set by the internal examiner for a course. Whenever there are no sufficient internal examiners, the Chairman of BoE shall get the questions papers set by external examiners.

II. The Board of Examiners shall scrutinize and approve the question papers and scheme of valuation.

III. Questions not to be set from practical components area in the C3 examination of the concerned course.

IV. There shall be valuation for all theory papers by examiner. In case a candidate secures less than 30% in C1 and C2 put together in a course, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course. In case a candidate's class attendance in a course is less than 75% or as stipulated by the University, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

Example

C1+C2= (15+15=30 Marks), 30% of 30Marks =9 Marks (*) (Qualifying Marks)

*Less than 9 Marks in C1+C2 is Drop, More than 9 Marks in C1+C2 is Pass

Teachers offering the courses will place the above details in the Department Council meeting during the last week of the semester, before the commencement of C3, and subsequently a notification pertaining to the above will be brought out by the Chairman of the Department before the commencement of C3 examination. A copy of this notification shall also be sent to the office of the Registrar and Deputy Registrar (Evaluation).

In case a candidate secures less than 30% in C3, he/she may choose DROP/MAKEUP option. In case a candidate secures more than or equal to 30% in C3, but his/her grade (G) = 4, then he/she may be declared to have been conditionally successful in this course, provided that such a benefit of conditional clearance based on G=4 shall not be availed for more than 8 credits for the entire programme of Master's Degree of two years. In case a candidate secures less than 30% in C3, he/she may choose DROP/MAKE-UP option.

Example

C3= 70 Marks, Eligible is 30% of 70 Marks is 21 (*)

*Less than 21 is Drop and more than 21 is Pass

The candidate has to exercise his/her option to DROP immediately within 10 days from the date of notification of results.

A MAKE UP examination for odd semester courses will be conducted along with next regular odd semester examinations and for even semester courses along with a next regular even semester examinations. If a candidate is still unsuccessful, he/she may opt for DROP or again take up MAKE UP examination; however, not exceeding double the duration norm in one stretch from the date of joining the course.

A candidate has to re-register for the DROPPED course when the course is offered again by the department. A candidate who is said to have DROPPED project work has to re-register for the same subsequently within the stipulated period. The details of any dropped course will not appear in the grade card.

The tentative / provisional grade card will be issued by the Controller (Evaluation) at the end of every semester indicating the courses completed successfully. This statement will not contain the list of DROPPED courses.

Upon successful completion of Master's degree a final grade card consisting of grades of all courses successfully completed by the candidate will be issued by the Controller (Evaluation).

5.(b) Evaluation of courses with credit 1.

Evaluation of courses with credit 1 (Computer Applications in Management, Skill Development Programme-1, Skill Development Programme-2, Skill Development Programme-3) will be evaluated for 50 marks through internal valuation.

6. Evaluation of Business Familiarization Report (BFR) and Final Project Report

BFR will be evaluated by the concerned guide, for 50 marks through internal valuation.

Each Final project report will be evaluated for 70 marks by internal and external

examiners. The guide ordinarily shall be the internal examiner. A viva-voce on the project report for 30 marks will be conducted by a board of three members constituted by the Chairman, BOE from the approved list of examiners.

7. Calculation of Cumulative Grade point Average(CGPA)

The grade and the grade point earned by the candidate in the course will be as given below

Marks	Grade	Grade Point (GP = V x G)
30 – 39	4	V*4
40 – 49	5	V*5
50 – 59	6	V*6
60 – 64	6.5	V*6.5
65 – 69	7	V*7
70 – 74	7.5	V*7.5
75 – 79	8	V*8
80 – 84	8.5	V*8.5
85 – 89	9	V*9
90 – 94	9.5	V*9.5
95 – 100	10	V*10

Here, P is the percentage of marks, P = [(C1+C2) + C3] secured by a candidate in a course which is rounded to nearest integer. V is the credit value of course. G is the grade and GP is the grade

point.

A candidate can withdraw any course within in ten days from the date of notification of final results. Whenever a candidate withdraws a course, he/she has to register for the same course in case it is hard core course, the same course or an alternate course if it is soft core/open elective. A DROPPED course is automatically considered as a course withdrawn.

Overall cumulative grade point average (CGPA) of a candidate after successful completion the required number of credits (89) is given by

$$CGPA = \Sigma GP / \text{Total number of credits}$$

Only such students, who successfully earn 89 credits in 4 semesters, without break, shall be considered for declaration of ranks and or medals.

8. Declaration of results

The final grade point (FGP) to be awarded to the student is based on CGPA secured by the candidate and is given as follows.

CGPA	FGP	
	Numerical Index	Qualitative Index
4 < = CGPA < 5	5	SECOND CLASS
5 < = CGPA < 6	6	
6 < = CGPA < 7	7	FIRST CLASS
7 < = CGPA < 8	8	
8 < = CGPA < 9	9	DISTINCTION
9 < = CGPA < =10	10	

Overall percentage = 10*CGPA or is said to be 50% in case CGPA<5

EXAMPLE

Sl.No	Title of the Course	Grade (G)	Credit Value (V)	Grade Point (GP)	GP = V x G
1.	XXX	30 – 39	3	4	12
2.	XXX	40 – 49	4	5	20
3.	XXX	50 – 59	4	6	24
4.	XXX	60 – 64	4	6.5	24.5
5.	XXX	65 – 69	4	7	28
6.	XXX	70 – 74	3	7.5	21.5
7.	XXX	75 – 79	3	8	24
			25		154

Total no of credits =25

CGPA = Σ GP / Total number of credits

CGPA = 154 / 25 = 6.16 = FIRST CLASS

(Note: As per the Section 7 & 8)

9. Medium of Instruction

The medium of instruction shall be English. However, a candidate will be permitted to write the examination in English. This rule is not applicable to languages.

10. In case of any discrepancy, the general provisions of CBCS and Continuous Assessment and Grading Pattern (CAGP) of the University of Mysore will be applicable.

DEPARTMENT OF STUDIES IN BUSINESS ADMINISTRATION CHOICE BASED CREDIT SYSTEM- 2021 – 2022

MBA Programme Structure and Syllabi Minimum Credits required for MBA Degree

I to IV Semesters	Core Course (C)		Foundation course (F)		Elective Course (E)		Total	
	Numbers	Credits	Numbers	Credits	Number	Credits	Numbers	Credits
	16	62	04	06	07	21	27	89

Minimum Credits to be registered by a student in a normal phase to successfully complete MBA degree in four semesters

Semesters	Core Course (C)		Foundation course (F)		Elective Course (E)		Total	
	Numbers	Credits	Numbers	Credits	Number	Credits	Numbers	Credits
I	06	23	01	01	00	00	07	24
II	05	20	02	04	00	00	07	24
III	03	10	01	01	03	09	07	20
IV	02	09	00	00	04	12	06	21
Total	16	62	04	06	07	21	27	89

Semester – I

Sl No	Title of the Course	Core/ Foundation	L.T.P	CREDIT	Teaching hour per week
01	Management Theory and Practices	Core	3:0:1	4	5
02	Organizational Behavior	Core	3:0:1	4	5
03	Corporate Economics	Core	3:0:1	4	5
04	Accounting for Managers	Core	3:1:0	4	5
05	Business Communication	Core	2:0:1	3	4
06	Statistics for Management	Core	3:0:1	4	5
07	Computer Applications in Management	F	0:0:1	1	2
08	Skill Development Pogram-1*	F	0:0:1	1	2

* A Student shall choose any one Foundation Course

Semester - II

SL. No	Title of the Course	Core / Foundation	L:T:P	CREDIT	Teaching hour per week
01	Marketing Management	Core	3:0:1	4	5
02	Human Resource Management	Core	3:0:1	4	5
03	Corporate Finance	Core	3:0:1	4	5
04	Business Research Methods	Core	3:0:1	4	5
05	Operations Management	Core	3:0:1	4	5
06	Legal aspects of Business	F	2:1:0	3	4
07	Operations Research	F	2:0:1	3	4
08	Management Information Systems	F	2:0:1	3	4
09	Skill Development Program-2	F	0:0:1	1	2

* Any one foundation course from the available foundation courses (Legal aspects of Business, Management Information Systems, and Operations Research) shall be selected by the student along with the foundation course Skill Development Program-2, at the commencement of second semester. The department council/ affiliated college will announce at the beginning of the second semester, any two or more foundation courses which will be offered during second semester depending upon the availability of faculty and the demand for foundation courses. The minimum number of students opting for a foundation course should be 20.

Semester - III

Sl.No	Title of the Course	Core/ Foundation/ Elective	L:T:P	Credit	Teaching hour per week
01	Strategic Management	Core	3:0:1	4	5
02	Entrepreneurship	Core	2:0:2	4	4
03	Elective 1	E	2:0:1	3	4
04	Elective 2	E	2:0:1	3	4
05	Elective 3	E	2:0:1	3	4

06	Business Familiarization Report	Core	0:0:2	2	
07	Skill Development - 3	F	0:0:1	1	

Electives: Group - I

Sl.No	Title of the Course	Elective	L:T:P	Credit	Teaching hour per week
01	Consumer Behavior	Elective – I	2:0:1	3	4
02	Sales and Logistics Management	Elective – II	2:0:1	3	4
03	Advertising and Sales Promotion Management	Elective – III	2:0:1	3	4

Electives: Group - II

Sl.No	Title of the Course	Elective	L:T:P	Credit	Teaching hour per week
01	Strategic Financial Management	Elective – I	2:0:1	3	4
02	Financial Markets and Service	Elective – II	2:0:1	3	4
03	Investment Analysis and Portfolio Management	Elective - III	2:0:1	3	4

Electives: Group - III

Sl. No	Title of the Course	Elective	L : T : P	Credit	Teaching Hour per week
1	Personal Growth & Interpersonal Effectiveness	Elective – I	2 : 0 : 1	3	4
2	Organizational Change & Development	Elective – II	2 : 0 : 1	3	4
3	Training & Development	Elective - III	2 : 0 : 1	3	4

Electives: Group-IV

Sl. No	Title of the Course	Elective	L : T : P	Credit	Teaching Hour per week
1	Fundamentals of CSR	Elective – I	2 : 0 : 1	3	4
2	Social Development Issues and Challenges	Elective – II	2 : 0 : 1	3	4
3	Corporate Governance and Ethics	Elective - III	2 : 0 : 1	3	4

Electives: Group-V

Sl. No	Title of the Course	Elective	L : T : P	Credit	Teaching Hour per week
1	Tourism Management	Elective – I	2 : 0 : 1	3	4
2	Global Tourism Geography	Elective – II	2:1:0	3	4
3	Hotel Operations & Management	Elective - III	2 :1:0	3	4

Semester - IV

Sl.No	Title of the Course	Core/Elective	L:T:P	Credit	Teaching hour per week
01	Event Management	Core	1:0:2	3	5
02	Elective 4	E	2:0:1	3	4
03	Elective 5	E	2:0:1	3	4
04	Elective 6	E	2:0:1	3	4
05	Elective 7	E	2:0:1	3	4
06	Project	C	0:0:6	6	

Electives: Group-VI

Sl.No	Title of the Course	Elective	L:T:P	Credit	Teaching hour per week
01	Brand Management	Elective - IV	2:0:1	3	4
02	Industrial Marketing	Elective - V	2:0:1	3	4
03	Services Marketing	Elective - VI	2:0:1	3	4
04	International Marketing	Elective - VII	2:0:1	3	4

Electives: Group - VII

Sl.No	Title of the Course	Elective	L:T:P	Credit	Teaching hour per week
01	Merger and Acquisition	Elective - IV	2:0:1	3	4
02	Derivatives	Elective - V	2:0:1	3	4
03	International Finance	Elective - VI	2:0:1	3	4
04	Taxation	Elective - VII	2:0:1	3	4

Electives: Group - VIII

Sl. No	Title of the Course	Elective	L : T : P	Credit	Teaching hour per week
01	Strategic Human Resource Management	Elective - IV	3 : 0 : 0	3	3
02	Industrial Labour Legislation	Elective - V	2 : 0 : 1	3	4
03	Industrial Relations	Elective - VI	2 : 0 : 1	3	4
04	Managing Knowledge Workers	Elective - VII	3 : 0 : 0	3	3

Electives: Group-IX

Sl. No	Title of the Course	Elective	L : T : P	Credit	Teaching Hour per week
01	Brand Management	Elective - IV	2 : 0 : 1	3	3
02	International Business and CSR	Elective - V	2 : 0 : 1	3	4
03	Sustainability & Stakeholder Management	Elective - VI	2 : 0 : 1	3	4
04	Industrial Relations	Elective - VII	2 : 0 : 1	3	3

Electives: Group -X

Sl. No	Title of the Course	Elective	L : T : P	Credit	Teaching Hour per week
01	Travel Agency & Transport Management	Elective - IV	2 : 0 : 1	3	3
02	International Toursm	Elective - V	2 : 0 : 1	3	4
03	Tourism Planning & Development	Elective - VI	2 : 0 : 1	3	4
04	Meeting, Incentive, Conference & Exposition (MICE) Tourism	Elective - VII	2 : 0 : 1	3	3

***L = Lecture – 1 hour of lecture per week in a semester = 1 Credit**

***S/T/FW = Seminars/Tutorials/Field Work – 2 Hours of seminars/tutorial/field work per week in a semester = 1 Credit**

***P = Practical – 2 hours of practical per week in a semester = 1 Credit**

**** Elective Groups:**

Any one group from the available Elective Groups shall be selected by a student at the commencement of III Semester. Once a group has been selected, no change in the selected group will be allowed later in the fourth semester. The Department will announce at the end of the second semester, any one or more Elective Groups which will be offered during III and IV semesters depending upon the availability of faculty members and the demand for elective groups. An Elective Group can be offered if there are minimum ten students opting for that group.

***A student shall register for Business Familiarization Report in third semester which carries 2 credits. In the fourth semester project work must be carried out for preparing the final project work report which carries 6 credits.

Management Theory & Practices

Nature	Area	Semester	
Core	General Management	I	
Course code	Course Name	Credit/Distributions	
21C101	Management Theory & Practices	(L-3:T-0:P-1)Credit=04	
		C1+C2	30Marks
		C3	70Marks

Course Objectives:

- To make students understand fundamental concepts and principles of management, including the basic roles, skills, and functions of management.
- To understand the basic concepts & theoriesof Management
- To enumerate the Importance of various structural forms in organizations
- To understand the importance of various dimensions of controls employed in organizations

Unit –I: Management 16Hours

Management Definition of Management, Nature and Scope of Management, Basic functions of Management, Management as a process. Evolution of management theory and practice from Taylor, Fayol, to the present day. Neo-Classical-Mayo & Hawthorne Experiments. Modern era – system & contingency approach, managerial skills, Professional code of conduct & ethics in management..

Unit– II: Planning & Decision making 10Hours

Nature and purpose, Planning process - Types of plans- Objectives - Managing by Objective (MBO) strategies - Types of strategies & Policies – Decision Making- Types of decision. Process – Decision making under different conditions.

Unit – III:Organizing 10Hours

Nature and purpose of organizing- Organization structure - Line and staff authority Departmentation & Bases of Departmentation - Span of control - Centralization and decentralization- Delegation of authority – Span of Management – Informal Organisation & Grapevine. Impact of Technology on Organisation structure.

Unit– IV: Coordination **10 Hours**

Features of Coordination, Principles of Coordination, Coordination – The Essence of Management, Process of coordination in Management, Elements of coordination,

Unit– V: Controlling 10 Hours

Managerial Control, Relationship between Planning and Control, Limitations of Control, Feedback, Types of Control Systems and Techniques, Management by Exception, Budgetary Control, Functional and Dysfunctional aspects of Budgetary Control, Internal Control Systems,InternalAuditandManagement Audit.

Practical Components:

- Study 5 companies from Manufacturing and Service Sectors and enumerate different types of organizational structures

Visit various websites and collect information on "Inverted Pyramid", "Wirearchy" and "Holacracy".

- Visit 5 companies and study their system of delegation of responsibilities
- Visit 5 companies to study the control systems employed to enhance organizational performance.

Reference Books

- Essentials of Management-Koontz and O'Donnell. E-McGrawHill,
- Introduction to Management-Fred Luthans-McGraw
- The Practice of Managementt Peter.F.Drucker
- The Management

Stoner,FreemenandGilbert

Other Reference Books

1. Don Hellriegel, Susan E. Jackson and John W. Slocum, Management- A competency-based approach, Thompson South Western,11th edition, 2008.
2. Heinz Weihrich, Mark V Cannice and Harold Koontz, Management- A global entrepreneurial perspective, Tata McGraw Hill, 12th edition, 2008.
3. Stephen P. Robbins, David A.De Cenzo and Mary Coulter, Fundamentals of management, Prentice Hall of India, 2012.

Course Outcome:

CO1. Acquire the conceptual knowledge of Management, various functions of Management.
CO2. Apply managerial knowledge in real world situations.
CO3. Develop a greater understanding about Management.
CO4. Demonstrate their exposure on recent trends in management.
CO5. Ability to understand the management process in the corporate world.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	-	-	2	2	2	-	3	2	3	-
CO2	3	2	2	3	2	1	-	1	3	-	3	-
CO3	3	2	2	1	2	1	1	2	3	2	3	-
CO4	2	-	2	-	3	2	-	-	3	2	3	3
CO5	2	-	3	2	3	2	-	-	3	2	3	2
Weighted Average	2.4	2	2.25	2	2.4	1.6	1.5	1.5	3	2	3	2.5

ORGANIZATIONAL BEHAVIOR

Nature	**Area**	**Semester**
Core	**Human Resource**	**1**
Course Code	**Course Name**	**Credit/Distribution**
22C102	**Organizational Behavior**	**(L-3:T-0:P-1) Credit=04** **C1+ C2 — 30 marks** **C3 — 70 marks**

Course Objectives

1. To Analyze the behavior of Individuals and Groups in organization in terms of the Key Factors that influence Organizational behavior
2. To Assess the potential effect of organizational factors (Structure, Culture, Change) on OB
3. To Critically examine the potential effects of important developments in external environments on OB
4. To Analyze the organizational behavior issues in the context of Organizational Behavioral theories, Models and Concepts

Unit I: Organizational behavior **08 Hours**

Definition, Key elements of OB, Nature, scope and challenges of OB, Models of organizational Behavior, Contributions of other disciplines to OB, Emerging issues in Organizational Behavior, Impact of globalization and IT on OB

Unit II: Personality, perception and attitudes 15 Hours

Personality: Meaning, Determinants of Personality – Heredity, Environment and Situation

Types of personality – Introvert, Extravert, Type A, Type B, Judging and perceptive personality,

Theories of personality – Trait theory, Type theory, Socio Learning theory, Self theory, Psycho-analytical theory, Other personality factors influencing OB–Locus of control, Machiavellianism, Self esteem, self monitoring, Risk taking.

Perception: Meaning, difference between perception and sensation, perceptual Process – Receiving the stimuli, selecting the stimuli, organization of stimuli, Interpretation, Factors influencing perception – Internal factors and External factors, How to improve perception, Perception and its application in OB (Employment Interview, Performance appraisal, Performance expectation, employee effort, employee loyalty)

Attitude: Meaning of Attitude, Formation of attitude (Direct experience, Social learning), Types of attitude: Job satisfaction, Job Involvement and Organizational commitment. Components of Attitude: Cognitive component, affective component and behavioral component, How to change attitude (Cognitive dissonance theory, Reinforcement theory, balance theory, comprehensive theory).

Unit III: Group dynamics: 10 Hours

Meaning, Definition and characteristics, why do people form and join groups, Types of Groups: Formal and informal groups, Stages of group development, Group Behavior, Group Norms, Group Cohesiveness, group role, Inter group behavior, Inter group conflicts, Group Decision making, JOHARI window and Transactional analysis.

Teams: Meaning, Difference between team and Group, Types of teams

Lead teams, Problem solving teams, self managed teams, cross functional teams, virtual teams, Causes for team failure, How to make teams successful?

Unit IV: Motivation 13 Hours

Meaning, Nature of motivation, Need for motivation, Theories of motivation – Content theories and Process theories,

Unit V: Leadership 10 Hours

Meaning, Differences between leadership and Management, functions of leadership, Leadership styles – Autocratic, Democratic, Laissez faire.

Leadership theories: Trait theory, Behavioral theories, Fiedler's contingency model, Path goal leadership theory, Situational leadership theory, Managerial grid, Transactional and Transformational leader- ship, Making leadership effective.

Practical Component:

1. Preparing the leadership profiles of five business leaders and studying their leadership qualities and behaviors.
2. Identifying any five job profiles and listing the personality traits / attributes required for the jobs identified.
3. Dividing the students into small groups and conducting collage activity to exhibit the group cohesiveness.

Text Book:

1. Dr. S.S. Khanka.(2003). Organizational Behavior. (4th ed.) S. Chand & Company Pvt. ltd.
2. Fred Luthans. (2010). Organizational Behavior an evidence based approach. McGrawhill, (12th Ed.).
3. Stephen Robbins. (2016). Organizational Behavior. Pearsons (16th Ed.).

After the completion of the course, students will be able to:

1. Analyze the behavior of individuals in organization.
2. Critically examine the potential effects of behavioral issues on organization.
3. Distinguish between Teams and Groups and devise methods to enhance their functioning.
4. Identify and develop techniques to motivate individuals.
5. Assess Leadership qualities and abilities required to sustain.

CO / PO ARTICULATION MATRIX

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	1	3	3	2	-	3	-	1	3
CO2	2	3	3	3	2	3	3	1	3	-	3	3
CO3	3	3	3	3	3	2	2	1	3	1	2	1
CO4	3	3	3	3	3	2	1	2	3	3	1	2
CO5	3	1	3	3	3	3	3	1	3	1	2	3
W.A	**2.6**	**2.6**	**3**	**2.6**	**2.8**	**2.6**	**2.2**	**1**	**3**	**1**	**1.8**	**2.4**

CORPORATE ECONOMICS

<table>
<tr><th>Nature</th><th>Area</th><th colspan="2">Semester</th></tr>
<tr><td>Core</td><td>General management</td><td colspan="2">1</td></tr>
<tr><td>Course Code</td><td>Course Name</td><td colspan="2">Credit/Distribution</td></tr>
<tr><td rowspan="3">22C103</td><td rowspan="3">Corporate Economics</td><td colspan="2">(L-3:T-0:P-1) Credit=04</td></tr>
<tr><td>C1+ C2</td><td>30 marks</td></tr>
<tr><td>C3</td><td>70 marks</td></tr>
</table>

Course Objectives:

1. **To Implement Analytical Tools**
2. **To Analyse business goals**
3. **To make new business or product decisions**

Unit I: Introduction **08 Hours**

Definition, nature and scope of managerial economics, Theory of the firm- goals of the firm, indifference curve analysis, and Equilibrium Analysis

Unit II: Demand Analysis 08Hours

Concept of demand, determinants of demand, Law of demand, Exceptions to the law of demand, Elasticity of demand, types and measurement

Unit III: Production and Cost Analysis **14 Hours**

Concepts, production function with one variable input - Law of Variable Proportions. Production functions with two variable inputs and Laws of returns to scale. Cost analysis: Concepts, Types of cost, Cost curves, Cost – Output Relationship in the short run and in the long run, LAC curve.

Unit IV: Market Structures **12 Hours**

Market Structures: Perfect Competition, Features, and Determination of price under perfect competition Monopoly: Features, Pricing under monopoly. Price Discrimination

Monopolistic Competition: Features, Pricing Under monopolistic com- petition, Product differentiation. Oligopoly: Features, Kinked demand Curve, Cartels, Price leadership

Unit V: Regression model for

managerial decisions **14 Hours**

: Introduction to Regression Analysis, Estimating and Testing Regression Equation, Problems in the Use of Regression Analysis, Two-Variable Regression Analysis.

Practical Components:

1. Study of demand elasticity for a product when there is a price increase or price decrease.

Reference Books:

1. Thomas ,Christopher R & S Maurice ,Charles (2008) Managerial Economics – Concepts and Application, New Delhi: Tata McGraw-Hill Irwin
2. Donald .N. Stengel (2011), Managerial Economics, Concepts and principles, Newyork: Business expert press
3. D.N Dwivedi (2011), Managerial Economics, Vikas publishing house pvt ltd.
4. Dominick Salvatore (2015), Managerial Economics in a global economy, Oxford university press
5. G.S Gupta (2011), Managerial Economics, Tata MC Graw Hill.

Course Outcome:

CO1: To analyze the roles of managers in firms

CO2: To design the internal and external decisions to be made by managers

CO3: To think about the demand and supply conditions and assess the position of a company

CO4: Design competition strategies, including costing, pricing, product differentiation, and market environment

according to the natures of products and the structures of the markets.

CO5: Make optimal business decisions by integrating the concepts of economics, mathematics and statistics

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	2	1	2	2	2	3	3	2	2	2
CO4	3	2	3	3	2	3	3	2	2	2	3	3
CO5	2	2	1	2	2	3	2	1	2	1	2	2
Weighted Average	2.8	2.2	2.4	2.4	2.4	2.8	2.6	2.4	2.8	2.2	2.6	2.6

ACCOUNTING FOR MANAGERS

Nature	**Area**	**Semester**	
Core	**Accounts**	**1**	
Course Code	**Course Name**	**Credit/Distribution**	
22C104	**Accounting for Managers**	**(L-3:T-1:P-0) Credit=04**	
		C1+ C2	**30 marks**
		C3	**70 marks**

Course Objectives:

1. To acquaint students with the fundamentals principles of financial, cost and management accounting
2. To enable the students to prepare, analyze and interpret financial statements and to enable the students to take decisions using management accounting tools.
3. To understand the basic concept of taxation.

Unit – 1: Introduction & Preparation of books of Accounts – 06 Hours

Meaning and Scope of Accounting; Accounting Concepts and Conventions, Journals, Ledgers and Trial Balance Depreciation: Meaning, characteristics and causes of depreciation, Types of Depreciation (Problems only on straight line and WDV method).

Unit II: Final Accounts of Companies & Non – Profit organisation – 15 Hours

Preparation of final accounts of companies in vertical form as per Companies Act of 2013 with Appropriation accounts. (Problems) - Window dressing.

Preparation of Final Accounts of Non – Profit Organisation

Unit III: Analysis of Financial Statements – 15 Hours

Financial Statements – Meaning and concepts, Nature of financial statements – Objectives – Limitations of Financial Statements – Types of Analysis and Interpretation – Horizontal analysis, vertical analysis,

Comparative Financial Statements, Common size statements, Trend Analysis.

Accounting ratios – Meaning, Uses and Limitations – Calculations of various ratios.

Unit IV: Cash Flow Statement – 12 Hours

Preparation of Cash flow Statement (Indirect method) under AS – 3

Unit V: Direct and Indirect Tax (Theory only) – 8 Hours

Direct Tax – Basic Concepts – Various heads of Income – Tax Planning & Tax evasion

Indirect Tax – Introduction – GST – Advantages and disadvantages – Types of GST returns and their due dates – Composition Tax Payer – Registration under GST – Unique Identification Number

Practical Components

1. To collect Annual reports of the companies and analyze the financial statements using different techniques and presenting the same in the class.
2. To analyze the companies' cash flow statements and presenting the same in the class.
3. To identify the sustainability report of a company and study the contents.

Reference Books:

1. Accounting for Managers: Raman B. S, United Publishers.
2. A Text book of Accounting For Management: Maheswari S.N, Maheswari Sharad K. Maheswari, 2/e, Vikas Publishing house (P) Ltd.
3. Accounting for Management: Arora M.N., Himalayan Publishing House Pvt. Ltd.
4. Financial Accounting: A Managerial Perspective, Narayanaswamy R, 5/e, PHI, 2014.
5. Goods and Service Tax with Customs Law: Srinivas K.R, Jayaprasad D & Bhavani M., Kalyani Publications.
6. Accounting for Managers, J. Madegowda, Himalaya Publishing House.

Course outcomes:

- Demonstrate the applicability of the accounting principles to prepare the accounting to understand the managerial decisions.
- Demonstrate the applicability of the depreciation concept to prepare report and take the managerial decisions.
- Prepare the final account reports with the accounting tools and concept and facilitate to take managerial decisions.
- Apply the financial statement analysis associate with financial data in the organization.
- Application of accounting standards prepare the accounting and statement.

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	1	1	1	1	3	2	3	3	2
CO2	3	2	3	3	3	1	1	1	2	3	3	2
CO3	3	2	3	3	3	1	1	1	2	3	2	2
CO4	3	2	3	3	3	1	1	1	2	3	3	2
CO5	3	2	3	3	3	1	1	3	2	3	3	2
Weighted Average	3	2	3	2.6	2.6	1	1	1.8	2	3	2.8	2

BUSINESS COMMUNICATION

Nature	Area	Semester	
Core	General Management	1	
Course Code	Course Name	Credit/Distribution	
22C105	Business Communication	(L-2:T-0:P-1) Credit=03	
		C1+ C2	30 marks
		C3	70 marks

Course Objectives:

1. To familiarize students with the mechanics of writing
2. To enable students to communicate (Written and Oral) in English precisely and effectively

Unit I: Introduction **12 Hours**

Introduction: Meaning & Definition, Importance of communication in management, Purpose of communication, Communication Process, Shannon – Weaver Model, Characteristics of successful communication, Communication in conflict resolution, Communication in crisis, Cost of poor communication, Committing to legal and ethical communication.

Unit II: Oral communication: **12 Hours**

Oral communication: Meaning, Principles of successful oral communication, three aspects of oral communication, conversing, listening, and body language, Conversation control, Non – verbal communication, Communicating in diverse workgroups, Barriers to communication, Suggestions to overcome the barriers.

Unit III: Written communication **10 Hours**

Written communication: Purpose of writing – Clarity in writing – Principles of effective writing, Approaching the writing process systematically: The 3X3 writing process for business communication: Pre writing – Writing – Revising – Specific writing features – Coherence – Electronic writing process, Positive, negative, and persuasive writing.

Unit IV: Business letters and reports **10 Hours**

Business letters and reports: Introduction to business letters – Types of Business Letters, Purpose, Writing Reports:

Objectives of reports, Organization and Preparing reports, Types of reports, Writing Proposals: Structure & preparation. Writing memos, Writing for websites.

Unit V: Case method of learning **12 Hours**

Case method of learning: Understanding the case method of learning – Different types of cases Difficulties and overcoming the difficulties of the case method – Reading a case properly, (previewing, skimming, reading, scanning) – Case analysis approaches (Systems, Behavioural, decision, Strategy) – Analyzing the case – Do's and don'ts for case preparation – Discussing and Presenting a Case Study

A suitable case is to be selected and administered in the class sticking to all the guidelines of case administering and analysis.

Reference Books:

1. Business Communication: Concepts, Cases And Applications – P D Chaturvedi, Mukesh, Chaturvedi – Pearson Education, 2/e, 2011 (Module 1, 2, 4, 5, &7)
2. Business Communication, Process And Product – Mary Ellen Guffey – Thomson Learning , 3/E, 2002 (Module 3)
3. Business Communication – Lesikar, Flatley, Rentz&Pande – TMH 11/E, 2009 (Module 1, 2, 4, 5, & 7)
4. Advanced Business Communication – Penrose, Raspberry, Myers – Cengage Learning, 5/e, 2004 (Module 1, 5, 6 & 8)
5. BCOM – Lehman, DuFrene, Sinha – Cengage Learning, 2011 (Module 1, 2, 4, 6, 7, 8)
6. Business Communication Today – Bovee and Thill, Pearson.
7. Effective Technical Communication - M Ashraf Rizvi – TMH, 2005.
8. Business Communication, M.K. Sehgal & V. Khetrapal – Excel Books.

Business Communication – Krizan, Merrier, Jones – Thomson Learning, 6/e, 2005.

Business Communication Today – Bovee and Thill, Pearson

Course Outcomes:

1. familiarize students with the technicalities of writing
2. Enable students to communicate (Written and Oral) in English language precisely and effectively

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	2	3	2	3	2	3	2
CO2	2	3	2	2	2	2	2	2	2	2	3	3
Weighted Average	2.5	2.5	2.5	2.5	2.5	2	2.5	2	2.5	2	3	2.5

STATISTICS FOR MANAGEMENT

Nature	**Area**	**Semester**	
Core	Statistics	I	
Course Code	**Course Name**	**Credit/Distributions**	
22C105	Statistics for Management	(L-3:T-0:P-1)Credit=04	
		C1+C2	30Marks
		C3	70Marks

Course Objectives:

- This course is designed to introduce the student to statistical methodology useful for data analysis and managerial decision-making. Emphasis will be placed on applications through working examples and computer-assisted data analysis in lab sessions.

Course Outcomes:

- Appreciate that the collection and statistical analysis of data improves business decisions and reduces the risk of implementing solutions that waste resources and effort.
- Select and deploy the correct statistical method for a given data analysis requirement.
- Achieve a practical level of competence in building statistical models that suit business applications.

Unit I: Introduction 10 Hours

Quantitative data interpretation in managerial decision making: collection – classification – tabulation – frequency distribution – charts and graphs, measures of central tendency and measures of dispersion; Coefficient of Variation.

Unit II: Correlation and regression 10 Hours

Types of correlation: Scatter diagram: Karl Pearson coefficient of correlation: Spearman rank correlation coefficient – repeated ranks. Regression coefficients; Lines of regression.

Unit III: Probability Theory 12 Hours

Basic Probability concepts. Counting rule for determining number of outcomes- Permutation and Combination. Conditional probability, Bayes theorem. Probability distributions - binominal distribution, Poisson distribution and normal distribution.

Unit IV: Sampling Techniques 08 Hours

Census and Sampling; Non-sampling and sampling errors. Probability sampling techniques and Non-probability sampling Techniques, sample size. Estimation: point estimation and interval estimation – definition

Unit V: Statistical Decision Theory 16 Hours

Hypothesis testing for mean and proportion: One sample and two samples test (z-test and t-test). Chi-square test – Goodness of Fit and Independence of Attributes. Analysis of Variance: One - way and two - way ANOVA.

Concept of Business Analytics – meaning, types and application of Business Analytics. Use of Spread sheet to analyze data – Descriptive Analytics and Predictive Analytics.

Practical components:

1. Data entry in Excel sheet and carryout descriptive statistics and interpretation of data.
2. Correlation analysis and regression analysis of the assigned data.

Reference Books:

1. Dr. C.K Renukarya-Business Statistics, Chethan Book House, Mysore
2. Statistics for Managers – using Microsoft excel – Levine, Stephan & others 9th edition, Pearson (2021)
3. Statistics for Management – Richard Levin and Rubin[excel version] 8thadition, Pearson (2017)
4. Statistics – Murray Spiegel, Schaum Series. 5th edition (2017)
5. Quantitative Business Analysis – Text & Cases – Samul Bodiley & others. Mcgrawhill edition (16th January 1998)
6. Basic Business Statistics – Bereuram and Levine. 13th edition, Pearson (2015)
7. Quantitative Methods – Anderson, Sweeny & William. Cengage (2016) 13th edition
8. Statistical Techniques in Business and Economics – Douglas A. Lind, William G. Marchal and Samuel A. Wathen, 15th edition, McGraw-Hill (2012)

After the completion of the course, Students will be able to:

CO1: Use Tabular, Diagrammatic, and Graphical presentation in Managerial decision Making.

Implementation of Summary statistics in decision making.

CO2: Derive Problem – Solution by using Correlation analysis and Regression analysis.

CO3: Make use of Probability and Distribution in Sequential Managerial analysis.

CO4: Demonstrate data collection through various Sampling techniques.

CO5: Implement Statistical decision theory for Managerial Research problems.

CO	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
1	1	3	2	3	2	1	1	-	-	1	2	1
2	1	3	2	3	2	1	1	-	-	1	2	1
3	1	3	2	3	2	1	1	-	-	1	2	1
4	1	3	2	3	2	1	1	-	-	1	2	1
5	1	3	2	3	2	1	1	-	-	1	2	1
Weighted Average	1	3	2	3	2	1	1	-	-	1	2	1

COMPUTER APPLICATIONS IN MANAGEMENT

Nature	**Area**	**Semester**	
Foundation	**General Management**	**I**	
Course Code	**Course Name**	**Credit/Distributions**	
22C107	**Computer Applications in Management**	**(L-0:T-0:P-1)Credit=01**	
		C1+C2	5+ 5 Marks
		C3	40 Marks

Course Objectives:

1. To provide students with the essential skills needed to create, edit and print professional looking documents using text, tables, lists and pictures as well as covering simple mail merge.

2. To equip students with the skills required to create & edit spreadsheets, use functions & formulas and to work with various tools to analyze and present data in spreadsheets, such as sorting, filtering, applying conditional formatting and charting the data.

3. To provide students with the essentials skills needed to create, edit and present professional looking presentations using text, tables, diagrams, charts and pictures as well as providing presentations tips.

Unit I: Information System Resources **04 Hours**

Word processing with MS word - starting MS word - MS Environment - working with word documents - working with text - working with tables - checking spelling and grammar - printing document - creating mailing lists- mail and merge.

Unit II: Concept of spread sheet and MS Excel 08 Hours

Starting MS Excel - MS Excel Environment-working with Excel – workbook- Preparation of charts and graph with excel – Sorting & Filtering - Working with functions – Summary statistics – printing in Excel.

Unit III: Making Presentation with

MS Power Point **04 Hours**

Starting MS Power point - MS Power point Environment - working with power point - working with different views - designing presentations - printing in power point.

Practical Component

1. Hands on sessions to create, edit and print word documents using text, tables, lists and pictures as well as covering simple mail merge.
2. Hands on sessions to create & edit spreadsheets, use functions & formulas and to work with various tools to analyse and present data in spreadsheets, such as sorting, filtering, applying conditional formatting and charting the data.
3. Hands on sessions to create and edit PowerPoint slides using text, tables, diagrams, charts and pictures and presenting the slides.

Text Books:

1. Kumar Bittu.*Mastering MS Office.* V & S Publisher
2. SaxsenaSanjay.*MS Office 2000*.Vikas Publishing House,

Reference Books:

1. Sanjay Saxsena – A First Course in Computer – Vikas Publishing
2. Sanjay Saxsena: MS Office 2000; Vikas Publishing House
3. Esssentials of E – Commerce & Technology, Rajaraman V, PHI Learning
4. Management Information Systems : A Contemporary Perspective – Laudon Kenneth & Loudon Jane
5. Management Information Systems : A Conceptual Foundation – Mc Graw Hill

Course Outcomes:

1. Perform intermediate tasks in Microsoft Excel
2. Apply advanced tools in Microsoft PowerPoint and Microsoft Word

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3	2	3	3	3	2
CO2	2	3	2	3	3	2	2	2	2	2	3	3
Weighted Average	2.5	2.5	2	3	3	2	2.5	2	2.5	2.5	3	2.5

SKILL DEVELOPMENT – 1

Nature	**Area**	**Semester**	
Foundation	**General Management**	**I**	
Course Code	**Course Name**	**Credit/Distributions**	
22C108	**SkillDevelopment-1**	**(L-0:T-0:P-1)Credit=01**	
		C1+C2	5+ 5 Marks
		C3	40Marks

Course Objectives:

1. To provide an analytical and practical overview of the basic skills needed for a manager
2. To comprehend the art of presentation, e-mail etiquette and data interpretation

Unit I: Presentation Skills **03 Hours**

Technical aids used for presentation; Chalk and Board, Over head Projectors, Paper Handouts, Flip Chart, Artifacts or Props, basic Understanding of PowerPoint

Unit II: Advanced Presentation Skills **03 Hours**

Rules and Guidelines for creating a good Presentation, The beginning, Actual content and closing of a Speech, Holding audience attention and Handling Questions

Unit III: Email Etiquettes **04 Hours**

Subject & Body of an email, Rules of emails: No Spamming, Disclaimer etc.

Guidelines of an email: Reply, Reply all, Forward etc., Mass Mail service providers like Mail Chimp etc.

Unit IV: E-Mail Analytics 03 Hours

Analytics like Click through Rate, Open rate, Opt out Rates etc., Email Threats like Phishing and Spamming

Unit V: Data Interpretation **03 Hours**

Basic interpretation of graphical representation of data, Basic Interpretation of Percentage based data.

Course outcomes:

1. Familiarize oneself with basic skills needed for a manager.
2. Comprehend the art of presentation, e-mail etiquette and data interpretation

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	1	1	-	-	-	2	2	3	2	2
CO2	2	-	-	-	-	-	-	2	1	3	1	2
W.A	2.5	-	0.5	0.5	-	-	-	0.8	0.6	1.2	0.6	0.8

Second Semester

MARKETING MANAGEMENT

Nature	**Area**	**Semester**	
Core	**General Management**	**II**	
Course Code	**Course Name**	**Credit/Distributions**	
22C201	**Marketing management**	**(L-3:T-0:P-1) Credit = 04**	
		C1 + C2	**30 Marks**
		C3	**70 Marks**

Course Objectives:

1. To be able to analyze various Marketing Concepts
2. To Identify the criteria of Consumer Behaviour Process
3. To evaluate the difference between Consumer Marketing and Business Marketing
4. To appreciate the Brand Concept inevitability

Unit I: Introduction to Marketing Management 12 Hours Introduction to Marketing Management: Differences between Selling and Marketing, Scope & nature of Marketing Management, Classification of various products/services. Various Marketing concepts, Different types of Marketing environment, elements of Marketing Mix.

Unit II: Nature of Consumer Behavior 10 Hours

Nature of Consumer Behavior: Various steps in consumer & Buyer Behavior Process, Models of Consumer Behavior. Fundamentals of Marketing Research, Marketing Information System.

Unit III: Test Marketing, Concept of Segmentation, Targeting & Positioning 10 Hours

Test Marketing, Concept of Segmentation, Targeting & Positioning: Basis for Segmentation.Differences between Consumer Marketing and Business Marketing.

Unit IV: Product Mix and Product Line 12 Hours

Product Mix and Product Line, Product Portfolio, Product Life Cycle strategies.Branding, types of Brands, Brand Building, measuring Brand Equity.Packaging and Labeling. Pricing, General Pricing approaches, new Product

Pricing strategies, Public Policy and pricing.

Unit V: Elements of Promotion Mix **12 Hours**

Elements of Promotion Mix, Marketing Communication Process, Internet Marketing, E-tailing, Levels and Strategies of Distribution Channels, Scope of Logistics Management.

Practical Components:

1. Consider the products of your favorite like, smart phones, Cars and appreralsetc to analyze the Buying Behaviour.
2. Analyze the various restaurants in city – how are they segmented? If you were to start a new restaurant, how would you position it? What would your parameters?
3. Analyze the product life cycle of a few common products like jeans, Laptops, Computers etc.
4. Visit a supermarket and study the pricing, packaging and advertising strategy of some FMCG companies like HUL, ITC, Britannia, Parle, and others in some products like Incense Stick, Soaps, Biscuits etc.

Reference Books:

1. Marketing Management – Philip Kotler, Prentice Hall India, (New edition)
2. Basic Marketing – Perault
3. Fundamentals of Marketing – William Stanton
4. Principles of Marketing – Philip Kotler and Garry Armstrong
5. Marketing Management – RajanSaxena
6. Marketing Management – Zickmund
7. Marketing – Ramesh Kumar
8.

Course Outcomes:

1.Identify, define and analyze the marketingproblems

2 Develop skills to Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	3	3	2	2	2	3	2	3	2
CO2	3	3	2	3	3	2	2	2	2	2	3	3
W.A	2.5	2.5	1.5	3	3	2	2	2	2.5	2	3	2.5

HUMAN RESOURCE MANAGEMENT

Nature	Area	Semester	
Core	Human Resource	II	
Course Code	Course Name	Credit/Distributions	
22C202	Human Resource Management	(L-3:T-0:P-1) Credit = 04	
		C1 + C2	30 Marks
		C3	70 Marks

Course objectives

1. To demonstrate the Knowledge and Skills needed to effectively manage Human Resource in organization
2. To describe the Trends in the Labor force composition and how they affect HRM
3. To describe the fundamental concepts, Rules of Law that apply to business activities, employment functions and labor
4. To demonstrate Knowledge of Human Behavior in organization and role of Management Strategies, including Motivation theory to influence Behavior
5. To compare the common methods for recruiting and selecting Human Resource
6. To Integrate Teamwork, Leadership and Motivational skills to organizational scenarios

Unit I: Introduction **10 Hours**

Introduction: Evolution and Development of HRM, Meaning of HRM, Definition, Nature and scope of HRM, personnel v/s HR, features of HRM, role of HRM, managerial functions and operative functions, objectives of HRM, HRM policies procedures and programmes, organization of HRM: line and staff relationship, HR manager, qualities of HR / personnel manager, Recent trends in HRM.

Unit II: HR Planning, Recruitmentand Selection **15 Hours**

HR Planning, Recruitment and Selection: Job analysis – Need for Job analysis, process of Job analysis, Techniques of data collection for job analysis, Job Description and Job specification, Components of jobdescription and job specification, Benefits of job analysis, HRP: Meaning, Objectives, and Benefits of Human Resource Planning. Factors affecting HRP – External Factor, Internal Factors, Process of Human Resource Planning, Recruitment – Definitions and Objectives, process of recruitment, Recruitment policy, Centralized versus Decentralized recruitment, sources of

Recruitment – Internal and external sources of recruitment. Selection: Meaning, Steps in Selection Process – Preliminary screening, Application Blank, Selection Tests, Selection Inter- view, Reference Checks, Physical examinations, Final selection. Placement – meaning and definition, Induction – Meaning, objectives and benefits, Contents of induction program – Formal and informal induction, Differences between induction and orientation programs.

Unit III – Training and Development 10 Hours

Training and Development: Meaning and definition of training, Objectives of Training, Need for training, benefits of training, Differences between training and development, Training methods – on the job and off the job training methods, Training procedure - identification of training needs, Training Design and delivery, Training evaluation – Reaction, Learning, Behaviour and Results.

Unit IV – Performance Management 10 Hours

Performance management: Introduction, Meaning and Definition, Objectives of performance Appraisal, Methods of Performance Appraisal - Traditional methods and Modern methods, 360 degree performance appraisal, Uses and Limitations of Performance Appraisal, Potential appraisal, Differences between performance and potential appraisal.

Unit V - Compensation Planning 11 Hours

Compensation planning: Meaning, Objectives of Wage and salary ad-ministration, Components of wage and salary administration, Methods of wage payment, perks, Fringe benefits, Benefits: Types of benefits, Incentives: Types of incentive schemes – Individual incentives and Group incentives, Making Incentives and Benefits more effective.

Practical Component

1. Give a job analysis case and ask the students to prepare job description and job specification.
2. Plan an advertising layout for the recruitment of the position of sales manager.
3. Ask the students to prepare an appointment letter for the post of sales manager of a company.

Text Books

1. Dr. S Khanka. (2013).*Human resource management.* S Chand
2. P SubbaRao . (2015). *Human Resource Management*.(5thReviseded.). Himalaya Publication

Reference Books

1. K Ashwathappa.(2017). *Human resource management*, (8th ed.). Mcgrawhill

2. VSP Rao. (2016).*Human Resource Management.* Taxmann Publications

3. Keith Davis. (1985). *HR and personnel management*, Tata Mc Grawhill

4. Flippo. (1980).*Personnel management*. Tata Mc Graw hill

Course Outcomes:

CO1.Ability to plan human resources and develop competency in job analysis.

CO2. Competency to recruit and select employees.

CO3. Competency to train people and evaluate training.

CO4. Ability to design appraisal performance system and appraising employees performance.

CO4. Design of compensation and salary administration.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	3	3	3	-	1	2	3	2	2
CO2	3	-	2	2	2	2	-	3	3	2	2	-
CO3	3	-	3	-	3	2	-	2	3	3	3	3
CO4	3	2	3	3	3	2	-	3	3	3	2	-
CO5	3	3	3	2	-	3	-	2	3	-	2	-
Weighted Average	3	2.5	2.75	2.5	2.75	2.4	-	2.2	2.8	2.75	2.2	2.5

CORPORATE FINANCE

Nature	**Area**	**Semester**	
Core	**Human Resource**	**II**	
Course Code	**Course Name**	**Credit/Distributions**	
22C203	**Corporate Finance**	**(L-3:T-0:P-1) Credit = 04**	
		C1 + C2	**30 Marks**
		C3	**70 Marks**

Course Objectives:

1. To familiarize the students with basic concepts of financial management.
2. To understand time value of money and cost of capital.
3. To analyze capital structure, capital budgeting and dividend decision.
4. To understand the short term and long term financing and working capital management.

Unit I: Financial Management **08 Hours**

Introduction to financial management, objectives of financial management – profit maximization and wealth maximization; Nature of basic managerial finance functions – investing, financing and dividend; Agency problems(Issues and Conflicts) ; Time value of money, the concepts of compounding, discounting and present value, annuities(Problems)

Unit II: Valuation of long term Securities **10 Hours**

Distinction among valuation concepts; Bond valuation-bond yields (Current yield, YTM)-Bond market; Valuation of preference stock, Equity valuation -Dividend discount model- P/E ratio approach

Unit III: Investment Decisions **16 Hours**

Cost of Capital Cost of capital – basic concepts. Cost of debenture capital, cost of preferential capital, cost of equity capital (Dividend discounting and CAPM model) - Cost of retained earnings - Determination of Weighted average cost of capital (WACC) and Marginal cost of capital

Capital Budgeting – Capital budgeting process, Investment evaluation techniques – Net

present value, Internal rate of return, Modified internal rate of return, Profitability index, discounted payback period, Payback period, accounting rate of return

Unit IV: Dividend policy –

Theories of dividend policy **12 Hours**

Relevance and irrelevance dividend decision, Walter's & Gordon's model, Modigliani & Miller approach. Dividend policies – stable dividend, stable payout and growth, Bonus shares and stock split corporate dividend behavior. (Theory and Problems)

Unit V - Working Capital Management 10 Hours

Factors influencing working capital requirements - Current asset policy and current asset finance policy- Determination of operating cycle and cash cycle - Estimation of working capital requirements of a firm (Does not include Cash, Inventory & Receivables Management)

Practical Components:

1. Identifying the small or medium sized companies and understanding the Investment evaluation techniques used by them.
2. Using the annual reports of selected companies, students can study the working capital management employed by them. Students can also compare the working capital management of companies in the same sector.
3. Students can choose the companies that have gone for stock split and Bonus issue in the last few years and study the impact of the same on the stock price.

Text books:

1. Khan M. Y.& Jain P. K(2011), Financial Management 6/e, TMH
2. Prasanna Chandra (2011),Financial Management – 8/e, TMH

Reference Books:

1. Shashi K Gupta and R K Sharma(2014), Financial Management 8th RevisedEdition, Kalyani Publishers.
2. Rajiv Srivastava and Anil Misra(2011) Financial Management Second edition,Oxford University Press.
3. I M Pandey(2014),Financial Management 10th Edition, Vikas Publishing House

Course Outcomes:

- Demonstrate a comprehensive knowledge of applicability of time value of money
- Analyse and valuation of various securities which are traded in Indian stock market
- Analyse and evaluate long term capital investment and analyse cost of capital to take managerial decision.

- Equipped with the knowledge of dividend decision
- Analyse and estimate working capital requirement for carrying day to day business in an organisation.

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	2	1	1	3	2	1	2	1
CO2	3	2	3	3	3	1	1	3	2	1	2	1
CO3	3	2	3	3	3	1	1	3	2	2	2	1
CO4	3	2	3	3	3	1	1	3	1	2	2	1
CO5	3	2	3	3	3	1	1	3	1	2	1	1
W.A	3	2	3	2.8	2.8	1	1	3	1.6	1.6	1.8	1

BUSINESS RESEARCH METHODS

Nature	Area	Semester	
Core	General Management	II	
Course Code	Course Name	Credit/Distributions	
22C204	Business Research Methods	(L-3:T-0:P-1) Credit = 04	
		C1 + C2	30 Marks
		C3	70 Marks

Course Objectives:

To develop a research orientation among the students and to acquaint with fundamentals of research methods. The course aims to introduce the basic concepts used in research, the scientific social research methods and their approaches.

Course Outcomes:

1. To develop an understanding of the basic framework of research process.
2. To develop an insight into various research designs and techniques.
3. To understand some basic concepts of research and its methodologies
4. To be able to write research report and thesis independently

Unit I: Research in Business: 08 Hours

Role of business research, Information systems and knowledge management, Theory building, Overview of Research process, Ethical issues in business research.

Unit II: Problem Formulation 10 Hours

Problem definition and research proposal, Basic research designs– Exploratory, descriptive and causal designs. Secondary data research designs. Qualitative analysis, Secondary data.

Unit III: Survey 12 Hours

Basic concepts in survey research, Methods of communication with respondents, Questionnaire, Interview, Observation method, Experimental research. Measurement and scaling concepts, Principles of questionnaire design.

Unit IV: Sampling Design and Methods 08 Hours

Sampling design and methods: Sample design and sample procedures, Determination of sample size.

Unit V: Data Analysis and Presentation 18 Hours

Data Analysis and Presentation: Editing and coding for transformation of raw data into information, Basic data analysis – descriptive statistics, Univariate analysis-z-test, t-test. Bivariate analysis: Measures of association.Presentation of research findings- report writing

Practical components

1. Students shall independently develop questionnaire for research problems assigned to them.
2. Understand and analyze the project report prepared by senior students and discuss.

Reference Books:

1. Business Research Methods – William G. Zikmund, Burry J. Babin, Jon C. Carr, Mitch Griffin Cengage Learning India. 9th Edition (2012)
2. Business Research Methods - Pamela S Schindler, McGraw-Hill, 13th edition (2021)
3. Business Research Methods - Donald R. Coopers and Pamela S Schindler, McGraw-Hill, 9th edition (2013)
4. Research Methodology: Methods and Techniques - C. R. Kothari, New Age International, 4th edition (2004)
5. Foundations Of Behavioural Research - Fred N. Kerlinger 2nd edition Surjeet Publications (2019)

1. Management decision making.
2. CO2: Develop and design Research Proposal.
3. CO3: Develop the skill to construct the Structures questionnaire and comprehend Research Methodology.
4. CO4: Devise tools and methods for data collection using Sampling techniques.
5. CO5: Develop the skill for data analysis and interpretation and presentation of research report.

CO	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
1	2	2	3	3	2	2	2	-	-	2	2	1
2	-	3	3	3	2	1	2	-	-	1	-	1
3	-	3	3	3	3	1	2	-	-	1	-	1
4	-	3	3	3	3	1	2	-	-	1	-	1
5	-	3	3	3	3	1	2	-	-	3	1	1
Weighted Average	2.0	2.8	3.0	3.0	2.6	1.2	2	-	-	1.6	0.6	1.0

OPERATIONS MANAGEMENT

Nature	**Area**	**Semester**	
Core	**General Management**	**II**	
Course Code	**Course Name**	**Credit/Distributions**	
22C205	**Operations Management**	**(L-3:T-1:P-0)Credit=04**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives:

1. To understand the role of operations management in the overall business strategy of the firm and moving towards business leadership.
2. To understand the interdependence and relationship of the operations function with other key functional areas of the firm.
3. To learn and apply different quantitative tools and techniques for decision making in operations management.

Unit I: Introduction to Operations Management **12 Hours**

Definitions, Key elements, Differences Between Services and Goods, OM's link with other functional areas, Current issues in OM, Operations' Competitive Priorities and Dimensions, Order Winners and Qualifiers, Operations Strategies, Mission, vision, and strategy, Quality, Productivity, Types of productivity, Factors affecting productivity, Numerical Exercises

Unit II: **12 Hours**

Production Policy and Process Management

Production policies and decisions, Process management, Process strategy, Process

selection, Environmental considerations, Corporate Social Responsibility, Make or buy decisions, Breakeven analysis, Numerical Exercises, Capacity concepts and measures, Capacity building strategies, Capacity lead and capacity lag strategies

Unit III : 10 Hours

Forecasting and Demand Management

Dependent Demand, Independent Demand, Types of Forecasting, Components of Demand, Time Series Analysis, Causal Relationship Forecasting, Forecast Error, Qualitative Techniques in Forecasting, Numerical Exercises

Unit IV 10 Hours

Location Strategies

Issues in Facility Location, Free Trade Zone, Industrial Clusters and Special Economic Zones, Plant Location Methods, Factor-Rating Systems, Breakeven analysis, Centroid Method, Numerical Exercises

Facility Layout Design and Analysis

Basic Production Layout Formats, Process Layout, Product Layout, Group Technology (Cellular) Layout, Fixed-Position Layout, Retail Layout, Work cells, Computerized Layout Techniques, Numerical Exercises

Unit V: 12 Hours

Aggregate Planning

Long-Range Planning, Intermediate-Range Planning, Short-Range Planning, Numerical Exercise, Inventory Management

Inventory, Purposes of Inventory, Inventory Costs, Inventory types, Inventory Systems, Single Period Model, Fixed-Order Quantity Models (Q Models), Fixed-Time Period Models (P Models), Establishing Safety Stock Levels, ABC Inventory Planning.

Reference Books

1. Chary, S. N. Production and Operations Management, Tata McGraw Hill, 2017
2. Lee J, Krajewski, Larry P Ritzman, Manoj Malhotra, and Samir Srivastava. Operations Management: Processes and Supply Chains, 11th Edition. - New Delhi: Pearson Education, 2015.
3. Mahadevan, B. Operations Management, Pearson Education India; Third edition (2015).
4. Pannerselvam, R. Production and Operations Management, PHI Learning Pvt. Ltd. 2016.
5. Richard B. Chase and Robert F. Jacobs. Operations and Supply Chain Management, 12th Edition, Mcgraw-Hill Education, 2017.

6. William J. Stevenson, Operations Management. 13th Edition, McGraw-Hill Education, 2017

Course Outcomes:

1. Familiarize students turning raw materials into deliverable product or service those include both man and material
2. Apply different quantitative tools and techniques for decision making in operations management.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3	2	3	3	3	2
CO2	2	3	2	3	3	2	2	2	2	2	3	3
W.A	2/5	2.5	2	3	3	2	2.5	2	2.5	1.5	3	1.5

LEGALASPECTSOFBUSINESS

Nature	**Area**	**Semester**	
Foundation	**Core**	**II**	
Course Code	**Course Name**	**Credit/Distributions**	
22C206	**Legal Aspects of Business**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives

1. To gain an understanding of the legal environment.
2. To comprehend about various laws pertaining to companies from incorporation to winding up.
3. To get acquainted with the laws pertaining to consumer protection, FEMA, SEBI, IDRA.

Unit I: Company Law 15 Hours

Indian Companies Act 1956 - Definition, Essential characteristics of a Company, Kinds of Companies, Incorporation and Registration of a Company, Memorandum of Association, Articles of Association, Prospectus, Meetings, Director, Oppression and Mismanagement, Remedies against oppression and mismanagement, Powers of investigation by the Government.

Unit II: IDRA 10 Hours

Industries Development and Regulation Act (IDRA) - Objectives, Definition of important

terms, Scope and applicability, Exemption, Provisions of IDRA.

Competition Act - Drawbacks of MRTP, Objectives, Scope and applicability, Exemptions, Provisions od Competition Act, Competition commission of India (Composition, term of office, duties and responsibilities, resignation removal and suspension, Inquiry into anti-competitive agreements and abuse of dominant position)

Foreign exchange management act (FEMA) - objectives, scope and applicability, Definition of important terms, regulation and management of Foreign exchange.

Unit III: IPR and Related aspect 10 Hours

Intellectual property rights - Need to protect IPR and kinds of IPR

Patents - Conditions to be patentable, types of patents, essential documents to be submitted, criteria for naming inventors for patent

Trademarks - steps for Trademark registration, Trademark infringement, Types of Trademark Infringement, penalties for trademark infringement

Copyrights - Concept and work protected by copyright

Geographical appellation

Unit IV: Stock Market Operation and Regulation 07 Hours

Security Market Laws, Security and Exchange Board of India Act (SEBI), Laws pertaining to stock exchanges

Unit V: Consumer Protection Act 06 Hours

Consumer Protection Act - Definition of important terms, Basic rights of a consumer, Consumer responsibilities, Redressal machinery under the Act - Central consumer protection council, State consumer protection council, District Forum.

Reference Books

1. S.N. Maheshwari and S.K. Maheshwari. (2016).*A Manual of Business Law.* (6thed.). Himalaya Publishing House
2. K.R. Bulchandani.(2010). *Business Law for Management*. (4th Revised and enlarged ed.). Himalaya Publishing House
3. Francis Cherunilam. (2017).*Business Environment Texts and Cases.* (25th Revised ed.). Himalaya Publishing House

4. S.S. Gulshan and G.K. Kapoor. (2018).*Business and Corporate Laws*. (19th ed.). New Age International Pvt. Ltd.
5. Bare Acts of respective legislations.

Course Outcomes

After the completion of the course, students will be able to:

1. Analyze various laws pertaining to business organizations.
2. Distinguish between various foreign exchange transactions required by business organizations.
3. Recognize and identify the rights and responsibilities of consumers.
4. Explain the rights of the creator through IPR.
5. Review the provisions for different kinds of companies.

CO / PO ARTICULATION MATRIX

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	1	1	3	3	-	1	2	1
CO2	2	3	3	3	1	3	1	2	2	1	3	2
CO3	3	3	2	2	2	1	2	3	3	-	1	2
CO4	3	3	2	1	3	3	1	2	2	-	2	2
CO5	3	3	2	3	3	2	2	3	3	3	3	3
W.A	**2.8**	**3**	**2.4**	**2.4**	**2**	**2**	**1.8**	**2.6**	**2.5**	**1**	**2.2**	**2**

Nature	**Area**	**Semester**	
Foundation	General Management	**II**	
Course Code	**Course Name**	**Credit/Distributions**	
22C208	**Operations Research**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives

1. Identify and develop operational research models from the verbal description of the real system.
2. Understand the mathematical tools that are needed to solve optimisation problems.
3. Ability to understand and analyze managerial problems in industry so that they are able to use resources (capitals, materials, staffing, and machines) more effectively.

Unit 1: Linear Programming **10 Hours**

Formulation, Graphical solutions – Simplex method – Big-M method , Duality and

Sensitivity analysis.

Unit 2: Transportation and Assignment Problem **15 Hours**

Traveling salesmen problems, solving the sequencing problems.

Unit 3: Queuing Models **10 Hours**

Deterministic and probabilistic models, single server and multiple server models – Infinite population.

Unit 4: Network Analysis **10 Hours**

PERT & CPM, Determination of floats, Time-cost-Trade-off and Crashing of networks. Theory of games – Two persons – Zero-sum game.

Unit 5: Decision Theory **11 Hours**

Decision making under risk and uncertainty, decision trees.

Text Books:

1. Quantitative Techniques in Management – N.D. Vohra
2. Operations Research – Wagner
3. Operations Research – Hamdy Taha
4. Theory and Problems of Operations Research – Richard Brouer
5. Mathematical Methods in Business – Barnett and Sieger
6. Operations Research – S.D. Sharma

After the completion of the course, Students will be able to:

CO1: Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained.

CO2: Determine optimal strategy for Minimization of Cost of shipping of products from source to Destination/ Maximization of profits of shipping products using various methods, finding initial basic feasible and optimal solution of the Transportation problems.

Optimize the allocation of resources to Demand points in the best possible way using various techniques and minimize the cost or time of completion of number of jobs by number of persons

CO3: Determine the optimal strategy of queuing model is to find out the optimum service rate and the number of servers so that the average cost of being in queuing system and the cost of service are minimized.

CO4: Formulate Network models for service and manufacturing systems, and apply operations research techniques and algorithms to solve these Network problems.

Model the competitive real-world phenomena using concepts from game theory. Analyze pure and

mixed strategy games

CO5: Facility with mathematical and computational modeling of real decision-making problems, including the use of modeling tools and computational tools, as well as analytic skills to evaluate the problems.

CO	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
1	-	3	3	3	3	-	1	-	-	-	-	-
2	-	3	3	3	3	-	1	-	-	-	-	-
3	-	3	3	3	3	-	1	-	-	-	-	-
4	-	3	3	3	3	-	1	-	-	-	-	-
5	-	3	3	3	3	-	1	-	-	-	-	-
Weighted Average	-	3.0	3.0	3.0	3.0	-	1	-	-	-	-	-

MANAGEMENT INFORMATION SYSTEMS

Nature	**Area**	**Semester**	
Foundation	General Management	**II**	
Course Code	**Course Name**	**Credit/Distributions**	
22C209	**Management Information Systems**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives

1. To develop an understanding of the concepts of Information Systems
2. To understand the concepts of Telecommunication Networks
3. To understand the different stages of Software Development Life Cycle
4. To provide students with practical knowledge to work with different functionalmodules of ERP

Unit 1: Information Systems **10 Hours**

Data vs Information, Strategic role of information in management, Organization as an information system. TPS, MIS, DSS, ESS, OAS, Networking concepts, telecommunications networks.

Unit 2: Systems Development **10 Hours**

The concept of systems development life cycle (SDLC), type of SDLC, use of flow charts.

Unit 3: Application Technologies **15 Hours**

ERP concepts, Evolution of ERP, ERP packages, SAP, Baan, MFG-PRO, Oracle, ERP Evaluation, ERP & BPR, ERP Implementation, Extended ERP, Case studies.

Unit 4: Web Publishing **10 Hours**

Web publishing, Types of websites, web surfing, E-commerce, B2B, B2C, C2C, E-commerce security issues, Ethical issues.

Unit 5 : Practicals on ERP **11 Hours**

Functional modules in business.

Text Books:

1. Kennett G. Lauden and Jane P. Lauden MIS, Pearsons Education, 10th Ed, 2007
2. James A. O'Brien, MIS, Tata Mc Grawhill, 7th Ed, 2006
3. C.S.V.Murthy MIS, Himalaya Publishing House, First Ed, 2008
4. D.P. Goyal MIS, Macmillen publishers, 2nd Ed, 2006
5. V.K. Garg ERP Concepts, PHI, 2nd Ed,2003

Course Outcomes:

CO1: Ability to make informed decision using information system.
CO2: Develop knowledge about system development and usage of web portals.
CO3: Develop technical skills in using functional modules in business.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	3	2	-	-	-	3	2	-	-
CO2	-	-	-	2	-	-	-	-	-	-	-	-
CO3	1	-	2	-	2	-	-	-	2	-	-	-
Weighted Average	2	2	2.5	2.5	2	-	-	-	2.5	2	-	-

SKILL DEVELOPMENT – 2

<table>
<tr><th>Nature</th><th>Area</th><th colspan="2">Semester</th></tr>
<tr><td>Foundation</td><td>General Management</td><td colspan="2">II</td></tr>
<tr><td>Course Code</td><td>Course Name</td><td colspan="2">Credit/Distributions</td></tr>
<tr><td rowspan="3">22C207</td><td rowspan="3">Skill Development-2</td><td colspan="2">(L-0:T-0:P-1)Credit=01</td></tr>
<tr><td>C1+C2</td><td>5+ 5 Marks</td></tr>
<tr><td>C3</td><td>40Marks</td></tr>
</table>

Course Objectives

a. The present course is designed to provide an effective communication required for a successful manager

b. To encourage the students to ideate entrepreneurial thoughts

Unit I: 03 Hours

Advance Goal Setting, Effective Communication Skills (Empathetic Communication), Power of Positive Thinking, Emotional Intelligence

Unit II: 03 Hours

Problem Solving techniques, Power of Preparedness, Entrepreneur- ship (How to ideate and start a business and Stress Management tools.

Unit III: 04 Hours

Team work, Team building exercise, Leadership Skills, Self - confidence

Unit IV: 03 Hours

Listening skill exercises, Creativity, Body Language

Unit V: **03 Hours**

Training on relevant Courses before Graduation, Grooming, Cleanliness, Decorum, Table Manners

Course Outcome

1. Ability of students to develop effective communication skill required for a successful manager
2. Evaluate the entrepreneurial thoughts

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	2	2	3	2	3	2
CO2	2	3	2	3	3	2	2	2	3	2	3	3
Weighted Average	2.5	2.5	2	3	3	2	2	2	3	2	3	2.5

STRATEGIC MANAGEMENT

Nature	Area	Semester	
Core	**General Management**	**III**	
Course Code	**Course Name**	**Credit/Distributions**	
22C301	**Strategic Management**	**(L-3:T-0:P-1) Credit = 04**	
		C1+C2	**30 Marks**
		C3	**70 Marks**

Course Objectives

1. To be able to comprehend vision, mission and goals of the company
2. To be able to analyze and deal with the competition using strategic management tools

Unit I: Introduction **08 Hours**

Origin of strategy, strategy vs tactics, vision, mission and objectives, elements of business strategies, Strategic Management process

Unit II: Competitive Analysis **10 Hours**

Strategically relevant components of internal and external environment, Industry and competitive analysis, analysis of resources and competitive capabilities, environmental scanning techniques

Unit III: Strategy Models **12 Hours**

Strategy Models - BCG matrix, GE nine cell planning grid, Chandlers thesis, levels of strategy making, Mackinsey 7 s model, Porters five forces model, Value Chain Analysis, Strategic intent and the concept of strategic pyramid, corporate ethics and corporate social responsibility(CSR).

Unit IV: Generic competitive strategies **12 Hours**

Generic competitive strategies – stability, expansion, retrenchment, conglomerate and their variants.Strategic and competitive advantage.

Unit V: Strategy Implementation **14 Hours**

Balanced Scorecard, Benchmarking, building core competencies and competitive capabilities, developing policies and procedures for implementation. Designing and installing supporting and rewarding systems. Evaluating and monitoring implementation.

Practical Components:

1. Do an Internet search of 3 companies, analyze and write down the strategy and execution efficiency.
2. Make a study on an unprofitable company and find out the rea- sons for failures in the market and their strategies.
3. Conduct SWOT analysis of a company and submit the report

Recommended Books:

1. Strategy and Structure – Alfred C.Chandler
2. Strategic Management – Alex Miller and Irwin
3. Competitive Advantages: Creating and Sustaining, Superior Performance – Michael E. Porter
4. Competing for the future – Prahlad and Hammel
5. The Future of Competition – Prahlad and Venkataraman
6. Crafting and executing Strategy – Aurthor A. Thompson and others
7. The Art of Strategy – AvinashK.Dixit and Barry J.Nalebuff

Course Outcome

1. Enable the students to develop and deliver effective strategies on a given for an business firm
2. Develop effective planning and communication channels

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	1	3	3	2	3	2	3	2	3	2
CO2	3	3	1	2	2	1	2	1	2	2	3	3
Weighted Average	2.5	3.0	1.0	2.5	2.5	1.5	2.5	1.5	2.5	2.0	3.0	2.5

ENTREPRENEURSHIP& QUALITY MANAGEMENT

Nature	Area	Semester	
Foundation	**GeneralManagement**	**III**	
CourseCode	**CourseName**	**Credit/Distributions**	
22C302	**Entrepreneurship& Quality Management**	**(L-2:T-0:P-1) Credit =03**	
		C1+C2	**30 marks**
		C3	**70 marks**

COURSE OBJECTIVES

1. To understand the concept of entrepreneurship
2. To familiarize with business Plan
3. To appreciate scope for rural & social entrepreneurship
4. To be acquainted with entrepreneurial flow analysis

Unit–1 **(10 Hours)**

Foundations of Entrepreneurship:

Concept and nature of entrepreneurship, social & cultural factors in nurturing entrepreneurship. Lateral thinking. Role of entrepreneurship in economic development. Characteristics of entrepreneurship. Type of Start-ups .Institutional support for promoting study of incubation.

Unit–II **(12 Horus)**

Business Planning:

Entrepreneurial process. Logistics strategy. Entrepreneurship Idea- generation and preparation of business plans. Exercises in preparation of business plans. Environmental scanning. Angel Investor: Features

Venture Capital.

Unit–III **(12Hours)**

Rural & Social Entrepreneurship:

Potential for entrepreneurship in rural India, SHGs, micro credit etc., Case studies of rural &social entrepreneurship in India. SDM case study of women entrepreneurship. MSMEs.

Unit – IV Critical Issues in Entrepreneurship: (12 Horus)

Issues associated with effective entrepreneurship in India. Concept of involvement and communication. Qualitative process. Corporate ethics, culture and image. Managerial issues. Customer insight-driven relationship Legal issues**.**

(10 Hours)

Unit – V Entrepreneurial Perspectives:

Entrepreneurial opportunity for budding entrepreneurs. Entrepreneurial motivation. Enterprise marketing, Enterprise Growth Strategies. Creativity and Innovation. **Competencies. Resourceful collaboration.** Business Resource Mobilization including state and central Government . Incipient sickness and preventive measures

Recommended Text Books:

1. The Dynamics of Entreprenural Development and Mangement -Vasant Desai
2. Management and Entrepreneurship –K.Venkatramana
3. Entrepreneurial Development –Dr S. S.Khanka
4. Entrepreneurship- Madhurima Lall snd Shikha Sahai

Practical Components (Revised):

1 Select a idea of your own and conduct a brainstorming session

2 .Meet an entrepreneur and summarize his entrepreneurial journey

Course Outcome

1. Enable the students to develop different methods that can be used to minimize uncertainties at different stages of the entrepreneurial process in a highly uncertain environment
2. Analyze requirements and develop quality improvement programs and manage quality improvement teams

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	3	3	2	3	2	3	3	3	2
CO2	3	1	2	3	2	1	2	1	2	2	3	3
Weighted Average	3.0	2.0	1.5	3.0	2.5	1.5	2.5	1.5	2.5	2.5	3.0	2.5

Electives : Group-I

CONSUMER BEHAVIOR

Nature	Area	Semester	
Elective - I	**Marketing**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3M1	**Consumer Behavior**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**
		C3	**70 marks**

Course objectives

1. To get acquainted with various Motivational Factors
2. To Identifying the factors influencing Consumer Behaviour
3. To appreciate the concept of Customer Satisfaction as the key factor

Unit I: Introduction **12 Hours**

Differences between Motives Motivating and Motivation, Dynamic characteristics of Motivation, Personality, Values of Perception, Attitudes, Basis of Segmentation, Life Style influences.

UnitII: Models of Consumer Behavior **12 Hours**

Introduction, Factors influencing Consumer Behaviour, Personality, Psychographics, Family, Society, Different models of Consumer Behaviour – Economic, Learning, Psychoanalytical, Sociological, Howard Shett, Nicosia, Webster and Wind, Engel, Blackwell and Minard models.

Unit III: Consumer Decision Making **12 Hours**

Consumer Decision Making, buying roles, Stages of the Decision Process – High and low effort decisions, Post purchase decisions, Consumer Adaptation Process.

Unit IV: Consumer Satisfaction **10 Hours**

Consumer Satisfaction; Satisfaction versus Service, Quality Level and Customer Loyalty, Handling Customer dissatisfaction and complaints, Customerisation, Implications of shaping expectations.

Unit V: Consumer Behavior Trends **12 Hours**

The future of consumer behavior in India, Issues and Challenges of Social Class, Challenges in cross-cultural influences, Reasons behind rise of consumerism, Consumer protection act in India.

Practical Components:

1. Students shall visit malls and unorganized retail outlets and observe the behaviour of customers of different outlets while buying different category of goods and present the findings / observations followed with a group discussion.
2. Students need to prepare a questionnaire and do a survey on consumer buying behaviour and present the findings in the class.
3. Students are encouraged to discover the need for motives in three to four advertisements
4. Conduct a survey using Interview Method to find out the important factors in their purchase of Watches, Laptops, Backpacks etc.

Recommended Books:

1. Marketing Research – R.Nargundkar
2. Consumer Behaviour – Schiffman and Kanuk
3. Marketing Research – Tull, Green and Hawkins
4. Business Research Methods – Zikmund
5. Marketing Research – N.K. Malhotra
6. Marketing Research – Parashuraman, Grewal
7. Consumer Behaviour – Hoyer Mac Innis
8. Consumer Behaviour in Indian Perspective – Suja R. Nair

Course Outcome

1. Distinguish between different consumer behaviour influences and their relationships
2. Establish the relevance of consumer behaviour theories and concepts to marketing decisions
3. Implement appropriate combinations of theories and concepts.

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	3	3	2	2	2	3	2	3	2
CO2	3	3	2	3	3	2	2	2	2	2	3	3
Weighted Average	1.67	1.67	1.00	2.00	2.00	1.33	1.33	1.33	1.67	1.33	2.00	1.67

SALES AND LOGISTICS MANAGEMENT

Nature	Area	Semester	
Elective - II	**Marketing**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3M2	**Sales & Logistics Management**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**
		C3	**70 marks**

Course objectives

1. Analyze the various dimensions of Selling Concepts
2. To appreciate the sales process through emerging electronic channels
3. To Outline the logistics involved for an effective sales management

Unit I: Sales Management **12 Hours**

Objectives of Sales Management, Personal Selling, Salesmanship, Personal Selling Process, Types of Sales Organizations – Determining the kind of Sales Force and Size of the Sales Force.Qualities of Sales Professionals.

Unit II: Managing the Sales force **12 Hours**

Effective Recruiting of the Sales Force, Selecting and Training the Sales Force, Elements of Time and Territory Management, Sales Territories and Sales Quotas – Compensating the Sales Force, Motivating the Sales Force – Controlling & Evaluating the Sales Force.

Unit III: Trends in Retailing and Wholesaling **10 Hours**

E-commerce: E-tailing, Marketing on the net, Non-store retailing, Emerging trends of Retailing &Wholesaling in India.

Unit IV: Distribution and Logistics Management **12 Hours**

Objectives of Logistics Management: Modes of Transportation, De- sign of Distribution Channel, Strategies of Distribution Channel, Com-ponents of Logistics – Inbound and

Outbound Logistics, Third party Logistics, Freight Forwarders, Communication Order Processing, Packaging, Warehousing.

Unit V: Logistics Strategies **10 Hours**

Elements of Supply Chain Management, Logistics Information Sys- tem, Computer packages used in Logistics, Sales and Logistics for rural markets,

Practical Components:

1. To Study the Important features of Apps which appeal most related to customers of Food suppliers by conducting an survey using Interview method
2. Conduct a survey in rural areas and study the implications associated with imitation (me too) products.
3. To analyze the designs of packaging and list out the advantages and disadvantages associated with it.

Reference Books:

1. Sales Management – Decisions, Strategies and Cases – Richard R. Still, Edward W. Cundiff and Noman A.P. Govani
2. Professional Sales Management – R.E. Anderson, Joseph F. Har, Alan J. Bash
3. Marketing Channels – Louis W. Stern, Adel I. ER – Ansary, T. Coughlan
4. Fundamentals of Logistics Management – M. Lambert, James R. Stock, M. Eliram
5. Logistics Management – Donald J.B. and D.J. Closs
6. Logistics and Supply Chain Management – Martin Christopher
7. Sales Management – Analysis and Decisions Making – Thomas N. Ingram
8. Managing Supply Chain – J.L. Gattorn and D.W. Waldis

Enable students to evaluate the opportunities for improvement

Equip students to provide better customer service.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	2	3	2	3	2	3	2
CO2	2	3	2	2	3	2	2	2	2	2	3	3
W.A	2.5	2/5	2.5	2.5	2	2	2.5	2	2.5	2	3	2.5

ADVERTISING AND SALES PROMOTION MANAGEMENT

Nature	Area	Semester	
Elective - III	**Marketing**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3M3	**Advertising & Sales Promotion Management**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**
		C3	**70 marks**

1. Discuss the increasing importance of promotion and how it differs from advertising

2. What functions do advertising objectives serve

3. Recognize various methods of evaluating adverting effectiveness

Unit I: Promotion Mix **12 Hours**

Elements in Promotion Mix, Types of Advertising, Impact of Publicity on society, Personal Selling Strategies, Public Relations and Sales Pro- motion.

Unit II: Advertising **10 Hours**

Advertise ability and Advertising aids, Advertising Planning and Decision Making, Media Frequency Plan.

Unit III: Advertising Campaign Planning **14 Hours**

Advertising Effectiveness, Assessment and Criticism of DAGMAR Approach, Creative approaches for making a effective Advertising, Copywriting, pre-testing and post-testing, Designing a Advertising Copy, Marketing Communications, Different types of Advertising appeals and themes, Drafting an advertisement copy.

Unit IV: Advertising Media **10 Hours**

Types of media, Conventional media, Traditional media and media planning and Scheduling, Advertisement Budgets, Advertising Strategies for rural markets.

UnitV: Advertising Agencies **10 Hours**

Ethics in Advertisement, Advertising Agencies in India and abroad, Rural Advertising, Social Advertising, Ethics followed in advertising, Characteristics of Advertising Standards Council of India (ASCI).

Practical Components:

1. Analyze the advantages and limitations of sales promotion of 5 FMCG MNC's in India
2. Outline the methods and tools of sales promotion by visiting the malls
3. Analyze the room for the improvement of technological innovation in advertisement in a major textile company

Recommended Books:

1. Advertisement and Promotion – Belch and Belch
2. Advertising – Aaker and Bathra
3. Advertising Management – Chunawalla
4. Advertising Management – Write and Ziegler
5. Contemporary Advertising – Williams Arens
6. Advertising Management – Rajeev Batra, John G.Myer, David Aker
7. Advertising Planning & Implementation – Sangeeta Sharma &Raghuvir Singh
8. Advertising Principles and Practice – Wells, Moriatry, Burnett
9. Advertising Management – JaishriJethwanry, Shruthi Jain

Course Outcome

1. Distinguish different situations in the competitive environment will affect choices in target marketing
2. communicate marketing information persuasively and accurately in oral, written and graphic formats
3. contribute to evaluating the effectiveness of advertising and marketing communications initiatives

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3	2	3	3	3	2
CO2	2	3	2	3	3	2	2	2	2	2	3	3
Weighted Average	1.67	1.67	1.33	2.00	2.00	1.33	1.67	1.33	1.67	1.67	2.00	1.67

Electives: Group-II STRATEGIC

FINANCIAL MANAGEMENT

Nature	Area	Semester	
Elective - I	**FINANCE**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3F1	**STRATEGIC FINANCIAL MANAGEMENT**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**
		C3	**70 marks**

Course Objectives:

1. To analyze the financial implications or aspects of various business strategies and the strategic management of finance
2. To understand conceptual framework i.e., the act of putting together financial assumptions, ideas and perceptions into astrategic design

Unit I: Conceptual framework of Strategic

Financial Management **10 Hours**

Strategic Financial Decision making framework, function of Strategic Financial Management; Strategy at different hierarchy level; Financial Planning-Process-Types of Financial Plan – Financial Model-Types of Financial Model- process of Financial Model Development (Theory only)

Unit II: Capital Structure Decisions **12 Hours**

Capital structure & market value of a firm. Theories of capital structure - NI approach, NOI approach, Modigliani Miller approach, Traditional approach. Planning the capital structure: EBIT and EPS analysis, ROI & ROE analysis (Theory and Problems)

Unit III: Investment Decisions under Risk and Uncertainty **14 Hours**

Investments Decisions under Risk and Uncertainty–Techniques of Investment Decision–Risk Adjusted Discount Rate, Certainty Equivalent Factor, Statistical Method

(Probability distribution Approach, Normal Distribution Approach) Sensitivity Analysis and Simulation Method, Decision tree. (Problems)

Unit IV: Leasing **12 Hours**

Leasing–Importance, Types, Tax Considerations, and Accounting Considerations–Evaluation of Lease from the point of view of Lessor and Lessee–Lease versus Buy Decision–Venture Capital–Concept and Developments in India–Process and Methods of Financing–Fiscal Incentives

Unit V: Financial Re-Engineering **08 Hours**

Meaning of Financial Re-Engineering- interpretations of Various Stakeholder's approach to innovative Financial Engineering, Funding Structure-Fund rising Instruments; Programs and Policies to reward various Shareholders

Practical Components:

Students should be able to distinguish below activities

1. How can you distinguish between strategies and policies?
2. Are strategies and policies as important in a non business enterprise (such as a labor union, the State Department, a hospital, or a city fire department) as they are in a business? Why and how?
3. Why are contingency strategies important?
4. Choose an organization you know and identify its strengths and weaknesses. What are its special opportunities and threats in the external environment?
5. How would you make an organizational appraisal of your college or university? What kind of business is the school in?
6. How can strategies be implemented effectively?

Recommended Books:

1. Girish P JakhotiyaVikas Publishing, (2011) 2/e Strategic Financial Management
2. RajniSofat&PreetiHiro,(2011) Strategic Financial Management, Phi, Delhi
3. Chandra, Prasanna,(2007) FINANCIAL MANAGEMENT, Tata McGraw Hill,

Delhi.

Weaver &Weston,(2001) STRATEGIC CORPORATE FINANCE, Cengage Learning, Delhi

COURSE OUTCOME:

After completing the course student should be able to

CO1 Formulate financial planning and develop insight into financial model.

CO2 Design and Plan the capital structure

CO3 Apply different techniques of risk analysis

CO4 Critically analyse leasing decisions

CO5 Think creatively to resolve financial problems in business

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	3	3	2	3	2	3	2	3	2
CO2	2	3	1	2	3	1	2	1	2	1	3	3
CO3	3	3	3	3	3	1	2	1	1	1	3	3
CO4	3	3	3	3	3	1	2	1	1	1	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	2.8	2.8	2.2	2.8	3	1.6	2.4	1.6	2	1.6	3	2.8

FINANCIAL MARKET AND SERVICE

Nature	Area	Semester	
Elective - II	**FINANCE**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3F2	**FINANCIAL MARKET AND SERVICE**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**
		C3	**70 marks**

Course objective

1. To provide the students, basic knowledge about the Finance concepts, markets and various services provided in those markets.
2. To provide adequate information about the roles of intermediaries and its regulating bodies.
3. To provide information about the prevailing financial system in India.

Unit I: Overview of Indian Financial System **12 Hours**

Indian Capital Market and Money Market, Foreign Institutional Investors (FIIs)-Portfolio Management Schemes of Indian Institutional Investors, Global Capital Flows - Hedge Funds, Private Equity. ADR and GDR.

Unit II: Indian Capital Market **10 Hours**

Primary and Secondary Capital Markets in India-Market for Stocks and Bonds, Market for Derivative Instruments (Financial and Commodities), Over the Counter Markets (OCTEI), NCDEX, MCX. Markets for Government Securities, Mock Exercises in Online Stock Market Operations on Sensex and Nifty.

Unit III: Banking in India **10 Hours**

Meaning of Bank, types of banks, Current problems of public sector banks, capital adequacy norms, Basel norms, NPA problem, corporate debt restructuring, and securitization of debt and asset reconstruction companies, the new Insolvency and bankruptcy code

Unit IV: Merchant Banking and Credit Rating **12 Hours**

Introduction to merchant banking, merchant bankers/lead managers, registration,

obligation and responsibilities, underwriters, bankers to an issue, brokers to an issue. Issue management activities and procedure pricing of issue, issue of debt instruments, book building green shoe option, services of merchant banks, Credit Rating - SEBI guidelines, limitations of rating.

Unit V: Regulatory Mechanisms **12 Hours**

Therole of SEBI in regulating the Capital Market and Stock Exchanges- Outlines of the SEBI Act and Powers of SEBI- Important Cases dealt with by SEBI-Sahara, NSEL, Insider Trading Cases etc. Investigation into Corporate Frauds under Companies Act 2013, NFRA and IBBI

Practical component:

1. Prepare a report on capital market scams. And visit stock broking firms.
2. Visit any 5 retailers and collect the information about cashless transaction (merchant banking)

Text Book:

1. M.Y. Khan,(2008) INDIAN FINANCIAL SYSTEM, Tata McGraw Hill, Delhi
2. Jeff Madura,(2008) FINANCIAL MARKETS AND INSTITUTIONS, CenGage Learning, Delhi
3. H.R. Machiraju,(2009) INDIAN FINANCIAL SYSTEM, Vikas Publishing House, Delhi
4. Pathak,(2007) THE INDIAN FINANCIAL SYSTEM, Pearson Education India

Reference Books:

1. Vasanth Desai, Financial Markets & Financial Services, HPH, Mumbai
2. PunithavathyPandian, Financial Markets and Services, Vikas Publishing House, New Delhi
3. Gorden E &Natarajan, Financial Services, HPH, Mumbai

COURSE OUTCOME: After completing the course student should be able to

CO1 Evaluate various financial products in the primary and secondary markets

CO2 Analyse functioning of Stock Exchange

CO3 Analyse the banking and non-banking operations

CO4Examine the Regulatory bodies

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	1	1	1	1	1	1	2	1
CO2	3	1	1	1	1	1	1	1	1	1	1	2
CO3	2	1	1	1	2	1	3	2	1	1	1	1
CO4	1	2	2	1	1	2	2	2	1	2	3	2
Weighted Average	2.25	1.25	1.25	1	1.25	1.25	1.75	1.5	1	1.25	1.75	1.5

INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

Nature	**Area**	**Semester**	
Elective - III	**FINANCE**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3F3	**INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**
		C3	**70 marks**

Course Objectives

- To have a thorough understanding on investment and avenues of investment
- Tohaveexposureonanalyse the various risk & return of different portfolios.
- Tohave an exposure to valuation of different kinds of securities.
- To have a broad knowledge about fundamental and technical analysis by using various theories.

Unit I: Investment Background **08 Hours**

Concepts of Investment- Investment Avenues - Objectives of Investment- Investment, Speculation and Gambling - Trading and investing - Portfolio Management process - Sources of Investment Information - Investing Internationally - The asset allocation decision -Organization and functioning of securities market

Unit II: Analysis of Risk & Return **14 Hours**

Return - Measuring Return- Risk - Measuring Risk - S.D and Variance- Return and Risk of a Single Security and Portfolio - Calculation of Risk using Variance Covariance Matrix - Reduction of Risk through Diversification - Concept and Types of Risks - Total Risk, Systematic and Unsystematic Risk - Other Risks - Beta and its Computation - Uses and Limitations of Beta.

Unit III: Valuation of Securities **12 Hours**

Bond- Bond features, Types of Bonds, Determinants of interest rates, Bond Management Strategies, Bond Valuation, Bond Duration. Preference Shares- Concept, Features, Equityshares- Concept, Valuation, Dividend Valuation models. (Theory & Problems).

Unit IV: Fundamental Analysis and Technical Analysis **08 Hours**

Economy - Industry-Company Framework- Economic Analysis and Fore- casting – Technical Analysis-Assumptions of Technical Analysis - Technical Indicators - Dow Theory - Important Tools of Technical Analysis -Limitations of Technical Analysis - behavior of stock prices- Market Efficiency - Forms of Market Efficiency- Behavioral Finance - Standard Finance Versus Behavioral Finance

Unit V: Active Portfolio Management **14 Hours**

Markowitz (MPT) ,Sharpe, Treynor, Jensen's Alpha measures of mutual fund performance – measuring investment return, conventional theory of performance evaluation, Performance attribution procedures, style analysis and morning star's, risk adjusted rating. Active portfolio construction using Treynor – Black model, Sharpe Optimal Portfolio Construction

Practical Components:

1. Students should study the stock market pages from business press and calculate the risk and return of selected companies.
2. Each student will be given a virtual cash of Rs.5 Lakhs and they will be asked to invest in equity shares based on fundamental analysis throughout the semester. At the end the best investment will be awarded based on the final net worth. Virtual on line trading account can be opened for the student and every week 2 Hours can be allotted to invest, monitor and evaluate.
3. Students should study the stock market pages from business press and calculate the risk and return of selected companies.
4. Students can do a macro economy using GDP growth.
5. Students' are expected to do Industry analysis for specific sectors.
6. Students can do Company analysis for select companies using profitability and liquidity ratios.
7. Practice technical analysis using Japanese candle sticks.

Recommended Books:

1. Prasanna Chandra, 3/e,TMH, (2010). Investment Analysis and Portfolio management
2. ZviBodie, Kane, Marcus &Mohanty, 8/e, TMH, (2010). Investments
3. Security Analysis & Portfolio Management- J Kevin, TMH

Reference Books:

1. Reilly & Brown, Cengage, 10e/ (2017). Analysis of Investments & Management
2. Punithavathy Pandian,2/e, Vikas, (2005). Security Analysis & Portfolio Management

Course Outcomes

- Explored to different avenues of investment and apply the concept of portfolio management for the better investment.
- Determining the portfolio risk, return and measuring them on the basis of various techniques and invest in less risk and more return securities.
- Equipped with the knowledge of security analysis and valuation for right investment.
- Pre and post investment analysis using fundamental and technical analysis for the better investment
- Performance evaluation and style analysis of investment and portfolio revision.

CO / PO ARTICULATION MATRIX

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	1	1	2	1	1	1	2	2
CO2	3	1	3	2	3	1	2	2	1	3	3	2
CO3	3	1	3	2	3	1	2	2	1	3	3	2
CO4	3	2	3	2	2	1	2	2	1	3	3	2
CO5	3	1	3	2	2	1	2	2	1	3	3	2
W.A	**3**	**1.2**	**2.6**	**1.8**	**2.2**	**1**	**2**	**1.8**	**1**	**2.6**	**2.8**	**2**

Electives: Group - III

PERSONAL GROWTH AND INTERPERSONAL EFFECTIVENESS

Nature	Area	Semester	
Elective - I	**Human Resource**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3H1	**PERSONAL GROWTH AND INTERPERSONAL EFFECTIVENESS**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**

Course Objectives

1. To develop and nurture a deep understanding of self.
2. To understand and practice personal and professional responsibilities.
3. To Nurture comprehensive skill sets for life knowledge such as learning, personality improvement, and effective interpersonal relation, resolving conflict for better intrapersonal and interpersonal relationship.

Unit I: Personal Growth **10 Hours**

Meaning and concepts of personal growth, Self esteem: Know yourself, accept yourself, Self improvement: Plan to improve, actively working to improve yourself. Life positions, Personal life style choices.

Unit II: Individuals and Organizations **12 Hours**

Values - Meaning, Types of values – Societal values, Organizational values and work values. Attitudes: Nature and Dimensions of attitude – Components of attitudes, Functions of attitudes, Changing attitudes, and antecedents of work related attitudes. Job satisfaction – Meaning, influences on job satisfaction, outcomes of job satisfaction. Job involvement, Organizational commitment – Meaning, Outcomes of organizational commitment, Guidelines to enhance organizational commitment.

Unit III: Learning and personality theories **12 Hours**

Meaning, Learning principles, Learning Theories – Classical condition- ing theory, Operant conditioning, Cognitive theories, Social Learning theory,Learning styles. Personality theories: The Big Five personality Traits, Myers Briggs Type Indicator (MBTI), Carl Jung's theory of personality types.

Unit IV: Interpersonal Behavior and conflicts **10 Hours**

Nature of conflict, Levels of conflict, Sources of conflict, Effects of conflict, Intraindividual conflict – Conflict due to frustration, Goal conflict, Role conflict and ambiguity, Interactive conflict – Interpersonal conflict, Inter group behavior and conflict, Assertive behavior, Transactional analysis, Types of Transaction, Life positions.

Unit V: Stress management and

Emotional Intelligence **12 Hours**

The emergence of stress, causes of stress – Extra organizational stressors, Organizational stressors, group stressors and individual stressors. Con- sequences of stress – Physiological symptoms, psychological symptoms and behavioral symptoms. Coping strategies for stress – Individual approaches and organizational approaches. Emotional Intelligence: Role of emotions, Types of emotions, Meaning of Emotional Intelligence, components of emotional Intelligence.

Practical Component

1. Students are expected to conduct an in depth study about various personality traits and TA and submit a detailed report.
2. Ask the individual students to seek multisource feedback about their interpersonal effectiveness from peers, teachers and parents.
3. Conduct mock stress interview for students to enhance their employability skills.

Recommended Books:

1. UdaiPareek. (2018).*Understanding OB.*(4th ed.). Oxford University Press.
2. Keith Davis. (2003). *Organizational Behaviour*. (11th ed.). Tata McGraw Hill

Reference Books

1. Stephen P Robbins . (2016). *Organizational Behavior – concepts, controversies and applications. (16th ed.).* Pearson
2. Fred Luthans. (2010). *Organizational Behavior*.(12th ed.). TMH
3. Wallace & masters. (2010). *Personal development for life and wor*k.(10th ed.).Cengage Learning

CO1. Ability to set short term and long term goals.

CO2. Ability to distinguish between cultures, change attitudes of people and develop knowledge on improving job satisfaction of employees.

CO3. Develop learning skills and skills related to positive reinforcement.

CO4. Ability to identify individual's personality type favorable or unfavorable to work performance.

CO5. Ability to identify sources and causes of conflicts and develop conflict resolution strategies.

CO6. Ability to identify causes of stress and develop stress coping strategies.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	-	-	-	-	1	-	-	2	1	3	-
CO2	3	2	2	-	-	3	2	-	2	-	-	-
CO3	3	1	2	-	3	2	2	-	2	-	-	3
CO4	3	2	3	-	-	-	-	-	2	-	-	-
CO5	3	3	3	-	-	2	2	-	3	-	2	-
CO6	3	3	3	-	-	3	2	2	3	-	-	-
Weighted Average	3	2.2	2.6	-	3	2.2	2	2	2.33	1	2.5	3

ORGANIZATIONAL CHANGE AND DEVELOPMENT

<table>
<tr><th>Nature</th><th>Area</th><th colspan="2">Semester</th></tr>
<tr><td>Elective - II</td><td>Human Resource</td><td colspan="2">III</td></tr>
<tr><td>Course Code</td><td>Course Name</td><td colspan="2">Credit / Distributions</td></tr>
<tr><td rowspan="3">22C3H2</td><td rowspan="3">ORGANIZATIONAL CHANGE AND DEVELOPMENT</td><td colspan="2">(L-2:T-0:P-1) Credit = 03</td></tr>
<tr><td>C1+C 2</td><td>30 marks</td></tr>
<tr><td>C3</td><td>70 marks</td></tr>
</table>

Course Objectives:

1. To gain a general understanding of organizational change and development concepts
2. To develop an understanding of change models and theories
3. To reflect on different interventional strategies and their importance in a change process
4. To apply change concepts to a real case example

Unit I: Organizational Change **10 Hours**

Introduction to change, Nature of Change, Types of change, Reasons for change, Reasons for resistance to change, Overcoming resistance to change, Differences between planned and unplanned organizational Change, Change agents, Skills and competencies of change agents.

Unit II: Organization Development **10 Hours**

Introduction and concepts of Organization Development, Characteristics of OD, History of Organization Development: Laboratory Training Stem, Survey Research and Feedback Stem, Action Research Stem, Socio-technical and Socio-clinical Stem. Values, Assumptions and Beliefs in organization development: Early statements of OD values and Assumptions, Implications of OD values and Assumptions.

Unit III: Theory and Management of

Organization Development **12 Hours**

Foundations of organization development: Models and Theories of planned change - Kurt Lewin'sThree stage model, Force Field Analysis, Burke Litwin Model of Organizational Change, Systems Theory. Participation and Empowerment, Teams and Teamwork, Parallel Learning Structure, Normative Re educative strategy of Change. Managing the organization development process: Diagnosis, Six box model, Action Component, Program management component. Action research and organization development: Action Research a Process and an Approach, Genesis of OD in the company. The OD Process – A Diagnostic Study.

Unit IV: Organization Development

Intervention **14 Hours**

Team interventions: Teams and work Groups Strategic Units of Organizations, Broad Team Building Interventions, The Formal Group Diagnostic Meeting, The Formal Group Team Building Meeting, Process Consultation Interventions, A Gestalt Approach to Team Building,

Techniques and exercises used in Team building. Inter-group and third party peacemaking intervention: Inter group team building Interventions, Third party peacemaking Interventions, Organization mirror Interventions, Partnering. Comprehensive intervention: Beckhard's Confrontation meeting, Strategic Management activities, Real time strategic change, Stream Analysis, Survey feedback, Grid OD, Trans-organizational Development. Structural interventions: Socio-technical systems, Self managed teams problems in implementation, MBO and Appraisal, Quality Circles, Quality of work life projects, Physical settings and OD, Total Quality Management, Self design strategy, Large scale systems change and Organizational Transformation. Training experiences: T Groups, Behavioural modeling, Life and career planning, Coaching and mentoring, Instrumented Training.

Unit V: Key Considerations and Issue **10 Hours**

Issues in consultant-Client relationships: Entry and Contracting, defining the client system, The trust issue, The nature of consultant's expertise, Diagnosis and appropriate interventions, Depth of Intervention, The consultant as a model, The consultant team as a microcosm, Dependency issue and terminating the relationship, The role of the Human Resource specialist in OD activities. Power, politics and organization development: Theories about the sources of social power, Organizational politics defined, Frameworks for analyzing power and politics, The role of power and politics in the practice of OD.

Practical Component

1. Students are expected to submit a report on Changes that have taken place in various industries.

2. Individual students are expected to conduct force field analysis and identify the driving and restraining forces for trimester scheme.

Recommended Books:

1. French and Bell. (2006). *Organization Development.* (6th Ed.). Pearson

2. Dr.S.S.Khanka. (2003). *Organizational Behavior*.(4th Ed.).S.Chand& Company Pvt ltd.

Reference Books

1. Cummings T. G, & Worley C.G.(2014). Organization Development and Change(10th Ed.). Cengage Learning

2. Fred Luthans. (2010). *OrganizationBehaviour an Evidence based Approach*.(12th Edition). McGrawhill,

3. Keith Davis. (2002). *HumanBehaviour at Work.* (11th Ed.). Tata McGrawhill

III SEM Organizational Change and Development.

CO1. Develop the knowledge of planning for organizational change and apply appropriate strategy for implementing planned change.
CO2. Ability to identify the sources of resistance to change and overcoming resistance to change.
CO3. Ability to apply theories of change management in work environment.
CO4. Application of appropriate OD intervention for organization change and development.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	2	-	-	-	-	-	2	1	3	2
CO2	3	2	3	2	2	2	2	-	2	-	2	-
CO3	3	2	2	2	2	2	1	-	2	-	2	2
CO4	3	-	3	3	2	3	1	-	2	-	2	-
Weighted Average	3	2.33	2.5	2.33	2	2.33	1.33	-	2	1	2.75	2

TRAINING IN ORGANIZATIONS

Nature	Area	Semester	
Elective - III	**Human Resource**	**III**	
Course Code	**Course Name**	**Credit / Distributions**	
22C3H3	**TRAINING IN ORGANIZATIONS**	**(L-2:T-0:P-1) Credit = 03**	
		C1+C 2	**30 marks**
		C3	**70 marks**

Course Objectives

1. To develop an understanding on Training and Learning environment.
2. To comprehend on how need analysis is done for training.
3. To get acquainted with the trainer's skills and designing a training program.
4. To conceptualize on the evaluation of training program.

Unit I: Introduction **10 Hours**

Introduction to the concept of Training, Importance of training, Advantages of training, Training challenges, Changing workplace and workforce, Training as a sub system of HRD

Learning principles, learning environment, Instructional design, Learning outcomes, Feedback, Conditions of transfer, Converting training objectives to training plan.

Unit II: Training Needs Assessment (TNA) **12 Hours**

Introduction to Needs Assessment, Why conduct Training Need Analysis? When to conduct a Training Need Analysis?, Needs Assessment Process - Organizational support for TNA, Organizational analysis, Requirement Analysis, Task and KSA Analysis, Person Analysis, In- put design and evaluation of Training programs. Needs Assessment Techniques, Advantages and Disadvantages of Needs Assessment Techniques, Training enhancement, Trainee characteristics

– Trainee readiness and Trainee Motivation.

Unit III: Trainer's skills **10 Hours**

Communication Skill, Questioning Skill, Body Language Gesture, Handling difficult situation, Creativity skills, Technical skills, Interpersonal skills, Self Development and awareness, Managerial skills, Designing skills, Humour, Integrity, Credibility, Transparent, resilience, Rapport building, Confidence, Feedback sensitivity.

Unit IV: Training Delivery **12 Hours**

Differences between Traditional and Modern methods, Traditional Training Approaches – Classroom instruction, Lecture and Discussion, Case study, Role play, Self Directed Learning Program (SDLP), Simulated work settings, Modern Training Approaches - Distance Learning Program (DLP), CD ROM and Interactive Multimedia, Web- based instructions, Intelligent Tutoring System (ITS), Virtual Reality Training (VRT).

Unit V: Training Evaluation **12 Hours**

Need for evaluation, Evaluation criteria, Evaluation objectives, Types of evaluation instruments– Questionnaires / survey, Interview, Tests, Focus group, Observation of participant, Performance record, Training Evaluation Models – Kirk Patrick's model, Philip's Model, CIRO model of Training Evaluation.

Practical Component

1. Students are expected to conduct a mock training session including need identification and a set of students to evaluate the effectiveness of the same.
2. Give a training need analysis case and ask the students to find out the training needs.
3. 10 minutes of role play by individual students to exhibit their skills as a trainer.

Recommended Books:

1. Irwin L. Goldstein, J. Kevin Ford. (2005).*Training in Organization.*(4th Ed.). Wordsworth.
2. Dr.B.Janakiraman. (2007).*Training and Development*, (Kindle ed.). Biztantra / Wiley Dreamtech

Reference Books

1. P Nick Blanchard James W Thacker. (2010). *Effective Training: System Strategies & Practices*, (custom ed.) .Pearsons
2. Rolf P Lynton UdaiPareek. (2011). Training ForDevelopment. (3rd ed.). Sage India
3. Gargulo& Others. (2008). *The Trainers portable mentor*. (1st ed.) . Pfeiffer

Course Outcomes

After the completion of the course, students will be able to:

1. Assess the importance of training in organizations.
2. Compute training need analysis for organizations.
3. Compare and contrast and different training methods.
4. Identify the skills required for the trainer.
5. Evaluate the effectiveness of training programs through various models and theories.

CO / PO ARTICULATION MATRIX

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	3	2	2	2	2	3	3
CO2	3	3	3	3	2	2	2	3	3	1	3	3
CO3	3	3	3	3	3	2	2	3	3	1	3	2
CO4	2	3	2	2	2	3	3	1	3	2	3	3
CO5	3	3	3	3	2	2	2	3	3	3	1	2
W.A	**2.8**	**3**	**2.8**	**2.6**	**2.4**	**2.4**	**2.2**	**2.4**	**2.8**	**1.8**	**2.6**	**2.6**

Electives:Group-IV

FUNDAMENTALS OF CSR

Nature	**Area**	**Semester**	
Elective-I	**Corporate Social Responsibility**	**III**	
Course Code	**Course Name**	**Credit/Distributions**	
22C3C1	**Fundamentals of CSR**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives:

- To learn the concepts and theories of CSR
- To know the importance of sustainable development goals
- To understand the role of NGOs in promoting and implementing CSR initiatives in India
- To evaluate futuristic role of CSR in India

Practical Components:

- Visit two MNCs and list down their CSR activities
- Visit two NGOs and enumerate their role in propagating sustainable development goals

- To find out from NGOs their role in promoting CSR activities in India

UNIT I **(12 Hours)**

Introduction to CSR:

Meaning & Definition of CSR, History & evolution of CSR. Concept of Charity, Corporate philanthropy, Corporate Citizenship, CSR-an overlapping concept. Concept of sustainability & Stakeholder Management. CSR through triple bottom line and Sustainable Business; relation between CSR and Corporate governance; environmental aspect of CSR; Chronological evolution of CSR in India; models of CSR in

India, Carroll's model; drivers of CSR; major codes on CSR;Initiatives in India.

UNIT II **(12 Hours)**

International framework for corporate social Responsibility, Millennium Development goals, Sustainable development goals, Relationship between CSR and MDGs.United Nations (UN) Global Compact 2011. UN guiding principles on business and human rights.OECD CSR policy tool, ILO tri-partite declaration

of principles on multinational enterprises and social policy.

UNIT III **(12 Hou**rs)

CSR-Legislation In India & the world. Section 135 of Companies Act 2013.Scope for CSR Activities under Schedule VII, Appointment of Independent Directors on the Board, and Computation of Net Profit's Implementing Process in India.

UNIT IV **(10 Hours**)

The Drivers of CSR in India, Market based pressure and incentives civil society pressure, the regulatory environment in India Counter trends. Performance in major business and programs. Voluntarism Judicial activism.

UNIT V **(10 Hours**)

Identifying key stakeholders of CSR & their roles. Role of Public Sector in Corporate, government programs that encourage voluntary responsible action of corporations. Role of Nonprofit &Local Self- Governance in implementing CSR; Contemporary issues in CSR & MDGs. Global Compact Self- Assessment Tool, National Voluntary Guidelines by Govt. of India. Understanding roles and responsibilities of corporate foundations.

Reference Books:

1. Corporate Social Responsibility: An Ethical Approach - Mark S. Schwartz

2. The World Guide to CSR - Wayne Visser and Nick Tolhurst

3. Innovative CSR by Lelouche, Idowu and Filho

4. Corporate Social Responsibility in India - Sanjay K Agarwal

5. Handbook on Corporate Social Responsibility in India, CII.

6. Handbook of Corporate Sustainability: Frameworks, Strategies and Tools - M. A. Quaddus, Muhammed Abu B. Siddique

7. Growth, Sustainability, and India's Economic Reforms – Srinivasan

8. Corporate Social Responsibility: Concepts and Cases: The Indian - C. V. Baxi, Ajit Prasad

9. .Mallin, Christine A., Corporate Governance (Indian Edition), Oxford University Press, New Delhi.

10. Blowfield, Michael, and Alan Murray, Corporate Responsibility, Oxford University Press.

11. Francesco Perrini, Stefano, and Antonio Tencati, Developing Corporate Social Responsibility-AEuropean Perspective, Edward Elgar. University of Delhi.

12. Sharma, J.P., Corporate Governance, Business Ethics & CSR, Ane Books Pvt Ltd, New Delhi.

13. Sharma, J.P., Corporate Governance and Social Responsibility of Business, Ane Books Pvt. Ltd, NewDelhi.

Course Outcome:

1.	To learn the concepts and theories of CSR
2.	To know the importance of sustainable development goals
3.	To understand the role of NGOs in promoting and implementing CSR initiatives in India
4.	To evaluate futuristic role of CSR in India
5.	To comprehend the role of nonprofit & Local Self- Governance in implementing CSR

CO/PO												
CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	3
CO5	3	2	3	3	3	3	3	3	3	3	2	3
W.A	3	2.4	3	3	3	3	3	3	3	3	2.6	3

Social Development Issues and Challenges

Nature	**Area**	**Semester**	
Elective-II	Corporate SocialResponsibility	**III**	
Course Code	**Course Name**	**Credit/Distributions**	
22C3C2	Social Development IssuesandChallenges	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives:

- The students will be enlightened on the principles and practices of NGOs, Cooperatives and Corporate foundations
- The students will get introduced to various society registration acts

Practical Components:

- Visit two NGOs and record their social spending
- Understand the funding structure of two foreign and national organizations

UNIT I **(12 Hours)**

Introduction: What is the sociology of development - Neo-evolutionary, modernization and neomodernization theories of development - Marxist and neo-Marxist theories of development - Global approaches to development.

UNIT II **(12 Hours)**

Social work intervention and contemporary issues, Social work intervention and contemporary issues - Urban sociology, urban community development &municipal administration – Rural sociology, rural community development & Panchayati raj - Family welfare Women's welfare and child welfare.

UNIT III **(10 Hours)**

Social justice and Empowerment-Women Rights - Tribal Rights - Social Policy and Social Legislation in India: Planning in India - Rehabilitation & Resettlement Policy and Social Development - Rehabilitation Action Plan - CSR Policy and Rehabilitation &Resettlement

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UNIT IV **(12 Hours)**

World Bank and ADB standing on and Rehabilitation & Resettlement - Government of India Policy Guidelines and interventions - Millennium Development Goals – Sustainable Development Goals-Developmental Schemes in India - Social Security in India

UNIT V(10 Hours)

Corporate –Community Collaboration (CCC)and Social Development Social Development and Modes of CSR – Challenges and barriers to Corporate-Community Collaboration – CCC as CSR process and product-Socio-Economic Impact of CCC – Community Investment and Corporate Citizenship Programs.

References:

1. Willis, K. Theories and Practices of Development, London: Routledge.

2. Frank, A. G) "The Development of UnderdevelopmentJ

3. Timmons Roberts and Amy Bellone Hite (eds.) The Globalization and Development

Reader. Oxford: Blackwell

4. Roberts, T.J. and A. Hite (eds) From Modernisation to Globalisation: Perspectives on

Development and Social Change. (London: Blackwell, 2000)

5. Sklair, L. (ed.) Capitalism and Development. (London: Routledge, 1994)

6. Sklair, L. Sociology of the Global System. (London: Prentice-Hall, 1995)

7. Cohen, R. and P. Kennedy Global Sociology. (London: Macmillan, 2000)

8. Webster, A. Introduction to the Sociology of Development. (London: Macmillan, 1990)

Course Outcome:

1.	The students will be enlightened on the principles and practices of NGOs, Cooperatives and Corporate foundations
2.	Comprehend contemporary social issues and equate Social Work intervention
3.	Understand Social legislations and rights of the marginalised
4.	Cognize MDG, SDG and Government of India policies for Social security
5.	Recognize the need for Corporate community collaboration

CO/PO												
CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	2
CO5	3	2	3	3	3	3	3	3	3	3	3	2
W.A	3	2.4	3	3	3	3	3	3	3	3	3	2.6

Corporate Governance and Ethics

Nature	**Area**	**Semester**	
Elective–III	**Corporate SocialResponsibility**	**III**	
CourseCode	**CourseName**	**Credit/Distributions**	
22C3C3	**CorporateGovernanceand Ethics**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives:

- The students should be able to appreciate the nature of business ethics, ethical leadership
- The students must comprehend theoretical aspects of corporate governance

Practical Components:

- Visit two MNCs and record their practice of ethical leadership
- Visit two MNCs and study the transparency and accountability pattern practiced at corporate governance system

UNIT I (10 Hours)

Meaning and definitions of Ethics. Nature of business ethics; the relationship between business ethics, corporate governance and ethical leadership; Kohlberg's six stages of moral development; levels of ethical analysis; concept of corporate integrity.

UNIT II (12 Hours)

Definition—Historical perspective of corporate governance and Issues in corporate governance—Theoretical basis of corporate governance—mechanism- corporate governance systems—Indian model of governance –What is good corporate governance—obligations towards society and stake holders. Theories underlying Corporate Governance (Stake holder's theory and Stewardship theory, Agency theory, Separation of ownership and control, corporate Governance Mechanism: Anglo-American Model, German Model,

Japanese Model, Indian Model, OECD, emphasis on Corporate governance, Ethics and Governance, Process and Corporate Governance (Transparency Accountability and Empowerment).

UNIT III **(12 Hours)**

Ethical decision making: Decision making (Normal Dilemmas and Problems): Application of Ethical theories in Business (i) Utilitarianism (J.Bentham and J.S. Mill), (ii) Deontology (I. Kant) Virtue Ethics (Aristotle).

Economic Justice: Distributive Justice, John Rawls Libertarian Justice (Robest Nozick) Ethical Issues in Functional Areas of Business.

Marketing: Characteristics of Free and Perfect competitive market, Monopoly oligopoly, Ethics in Advertising (Truth in Advertising). Finance: Fairness and Efficiency in Financial Market, Insider Trading, Green Mail, Golden parachute.

HR: Workers Right and Duties: Work place safeties, sexual harassment, whistle Blowing.

UNIT IV **(10 Hours)**

Role Players. Role of Board of Directors and Board Structure, Role of Board of Directors, Role of the Non- executive Director, Role of Auditors, SEBI Growth of Corporate Governance. Role of Government,Corporate governance in India, Kumaramangalam Birla Committee, CII, Report, Cadbury Committee.

UNIT V **(12 Hours)**

Accounting Standards and Accounting disclosures. Finance Reporting and Corporate Governance, Non Accounting Regulations in Corporate Governance, Corporate Governance & CSR

Reference Books :

1. Good Governance Issues and Sustainable Development: The Indian - Ed. R.N. Ghosh, Rony

Gabbay, Abu Siddique

2. The Quest for Sustainable Business - *Wayne Visser*

3. A Guide For Corporate Responsibility Managers - *Timothy J Mohin*

4. ISO 26000: The Business Guide to the New Standard on Social Responsibility; Lars Moratis and Tino

Cochius; Greenleaf Publishing; 2011

5. Strategic Corporate Social Responsibility: Stakeholders in a Global Environment, William B.

Werther, Jr., David Chandler

6. The Business Case for Corporate Social Responsibility: Understanding and ...

7. Philipp Schreck

8. Motivational Interviewing, Third Edition: Helping People Change (Applications of Motivational Interviewing) by William R. Miller and Stephen Rollnick (Sep 7, 2012)

9. Skills Training Manual for Treating Borderline Personality Disorder by Marsha M. Linehan (May 21, 1993)

10. Smart but Scattered: The Revolutionary "Executive Skills" Approach to Helping Kids Reach Their Potential by Peg Dawson and Richard Guare (Jan 2, 2009)

11. Business Ethics and Corporate Governance, C.S.V.Murthy, HPH

12. Business Ethics, Francis & Mishra, TMH

13. Corporate governance, Fernado, Pearson

14. Business Ethics & Corporate Governance, S. Prabakaran, EB

15. Corporate Governance, Mallin, Oxford

16. Corporate Governance & Business Ethics, U.C.Mathur, MacMillan.

Course Outcome:

1.	The students should be able to appreciate the nature of business ethics, ethical leadership
2.	The students must comprehend theoretical aspects of corporate governance
3.	Comprehend corporate ethics in different dimensions
4.	Understand different committees in Indian organizations
5.	Categorize Accounting standards and Non-Accounting Regulations in Corporate Governance

CO/PO												
CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**

CO1	3	2	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	2	3	3	3	3	2	3	3	3	3	3
W.A	3	2.4	3	3	3	3	2.8	3	3	3	3	3

Electives:Group-V

TOURISM

MANAGEMENT

Nature	**Area**	**Semester**	
Elective–I	**Tourism &Travel Management**	**III**	
Course Code	**Course Name**	**Credit/Distributions**	
22C3T1	**Tourism Management**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives:

1. To study the conceptual clarity of tourism.
2. To understand the types, typologies and its impacts on tourism.
3. To know the international, national and regional organizations of tourism.

Unit 1 **10 hrs**

Concepts of Tourism-Meaning-Definitions-Visitors-Excursionist-Tourist-Traveller-Hospitality- Nature- Forms -Tourism System-Purpose of Travel-Travel Motivators-Components of Tourism-Historical Development of Tourism-Tourism in India-- Factors affecting growth and development of International and national Tourism; Push and Pull Factors-and Approaches.

Unit II **08 hrs**

Impacts of Tourism-Tourism Industry-Significance of Tourism-Multipliers Effect-Economic-Socio-Cultural-Environmental Impacts of Tourism (Positive and Negative) - Case Studies.

Unit III **08 hrs**

Types and Typologies of Tourism: Heritage, Adventure, Cultural, Sports, MICE, Educational and Mass Tourism. **Alternative Tourism:** Eco, Rural, Agri and Farm and Yoga Tourism.

Unit IV **07 hrs**

Economics of Tourism –Demand and Supply-Factors Influencing on Tourism demand – Measuring the demand –Types of demand –Determinants of Tourism demand and Supply.

Unit V **07 hrs**

Tourism Organizations: Organization Structure and Functions of ITDC, STDCs, NTOs, PATA, UNWTO, TAAI, FHRAI, IATO, UFTAA.

Books for Reference:

1. Chottopadhyay, K. (1995): Economic Impact of Tourism Development; An Indian Experience, Kanishka Publishers, Delhi.

2. Cooper, C, Fletcher, J, Gilbert, D and Wanhill, S. (2002): Tourism: Principles and Practice, Addison Wesley Longman Publishing, New York, USA

3. Swain S K, Mishra J.M. (2012), Tourism Principles and Practices, Oxford University Press

4. Kamra & Chand (2002): Basics of Tourism, Theory Operation and Practice; Kanishka Publishers, New Delhi-02

5.Kamra, Krishna. K (2001): Economics of Tourism; Pricing, Impacts, Forecasting; Kanishka Publishers, New Delhi-02

Course Outcomes

1. To acquire the conceptual clarity of tourism.
2. To enhance the knowledge related to impacts on tourism.
3. To acquire the background knowledge of types, typologies of tourism.
4. To acquire the concepts relate to economics of tourism.
5. To acquire the knowledge of international, national and regional organizations of tourism.

Course Articulation Matrix -20C3T1

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	-	2	3	2	1	1	1	-	-
CO2	2	2	1	2	3	1	3	1	1	2	1	1
CO3	2	2	1	3	-	1	1	2	3	1	3	1
CO4	2	1	2	3	1	-	-	2	1	1	3	1
CO5	2	1	2	3	-	2	3	1	2	1	2	-
WA	**2**	**1.4**	**1.5**	**2.75**	**2**	**1.75**	**2.25**	**1.4**	**1.6**	**1.2**	**2.25**	**1**

GLOBAL TOURISM GEOGRAPHY

Nature	Area	Semester	
Elective-II	**Tourism &Travel Management**	**III**	
Course Code	**Course Name**	**Credit/Distributions**	
22C3T2	**GLOBAL TOURISM GEOGRAPHY**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

1. Course Outcomes

- To acquaint with the interdependence between geography and tourism;
- To familiarize on the locales, attractions, and accessibility to major tourist destinations across the continents; and
- To be able to plan tour itineraries of various countries across time zones.

Unit I **09 hrs**

Physical Geography, Time Calculation and Transport System: North, South and Central America – Europe – Africa - Asia & Australasia, Map Reading: Latitude - Longitude - International Date Line , Time Zones, Calculation of Time: GMT Variation , Tourism Transport Systems: Major Destinations and Routes - Major Railway Systems and Networks - Water Transport - Road Transport.

Unit II **08 Hrs**

Tourist Destinations in the Americas: Key Features- Special Interests- Activities-Travel Formalities, North American Destinations: Canada- the United States of America, Mexico, Central America: Bermuda-the Caribbean Islands, South American Destinations: Brazil-Uruguay, Argentina, Chile- Peru.

Unit III **08 Hrs**

Tourist Destinations in Europe: Key Features- Special Interests- Activities- Travel Formalities, Countries: United Kingdom- France- Italy- Spain-Switzerland- Netherlands and Germany.

Unit IV **08 Hrs**

Tourist Destinations in Africa: Key Features- Special Interests- Activities-Travel Formalities, Regions: Western Africa- Eastern Africa- South Central Africa- South Africa, Important Destinations: the Egypt- Mauritius-Seychelles.

Unit V **08 hrs**

Tourist Destinations, Key Features, Special Interests & Activities, Travel Formalities in Asia, Australia, and Oceania: Important Tourist Destinations of South Asian, South-East Asia and Far East, Tourist Destinations of the Middle East and West Asia, Australia, New Zealand, Fiji, Papua New Guinea and French Polynesia.

BOOKS FOR REFERENCES

1. Boniface, B., Cooper, R. & Cooper, C. (2016), World Wide Destinations – The Geography of Travel and Tourism. New York: Routledge.

2. Nelson, V. (2013). An Introduction to the Geography of Tourism. United Kingdom: Rowman and Littlefield Publisher.

3. Hall, M. (1999). Geography of Travel and Tourism. London: Routledge.

4. Hall, M., & Page, S.J. (2006). The Geography of Tourism and Recreation - Environment, Place and Space. London: Routledge.

5. Hudman, L.E., & Jackson, R. H. (2003). Geography of Travel and Tourism. London: Thomson.

6. IATA. (2009). Travel Information Manual. Netherlands: IATA Publications.

Course Outcomes:

1. To acquaint with the interdependence between geography and tourism;
2. To familiarize on the locales, attractions, and accessibility to major tourist destinations across the American continents.
3. To familiarize on the locales, attractions, and accessibility to major tourist destinations across the Europeancontinents.
4. To familiarize on the locales, attractions, and accessibility to major tourist destinations across the African continents.

To be able to plan tour itineraries of various countries across time zones.

Course Articulation Matrix - 20C3T2

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	-	3	1	2	1	3	1	3	1
CO2	2	2	3	1	3	2	1	-	3	1	2	-
CO3	2	1	1	2	1	1	2	1	1	2	1	-
CO4	2	1	1	1	1	1	1	1	1	-	-	-
CO5	2	1-	3	2	2	-	-	2	1	-	2	3
WA	**2**	**1.25**	**2**	**1.5**	**2**	**1.25**	**1.5**	**1.25**	**1.8**	**1.33**	**2**	**2**

HOTEL OPERATIONS AND MANAGEMENT

Nature	**Area**	**Semester**	
Elective-III	Tourism&TravelManagement	**III**	
CourseCode	**CourseName**	**Credit/Distributions**	
22C3T3	Hotel Operations &Management	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives:

1. To study the flow of activities and functions of hotel operations and management
2. To familiarize with hospitality, resort and spa management
3. To understand the functioning of various departments and its role in hospitality industry

Unit I **10 hrs**

Hotel and Hospitality Industry: Introduction to hotel and hospitality industry, Overview of core departments, types and classification of hotels, service industry characteristics - concept of "Atithi Devo Bhava", chain of hotels, leased and franchised hotels, future of hospitality industry, changing trends and hotel terminologies.

Unit II **8 hrs**

Front Office Operations: Front office organization, duties and responsibilities of front office staff, room tariff, meal plans, guest cycle, front office accounting and auditing, IT applications in front office, guest services.

Unit III **7 hrs**

Accommodation Management: Introduction to accommodation management, department hierarchy, duties and responsibilities, functions and operations of accommodation management, planning and organizing – inventories, budget, safety and security management.

Unit IV **8 hrs**

Food and Beverage (F & B) Management: An overview of F & B management, department hierarchy, duties and responsibilities, food production organization, operations and functions, catering service, banquet, club, Food and Beverage control.

Unit V 7 **Hrs**

Evaluating Hotel Performance and Revenue Management: Measuring methods of measuring hotel performance - occupancy ratio, average room rate, revenue per available room, yield management, guest relation management.

BOOKS FOR REFERENCE

1. Introduction to Hospitality Industry: A Text Book S.C. Bagri and Ashish Dahiya
2. Hospitality Today: Rocco M. Angelo, Andrew Vladimir
3. Hotel Housekeeping: A Training Manual by Sudhir Andrews
4. Hotel Housekeeping by Raghubalan
5. Hotel Front Office Operations and Management by Jatashankar R Tewari

6. Food production operation by PS bali
7. Professional Food and Beverage Service Management –Brian Varghese
8. Food Service Operations – Peter Jones and Cassel
9. Marketing management analysis & Planning – Kotler Philip
10. Hospitality Marketing – Wearne, Neil

Course Outcomes:

1. To acquire the concepts and functions of hotel and hospitality operations and management
2. To familiarize with front office operations.
3. To familiarize with accommodation management.
4. To familiarize with food & beverage management.
5. To enhance the knowledge related to evaluating hotel performance and revenue management

Course Articulation Matrix - 20C3T3

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	-	1	1	1	1	1	3	3
CO2	2	-	-	1	1	2	1	-	2	1	2	3
CO3	2	2	1	-	-	1	-	-	1	-	1	3
CO4	2	1	-	1	1	1	1	-	1	1	-	3
CO5	2	-	-	-	-	-	-	-	-	-	-	3
WA	**2**	**1.33**	**1**	**1**	**1**	**1.25**	**1**	**1**	**1.25**	**1**	**2**	**3**

SKILL DEVELOPMENT–3

Nature	**Area**	**Semester**	
Foundation	**General Management**	**III**	
Course Code	**Course Name**	**Credit/Distributions**	
22C313	**Skill Development-3**	**(L-0:T-0:P-1)Credit=01**	
		C1+C2	5+ 5 Marks
		C3	40Marks

Course Objectives

1. To think logically and appreciate the reasoning capability
2. To Involve the students in group discussion and mock interview exercises to enhance their employability

UnitI: **02 Hours**

Language enhancement tips, written communication skills, public speaking skills

Unit II: **02 Hours**

Exercises to develop right attitude, Self-Development, time management

UnitIII: **04 Hours**

Quantitative Aptitude & Logical Reasoning

UnitIV: **04 Hours**

GD & Mock GD

UnitV: **04 Hours**

Resume Writing, HR Interview, FAQs & Mock Interview

Course Outcomes:

1. Appreciate the reasoning capability
2. Sharpen employability skills

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	3	3	2	2	2	3	2	3	2
CO2	3	2	2	3	3	3	2	2	3	2	3	3
W.A	2.5	2	2	3	3	.5	2	2	3	2	3	2.5

Fourth Semester

EVENT

MANAGEMENT

Nature	Area	Semester	
Core	**GeneralManagement**	**IV**	
CourseCode	**CourseName**	**Credit/Distributions**	
22C401	EVENT MANAGEMENT	**(L-1:T-0:P-2)Credit=03**	
		C1+C2	30 Marks
		C3	70Marks

Course Objectives

The purpose of this course is to enable the students to acquire a general knowledge about the "event management" and to become familiar with management techniques and strategies required for successful planning, promotion, implementation and evaluation of special events with a special focus on case studies of the events.

1. To acquire an understanding of the role and purpose(s) of special events in the organizations.
2. To acquire an understanding of the techniques and strategies required to plan successful special events.
3. To acquire the knowledge and competencies required to pro- mote, implement and conduct special events.
4. To acquire the knowledge and competencies required to assess the quality and success of special events.

Unit I: Introduction **08 Hours**

Introduction -Nature, scope, significance and components of event, relationship between business and events, Responsibility of event planners, identifying suitable venue, layout.

Types of events and skills for Event management -Seminars & Conferences, Trade Shows, Sporting events, Product launch, Press conference. Skills for Event Management.

Unit II: Planning **10 Hours**

Concept, Nature and Practices in Event Management: Organizing and planning events, Customer relationship management, Staring and man- aging events business, Event coordination, Crisis planning - prevention - preparation - provision - action phase -

handling negative publicity -Different types of sponsorship - definition - objectives - target market - budget

Unit III: Preparing a proposal 12 Hours

Conducting market research - SWOT analysis - estimating attendance - media coverage - advertising - budget. Organizing the event - Purpose - venue - timing - guest list - invitations - food & beverages - room dressing - equipment - guest of honor - speakers - media - photographers - podium – exhibition and check lists.

Unit IV: Introduction to Event Marketing 12 Hours

Nature, need and importance – Marketing for event – Special feature of event marketing – Event Marketing Mix: Product, Price, Promotion, Distribution, Partnership, Segmentation and Targeting of the market for events–Types of advertising - promotions - website and text messaging, Social media platform and other digital media promotions used to market an event. Media invitations - photo-calls - press re- leases - TV opportunities - radio interviews. Special emphasis on 5 W's of event marketing.

Unit V: Preparing Human Resources for Event 14 Hours

Man power planning- training of employees – training needs identification – training methods Evaluation-Budget - cost of event - return on investment - media coverage - attendance – feedback

Reference Books:

1. Lynn Van Der Wagen& Brenda R. Carlos, Event Management for Tourism, Cultural, Business and Sporting Events, Pearson Prentice Hall, 2005
2. Event Management-PurnimaKumari
3. Event Management and Marketing: Theory, Practical Approaches and Plan- Anukrati Sharma, ShrutiArora
4. Event Management -Sandhya A Kale
5. Event Management: A Professional and Development Approach– AshutoshChaturvedi

Course Outcome

1. Enable students to evaluate the opportunities in event management and handle problems
2. Equip students to provide better services by using measuring techniques

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	2	3	1	3	2	3	2
CO2	2	3	2	2	3	2	2	2	2	2	3	3
Weighted Average	2.5	2.5	2.5	2.5	3.0	2.0	2.5	1.5	2.5	2.0	3.0	2.5

Electives: Group VI

BRAND MANAGEMENT

Nature	Area	Semester	
Elective - IV	**Marketing**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4M4	EVENT MANAGEMENT	**(L-1:T-0:P-2)Credit=03**	
		C1+C2	30 Marks
		C3	70Marks

Course Objectives

1. To analyze the importance of branding by visiting the various dimensions of brand promotion
2. To Study the factors that are associated with brand success and failure
3. To outline the importance of market planning and segmenting, targeting and positioning to make the product successful

Unit I: Introduction **12 Hours**

Introduction to Product & Brand Management, Product mix and Product line, Brand Image, Brand Equity, Brand Association, Brand Awareness, Brand Recall, Brand Positioning, Brand Narration, Brand Experience, Brand loyalty, Brand pull, Brand Promise.

Unit II: New Product Development Process **12 Hours**

Product Launch, , Launch Strategy, Reasons for New Product failures, Steps in Consumer Adoption Process, Product Life Cycle concepts.

Unit III: Market Planning **12 Hours**

Planning Process, Components of Marketing Plan – Analysis of com- petition, Product Portfolio Analysis, Customer Analysis, Segmenting – Targeting – Positioning (STP), Techniques of good positioning, Various Pricing strategies, Distribution strategies.

Unit IV: Designing and Implementing **10 Hours**

Marketing Programs to build Brand Equity, Important elements to build Brand Equity, Measuring the effectiveness of Brand Equity, Branding Strategies.

Unit V: Ethics in Brand Building **10 Hours**

Brand Marketing practices in India, Issues and Challenges of Indian Brands, Branding in rural India.

Practical Components:

1. Identify 5 major brands of India and analyze their branding efforts to bring about uniqueness to make the product successful
2. Do a mini project on social media that has been used to create a powerful brand image of a new entrant in car market
3. Interview 5 marketers and list out their brand positioning strategies to exploit the rural market

Reference Books

1. Product Management – Donald R. Lehman, Russel S. Winner and
2. Strategic Brand Management - Kevin L.Keller
3. The Brand Management Checklist – BrabVanauken and Man- aging Indian Brands – Ramesh Kumar
4. Application Exercises in Marketing – Ramesh Kumar
5. Brands & Branding by The Economist .
6. Strategic Brand Management by Jean Noel Kapferer
7. Building, Measuring, and Managing Brand Equity by Kevin L.Keller
8. Handbook of new product management – Christopher H.Luch

Outcomes:

1. Enable the students to develop and deliver effective presentation on a given brand .
2. Develop effective interpersonal communications

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	3	3	2	3	2	3	2	3	2
CO2	3	3	1	2	2	1	2	1	2	2	3	3
Weighted Average0	2.5	2.5	1	2.5	2.5	1.5	2.5	1.5	2.5	2	3	2.5

INDUSTRIALMARKETING

Nature	Area	Semester	
Elective - V	Marketing	IV	
CourseCode	CourseName	Credit/Distributions	
22C4M5	INDUSTRIALMARKETING	(L-2:T-0:P-1)Credit=03	
		C1+C2	30 Marks

Course Objectives

1. To Study the factors that are associated with business and consumer marketing
2. To acquaint with buying motivation and process involved in organizational customer
3. To study the product lifecycle of Industrial Marketing in the context of managing the business marketing

Unit I: Introduction **12 Hours**

The Nature and uniqueness of Industrial Marketing, Classification of Industrial Products, Classification of e-commerce, Difference between Business and Consumer Marketing, Classification of Business Consumers.

Unit II: Business Buying Behavior **12 Hours**

Identifying the Buying Behavior of Industrial, Buying Process and Buying Stages, Buying Center Roles, evaluation of unregistered suppliers and registered suppliers for identification, Marketing Information Sys- tem for Industrial Marketing.

Unit III: Segmenting, Targetingand Positioning **12 Hours**

Industrial Marketing Planning Process, Demand and Supply Analysis, Segmenting, Targeting and Positioning, Industrial Product Strategy and Product Policy, Product Portfolio, New Product Development, Product Life Cycles of Industrial Products.

Unit IV: Industrial Marketing Channels`

10 Hours

E-channels, Concept of Logistics and Supply Chain Management in Industrial Marketing. Pricing strategy for Business Markets, Competitive Bidding Technique, Types of Leasing, Personal Selling Process in Industrial marketing

Unit V: Key Account Management **10 Hours**

ABC Analysis, Selling through Internet, Issues and Challenges relating to transaction using software.

Practical Components:

1. Pay a visit to Government as well as a private manufacturing company and study the differences in their purchasing procedures, pricing, payment terms
2. Visit an industrial unit which sells directly as against using an intermediary or distributor and list out the advantages and drawbacks of selling directly
3. Imagine you are marketing a product like Air conditioners which can be sold to the large buyers (Business Marketing) like KSTDC as well as in the retail market and list out the differences in terms of Product, Price, Place and Promotion

Reference Books

1. Business Marketing Management – Michael Hutt and Thomas Speh, 8th Edition, Thomson Learning
2. Industrial Marketing – Reeder and Reeder (PHI)
3. Industrial Marketing – Richard Hill (AITBS)
4. Supply Chain Management – Sunil Chopra and Peter Meindl (1st Indian reprint, Pearson Education)
5. Business Marketing – Haynes
6. Business Marketing – Rangan

Course Outcome

1. Provide analytical skills to recognize the product manufacturing strategies that support broader marketing decisions.
2. Evaluate the capacity and demand management in industrial marketing.
3. Comprehend the art to explain the concept of product quality.

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3	2	3	2	3	2
CO2	2	3	1	2	3	2	2	2	2	2	3	3
CO3	3	3	3	3	2	2	2	2	2	2	3	3
Weighted Average	2.7	2.7	2.0	2.7	2.7	2.0	2.3	2.0	2.3	2.0	3.0	2.7

SERVICES MARKETING

Nature	**Area**	**Semester**	
Elective - VI	**Marketing**	**IV**	
CourseCode	**CourseName**	**Credit/Distributions**	
22C4M6	**SERVICES MARKETING**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30 Marks**
		C3	**70Marks**

Course Objectives

1. To analyze the growing importance of Services marketing post LPG
2. To Study the factors affecting the customer expectation and satisfaction
3. To list the roles of effective service delivery to bring about the sales performance

Unit I: Introduction **10 Hours**

Definition and uniqueness of Services, Emerging trends in Services Marketing, Service Marketing mix, recent trends in Services Marketing, Growing potential of Service Industry post Liberalization.

Unit II Consumer Behaviors in Services **14 Hours**

Gap Analysis and Consumer Behavior, Gap Analysis and Strategies, Customer Perception and expectations, Factors influencing Customer Expectations, Services Design and Development, inevitability of Service Standards post globalization.

Unit III: Management of Service Performance **10 Hours**

Service Delivery and Performance, Employees role in Service Delivery - Boundary-spanning roles, Customer roles in Service Delivery, Delivering Services through

Intermediaries and Electronic Channels.

Unit IV: Management of Marketing channels **12 Hours**

Managing Demand, Managing Service Promises, Integrated Service, Marketing Communications, Pricing of Services, The integrated gap models for Service Quality

Unit V: Marketing of Services **10 Hours**

Health Care, Hospitality Services, Transport Services, Telecommunication Services, Consultation Services, Financial Services.

Practical Components:

1. Identify 5 major companies in service sectors that have generated employment opportunities in India
2. Visit 2 Car dealers and gather information on expectations and satisfaction from customers about recently introduced car
3. Visit a major Hospital and gather data to analyze the service gap experience by the patients

Reference Books

1. Services Marketing – Integrated Customer Focus Across The Firm – Valarie A. Zeithaml and M. J. Bitner
2. Services Marketing – People, Technology and Strategy – Lovelock
3. Services Marketing – Ravishankar
4. Marketing of Services – Jha
5. Marketing of Services – G.S. Bhatia
6. Marketing of Services – Sahu and Sinha

Cou Course Outcome

Provide analytical skills to recognize the service as strategy that support broader marketing decisions.

2.Evaluate the capacity and demand management in service marketing.

3.Comprehend the art to explain the concept of service quality.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3	2	3	2	3	2
CO2	2	3	2	2	3	2	2	2	2	2	3	3
CO3	3	3	3	3	3	2	2	2	2	2	3	3
Weighted Average	2.66	2.66	2.66	2.66	32	2	2.33	2	2.33	2	3	2.66

INTERNATIONAL MARKETING

Nature	Area	Semester	
Elective - VII	**Marketing**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4M7	**INTERNATIONAL MARKETING**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30 Marks**
		C3	**70Marks**

Course Objectives

1. To explore the theories, trade and its barriers of India's foreign trade
2. To acquaint with International market entry strategies
3. To learn the factors affecting International marketing
4. To be acquainted with International economic Institutions and forums

Unit I: Introduction **10 Hours**

Introduction and Importance of International Marketing, Concepts in International Trade, Theories of International Trade, Trade Barriers, Panoramic view of India's Foreign trade since Independence.

Unit II: International Marketing Environment **10 Hours**

Economic, Political, Legal, Socio-cultural and Demographic environment.Market entry strategies – MNC's, Global marketers etc.

Unit III: International Marketing Mix **12 Hours**

Factors affecting International Marketing, International Marketing mix Strategy, Distribution Strategies and Types of Intermediaries in Inter- national Marketing.

Unit IV: Export Planning **12 Hours**

Export Finance, Letter of Credit, Export Licensing, Export Houses, Export risk and

Insurance, Export Promotion and Incentives provided by the Government of India. Import-Export policies of the Government of India.

Unit V:International Economic Institutions and Forums **12 Hours**

GATT, WTO, EFTA, LAFTA, EU, SAARC, BRICS, World Bank,IMF and other trading blocks and common marketing for International Business.

Practical Components:

1. Pay a visit to the web sites of companies like PEPSI, Huyndai, Addidas etc., and study their practices in India as well as their home country in the areas of technology, pricing, service, warranty, advertising etc.
2. A Khadi apparel manufacturer in Mysore wants to export his apparel to Sri Lanka and Australia. Based on internet research. What would be your advice to overcome trade barriers
3. Visit a company involved in export business. Learn and record the difficulties faced by them when they began to export

Reference Books

1. International Marketing – SakOnkvisit and John J. Shaw
2. International Marketing – Philip Cateora and John Graham
3. International Marketing – C.A. Francis

rse Outcome:

CO1: Develop an understanding of and an appreciation for basic international marketing concepts, theories, principles, and terminology.

CO2: Be able to demonstrate an awareness and knowledge of the impact of environmental factors (cultural, economic, institutional, legal and political) on international marketing activities.

CO3: Be capable of identifying international customers through conducting marketing research and developing cross-border segmentation and positioning strategies.

CO4: Be capable of developing a global marketing strategy by applying the basic concepts of product, pricing, promotion, and channels of distribution in international settings.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	3	3	3	3	3	3	3	3	3

CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	2	1	2	2	2	3	3	2	2	2
CO4	3	2	3	3	2	3	3	2	2	2	3	3
W.A	3	2.2	2.7	2.5	2.5	2.7	2.7	2.7	2.7	2.5	2.7	2.7

Electives : Group VII

MERGER AND ACQUISITION

Nature	**Area**	**Semester**	
Elective - IV	**Finance**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4F4	**MERGER AND ACQUISITION**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30 Marks**
		C3	**70Marks**

Course Objectives

1. To understand the role of mergers and acquisitions in firm's strategy,
2. To Know the main concepts related to managing mergers and acquisitions, and
3. To apply common frameworks and tools related to mergers and acquisitions.

Unit I – Introduction to M & A 08 Hours

Types of merger– theories of mergers- operating, financial and managerial synergy of mergers – value creation in horizontal, vertical and conglomerate mergers – internal and external change forces contributing to M & A activities- Impact of M & A on stakeholders. Reasons for failures of M & A-synergy-types of synergy–value creation in M&A-SWOT analysis- BCG matrix (Theory)

Unit II: Merger Process 10 Hours

Procedure for effecting M & A-Five-stage model–Due diligence–Types, process and challenges of due diligence-HR aspects of M & A–Tips for successful mergers-Process of merger integration (Theory)

Unit III: Financial Evaluation of M& A 10 Hours

Merger as a capital budgeting-Business valuation approaches-asset based, market based

and income based Approaches-Exchange Ratio (Swap Ratio)-Methods of determining exchange rate. (Theory and Problems)

UnitIV: Accounting aspects of Amalgamation 14 Hours

Types of amalgamations (Amalgamation in the nature of merger and amalgamation in the nature of purchase)-Methods of Accounting-Pooling of interest method and Purchase method)–Calculation of purchase consideration-Journal entries in the books of transferor & transferee company-Ledger accounts in the books of transferor and transferee companies (Theory and Problems).

UnitV: Takeovers 14 Hours

Takeovers, types, and takeover strategies, - Takeover defenses – financial defensive measures – methods of resistance – anti-takeover amendments – poison pills Legal aspects of Mergers/amalgamations and acquisitions/takeovers- Combination and Competition Act- Competition Commission of India (CCI), The SEBI Substantial Acquisition of Shares and Takeover code

Practical Component:

1. Pick up any latest M&A deal.
2. Generate the details of the deal and then study the deal in the light of the following.
3. Nature of the deal: merger, acquisition, or takeover. If it is a merger, what type of merger is it?
4. Synergies likely to emerge to the combining and the combined firm(s) from the deal
5. The valuation for the merger
6. The basis for exchange rate determination

Recommended Books:

1. Rabi Narayan Kar and Minakshi, Taxmanns. Mergers Acquisitions & Corporate Restructuring - Strategies & Practices

2. SheebaKapil and Kanwal N. Kapil, Wiley. Mergers and Acquisitions

3. MachirajuH.R.(2003), New Age International (P) Ltd., Mergers, Acquisitions and Takeovers ,New Delhi

Reference Books:

1. Mergers etal.-Issues, Implications, and Case Law in Corporate Restructuring, Ramanujam S., Tata McGraw Hill Publishing House,2000.

2. Takeovers, Restructuring and Corporate Governance, Weston, Mitchell and Mulherin, 4th Edition, Pearson Education, 2003.

COURSE OUTCOME:

After completing the course student should be able to

CO1 Critically analyse Impact of Mergers and acquisition on stakeholders

CO2Make an informed decision with due diligence

CO3 Apply Business valuation approaches

CO4 Evaluate purchase consideration in Mergers and Acquisition

CO5Analyse the Legal aspect of merger and acquisition

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	2	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	3	3	3	3
CO3	3	3	3	3	3	1	2	1	1	3	3	3
CO4	3	3	3	3	3	3	3	2	2	3	3	3
CO5	2	2	3	3	1	1	2	2	2	2	2	2
Weighted Average	2.8	2.8	3	3	2.6	1.8	2.6	2.2	2.2	2.8	2.8	2.8

DERIVATIVES

Nature	Area	Semester	
Elective - IV	Finance	IV	
Course Code	Course Name	Credit/Distributions	
22C4F5	DERIVATIVES	(L-2:T-0:P-1)Credit=03	
		C1+C2	30 Marks
		C3	70Marks

Course Objectives:

1. To understand the features of financial derivatives.
2. To hedge risk and practice risk management using derivatives.
3. To explain the use of options and futures contracts for tactical portfolio strategies purpose
4. To provide an understanding of pricing financial derivatives, including familiarity with some central techniques, like the binomial model, and the Black-Scholes model
5. To explain the fundamentals of credit risk management and Value at Risk

Unit I: Introduction to Derivatives **10 Hours**

Forwards, Futures, Options, Swaps, trading mechanisms, Exchanges, Clearing house (structure and operations, regulatory framework), Floor brokers, Initiating trade, and Liquidating or Future position, Initial mar- gins, Variation margins, Marking to Market (MTM) ,Types and orders. Future commission merchant

Unit II: Forward and Future Contracts **10 Hours**

Forward contracts, futures contracts, Financial futures, Valuation of forward and future prices of index futures, Valuation of stock futures, Hedging using futures contracts, Hedging using stock & index future contracts, Adjusting Beta of a portfolio using future contract. Interest rate futures and currency futures.

Unit III: Valuation of options **12 Hours**

Options-Types of options, option pricing, factors affecting option pricing call and put options on dividend and non-dividend paying stocks, - mechanics of options - stock options - options on stock index - options on futures – interest rate options. Concept of exotic option. Hedging & valuation of option: basic model, Black and Scholes Model, Option Greeks. Arbitrage profits in options.

Unit IV: Options Contracts and

Trading Strategies **12 Hours**

Put-call parity; Trading strategies (Butterfly, Bull, Bear, Box Strangle) involving options

Unit V: Commodity Market in India **12 Hours**

Commodity futures and options, outlines of SEBI guidelines, working of NCDX, MCX.

Practice Component

1. Preparation of working structure of various stock exchange/ broking firms in India.
2. NISM Exam
3. Mock trading using Money control

Recommended books:

1. John C. Hull, Pearson Education. Options Futures & Other Derivatives,
2. Rajiv Srivastava, Oxford University Press, (2010) Derivatives and Risk Management,
3. Options & Futures- Vohra& Bagri, 2/e, TMH.

Reference Books:

1. Derivatives, Principles and Practice, Sundaram& Das, McGraw Hill.
2. Options & Futures –Edwards & Ma, 1/e, McGraw Hill.

Outcomes:

- Demonstrate a comprehensive knowledge of derivatives, its types and market structure
- Enable to select right kind of derivatives amongst forward, futures, options and swaps for risk hedging.
- Evaluate forward, futures, options pricing models for make high profit through risk hedging.
- Critically analyse trading/hedging strategies using derivatives options contracts.
- Comprehensive knowledge derivative products and their performance in Indian and global markets.

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	1	2	1	2	2	1	2	2	2
CO2	3	1	3	3	3	1	2	3	1	3	3	2
CO3	3	1	3	3	3	1	2	3	2	3	3	2
CO4	3	1	3	3	2	1	2	2	2	3	3	2
CO5	3	1	2	1	2	1	1	1	2	2	2	2
W.A	3	1	2.6	2.2	2.4	1	1.8	2.2	1.6	2.6	2.6	2

INTERNATIONAL FINANCE

Nature	Area	Semester	
Elective - VI	**Finance**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4F6	**INTERNATIONAL FINANCE**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30 Marks**
		C3	**70Marks**

Course Objectives:

1. To understand the International Financial Environment and the Foreign Exchange market.
2. To learn hedging and Forex risk management.
3. To learn the Firm's Exposure to risk in International environment and various theories associated with it.

Unit I: International Financial Environment **08 Hours**

Role of International Financial Management in Corporate Financial Management, Dynamics of Global Capital Flows, India's Balance of Payment, trends, direction and composition.CAD (current account deficit) problems. Economic and Monetary Union

Unit II: Foreign Exchange Market **14 Hours**

Function and Structure of the Forex markets, Foreign exchange market participants, Types of transactions and Settlements Dates, Exchange rate quotations, Determination of Exchange rates in Spot markets. Exchange rates determinations in Forward markets. Exchange rate behavior-Cross Rates- - Bid – Ask – Spread (Theory & Problems).

Unit III: Foreign Exchange Risk Management **12 Hours**

Hedging against foreign exchange exposure – Forward Market- Futures Market- Options Market-Currency Swaps-Interest Rate Swap- problems on both two way and three way Swaps (Theory & Problems).

Unit IV: International Parity Relationships &

Forecasting Foreign Exchange **14 Hours**

Measuring exchange rate movements-Exchange rate equilibrium–Factors effecting foreign exchange rate-Forecasting foreign exchange rates, Interest Rate Parity, Purchasing Power Parity &International Fisher effects, Arbitrage, Types of Arbitrage – Locational, Triangular and Covered Interest Arbitrage (Theory & Problems)

Unit V: International Investment Decision 08 Hours

Risk Factors, country Risk, cost and Benefits International Capital Budgeting- Evaluation Criteria

Recommended Book:

1. MadhuVij-International Financial Management, 2nd Edition, 2003
2. AptePrakash G., International Finance, Tata McGraw Hill Ch1 Buckley, Adrian Multinational Finance, New York, Prentice Hall Inc.
3. Kim, Suk and Kim, Seung – Global Corporate Finance: Text and Cases, 2nd ed. Miami Florida, Kolb
4. Shapiro, Alan.C – Multinational Financial Management, New Delhi, Prentice Hall of India

Reference Books:

1. Shailaja G., International Finance, University Press India P. Ltd Ch.9, 15, 18, 19 and 20.
2. International Financial Management by Jeff Madura

COURSE OUTCOME:

After completing the course student should be able to

CO1 Analyse the international integrationof financial markets

CO2 Critically analysestrategies to Hedge against foreign exchange exposure

CO3 Apply financial knowledge in forecasting foreign exchange rates

CO4 Evaluate strategies used by Multinational Corporation

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	1	2	3	3	3	3	3
CO2	3	3	3	3	3	1	2	3	2	3	3	3
CO3	3	3	3	3	3	1	3	2	2	3	3	3
CO4	3	3	3	3	2	1	2	3	3	3	3	3
Weighted Average	3	2.75	3	3	2.75	1	2.25	2.75	2.5	3	3	3

TAXATION

Nature	Area	Semester	
Elective - VII	**Finance**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4F7	**TAXATION**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30 Marks**
		C3	**70Marks**

Course Objectives:

1. To provide the students with a comprehensive understanding of residential status in tax laws
2. To acclimatize the students with process of computing tax liability of Individuals
3. To understand corporate taxation system in the country
4. To know the deductions and exemptions available in the tax laws
5. To Provide Insight into GST

Unit I: Introduction to Direct Tax **12 Hours**

Basic concepts: assessment year, previous year, person, assessee, Income, charges on income, gross total income, capital and revenue receipts, residential status, receipt and accrual of income, connotation of income deemed to accrue or arise in India. Tax Planning, Tax Evasion and Tax Management. (Problems on residential Status of Individual assessee).

Unit II: Heads of Income **10 Hours**

Explanation under various heads of income .Income from salary (Basic problems), Income from House Property (Theory Only) Income under the head Profit and Gains of

Business or Professions and its computation scheme of business deductions (Problems on computation of income from business/ profession of Individual assessee).

Unit III: Income under Capital Gain **10 Hours**

Income under capital gain, basis of charge, transfer of capital asset, inclusion & exclusion from capital asset, capital gain, computation of capital gain(theory& problems), deductions from capital gains. Income from other Sources (Theory Only), Permissible deductions under section 80C to 80U. Setoff and carry forward of losses.

Unit IV: Computation of Tax Liability **10 Hours**

Computation of tax liability of a firm and partners.Computation of taxable income of a company with special reference to MAT.Corporate dividend Tax.

Unit V: Goods and Service Tax **14 Hours**

Introduction, Overview and Evolution of GST, Indirect tax structure in India , Introduction to Goods and Service Tax (GST) - Key Concepts , Phases of GST, GST Council , Taxes under GST, Cess, Registration under GST - Threshold for Registration, Regular Tax Payer, Composition Tax Payer, Unique Identification Number, Registration Number Format. Types of GST returns and their due dates, late filing, late fee and interest. ,

Practical Components:

1. Preparation of Income tax returns of Individual assesses.
2. Studying the online submission of Income tax returns

Reference Books:

Students' Handbook on Taxation: Manoharan T.N. &Hari G.R., 29/e, Snow White Publications Pvt. Ltd.

1. Goods and Service Tax with Customs Law: Srinivas K.R, Jayaprasad D &Bhavani M., Kalyani Publications.
2. Systematic Approach to Indirect Tax- Kumar, Sanjeev
3. Text Book of Indirect Tax – Sinha P.K
4. Dr. Vinod Singhania, Taxman Publication, New Delhi.

Outcomes:

- Comprehensive knowledge of income tax concept, functions and provisions.

- Illustrate theincome of different heads and gross total income of an Individual assessee
- Illustrate the concepts and features of assessment of profits and gains of individual and corporate assessee.
- Knowledge of different types of return filing
- Comprehensive knowledge of GST and its provisions

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	1	2	1	1	2	2	2	2	2
CO2	3	1	3	3	3	1	1	3	2	3	3	2
CO3	3	1	3	3	3	1	1	3	2	3	3	2
CO4	3	1	3	1	3	1	1	3	2	2	3	2
CO5	3	1	2	1	1	1	1	3	2	2	3	2
W.A	3	1	2.6	1.8	2.4	1	1	2.8	2	2.4	2.8	2

Electives: Group - VIII

STRATEGIC HUMAN RESOURCE MANAGEMENT

Nature	Area	Semester	
Elective -IV	Human Resource	IV	
Course Code	Course Name	Credit/Distributions	
22C4H4	STRATEGIC HUMAN RESOURCE MANAGEMENT	(L-3:T-0:P-0)Credit=03	
		C1+C2	30 Marks
		C3	70Marks

Course Objectives

1. To learn the fundamentals of SHRM framework and analyze the overall role of SHRM in business.
2. To improve the ability to think how SHRM should be used as a tool to achieve competitive advantage.
3. To understand the key element of SHRM and unite with organizational culture.

4. To magnify the numerous issues that crop in while implementing SHRM and find suitable remedies for the same.

Unit I: Context of Strategic HRM **12 Hours**

Introduction, An investment perspective of HRM – Adopting an in- vestment perspective, Valuation of assets, Understanding and measuring human capital, Human resource metrics, factors influencing investment oriented organizations, Impact of changes in technology - Telecommuting, Employee surveillance and monitoring, e-HR, Social networking, Workforce demographics & diversity on HRM – Generational diversity, Sexual orientation, individuals with disabilities, other dimensions of diversity.

Unit II: Strategic Role of HRM & Planning **12 Hours**

strategic HR Vs Traditional HR – Roles assumed by the HR function, HR roles in a knowledge based economy, SHRM critical HR competencies, Lepak and Snell's Employment models, Barriers to strategic HR, Strategic HR planning – Objectives of HR planning, Types of planning - aggregate & succession planning.

Unit III: Strategic Perspectives on

Recruitment, Training & Development **12 Hours**

Temporary Vs Permanent employees, Internal Vs External recruiting, methods of recruiting, Selection - Interviewing, testing, references; International Assignment, Diversity, Strategizing training & development, Needs assessment, objectives, Design and delivery, Evaluation.

Unit IV: Strategic Perspectives on

Performance Management **10 Hours**

Feedback & Compensation Use of the System, who evaluates, what to evaluate & how to evaluate, measures of evaluation, Compensation Equity, Internal equity, external equity, and Individual equity.

Unit V: Employee Separation **10 Hours**

Reduction in force, turnover, retirement, Global Human Resource Management – InternationalVs Domestic HRM, Strategic HR Issues in International Assignment, Repatriation.

Text Books

1. Jeffery Mello. (2012). *Strategic Management of Human Resources*. (3rd International ed.). Cengage Learning

2. Dr.S.S.Khanka. (2003). *Organizational Behavior*, (4th Ed.) S.Chand& Company pvt ltd

Reference Books

1. Luis R. Gomez-Mejia. David B.Balkin, Robert L. Cardy, (2001). *Managing Human Resources,* PHI.
2. S.K.Bhatia. (2007). *Strategic Human resources Management: Winning through People*, Deep & Deep Publication Pvt. Ltd.
3. Charles R, Greer. (2003). *Strategic Human Resource Management*. (2nd ed.). Prentice Hall
4. Kandula S.R. (2001). *Strategic Human Resource Development*. (New Title Edition). Prentice Hall India.

Course Outcomes

After the completion of the course, students will be able to:

1. Recognize the fundamentals of SHRM framework and analyze the overall role of SHRM in business.
2. Compute the strategic planning for Human resource.
3. Design the training program strategically as required for organization.
4. Design and implement compensation packages for human resource.
5. Gain insights on various operations of HRM at International level.

CO / PO ARTICULATION MATRIX

O/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	3	3	2	2	2	1	3	3
CO2	2	3	2	3	2	2	2	3	2	1	2	3
CO3	2	3	2	3	3	2	2	3	1	1	1	2
CO4	2	3	2	2	2	3	3	1	1	2	1	3
CO5	2	3	3	3	2	2	2	3	1	1	1	2
W.A	**2**	**3**	**2.2**	**2.6**	**2.4**	**2.4**	**2.2**	**2.4**	**1.4**	**1.2**	**1.6**	**2.6**

INDUSTRIAL LABOUR LEGISLATION

Nature	Area	Semester	
Elective -V	**Human Resource**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4H5	**INDUSTRIAL LABOUR LEGISLATION**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30 Marks**
		C3	**70Marks**

Course Objectives

1. To know the development and the Judicial setup of Labour Laws
2. To learn the salient features of Welfare and Wage Legislation
3. To learn the Laws relating to IR, Social Security and Working Conditions

Unit I: Industrial Disputes Act 1947 **12 Hours**

Emphasis on Sec 2 (all definitions), 9A, 10, 12, 17 , 18 , 22 , 23 , 24, 25, Chapter V B, Up to Sec 25 (S) and Sec33. Karnataka ID Rules, Industrial Employment (Standing Orders) Act, Karnataka Standing Orders Rules.

Unit II: Indian Factories Act 1948 **12 Hours**

Karnataka Factory Rules, Contract Labour (Regulation and Abolition) Act 1971, Karnataka Contract Labour Rules.

Unit III: Payment of Gratuity Act 1982 **10 Hours**

Payment of bonus act 1965, Karnataka Industrial Establishments (National Festival Holidays) Act

Unit IV: ESI Act 1948 **12 Hours**

Employees' provident fund and miscellaneous provisions act 1952, workmen's compensation act 1932. Payment of wages act 1936.

Unit V: Code of Discipline in Industries **10 Hours**

Report of the second national labour commission 2002.Latest ILO deliberations on labour legislation in developing countries.

Practical Component

1. Students are taken to Labour Court to get practical exposure on labour proceedings
2. Arrange a debate on Constitutional provisions of Labour Law

Reference Books

1. P.L.Malik. (2013). Industrial Laws, (15th Ed.). Eastern Book Publishing
2. R. J Reddy (2004). Industrial Law, APH Publishing
3. S.N Mishra (2014). Industrial and Labour Law. (27th ed.). Central Law Publications

Course Outcomes

After the completion of the course, students will be able to:

1. Recognize the existing provisions provided under Factories Act.
2. Assess the provisions under Industrial Disputes Act.
3. Gain insights on payment of Gratuity Act.
4. Analyze the provisions under employees' Provident Fund and Workmen's Compensation Act.
5. Recognize the ILO deliberations and code of discipline in industries.

CO / PO ARTICULATION MATRIX

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	3	2	2	3	2	3	1	2	1
CO2	2	2	2	3	3	3	3	3	1	2	3	3
CO3	2	3	3	3	3	2	2	2	1	3	3	3
CO4	2	1	3	2	3	3	2	2	3	3	2	3
CO5	2	2	3	3	2	2	3	3	2	-	1	3
W.A	**2**	**2.2**	**2.8**	**2.8**	**2.6**	**2.4**	**2.6**	**2.4**	**2**	**1.8**	**2.2**	**2.6**

INDUSTRIAL RELATIONS

Nature	Area	Semester	
Elective -VI	Human Resource	IV	
Course Code	Course Name	Credit/Distributions	
22C4H6	INDUSTRIAL RELATIONS	(L-2:T-0:P-1)Credit=03	
		C1+C2	30 Marks
		C3	70Marks

Course objectives

1. To understand the importance of Human Relations at work
2. To distinguish the procedures concerning Worker Participation and Participatory Institutions and Instruments of Trade Union
3. To distinguish Employee Rights & Obligations according to the scope of employment
4. To analyze the field of Labor Relations in an Interdisciplinary Manner
5. To Synthesize the proposals for Legislative Initiatives

Unit I: Industrial Relations **12 Hours**

Historical background, concept, Meaning and scope of IR, stake holders of IR, various factors influencing IR, Perspectives/Approaches to IR- Unitary, Pluralist, Radical, Psychological approach, Sociological approach, Human Relations approach, Socio ethical approach, Gandhian/ Trusteeship approach, Systems approach, Essentials of sound IR policy, IR strategies, Legal frame work: The Industrial Disputes Act 1947, Industrial conflict Disputes – Causes and Consequences of Industrial Conflicts in India, Conflict resolution.

Unit II: Trade Unions and Related aspect **10 Hours**

Trade union movement and growth of TU in India, national level federations, trade union problems, trade union organization, leadership and management of Trade union, trade union act 1926, registration of trade union, employers association – objectives, origin and

growth, legal status, problems of trade unions.

Unit III: Grievances and Disciplines **12 Hours**

Grievances, redressal, discipline, standing orders, acts of misconduct, show cause notice, suspension, Enquiry procedure, Principles of natural justice, Punishments, Demotion suspension, Termination, Removal and dismissals, Conflicts – Industrial disputes –Lay off, Termination simplicitor, Retrenchment, closures, VRS.

Unit IV: Collective Bargaining **10 Hours**

Concept, its relevance in IR, CB as an institution, ILO perception of CB, Objectives of CB, Structure, Functions, process, negotiations, bargaining approaches & techniques, patterns of bargaining.

Unit V: Settlements **12 Hours**

Types of settlement wage settlement, bonus settlement, productivity settlement, VRS settlement, Union issues settlement, Reorganization settlement, transfer, Layoff, retrenchment and closure settlements.

Practical Component

1. Give a case of collective bargaining and ask the students to role play
2. Arrange a debate in the classroom about rights and duties of trade union of workers

Text Books

1. Mamoria, Mamoria, Gankar,. (2016). *Dynamics of Industrial Relations.* Himalaya Publishing House

2. C S VenkataRatnam. (2017). *Industrial Relations*(2nd ed.). Oxford University Press

Reference Books

1. A M Sarma. (2016). *Industrial Relations &Labour Laws*. (Revised ed.). Himalaya Publishing House
2. ArunMonnappa. (2017). *Industrial Relations &Labour Law.* (2nd ed.). McGrawhill Education

CO1. To familiarize with the role of management and unions in the promotions of industrial relations.

CO2. Be acquainted with the concepts, principles and issues connected with trade unions.

CO3. Be acquainted with the concepts, principles connected with collective bargaining,

grievance redressal, and employee discipline and dispute resolution**.**

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	2	-	3	-	3	3	-	2	-
CO2	3	-	2	-	3	3	-	2	-	-	-	-
CO3	3	3	3	1	3	3	1	2	3	3	2	-
Weighted Average	3	2.5	2.67	1.5	3	3	1	2.33	3	3	2	-

MANAGING KNOWLEDGE WORKERS

Nature	**Area**	**Semester**	
Elective -VI	**Human Resource**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4H7	**MANAGING KNOWLEDGE WORKERS**	**(L-3:T-0:P-0)Credit=03**	
		C1+C2	**30 Marks**
		C3	**70Marks**

Course objectives

1. To analyze and define the links between Knowledge Management, Organizational Learning
2. To analyze the fundamental elements pertaining to Knowledge Management
3. To examine and Evaluate the Role of Leadership in Facilitating Human Infrastructure to enable best practices
4. To Identify the Drivers and Inhibitors of Effective KM Practices to promote Innovation and improving projects and management practices at a large

Unit I: Knowledge Management **12 Hours**

The changing nature of organizations – workforce composition, evolving work roles and responsibilities, Team work, Relationship building, Communication, Leadership, Decision making, Change management, worker motivation, Infrastructure, concept of Knowledge management, Drivers of knowledge management, Knowledge as an asset –

Explicit knowledge and Tacit knowledge, Organizational knowledge, Knowledge management as an emerging concept - leadership and knowledge management, Developing a knowledge culture, learning & develop- mental organization, Asset based corporate development, Applying knowledge to work practices, Knowledge Systems, Developing a Knowledge Service, The challenge for Strategic Knowledge Leadership.

Unit II: Strategic Knowledge Management **12 Hours**

Models of knowledge management, Knowledge management Life cycle, knowledge workers, Skills and competencies of knowledge workers, phases of knowledge development – Knowledge sourcing, Knowledge Abstraction, Knowledge Conversion,Knowledge Diffusion, Knowledge development and refinement, Knowledge management infrastructure – Managerial infrastructure, Technological infrastructure, Social infrastructure, harnessing organizational knowledge, Enabling Knowledge Transference, The five P's of strategic management, Building knowledge management into the StrategicFramework.

Unit III: Knowledge Leader **10 Hours**

Contributory Disciplines to Knowledge Leadership - Librarianship, Information Technology, Human Resource Management, Business management, The generic Attributes of a knowledge leader – Strategic visionary, Motivator, Communicator, Change agent, Coach Mentor and model, Learning facilitator, Knowledge Executor, Specific knowledge Leadership Roles – Strategic knowledge leader, Core leaders, Leading Knowledge Teams – Self managed knowledge teams, Virtual knowledge teams, Leading a Knowledge network, Recruiting and Selecting Knowledge Leaders.

Unit IV: Developing and sustaining

a Knowledge Culture **10 Hours**

Knowledge Culture Enablers – Core values, Structural support, Enacted values, Interaction with colleagues, maintaining the Knowledge Culture during Change, Reviewing the existing knowledge culture, implementing knowledge culture enhancement programs, maintaining the Knowledge Culture.

Unit V: Knowledge Management &

HRM Practices **12 Hours**

Structural Support for knowledge management, Impact of Organizational Structure on Knowledge Management – Functional structure, Divisional structure, Matrix model, Staffing – workforce planning, Defining core competencies, Selection and Recruitment,

Induction orientation and acculturation, work context management, Performance Management – Performance standards, performance management process, providing feedback, Rewarding high achieving Knowledge Workers, Learning & Development – Individual learning, succession planning, Learning transfer, Organizational Evaluation and Review – Exit interviews, Performance measures, Organizational development

Text Books

1. SheldaDebowski. (2005). *Knowledge Management*. (1st ed.). John Wiley India Pvt. Ltd.
2. Elias M.Awad& Hassan M.Ghaziri. (2004). *Knowledge Management*. Pearson Education.
3. Carl Davidson & Philip Voss. (2003). *Knowledge Management*. Vision Book India

COURSE OUTCOME

CO1: Recognize the significance of knowledge workers in an organization

CO2: Gain knowledge on effective harnessing of organizational knowledge

CO3: Identify the role of knowledge leader in achieving team goals

CO4: Realize the association between knowledge management and HRM practices

Course Articulation Matrix

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	3	2	1	-	2	-	-	3	2	2	-
CO2	2	3	2	2	-	2	2	-	3	1	-	1
CO3	3	1	-	-	-	-	-	-	3	-	3	2
CO4	3	2	-	-	-	-	-	-	-	-	2	1
W.A	2	2.25	1	0.75	-	1	0.5	-	2.25	0.75	1.75	1

Electives: Group IX

Brand Management

Nature	Area	Semester	
Elective-IV	Corporate Social Responsibility	IV	
CourseCode	CourseName	Credit/Distributions	
22C4C4	Brand Management	(L-2:T-0:P-1)Credit=03	
		C1+C2	30Marks
		C3	70Marks

Course Objectives

- Analyze the importance of branding by visiting the various dimensions of brand promotion
- To Study the factors that are associated with brand success and failure
- Outline the importance of market planning and segmenting, targeting and positioning to make the product successful

UNIT I: **12 Hours**

Introduction to Product & Brand Management, Product mix and Product line, Brand Image, Brand Equity, Brand Association, Brand Awareness, Brand Recall, Brand Positioning, Brand Narration, Brand Experience, Brand loyalty, Brand pull, Brand Promise.

UNIT II: **12 Hours**

New Product Development Process, Product Launch, , Launch Strategy, Reasons for New Product failures, Steps in Consumer Adoption Process, Product Life Cycle concepts. **(12 Hours)**

UNIT III: **12 Hours**

Market Planning, Planning Process, Components of Marketing Plan – Analysis of competition, Product Portfolio Analysis, Customer Analysis, Segmenting – Targeting – Positioning (STP), Techniques of good positioning, Various Pricing strategies, Distribution strategies.

UNIT IV: **10 Hours**

Designing and Implementing Marketing Programs to build Brand Equity, Important elements to build Brand Equity, Measuring the effectiveness of Brand Equity, Branding Strategies.

UNIT V: **10 Hours**

Ethics in Brand Building, Brand Marketing practices in India, Issues and Challenges of Indian Brands, Branding in rural India. CSR and Marketing, CSR as Organizational Brand Building

Practical Components:

- Identify 5 major brands of India and analyze their branding efforts to bring about uniqueness to make the product successful
- Do a mini project on social media that has been used to create a powerful brand image of a new entrant in car market
- Interview 5 marketers and list out their brand positioning strategies to exploit the rural market

Reference Books

- Product Management – Donald R. Lehman, Russel S. Winner and
- Strategic Brand Management - Kevin L.Keller
- The Brand Management Checklist – BrabVanauken and Managing Indian Brands – Ramesh Kumar
- Application Exercises in Marketing – Ramesh Kumar
- Brands & Branding by The Economist .

- Strategic Brand Management by Jean Noel Kapferer
- Building, Measuring, and Managing Brand Equity by Kevin L.Keller
- Handbook of new product management – Christopher H.Luch
- Brand Management Practices – Issues and Trends by K. Sasikumar, K.S. Chandrasekar

Course Outcome

1.	Analyze the importance of branding by visiting the various dimensions of brand promotion
2.	To Study the factors that are associated with brand success and failure
3.	Outline the importance of market planning and segmenting, targeting and positioning to make the product successful
4.	Define the concept of brand equity
5.	Understand Challenges of Indian Brands, brand building and rural branding

CO/PO												
CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	2	3	3	3	3	3	3	2	3
CO5	3	2	3	3	3	3	3	3	3	3	2	3
W.A	3	2.4	3	2.8	3	3	3	3	3	3	2.6	3

International Business and CSR

Nature	Area	Semester	
Elective- V	Corporate SocialResponsibility	IV	
CourseCode	CourseName	Credit/Distributions	
22C4C5	International Business and CSR	(L-2:T-0:P-1)Credit=03	
		C1+C2	30Marks
		C3	70Marks

Course Objectives:

- The students will be highlighted on various concepts of International Business process
- The students will get introduced to relationship between CSR and International business

Practical Components:

- Students can visit two successful MNCs and record the business processes
- Prepare a mini project on the CSR activities conducted by two MNCs

UNIT I **(14 Hours)**

International Business –Definition – Internationalizing business-Advantages – Concept of Liberalization Privatization and Globalization - factors causing globalization of business-international business environment – country attractiveness –Political, economic and cultural environment –Effect of

Liberalization Privatization and Globalization, Liberalization Privatization.

UNIT II **(14 Hours)**

Globalization: Meaning, Drivers, And International trade theory: Mercantilism, Absolute advantage, Comparative advantage, Globalization and its impact on Indian economy-meaning and levels of globalization- factors are influencing globalization -globalization strategy for a company- a critique of globalization- globalization in India- steps towards globalization – effects of globalization. GATT and WTO -multilateral trade negotiation and agreements and implications, the global recession.

UNIT IV **(14 Hours)**

Convention on Bio – Diversity 1992, WTO Agreement of 1994, KYOTO Protocol of 1997.Relationship of WTO, CBD and KYOTO for India, Roles and Benefits from WTO, CBD and KYOTO, Relationship between CSR and WTO, CBD & KYOTO. Sustainable Forestry and Natural Recourses vis-à-vis CBD,

Non-Tariff Barriers of WTO vis-à-vis CSR, Green House Emission and KYOTO Protocol.

UNIT V **(14 Hours)**

Broad issues in Globalization: Emerging Global Players, Ethical issues in Context of International Business, The Social Responsibility of the Global Firm, Cross-Culture Communication

And Negotiation, Leadership Issues, Business Improvement: Integrating Quality, Innovation, and Knowledge Management, The Role of the Parent: Managing the Multinational Business Firm,

Organizing and Structuring the Multi Business Firm.

Reference Books:

1. International Business, Francis Cherunilam, Fifth Revised Edition, PHI Learning Pvt. Ltd.

2. Donald Ball Wendell H McCullooch, Michael Geringer, Minor, Jeanne M Mcnett – International

Business by TATA MCGRAW – HILL

3. International Business – Roger Bonnet

4. International Business – Michal Zinkata

5. International Business – Richard M Shaffer

6. India's Foreign Trade – Vadilal

7. Buckley , Adrian – Multinational Finance, New York, Prentice Hall Inc.m

8. International Financial Management – Jeff Madura

9. Lasserre, Philippe (2007). Global Strategic Management, Palgrave MacMillan.

10. John D Daniels, Lee H Radebaugh Daniel P Sullivan , Prashant Salwan (2010). International Business Environments and Operations, Pearson Education

Course Outcome:

1.	The students will be highlighted on various concepts of International Business process
2.	The students will get introduced to relationship between CSR and International business
3.	Understand Globalization and its impact on Indian economy
4.	Get introduced to international conventions relevant to CSR
5.	Understand the challenges in Managing the Multinational Business Firm,

CO/PO												
CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	-	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	3
CO5	3	2	3	3	3	3	3	3	3	3	2	3
W.A	3	2.2	3	3	3	3	3	3	3	3	3	3

Sustainability & Stakeholder Management

Nature	**Area**	**Semester**	
Elective-VI	**Corporate Social Responsibility**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4C6	Sustainability &StakeholderManagement	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course Objectives:

- The students will be introduced to the concepts and importance of sustainability
- The students will get insights into stakeholders management

Practical Components:

- Students can visit two NGOs and record their contribution towards the sustainability practices
- Write any two strategies employed to engage stakeholders in companies

UNIT I

Sustainability and sustainable development: Why sustainability?- Concept and seven key factors of Sustainability – UN Sustainable Development Goals and Sustainability – Environmental Sustainability : Global Initiatives on Environmental Sustainability.

UNIT II

Corporate Sustainability Footprint: The Value Chain Footprint - Sustainability and Greenhouse gases (GHG) - Facility Operations: Energy Efficiency & Green Building - Sustainable Procurement &Logistics.- Sustainable Production and Consumption. Corporate Sustainability Footprint - Resource use and loss – Process view and Life Cycle Assessment - Industry and competition analysis.

UNIT III

Business (corporate) sustainability: Evolution of business approaches to SD- Business Sustainability – UN Global Compact - Key players in sustainability field: governments, NGOs, international and supranational organizations.

Stake holder mapping, Internal Stakeholders, External Stake holders, Stakeholder Theory & Stakeholder Engagement Overview. Stakeholder's relations. Pro-poor development.

UNIT IV

Corporate Sustainability Strategy: Developing strategy through benchmarking and balanced scorecard - Intrapraneurs and employee engagement - Operationalizing Sustainability - Corporate Sustainability Management System: Determining sustainability "current state" – Corporate level; Benchmark sustainability program – Gap analysis; Creating sustainability strategy - Sustainability Challenges and Solutions.

UNIT V

Corporate Stakeholder Engagement : Multilateral engagement (UN/World Bank/OECD) - Government engagement - NGO's – influence and engagement -Trade associations (WBCSD) - Stakeholder interests and engagement -Creating a comprehensive Stakeholder engagement strategy - Implementation and engagement- Analysis and evaluation.

Reference Books:

1. Farver, *Mainstreaming Corporate Sustainability*

2. Blackburn, *The Sustainability Handbook*

3. "R. Edward Freeman on Stakeholder Theory"

4. Rate the Raters Phase Four: The Necessary Future of Ratings (Sustain Ability, July2011); scan key points

5. CSRHUB.com (review high level)

6. Accountability AA1000 Stakeholder Engagement Standard (AA1000SES) •

Account Ability& UNEP: From Words to Action: The Stakeholder Engagement Manual(Volumes One & Two) (review high level)

7. Accountability & UNEP: From Words to Action: The Stakeholder Engagement Manual(Volumes One & Two)

Course Outcome:

1.	The students will be introduced to the concepts and importance of sustainability
2.	The students will get insights into stakeholders' management
3.	Awareness of governments, NGOs, international and supranational organizations in corporate sustainability
4.	Ability to Develop strategies for sustainability
5.	Knowledge of stake holder management, Challenges and Solutions.

CO/PO												
CO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	2	3	3	2	3
W.A	3	3	3	3	3	3	3	2.8	3	3	2.8	3

INDUSTRIAL RELATIONS

Nature	Area	Semester	
Elective-VII	**Corporate Social Responsibility**	**IV**	
CourseCode	**Course Name**	**Credit/Distributions**	
22C4C7	**Industrial Relations**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Course objectives

1. To understand the importance of Human Relations at work
2. To distinguish the procedures concerning Worker Participation and Participatory Institutions and Instruments of Trade Union
3. To distinguish Employee Rights & Obligations according to the scope of employment
4. To analyze the field of Labor Relations in an Interdisciplinary Manner
5. To Synthesize the proposals for Legislative Initiatives

Unit I: Industrial Relations **12 Hours**

Historical background, concept, Meaning and scope of IR, stake holders of IR, various factors influencing IR, Perspectives/Approaches to IR- Unitary, Pluralist, Radical, Psychological approach, Sociological approach, Human Relations approach, Socio ethical approach, Gandhian/ Trusteeship approach, Systems approach, Essentials of sound IR policy, IR strategies, Legal frame work: The Industrial Disputes Act 1947, Industrial conflict Disputes – Causes and Consequences of Industrial Conflicts in India, Conflict resolution.

Unit II: Trade Unions and Related aspect **10 Hours**

Trade union movement and growth of TU in India, national level federations, trade union problems, trade union organization, leadership and management of Trade union, trade union act 1926, registration of trade union, employers association – objectives, origin and growth, legal status, problems of trade unions.

Unit III: Grievances and Disciplines **12 Hours**

Grievances, redressal, discipline, standing orders, acts of misconduct, show cause notice, suspension, Enquiry procedure, Principles of natural justice, Punishments, Demotion suspension, Termination, Removal and dismissals, Conflicts – Industrial disputes –Lay off, Termination simplicitor, Retrenchment, closures, VRS.

Unit IV: Collective Bargaining **10 Hours**

Concept, its relevance in IR, CB as an institution, ILO perception of CB, Objectives of CB, Structure, Functions, process, negotiations, bargaining approaches & techniques, patterns of bargaining.

Unit V: Settlements **12 Hours**

Types of settlement wage settlement, bonus settlement, productivity settlement, VRS settlement, Union issues settlement, Reorganization settlement, transfer, Layoff, retrenchment and closure settlements.

Practical Component

1. Give a case of collective bargaining and ask the students to role play
2. Arrange a debate in the classroom about rights and duties of trade union of workers

Text Books

1. Mamoria, Mamoria, Gankar,. (2016). *Dynamics of Industrial Relations*. Himalaya Publishing House

2. C S VenkataRatnam. (2017). *Industrial Relations*(2nd ed.). Oxford University Press

Reference Books

1. A M Sarma. (2016). *Industrial Relations &Labour Laws*. (Revised ed.). Himalaya Publishing House

2. ArunMonnappa. (2017). *Industrial Relations &Labour Law*. (2nd ed.). McGrawhill Education

Outcomes:

CO1. To familiarize with the role of management and unions in the promotions of industrial relations.

CO2. Be acquainted with the concepts, principles and issues connected with trade unions.

CO3. Be acquainted with the concepts, principles connected with collective bargaining, grievance redressal, and employee discipline and dispute resolution**.**

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	2	-	3	-	3	3	-	2	-
CO2	3	-	2	-	3	3	-	2	-	-	-	-
CO3	3	3	3	1	3	3	1	2	3	3	2	-
Weighted Average	3	2.5	2.67	1.5	3	3	1	2.33	3	3	2	-

Electives:Group-X

Travel Agency and Transport Management

Nature	**Area**	**Semester**	
Elective-IV	**Tourism & Travel Management**	**IV**	
CourseCode	**CourseName**	**Credit/Distributions**	
22C4T4	**Travel Agency and Transport Management**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Learning Objective: The main objective of the course is to equip the students with a set of theoretical and practical knowledge relating to travel agency tour operation and transportation management.

Unit 1 10 Hours

Introduction- Definition of Travel Agency –History & Growth of– Scope –Role - Functions and Types of Travel Agency - Ancillary Tourism Service - Sources of Income. – Differentiation and Interrelationship between Travel Agency and Tour Operators - Contributions in Growth and Development of Tourism.

Unit II 11 Hours

The Modern Tour Industry: Evolution of Tour Operation Business – Definition – Types - Functions – Types of Tours - Tour Formulations, Tour Designing Process – Tour Operations Process – Holiday Packages – Types - Components of Package Tour - Basic

Principles in Packaging - Factors Affecting Tour Design and Selection. Developing Linkages with Principle Suppliers – Itinerary – Meaning, Types of Package Tour (Prepare Itinerary Of Assumed Tour Packages) –Tour Guides And Escorts - Types, Role And Responsibilities.

Unit III 05 Hours

Travel Formalities: Passport, Visa, Foreign Exchange, Travel Insurance, Customs, Immigration and Health Regulation along with travel documents required for visiting North East region of India: Restricted Area Permit (RAP) and Inner Line Permit (ILP).

Unit IV 10 Hours

Introduction to Tourism Transport System: Airlines Transportation - The Airlines Industry - Origin and Growth - Scheduled and Non-scheduled Airlines services - Role of IATA and ICAO. Airports and Major Airlines. Road Transport in Tourism: Growth and Development of Road Transport system in India - Role of Regional Transport Authority. Rail Transport - Major Railways to tourists - Indrail pass – Eurail pass – Brit rail pass, Luxury Tourist Trains in India. Cruise ships – Types – Cruise liners – Major Cruise tourism destinations - Future prospects. Car Rental and International car hire.

04 Hours

UNIT V: Aviation Management- Aviation, Types of Aircrafts, Airport Layout, Types of Air Fares, Role of GDS and CRS in Air Travel.

Books for Reference:

1. An introduction to Travel and Tourism, McGraw Hill Int. Edition. 1994

2. Laws, Eric, Managing Packaged Tourism, International Thomson Business Press, Edition 1997.

3. Negi, Jagmohan, Toursit Guide and Tour operation, Kanishka Publishers 2004.

4. Syratt, Gwenda Manual of Travel Agency Practices, Elsevier, Butterworth Heinmann, Edition 2003.

5. Pender, Lesley, Travel Trade and Transport. An Introduction, Edition 2001

6. Holloway, J.C., (1983), The Business of Tourism, McDonald and Evans, Plymounth.

7. Syratt Gwenda, (1995). Manual of Travel Agency Practice, Butterworth Heinmann, London

8. Stevens Laurence, (1990). Guide to Starting and Operating Successful Travel Agency, Delmar Publishers Inc., New York.

9. Chand, Mohinder, Travel Agency Management, Anmol Publication

10. Seth, P. N., (1992), Successful Tourism Management Vol. 1 & 2, Sterling Publications, Delhi

11. Foster, Douglas (1983), Travel and Tourism Management, McMillan, London.

Course Outcomes:

1. To acquire the functions and contribution of travel agency and tour operators to tourism sector.
2. To enhance the knowledge of tour operations business and its process.
3. To acquire the background knowledge of travel formalities.
4. To enhance the knowledge of transport system in linkage with tourism aspects.

To acquire the background knowledge of aviation management

Course Articulation Matrix - 20C4T4

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	2	3	2	1	1	1	-	2	2
CO2	2	2	2	1	1	-	2	-	2	3	2	1
CO3	2	1	2	3	-	2	1	2	-	2	2	2
CO4	2	2	3	-	2	3	1	1	2	1	-	3
CO5	2	1	2	1	2	-	-	2	-	1	1	-
WA	**2**	**1.4**	**2.25**	**1.75**	**2**	**2.33**	**1.25**	**1.5**	**1.66**	**1.75**	**1.75**	**2**

International Tourism

Nature	Area	Semester	
Elective-V	**Tourism & Travel Management**	**IV**	
CourseCode	**CourseName**	**Credit/Distributions**	
22C4T5	**International Tourism**	**(L-2:T-0:P-1)Credit=03**	
		C1+C2	**30Marks**
		C3	**70Marks**

Learning Objectives:

1. To study the Tourism resources of India.
2. To understand the Tourism resources of North America and South America.
3. To know the tourism resources of Europe, Africa, Middle East, Asia and

Australia.

Unit 1 **12 hrs**

A) **Concept of International Tourism** - Challenges-Factors Affecting Global and Regional Tourist Movement-Contemporary Trends in International Tourist Movements-IATA Areas.

B) **Tourism Resources of India-**Art Forms-Paintings, Museums, Art Galleries -Manmade Attractions-Archaeological Sites, Forts and Palaces. – Natural Attractions-Land Forms, Landscapes, Mountains, Water Bodies, Deserts, Islands, Wildlife Sanctuaries, National Parks, and Tourism Attractions - Cultural Attractions, Fairs and Festivals, Dance Forms, Handicrafts and Music.

Unit II 07 hrs

Tourism Resources of North and South America-USA-Canada-Mexico-Caribbean Islands-Brazil and Argentina.

Unit III 07 hrs

Tourism Resources of Africa and Middle East- South Africa-Egypt-Kenya –Seychelles-Mauritius-U.A.E-Saudi Arabia.

Unit IV 07 hrs

Tourism Resources of Europe: Scandinavia -Italy-France-Germany-United Kingdom-Spain-Switzerland- Austria-Poland –Greece.

Unit V 07 hrs

Tourism Resources of Asia and Australia- China-Japan- Hongkong- Singapore-Malaysia-Thailand- Indonesia- Australia –New Zeland.

Books for References:

1) Travel Geography, Burton and Rosemary Longmen Edn. 1999s.

2) Worldwide destination, Geography of Travel and Tourism by Cooper, Chris and Bomifade.

3) Geography of Travel and Tourism, Hudson, Lyods and Jackson,Delmar Publishers 1999.

4) International destinations by Perlitz, Lee and Elliots, Prentic Hall Edn. 2001.

5) World Geography – By Majid Hussain

6) Heritage and Cultural tourism – Romila chawla

7) Tourism products - Robinet Jacob, Sindhu, Mahadevan

8) Cultural tourism - Harish Badan

Learning Outcomes:

1. To acquire the knowledge of tourism resources of India.
2. To enhance the knowledge of the tourism resources of North America and South America.
3. To enhance the knowledge of the tourism resources of Africa, Middle East
4. To enhance the knowledge of the tourism resources of Europe

To enhance the knowledge of the tourism resources of Asia and Australia

Course Articulation Matrix - 20C4T5

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	3	-	2	-	2	-	1	1	3
CO2	2	1	-	3	-	2	2	1	1	-	2	2
CO3	2	3	2	1	1	-	2	1	2	1	2	-
CO4	2	3	1	-	2	3	1	-	3	2	-	1
CO5	2	-	2	3	-	2	-	2	1	1	1	1
WA	**2**	**2**	**1.75**	**2.5**	**1.5**	**2.25**	**1.6**	**1.5**	**1.75**	**1.25**	**1.5**	**1.75**

TOURISM PLANNING AND DEVELOPMENT

Nature	Area	Semester	
Elective -VI	**Tourism & Travel Management**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4T6	**Tourism Planning and Development**	**(L-2:T-1:P-0) Credit = 03**	
		C1 + C2	**30 Marks**
		C3	**70 Marks**

Course Objectives:

1. To understand the tourism planning in destination management and development.
2. To know the institutional support in tourism destination development.
3. To study the concept of sustainable tourism planning and development.

Unit I

08 hrs

Tourism Planning: Common Features of Tourist Destinations – Components of Destination Amalgam. –Essential Facilities and Services For Tourism Development- Conceptual Meaning Of Tourism Planning- Destination Planning Process And Analysis – Types -Levels of Tourism Planning - Assessment of Tourism Potential of A Destination.

Unit II **08 hrs**

Tourism Destination Image Development - Attributes of Destinations: Pearson's Determined Image, Measurement of Destination Image – Tourism Destination Branding Perspectives and Challenges-Creating the Unique Tourism Destination Proposition – Tourism Destination Image Formation Process; Unstructured Image - Product Development and Packaging - Destination Branding and the Web-Case Study.

Unit III **06 hrs**

Tourism Destination Promotion and Publicity - Ten 'A's Framework for Tourism Destinations -Destination Marketing Mix - Destination Competitiveness – Distribution Channels- Marketing Communication and Strategies - Role of DMO's in Destination Marketing Strategies.

Unit IV **10 hrs**

Institutional Support: Public Private Partnership (PPP) - National Planning Policies for Destination Development- WTO Guidelines for Planners -Characteristics of Rural Tourism Plan - Environmental Management Systems – Destination Vision- The Focus of Tourism Policy: The Competitive Sustainable Tourism Destination. (Destination Mapping- Practical Assignment).

Unit V **08 hrs**

Sustainable Tourism: Definition – Forces Which Promote Sustainable Tourism – Economic Forces Which Resist– Principles– Carrying Capacity–Forms - Planning For Sustainable Tourism Development-Environmental Impact Assessment.

Books for Reference:

1. Nigel Morgan, Annette Pritchard & Roger Pride (2001), Destination Branding: Creating the Unique Proposition, Butterworth and Heinemann.
2. Richard W. Butler (2006), The Tourism Area Life Cycle: Applications And Modifications, Channel View Publications. Praveen Seth-Successful tourism planning and Management, Cross-section Publications.
3. Dash M.C. (1993) fundamentals of Ecology (New Delhi), Tata McGraw Hill Co. Ltd., Publishing Co. Ltd.)
4. Eagles P.F.J. 1987. The Planning and Management of Environmentally sensitive areas. (U.S., A. Lengman).

Course Outcomes:

1. To acquire the theoretical background of tourism planning, destination development.
2. To enhance the concepts related to the institutional support in tourism destination image development.
3. To acquire the knowledge of tourism destination promotion and publicity
4. To enhance the concepts related to institutional support, PPP, National, WTO, rural and environmental management.
5. To acquire the knowledge ofthe concept of sustainable tourism planning and development

Course Articulation Matrix - 20C4T6

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	-	3	-	2	1	-	2	1	3
CO2	2	1	1	2	-	3	2	2	-	1	2	2
CO3	2	3	1	2	1	2	-	1	2	1	-	2
CO4	2	1	2	-	3	2	1	-	2	-	1	-
CO5	2	1	-	2	1	1	3	2	2	1	2	1
WA	**2**	**1.4**	**1.5**	**2**	**2**	**2**	**2**	**1.5**	**2**	**1.25**	**1.5**	**2**

MEETING, INCENTIVE, CONFERENCE AND EXHIBITION (MICE) TOURISM

Nature	Area	Semester	
Elective -VII	**Tourism & Travel Management**	**IV**	
Course Code	**Course Name**	**Credit/Distributions**	
22C4T7	**MEETING, INCENTIVE, CONFERENCE AND EXPOSITION (MICE) TOURISM**	**(L-2:T-1:P-0) Credit = 03**	
		C1 + C2	**30 Marks**
		C3	**70 Marks**

Cource Objectives:

1. To know about event management, MICE industry and its contribution to tourism sector
2. To understand the techniques and strategies for organizing successful meeting, conference, trade fair and incentive tour
3. To acquire the knowledge of competencies to market and promote MICE tourism

Unit 1 **10 Hrs**

Introduction to Event Management: Meaning- Characteristics, Size and Type of Events, Event Team, Code of Ethics, Stakeholders in the Industry - Five C's of Event Management

–Nature, Scope, Significance and Trends of Event Business - Roles and Functions of Technical Staff and Event Manager - Purpose of Event, Developing Theme of the Event, Venue Selection, Participants, Financial, Date and Time Factors, Sponsors - Designing the Layout, Decoration, Technical Equipment, Catering Services, Logistical Elements, Feasibility, Legal Issues.

Unit II **08 Hrs**

MICE and Professional Meeting Planning: Meaning, Nature, Scope and Importance of MICE Tourism - Sectors Involved in MICE (Hotel, Transportation, Attractions) – Planning Process - Economic and Social Significance of MICE-Professional Meeting Planning:Meaning, Types and Roles, Associate, Corporate and Independent Meeting Planners -Travel Agents and Tour Operators as Meeting Planners - Responsibilities/Role of Meeting Planners – Current Meeting Technologies.

Unit III **07 Hrs**

Conference/Convention and Events Venues: Concept and Types-Conference Venues-Facilities, Check-Inand Check-Out Procedures, Requirements; Conference Room Lay-Outs; Conventions-Meaning, Significance and Process, Convention Manager -Convention Visitor Bureaus – Functions, Structure and Funding Sources, Conference Facilities in India - Role and Functions of ICPB and ICCA.

Unit IV **08 Hrs**

Trade Shows and Exhibitions/Expositions: Types of Shows, Benefits of Exhibitions, Participant Decision Making Process, Contract Negotiations – Principles, Steps, Negotiation with Hotels, Airlines and Groundhandlers. Case Studies: Tourism Festivals – Ellora Festival, Taj Festival, Khajuraho Festival, Dasara Festival, Hampi Festival - Trade Fairs: World Travel Mart ITB, TTW, PTM and TTF.

Unit V **07 Hrs**

Incentive Tour and Marketing, Promotion of MICE: Concepts, Trends, Growth and Characteristics - Organizing and Special Requirements/Checklists - Nature of MICE Markets - Demand, Segmentation, Targeting and Positioning Techniques, Marketing Channels, Process of MICE E-Marketing, SWOT Analysis, DMO's and DMC's and their Role in Promotion of the Destination.

BOOKS FOR REFERENCE:

1. Event Planning Ethics and Etiquette: A Principled Approach to the Business – Judy Allen

2. Event Planning –Judy Allen

3. Meeting Spectrum – Rudi .R Right

4. Meeting Conventions and exposition and introduction to industry – Rhoda J. Montgomery

5. Global Meetings and Exhibition - Carol Krugman and Rude R.Wright

Practical Components:

1. Identify 5 major companies in service sectors that have generated employment opportunities in India
2. Visit 2 Car dealers and gather information on expectations and satisfaction from customers about recently introduced car
3. Visit a major Hospital and gather data to analyze the service gap experience by the patients

Reference Books

1. Services Marketing – Integrated Customer Focus Across The Firm – Valarie A. Zeithaml and M. J. Bitner
2. Services Marketing – People, Technology and Strategy – Lovelock
3. Services Marketing – Ravishankar
4. Marketing of Services – Jha
5. Marketing of Services – G.S. Bhatia
6. Marketing of Services – Sahu and Sinha

Course Outcomes:

1. To acquire the knowledge of event managementits contribution to tourism sector
2. To enhance the knowledge of event planning
3. To acquire the theoretical background of conference and conventions requirements and functionalities
4. To acquire the theoretical background of trade show and exhibitions requirements and functionalities
5. To acquire the knowledge of incentives, competencies to market and promote MICE tourism

Course Articulation Matrix - 20C4T7

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	2	2	-	-	1	1	3	-	1
CO2	2	2	-	1	2	3	2	-	1	1	2	3
CO3	2	1	1	2	-	2	-	1	1	2	-	1
CO4	2	2	3	-	2	-	1	1	2	3	2	2
CO5	2	1	1	2	-	2	-	2	-	2	3	1
WA	**2**	**1.4**	**1.75**	**1.75**	**2**	**2.3**	**1.5**	**1.25**	**1.25**	**2.2**	**2.3**	**1.6**

GUIDELINESFORBUSINESSFAMILIARIZATIONREPORT(BFR)

Nature	Area	Semester
Core	Business Familiarisation Report (BFR)	**III**
Course Code	**CourseName**	**Credit/Distributions**
22C303	**Business Familiarisation Report (BFR)**	**(L-0:T-0:P-2) Credit=02**

OBJECTIVE

To expose the students to the working culture of the organization and apply theoretical concepts of real life situation at the work place for various functions of the organization.

GENERAL GUIDELINES

Internship and Business Familiarization Report (BFR): In the be- ginning of the third semester, the students shall undertake team based internship in a business firm and prepare a Business Familiarization Re- port under the guidance of a faculty member. The report shall be submit- ted before the commencement of the third semester examinations failing which the student shall not be permitted to appear for the third semester examination. Business Familiarization guidance to twenty students is considered as equivalent to teaching of a course of two credits.

- ❖ Internship conducted in a year cannot be for a continuous period of more than 4 weeks in a given academic year.
- ❖ Internship undergone during academic classes shall not be considered
- ❖ Each students shall maintain internship dairy
- ❖ Certificates (Color Photocopy) of each internship shall be sub- mitted to the department along with the report

Details to mention on the Certificate:

- ❖ Students name and registration number
- ❖ Name of the institution/organization and duration of internship with date

EVALUATION: BFR will evaluated by the concerned guide for 50 marks through

internal valuation.

Viva-Voce / PRESENTATION: A viva-voce examination shall be conducted at the respective institution where a student is expected to give a presentation of his/ her work. The viva –voce examination will be conducted by the respective HOD or Senior Professor or internal Guideof the department and an external evaluator drawn from industry. Incase of non availability of industry professional, a senior professor or a faculty may be invited to conduct the viva-voce examination.

CONTENTS OF THE ORGANISATION STUDY REPORT

1. Cover page
2. Certificate from the Organization (scanned copy)
3. Certificate from the guide, HOD and Head of the Institution (scanned copy) indicating bonafide performance of Organisation study by the student.
4. Declaration by the student (scanned copy)
5. Acknowledgement
6. Table of contents
7. List of tables and graphs

EXECUTIVE SUMMARY

Chapter 1: Introduction about the Organization& Industry.

Chapter 2: Organization ProfileBack ground, Nature of business, Vision,Mission, Quality Policy Workflow model Product/service profile Ownership pattern Achievements/awards if any Future growth and prospects

Chapter 3: Mckensy's 7S framework and Porter's Five Force Model with special reference to Organization under study.

Chapter 4: SWOT Analysis

Chapter 5: Analysis of financial statements

Chapter 6: Learning experience.

BIBLIOGRAPHY

Annexure relevant to the Organization study such as figures, graphs, photographs, Financial statements etc.,

FORMAT OF THE ORGANIZATION STUDY:

Report shall beprepared using the word processor viz., MS Word, Times New Roman font sized 12, on a page layout of A4 size with 1" margin all sides (1.5" on left side due to binding) and 1.5line spacing. The Organization study re- port shall not exceed 60 pages.

OUTLAY OF THE REPORT

The chapters, sections and subsections may be numbered in the decimal form for e.g. Chapter2, sections as 2.1,2.2 etc., and subsections as 2.1.1,2.2.1 etc.,

Course Outcome

1. Linking the theory and practice by taking part in supervised and scheduled work

2. Students adjust themselves according to the professional environment by analyzing their working environment to the conceptual knowledge

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3	2	3	3	3	2
CO2	2	3	2	3	3	2	2	2	2	2	3	3
Weighted Average	2.5	2.5	2	3	3	2	2.5	2	2.5	2.5	3	2.5

GUIDELINES FOR PROJECT

Nature	Area	Semester
Core	Project	**III**
Course Code	**CourseName**	**Credit/Distributions**
22C402	**Project**	**(L-0:T-0:P-6) Credit=06**

OBJECTIVE

To expose the students to understand the working of the organization/ company /industry and take up an in-depth study of an issue / problem in the area of specialization

CONTENTS OF THE PROJECT REPORT

1. Cover Title Page (Format Enclosed)
2. Inner Title page (same as title page)
3. Certificate from the guide, HOD and Head of the Institution (scanned copy) indicating bonafide performance of Project by the student
4. Certificate from the Organization (scanned copy if applicable)

5. Declaration by the student (scanned copy)
6. Acknowledgement
7. Table of contents
8. List of tables and graphs
9. Abbreviations/Operational definitions used.
10. Executive summary

EVALUATION: Each Final project report will be evaluated for 70 marks by internal and external examiners. The guide ordinarily shall be the internal examiner. A viva-voce on the project report for 30 markswill be conducted by a board of three members constituted by the Chairman, BOE from the approved list of examiners.

CHAPTERS

Chapter 1: Introduction

Introduction, Industry profile and company profile: Promoters, vision, Mission & Quality Policy. Products / services profile areas of operation, infrastructure facilities, competitors' information, SWOT Analysis, Future growth and prospects and Financial Statement

Chapter 2: Conceptual background and Literature review Theoretical background of the study, Literature review with research gap (with minimum 20 literature reviews)

Chapter 3: Research Design

Statement of the problem, Need for the study, Objectives, Scope of the study, Research methodology, Hypotheses, Limitations, Chapter scheme

Chapter 4: Analysis and Interpretation

Analysis and interpretation of the data- collected with relevant tables and graphs. Results obtained by the using statistical tools must be included

Chapter 5: Findings, Conclusion and Suggestions

Summary of findings, Conclusion and Suggestions / Recommendations

Bibliography

Annexure relevant to the project such as figures, graphs, photographs etc.

Appendix

This will include printed secondary data (only if it is very critical) and any questionnaires used for the study.

FORMATS FOR PROJECT REPORT AND EVALUATION

Format of Cover Page

Format of certificate by College/Institution or from both
Format of Declaration Page

Format of Contents

Format of List of Tables and Charts Format of Bibliography

Format for Internal Evaluation, External Evaluation and Viva – voce

FORMAT OF THE ORGANIZATION STUDY:

Report shall be prepared using the word processor viz., MS Word, Times New Roman font sized 12, on apage layout of A4 size with 1" margin all sides (1.5" on left side due to binding) and 1.5line spacing. TheOrganization study report shall not exceed 60 pages.

OUTLAY OF THE REPORT

The chapters, sections and subsections may be numbered in the decimal form for e.g. Chapter2, sections as 2.1,2.2 etc., and subsections as 2.1.1,2.2.1 etc.

Course Outcome

1. Improve students research and personal skills
2. Upgrade students experience of practical work there by enhancing professional growth and experience
3. Creating valuable employees and competent job applicants to the companies

Course Articulation Matrix

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	3	2	3	2	3	3	3	2
CO2	2	3	2	3	3	2	2	2	2	2	3	3
Weighted Average	1.67	1.67	1.33	2.00	2.00	1.33	1.67	1.33	1.67	1.67	2.00	1.67

SBRR MAHAJANA FIRST GRADE COLLEGE
[AUTONOMOUS]
(Accredited by NAAC with 'A' grade)
POST GRADUATION WING
Pooja Bhagavat Memorial Mahajana Education Centre
Affiliated to the University of Mysore
KRS Road, Metagalli, Mysuru-570016

DEPARTMENT OF STUDIES IN COMMERCE

STRUCTURE AND SYLLABUS

2022-23

DOS IN COMMERCE

CHOICE-BASED CREDIT SYSTEM

(TO BE IMPLEMENTED FROM THE ACADEMIC YEAR 2022-2023)
MASTER OF COMMERCE (M.Com)

COURSE STRUCTURE AND SYLLABUS MINIMUM CREDITS REQUIRED FOR M.Com DEGREE

I – IV Semester	Hard Core		Soft Core		Open Elective		Total	
	Numbers	Credits	Numbers	Credits	Numbers	Credits	Numbers	Credits
	11	44	8	32	1	4	20	80

MINIMUM CREDITS TO BE REGISTERED BY A STUDENT IN A NORMAL PHASE TO SUCCESSFULLY COMPLETE M.COM DEGREE IN IV SEMESTERS

Semesters	Hard Core Course		Soft Core Course		Open Elective Course		Total	
	Numbers	Credits	Numbers	Credits	Numbers	Credits	Numbers	Credits
I	4	16	1	4			5	20
II	3	12	1	4	1	4	5	20
III	2	8	3	12			5	20
IV	2	8	3	12			5	20
Total	**11**	**44**	**8**	**32**	**1**	**4**	**20**	**80**

I SEMESTER – M.COM

Sl. No.	Title of the Course	Hard Core/ Soft Core/ Open Elective	Number of Credits			
			L	T	P	Total
HC01	Advanced Accounting	HC	3	1	0	**4**
HC02	Financial Management	HC	3	1	0	**4**
HC03	Marketing Management	HC	3	1	0	**4**
HC04	Human Resource Management	HC	3	1	0	**4**
SC01	International Business Environment	SC	3	1	0	**4**
SC02	Statistics for Business Decisions	SC	3	1	0	**4**
SC03	Advanced Auditing	SC	3	1	0	**4**

II SEMESTER – M.COM

Sl.No.	Title of the Course	Hard Core/ Soft Core/ Open Elective	Number of Credits			
			L	T	P	Total
HC05	Organizational Behaviour	HC	3	1	0	**4**
HC06	Corporate Governance	HC	3	1	0	**4**
HC07	International Business	HC	3	1	0	**4**
SC04	Capital Market Instruments	SC	3	1	0	**4**
SC05	Services Marketing	SC	3	1	0	**4**
SC06	Portfolio Management	SC	3	1	0	**4**
SC07	Management Information System	SC	3	1	0	**4**
OE01	Stock Markets and Investment Decisions	OE	3	1	0	**4**
OE02	Management of Enterprises	OE	3	1	0	**4**

III SEMESTER – M.COM

Sl.No.	Title of the Course	Hard Core/ Soft Core/ Open Elective	Number of Credits			
			L	T	P	Total
HC08	Business Research Methods	HC	3	1	0	**4**
HC09	Operations Research	HC	3	1	0	**4**
SC08	Entrepreneurship Development	SC	3	1	0	**4**
SC09	International Human Resource Management	SC	3	1	0	**4**
SC10	International Financial Management	SC	3	1	0	**4**
SC11	Project Management					
SC12	Elective Group A:Business Taxation Paper1:Goods and Services Tax and Customs Duty	SC	3	1	0	**4**

SC13	Elective Group B: Financial Accounting Paper 1: Accounting for Special Transactions	SC	3	1	0	**4**
SC14	Elective Group C: Financial Management Paper1: Corporate Restructuring	SC	3	1	0	**4**
SC015	Elective Group D: Human Resource Management Paper1:Strategic Management of Human Resources	SC	3	1	0	**4**
SC016	Elective Group E:Management Accounting Paper: Marginal Costing and Decision Making	SC	3	1	0	**4**

IV SEMESTER – M.COM

Sl. No.	**Title of the Course**	**Hard Core/ Soft Core/ Open Elective**	**Number of Credits**			
			L	**T**	**P**	**Total**
HC10	International Accounting	HC	3	1	0	**4**
HC11	Strategic Management	HC	3	1	0	**4**
SC17	Foreign Exchange Management	SC	3	1	0	**4**
SC18	Project Work	SC	3	1	0	**4**
SC19	Elective Group A: Business Taxation Paper 2: Corporate Tax Law and Planning	SC	3	1	0	**4**
SC20	Elective Group B: Financial Accounting Paper 2 Contemporary Areas of Financial Accounting	SC	3	1	0	**4**
SC21	Elective Group C: Financial Management Paper 2: Financial Derivatives	SC	3	1	0	**4**

SC22	Elective Group D: Human Resource Management Paper 2: Industrial Relations and Collective Bargaining	SC	3	1	0	**4**
SC23	Elective Group E:Management Accounting Paper 2: Cost Management	SC	3	1	0	**4**

ELECTIVE GROUPS:

Any **TWO groups** from the available electives shall be selected by students at the commencement of the Semester. Once groups have been selected, no change in the selected groups will be allowed later. The department will announce at the end of the second semester, elective groups which will be offered during III and IV semesters depending on the availability of faculty members and the demand for electives.

MINOR PROJECT WORK:

A student in the fourth semester shall register for a project work that carries 4 credits. The workload for project work and tutorial class is 1 hour per batch of 4 students per week for the teacher. The students shall do field work and library work in the remaining 3 hours per week. Continuous assessment criteria for project work include:

Component-I (C-1): Periodic Progress and Progress Reports 15 Marks

Component-II (C-2): Results of Work and draft report-15 Marks

Component-III (C-3): Final Viva-voce and Project Report Evaluation-70 Marks.

The project Reports evaluation is for 50 Marks and the Viva-voce examination is for 20 Marks

Program Outcomes

PO1: Enhance the in-depth knowledge of various fields of business and commerce such as Accounting, International Accounting, Financial derivatives, Business Environment, international business, Research Methodology, and Tax planning, etc.,

PO2: Provide practical knowledge to deal with the day-to-day activities of the business by using the techniques like an industrial visit, internship, case study analysis, field visit, role play, etc.,

PO3: Inculcate the knowledge of the application of information technology in the field of Commerce.

PO4: Educate the students on business ethics, values, and the responsibility of business towards society to contribute the society at large.

PO5: Encourage the students to develop an interest in Research.

PO6: Build the strong communication skills and interpersonal skills among the students.

PO7: Build team spirit among the students to face the real-life situations in their career.

PO8: Imparting career enhancement skills by providing training in various competitive exams**.**

M.COM SYLLABUS

I SEMESTER

ADVANCED ACCOUNTING

Total Credits: 4 per week **Credit Pattern: 3:1:0** **No of hours: 5**

Course Description: This course provides detailed insight into Indian accounting standards, Indian Accounting Standards Board, stages and process of standards settings by ICAI in India, Ind AS on general, assets liabilities, impacting and disclosures of financial statements along with compliance and applicability of accounting standards in India.

Pedagogy: Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on conceptual understanding on Indian accounting standards, Indian Accounting Standard Board and Financial Disclosures and Reporting. Tutorial session helps understand practical aspects of Indian accounting standards.

Course Objectives:
This course will help the students

- To learn concept of Indian Accounting Standards Board and accounting standard setting process.
- To know theoretical and practical concept of Indian accounting standards
- To learn financial disclosures and accounting reporting

Course Contents

Module-1:Accounting Standards: Objectives, Benefits, Scope-Accounting Bodies-International Accounting Standards Board- Institute of Chartered Accountants of India-Accounting Standards Boards (IASB)-Financial Accounting Standards Board's (FASB)- Stages and Process of

Standards settings in India- Accounting Standards issued by ICAI- Compliance and Applicability of Accounting Standards in India.

Module-2: Ind AS on General and Assets of Financial Statements: AS 1Presentation of Financial Statement-AS 2 Inventories- AS 7 Statement of Cash Flow- AS 8 Disclosure-AS 11 Construction Contracts- - AS 16 Property Plant and Equipment- AS 17 Lease- - AS 23 Borrowing Cost-AS-33 Earning Per Share.AS 36 Impairments of Assets-AS 38 Intangible Assets-AS 116 Lease

Module-3: Ind AS on Liabilities, Impacting and Disclosures in Financial statement: AS 12 Income Taxes- AS 19 Employee Benefits- AS 21 The Effects of Changes in Foreign Exchange Rates-AS 33 Earning Per Share.

Module-4:Financial Disclosures and Reporting: Objectives and Concepts- Developments on Financial Reporting Objectives- True Blood Report, Corporate Report- Stamp Report- Corporate Annual Report-Segment Reporting and Interim Financial Reporting.

Course Outcome:

CO1: Provides detailed insight into various Indian accounting standards

CO2: Stages and process of standards settings by ICAI in India along with compliance and applicability of accounting standards in India.

CO3: Understand the difference between Accounting Standard, IFRS, IASB and FASB and also gain knowledge on Convergence of Indian Accounting Standards with IFRS

CO4: Understand financial disclosures and preparation of accounting reporting.

References

Indian Accounting Standards- Asish K Bhattacharjee- Tata Mc Graw Hill.

Taxman Accounting Standards- Rawat D S-Taxmann Publication

Accounting Standards- Vijayakumar M.P -Snow White Publication Corporate Financial Reporting Theory and Practice - Jawaharlal- Taxman Publication

Skill Development

- Select any two accounting standards and prepare detailed report by considering theoretical and practical aspect the selected standard**.**
- Visit any organisation, prepare financial disclosures and accounting report based on Indian accounting standards.

HC02: FINANCIAL MANAGEMENT

Total Credits: 4 Credit Pattern: 3:1:0 No of hours: 5 per week

1.Course Description:

Financial management making assumes greater importance in maximizing value of an organization. This course is designed to focus on the analysis of three crucial long-term financial decisions -

(1) Cash flow measurement,

(2) Capital budgeting,

(3) Cost of capital and,

(4) Capital Structure. Risk analysis of capital budgeting decision is added as a special top

2.Course Objectives:

- To understand the various uses of finance.
- To familiarize oneself with the techniques used in financial management.
- To point out the importance of capital budgeting techniques in project evaluation.
- To describe the risk and uncertainty incorporated methods of project evaluation.

- To understand the importance and implications of various methods of measuring cost of capital.
- To understand and appreciate the risk and return implication of leverages.

3. Pedagogy:

Students to work out detailed case studies involving the application of various criteria for project selection including risk analysis of capital projects. Analysis of leverage and dividend polices should be based on a sample of leading corporate organizations such as SENSEX companies, followed by seminar presentations and group discussions.

4. Course Contents:

Module 1: Capital Budgeting: Introduction-scope of capital budgeting– Discounted and Non-Discounted cashflow techniques- NCF estimation projectevaluation- NPV vs. IRR Conflicts - Fisher's rate of intersection - Multiple IRRs – MIRR – Capital Rationing

Module 2: Risk Analysis in Capital Budgeting: Inflation in capital budgeting - real vs. nominal discount rates. Approaches to risk analysis - Expected Net Present Value (ENPV) - Payback method - Risk-Adjusted Discount rate - Use of Normal Distributions - Sensitivity analysis - Measurement of Project Risk- Risk analysis in Project Proposals.

Module 3: **Cost of Capital**: Long-term financing, Public issue of debt, Preferred stock and Common stock, Term loans - Cost of equity –CAPM approach- Cost of preferred capital - Cost of debt- Cost of retained earnings – cost of loan-WACC- Marginal cost of capital.

Module 4: **Capital Structures Theories**: Relevance and Irrelevance Theories-Optimal capital structure theory- MM proposition I &II - EBIT-EPS analysis –Leverage analysis- the pecking order theory - Factors impacting leverage decision. Contemporary issues and challenges in Financial Management.

Skill Development:

- **Preparation of project proposal with budget and cash flow analysis.**
- **Collection of financial reports and analysis of capital structure.**

- **Visit financial and non-banking financial institutions to identify sources and cost of funds.**

Course Outcome:

CO1: Know the relativity of capital investment decisions and financial Policies to business valuations.

CO2: Application of different methods of cost of capital to ascertain the overall cost of capital of the firm,

CO3: Application of financial leverage to form long-term financial policies for business.

CO4: Ascertain common investment criteria and project cash flows with associated corporate project evaluation.

References:

1. Financial Management and Policy: Text and Cases: V K Bhalla, Annual Publishers, 2002.
2. Financial Management: Chandra, Prasanna; TMH, New Delhi.
3. Capital Budgeting: Dr. G. Kotreshwar, Chandana Publications (2014), Mysore Financial Management: Sudarshan Reddy
4. Financial Management: Shashi K Gupta,R K Sharma

SC 03: MARKETING MANAGEMENT

Total Credits: 4 **Credit Pattern: 3:1:0** **No of hours: 5 Per Week**

1. Course Descriptions:

This course provides coverage of the concept of marketing, marketing concepts, marketing planning, market segmentation, online marketing etc.

1. Course Objective:

The objective of this course is to provide the student the knowledge about marketing and its significance and managing them in organizations.

2. Pedagogy:

The teaching method comprises lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting

for select aspects of the course contents, field visits conducting market surveys.

3. Course Contents :

Module 1: Marketing Concepts and Tools: Introduction to Marketing-- Evaluation of marketing concepts and its stages – objectives of marketing – Scope of marketing - Core concepts of marketing — Building Customer Satisfaction, Value and Retention. Understanding the Value Philosophy - Direct Marketing Vis-À-Vis Digital Marketing: Online Marketing – Advantages and Dis-Advantages of Direct Marketing and Online Marketing - Major channels of Direct Marketing – Marketing in 21st century –E-Commerce- Case studies.

Module 2: Marketing Environment: Scanning of marketing environment **-** Analysis of needs and trends in macro and the microenvironment – classification of macro environment- classification of micro environmental factors. Global Marketing Environment and Global Marketing Economy - Marketing environment of India - Marketing Intelligence system - Marketing Research system-- Case studies.

Module 3: Market-oriented Strategic Planning - Corporate and Division Strategic Planning – Business Strategic Planning - Elements of Marketing Mix Strategy -Price or Differentiation-Oriented Strategies - Stages of New Product Development- - Case Studies.

Module 4: Developing Marketing Strategies - Product Life Cycle - Marketing Strategies - Designing Competitive Strategies - Differentiation tools, - Positioning Strategy - Positioning the product - Product line Decisions - Brand Decisions - Pricing Decisions - Promotion Decisions and Channel Decisions- - Case studies.

Skill Development:

- Conduct a survey on customer satisfaction towards any company products.
- Analyze and submit a report on any five company pricing strategies.
- Students collect data relevant to the marketing mix strategies of an organization.

Course Outcomes:

CO: Learn the Importance of how Demographic, Cultural and Institutional factors Shape the Global Marketing Environment

CO2: Depict Various Methods through which a firm can promote Its products in markets and be able to make All the necessary decisions needed for promoting the product in markets.

CO3: Develop Self-Leadership Strategies to Enhance Personal and Professional Effectiveness.

CO4 Figure Out the Implications of Current Trends in Social Media Marketing and Emerging Marketing Trends.

CO5: Portray decisions related to designing channel as well as physical distribution systems for making available the products in the markets.

References:

1. Philip Kotler, Marketing Management, PHI, New Delhi.
2. Rajan Saxena, Marketing Management, TMH, New Delhi.
3. Stanton, Fundamental s of Marketing, TMH, New Delhi.
4. Gandhi, Marketing: A Managerial introduction, TMH, New Delhi,

   Marketing:

   Paul Baines, Chris Fill and Kelly Page, Oxford University Press, 2nd Edition, 2011.

5. William Stanton, Fundamentals of Marketing, TMH, New Delhi.
6. Ramaswamy and Namakumari, Marketing Management, Macmillan, Delhi.
7. J S Panwar, Marketing in the New Era, Response Books, Delhi.
8. Majare, The Essence of Marketing, PHI, New Delhi.
9. Paul Peter and James H Donnelly, Marketing Management, TMH, New Delhi.
10. Mulins, Marketing Management, TMH, New Delhi.

HC 04: HUMAN RESOURCE MANAGEMENT

Total Credits: 4 Credit Pattern: 3:1:0 No of hours: 5 per week

1. **Course Descriptions:** This course provides the coverage of concept of HRM, Human resources planning and procurement, human resource development and compensational and rewards system.

1. **Course Objective:**

The objective of this course is to provide the student the knowledge about human resources, their significance and managing them in organizations.

2. Pedagogy:

Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content.

3. Course Contents:

Module 1: Introduction: Human resource management – concepts - significance – objectives – scope – functions – changing role of Human Resource Manager - Need for studying HRM – Emerging trends in HRM - Human Resource Development (HRD) concept – scope – objectives - HRD techniques.

Module2:Human Resources Planning and Procurement; Human resource planning - Importance – objectives - factors affecting HRP – requisites for successful HRP- Job analysis – methods - Purposes – Job description – Job specification - Job evaluation – Process and methods of Job evaluation - Job design approaches and process of Job design - factors affecting Job design, Recruitment – source of recruitment – factors governing recruitments, and recruitment process. Selection - process –interview

Module3: Human Resource Development: Meaning-concepts of HRD - Objectives of training-organization of training programme – methods - advantages and limitation soft raining and development- Evaluation of training programme – HRD for total quality management - Transfer policy - Promotion policy and Transfer. Demotion and Discipline- consequences of indiscipline – disciplinary Procedure - Career Planning and Development. Case studies

Module 4: Compensation/Rewards System: Significance of reward system in business organization. Employee motivation; Compensation system in practice - systems of promoting -factors determining employee compensation and rewards-dearness allowance - employee benefits-bonus - laws on wages, bonus and social Security - managerial compensation. Performance Appraisal: concepts - objectives philosophy and process of performance appraisal system - 360 Degree performance appraisal system. E – HRM, Big data and HR Analytics, Artificial Intelligence Core and HRM Practices.HR Practices in Sunrise sector. Case studies.

Skill Development:

- Visit an organization and learn HR policies
- Visit an organization and collect data on the methods of performance appraisal adopted by that organization
- Visit an organization and collect data on the training need and analysis.

Course Outcome:

CO1: Understanding of the concept, functions and process of human Resource management.
CO2: Provide practical knowledge on preparation of job description and job specification.
CO3: Enhance the practical knowledge on human resource planning in an organization.
CO4: Design and formulate various HRM processes such as Recruitment, Selection, Training, Development, Performance appraisals.
CO5: Understanding of compensation and reward system adopted in an organization.
CO6: Understanding the adoption of E-HRM practices in an organization.

References:

1. Human Resource Management: Strategies and Action-Armstrong
2. Human Resource Management - Dr.Ashwathappa
   Personnel and Human Resource Management -D.A. Deonz and F.P. Robins
3. Personnel Management - EdwinPhillip
4. Human Resources Management—L.M.Prasa

SC01: INTERNATIONAL BUSINESS ENVIRONMENT

Total Credits: 4 Credit Pattern: 3:1:0 No of hours: 5 per week

1. **Course Description:**

   This course provides the coverage of international business as a social system, internal and external environment, international business ethics, and social responsibility.

2. **Course objectives:**

   - To understand the knowledge about International Business Environment.
   - To analyze the various factors influencing in international business environment.
   - To learn the contribution of International Trade and Investment theories.
   - To study International Investment recent trends.
   - To understand importance of international business environment and business social responsibility.

3. **Pedagogy:**

   Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content.

4. **Course Contents:**

   Module 1: An Overview of International Business Environment: Business in a social system; Concept and Nature and Significance of business environment - Need to study Business Environment - Elements of Business Environment- Internal Environment and External Environment- Economic- political-socio-cultural-Technological environment; Environmental analysis–Techniques Government - Business Interface - Changing Dimensions of Indian Business – Case studies.

   Module 2: International Trade and Investment Theory: Historical developments of Modern Trade theory – Investment theories – Theory of

capital movements – Market imperfections – Internationalization – Appropriability –Location specific advantage – eclectic. **Transnational Corporations:** Introduction to TNCs, Features of TNCs, Why Firms Become Transnational? Theories Explaining Emergence of TNCs in World Economy, Recent Trends in TNCs, Issues and Controversies, The Indian Perspectives, – Case studies.

Module 3: International Investment: Introduction to international investment, Nature and Significance of foreign investment, Types of International Investment, Factors affecting international Investment - FDI and Developing Countries - Advantages – Limitations - Recent Trends in FDI Flows - Sectoral Distribution of FDI- Cross-Border Mergers and Acquisitions, Trade Related Investment Measures (TRIMS), Multilateral Investment Agreement (MIA), Foreign Investment in India.– The New Policy – EURO/ADR issues – M & A – Indian companies going global – Case studies.

Module 4: International Business ethics and Social Responsibility: Introduction to the Concept of Ethics, Approaches to Ethical Management, Frameworks for Resolving Ethical Dilemmas, Ethics and International Management, Ethical Systems of Belief, Foreign Corrupt Practices Act of USA, Ethical Issues in International Trade - Ethical vs. Unethical Activities- Code of Ethics for International Marketing. Business and Social Responsibility - Areas of Social Responsibility - Approaches to Social Responsibility- Institutionalizing Social Responsibility – Case studies.

5. Skill Development:

- Student's visit MNCsand collect data related to FDI investments for past five years.
- Students conduct interview and gather information related to Organizational business ethics and CSR activities conducted for the past few years.

6. Course Outcomes:

CO1. Learn the dynamics of the international business environment from a competitive and economic perspective.

CO2. Depict the various provisions relating to international trade and investment theories, and Transnational Corporations and its recent trends in TNCs.

CO3. Know about the international investments and recent trends in FDI Flows.

CO4. Outline the International business ethics and International Management.

CO5. Portray the approaches towards social responsibility and institutionalizing social responsibility.

References:

1.Adhikary, Manab, GLOBAL BUSINESS MANAGEMENT, *Macmillan*, New Delhi.

2.Aswathappa, INTERNATIONAL BUSINESS, *Tata Mc Graw Hill publications*, New Delhi.

3.Bhattacharya.B, GOING INTERNATIONAL RESPONSE STRATEGIES FOR INDIAN SECTOR, *Wheeler Publishing Co*, New Delhi.

4. Black and Sundaram, INTERNATIONAL BUSINESS ENVIRONMENT, *Prentice Hall of India*, New Delhi.

5.Gosh, Biswanath, ECONOMIC ENVIRONMENT OF BUSINESS, *South Asia Book*, New Delhi.

6. P.Subba Rao, International Business Environment, Himalaya Publishing House, Mumbai.

7. Francis Cherunilam, International Business Environment, Himalaya Publishing House, Mumbai.

SC 02: STATISTICS FOR BUSINESS DECISIONS

Total Credits: 4 **Credit Pattern: 3:1:0** **No of hours:5 per week**

1. Course Description:

The course comprises of probability theories, sampling techniques, time series analysis and multivariate analysis.

2. Course Objectives:

The aim of this course is to enable a student to have knowledge about application of time series analysis, probability theory and sampling in different areas of commerce, Testing of Hypothesis and application of multiple correlation and regression analysis.

3. Pedagogy:

Class room teaching of basic statistical models shall be followed by solving problems involving business applications. Assigned problems are to be worked on an individual basis, followed by group discussion of case problems.

4. Course Contents:

Module 1: Time Series Analysis: Methods in time series – Cyclical - seasonal and regular variations; Trend analysis - Application of time series analysis forecasting- Measure of Trend - Method of least squares and Measure of seasonal Indices case studies.

Module 2: Probability Theory and Theoretical Distributions: Meaning – terminology -addition and multiplication theorem- types and rules - Random variables and use of expected value in decision making- Binomial, Poisson and Normal probability distributions- characteristics-properties- their applications in business decisions, case studies

Module 3: Sampling: Meaning of sample and population – Probability and non-probability of sampling – Census vs sampling-sampling principles-- Sampling from normal and non- normal populations – The Central limit theorem - Use of sampling in business decisions-sampling errors.

a. Testing of hypothesis Small and Large sample Tests - Statistical Inference: Estimation and test of hypothesis: Finite and infinite population, Random sample, parameter, statistic, sampling distribution of statistic, standard error and its utility. Estimation: Point and interval estimates, meaning of confidence interval. Statistical Hypothesis, null and alternative, simple and composite hypotheses, sample selection, sample space, parameter space, critical region, two types of errors, level of significance and size of a test, power of a test, one-tailed and two-tailed tests.

b. Large sample tests:Tests for single mean, equality of two means, single proportion and equality of two proportions.

c. Small sample tests:

i. Sampling distribution- Chi-square, t - distributions - properties and applicability.

ii. Chi-square test for single variance, testing goodness of fit and Independence of attributes in (2*2) contingency tables, Yates' correction for continuity.

iii. single mean, Equality of two means (Independent and Dependent Samples)

Module: 4 Preparing the Data for Analysis: Editing, Coding, Classification, Tabulation, Validation Analysis and Interpretation. Errors in Hypothesis Parametric test-t-Test, Z-Test, F-Testand Non-Parametric Test- U-Test, K-W Test - Statistical Analysis: Bivariate Analysis Multivariate Analysis - ANOVA: One- Way and Two-Way Classification - Technology in research.Test of significance- Report writing and presentation of results: Importance of report writing, types of research report, report structure, guidelines for effective documentation. Case studies.

Skill Development

1. Development and testing of hypothesis based on sample size.
2. Data analysis using SPSS.
3. Financial data interpretation and modeling using advanced excel tools.
4. Collect primary data and apply descriptive statistics.

Course Outcomes

CO 1 : Development of logical reasoning ability in students.

CO 2 : Knowledge about the applicability of various parametric and non-parametric tests for analysis of data.

CO 3 : Ability to use SPSS to solve statistical problems.

CO 4 : Ability to make decisions under uncertain business situations through analysis.

References:

1. Statistics: Sanchetti and Kapoor
2. Research Methodologyu- C R Kothari & Gaurav Garg
3. Statistics for Management: Richard Livin and DavidRobin
4. Fundamentals of statistics- S C Gupta
5. Statistics Theory and Practice- R S N Pillai, Bagavathi

SC03: ADVANCED AUDITING

Total Credits: 4 **Credit Pattern: 3:1:0** **No of hours:5 per week**

1.Course Description:

This paper is to educate the present Indian auditing practices, conceptual understanding, and different terminologies and comparisons with International Auditing practices. To know leading & top Auditing Firms and its importance, to learn auditing and digitalization, Indian Standards on Auditing (SA), major scams in India and its impact on economy of the Country.

2. Course Objectives:

- After completion of the course the students should capable with:
- To know the importance of auditing with different accounting practices.
- To compare the national auditing practices with international auditing principles.
- To have a detailed knowledge on different Auditing Standards and its uses.
- To know audit regulation and laws of various entity.

3. Pedagogy:

The course content is covered class room lecture, students' interaction/seminar, case discussion, major scams and work out the practical insight of auditing issues, challenges as an auditor and also visiting companies for practical exposure. Practical Works: Auditing, Standards, Practice Manuals, Leading and pending cases on auditing issues, on-line auditing methods, proper scrutiny and verification of accounting for best auditing practices.

4. Course Contents:

Module 1: Auditing Concepts: Nature- Objective -Scope of Audit; Relationship of Auditing with Other Disciplines Auditing Standard-Setting Process -Role of International Auditing and Assurance Standards Board (IAASB) and Auditing and Assurance Standards Board (AASB).

Module 2: Auditing Standards and Audit Procedures-audit planning**-** Quality Control for an Audit of Financial Statements- SA 300 Audit Planning and Risk Assessment-Risk Assessment and Control -Audit Risk Components- Companies Auditors Report Order 2020 (CARO 2020)-Audit Committee and Corporate Governance- Consolidated Financial Statement.

Module-3: Audit Reports - Basic Elements -SA 700 Forming an Opinion and Reporting on Financial Statement- Types of Modified Opinion- Circumstances When a Modification to the Auditor's Opinion is Required- Qualified- Adverse-Disclaimer of Opinion -SA 705 Modification to the Opinion in the Independent Auditor's Report- SA 706 Emphasis of Matter Paragraphs and Other Matter Paragraphs in the Independent Auditor's Report- Nature of Comparative Information; Corresponding Figure; Comparative Financial Statements -SA 710 Comparative Information - Corresponding Figures and Comparative Financial Statements.

Module: 4: Audit Regulation and Laws – Due Diligence- Investigation - Forensic Audit- Peer and Quality Review - Professional Ethics—Audit-Related Penalties - Imprisonment and Prosecution - Rethinking of Audit - Auditing Software - Case Studies - Kingston Cotton Mill Company 1896 – Sahara and Subratha Rai -Case Studies.

Skill Development:

Evaluate effect of forensic audit on the profitability of select consumer goods manufacturing industries

Select any five companies and analyze role of internal audit in managing corporate governance

Course Outcomes

CO-1: Knowing the Indian Auditing Standards and Audit Procedures.

CO-2: Learning the auditing practice of different sectors.

CO-3: Preparation of audit report as per CARO 2016.

CO-4: Practice of audit through online.

References:

1. **Advanced Auditing & Professional Ethics- By CA Pankaj Garg-Taxmann Publication**
2. Advanced Auditing-Surabhi Bansal-Best word's Publication
3. Advanced Auditing- CA G Shekar- Padhuks's Publication
4. **Advanced Auditing & Professional Ethics-Abhishek Bansal-Commercial Law Publication Pvt. Ltd.**

II SEMESTER

HC05: ORGANISATIONAL BEHAVIOUR

Total Credits:4 Credit Pattern:3:1:0 No of hours:5 per week

1. Course Description:

This course provides the coverage of scope of OB, different contributing discipline to OB, foundational of individual behavior, motivational theories and foundations of group behavior.

2. Course Objectives:

Course is to provide the knowledge about organizations structure, design, and culture, their constitution, motivational theories and the behviour of individual and group members in organizations.

3. Pedagogy:

Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content.

4. Course Contents:

Module1: Introduction: Meaning-Definitions and scope of organizational behavior – Fundamental Concepts of OB - Key elements of OB- people, Organizational structure, technology and environment; Historical development of Organizational Behavior-Model of Organizational Behavior. Contributing Disciplines to OB-Psychology-Sociology-social psychology-Anthropology- Political science; OB and Management-Comparative roles in organization;- Organizational structure Designs and Culture -Formal and Informal organization - Case studies.

Module 2: Foundations of Individual Behavior: Personal factors, Psychological factors - Organizational factors, Environmental factors - Personality - Personality determinants-personality traits – Authoritarianism - Locus of Control – Machiavellianism - Introversion and Extroversion - Achievement Orientation - Self- Esteem - Risk-taking, Self-Monitoring.- Theories of Personality; Learning – Theories of learning - Perception-meaning and definition, factors influencing perception – Attitudes - formation of attitudes, changing attitudes, attitudes and Job satisfaction – Values - Importance of Values - Sources of Values - Case studies.

Module 3: Motivation: The concept of Motivation - Early Theories of Motivation - Hierarchy of Needs theory - theory X and Theory Y; Hygiene theory; contemporary theories of motivation-ERG Theory-three needs theory - cognitive evaluation theory and others - Work stress - sources of stress - Stress Management – Case studies.

Module 4: Foundations of Group Behavior: Defining and classifying groups-group process-group tasks-cohesive groups - group dynamics - Leadership-nature and importance- functions styles - Communication: Nature and Types - Effective communication - Roles of Formal and Informal communication - Conflict management - The process of conflict - Types of conflict - Functional and Dysfunctional conflict -Resolution of conflict - Case studies.

Skill Development:

- Visit a business organization and collect data onfactors that influence on employee motivation.
- Study the conflict resolution procedure in an organization.

Course Outcomes:

CO1. Comprehend the conceptual frame work of management and Organizational behavior

CO2. Understanding the complexities associated with management of individual behavior and group behavior in the organization.

CO3. Application of various motivational theories in anchoring the behaviour of employees in an organization

CO4. Apply creative, critical and reflective thinking to address organizational opportunities and challenges.

References:

1. OrganisationalBehaviour - FredLuthans
2. Organisation Theory and Behaviour - V S P Rao and PSNarayana
3. OrganisationalBehaviour – K.Aswathappa
4. Human Behaviour at Work – KeithDevis
5. Organisational Theory and Behaviour- R. A.Sharma
6. Organisational Psychology – Schein,E.H.

HC06: CORPORATE GOVERNANCE

Total Credits: 4 **Credit Pattern: 3:1:0** **No of hours: 5 Per Week**

Course Description:

The course provides coverage of concept of corporate governance, Business ethics, Corporate Social Responsibility and corporate governance in India and reforming of BOD and different Committees.

Course Objectives:

This course aims to, Enable the students to understand the concept of corporate Governance

1. Help the students to know about Corporate Ethics and Cultural Influences
2. Acquire knowledge of Corporate Social Responsibility and Accountability
3. Gain information about the Corporate Governance Reforming Committee Reports in India

Pedagogy:

The subject matter will be presented through lectures, class discussions, student presentations, Guest lectures, and laboratory experiences.

1. Course Contents:

Module 1: Concept of Corporate Governance: Introduction to Corporate Governance, Its Importance - OECD Principles of Corporate Governance, Need for good Corporate Governance - Theories of corporate governance, Agency theory and Stewardship theory - Corporate Governance Models – US/UK model, European model, and Japanese Model. Evolution and growth of Corporate Governance in India- Case studies.

Module 2: Corporate Management and Functions of Board Committees: Management vs. Governance - Internal Constituents of the Corporate Governance - Key Managerial Personnel (KMP); Chairman - Qualities of a Chairman – Powers - Responsibilities and Duties of a Chairman - Chief Executive Officer (CEO) - Role and Responsibilities of the CEO - Separation of roles of chairman and CEO - CFO – Manager - Company Secretary – Auditor. **Statutory Committees of Board-** Audit Committee, Remuneration Committee - Nomination Committee - Compliance Committee - Shareholders Grievance Committee - Investor's Relation Committee - Investment Committee - Risk Management Committee – Other Committees. Case studies.

Module 3: Regulatory Framework of Corporate Governance: Corporate Governance Committees - Cadbury Committee on Corporate Governance, 1992 - Sarbanes-Oxley Act, 2002 - Kumar Mangalam Birla Committee, 1999 - Naresh Chandra Committee Report, 2002 - Narayana Murthy committee Report, 2003, Dr. J. J. Irani Committee 2005 (**Only highlights of**

committee reports)- Report on Company Law, - SEBI guidelines and clause 49 - reforms in the Companies Act; whistle blowing - whistleblower policy - Case studies.

Module 4: Business Ethics and Corporate Social Responsibilities: Concept – Importance - Principles of Business ethics - Benefits of Corporate Ethics - Arguments for and Against Business Ethics - Techniques to improve Ethical Conduct of Business - Ethics in functional areas of Business- Marketing - HRM - Accounting and Auditing - Finance etc., **Corporate Social Responsibility**: Meaning - CSR models **-** Corporate Social Challenges - Corporate Accountability - Business And Ecology - Sustainability Reporting - Case Studies.

Skill Development

- Visit an organization and collect data on the vision, Mission, and objectives of the organization, code of conduct, and values practiced in an organization.

- Visit an organization and collect information on CSR activities by conducting the interview.

COURSE OUTCOME:

CO1: Know the Conceptual framework of Corporate Governance around the world and in India,
CO2: Enhancing the Knowledge on Ethics in Business and the Code of Conduct practiced in various Corporations.
CO3: Learn the efforts of governments and various committees in enacting good governance systems in Indian Corporations,
CO4: Realize the roles and responsibilities of CEO, CFO, Company Secretary and other key managerial personnel
CO5: Identify and understand the various Corporate Social Responsibility activities taken up by the Indian corporate sector.

References:

1. Business ethics by L.P. Hartman, Tata Mc Grawhill.
2. Business ethics by W.H.Shaw-(Thomson)7
3. Corporate management and Accountability by L.C. Gupta (McMillan Institute for FM and Research, Chennai-1974)
4. Strategic Management by Hill, Ireland and Horkisson(Thomson)
5. Business and society by Keith Davis (Mc GrawHill)
6. Corporate Governance by Kenneth Kim, John R. Nofsinger, Derek J Mohr, 2010 3/E, Prentice Hall.
   N Balasubramaniam, Corporate Boards and Governance, Sterling Publishers, New Delhi.

   A C Fernando, Corporate Governance – Principles, Policies and Practices, Pearson Education, New Delhi.

   Jayati Sarkar and Subrata Sarkar, Corporate Governance in India, Sage Publications, New Delhi.

   Subash Chandra Das, Corporate Governance in India, PHI, New Delhi.

HC07: INTERNATIONAL BUSINESS

Total Credits: 4 **Credit Pattern: 3:1:0** **No of hours: 5 per week**

1. **Course Description:**

   This course provides the coverage of international marketing, international trade, international global sourcing, international business environment, multinational corporations and India in the global setting.

2. **Course Objectives:**

   - To understand differentiation between domestic and international trade practices.
   - To analyze various factors influencing international trade.
   - To learn the contribution and role of GATT, WTO efforts in regulating international trade.
   - To study economic integrations role in protecting domestic companies.
   - To understand the implication of globalization on emerging economies.

3. Pedagogy:

The course would be taught under LTP method. The lecture sessions are designed to be interactive with the student expected to come prepared with basic reading suggested before every session. The tutorial sessions are basically group exercises with each designated group handling a prescribed module for presentation and interaction, in a three- way interactive process. It basically involves preparing field reports and presenting them for plenary discussions.

4. Course Contents*:*

Module 1: Introduction: Nature of International Business-players in International Business- Approaches and need for international Business, International Trade Theories. International Marketing-Trends in International Trade - Reasons for Going International - Global Sourcing and Production Sharing-International Orientations Internationalization Stages and Orientations-Growing Economic Power of Developing Countries-International Business Decision - Case Studies.

Module 2: Regional Trade Blocks: Trading Environment-Commodity Agreements – Unilateral, Bilateral and multilateral stages of Economic integration, Castes - State Trading and Growing Intra-Regional Trade - Other Regional Groupings - GATT / WTO - The Uruguay Round Evaluation – UNCTAI – EFTA – LAFTA – EU – SAARC - World Bank - IMF and other trading blocks and common marketing for international business – case studies.

Module 3: Multinational Corporations: Definition -Organizational Structures - The Role of MNC's and Dominance of MNC's - India as a player in the International market place – its position and prospects - FDI & FII's in India - Code of Conduct - Multinationals in India - Case Studies.

Module 4: India in the global setting and globalization of Indian business: India an Emerging Market-India in the Global Trade-Liberalization and Integration with Global Economy - Foreign Trade Policy 2015-20 - Regulation and Promotion of Foreign Trade in India - Export promotion- Organizational set-up - incentives – EOUs - EPZs and SEZs - export houses and trading houses - an evaluation-One Borderone Road, - Case studies.

Course Outcome:

CO1: Identify the key aspects of international trade and calculate its potential gains to participating nations.

CO2: Recognize the characteristics of foreign exchange markets

CO3: Identify the different countries currency regimes around the world.

CO4: Evaluate cross-border investment opportunities, and describe a multinational firm's decision-making process

References:

1. WTO and Indian Economy:Chadha.G.K
2. International Business: New Trends:G.S.Batra&R.C.Dangwal
3. Global Marketing Strategies: Jean Pierre&H.DavidHennessay
4. International Marketing – SakOnkvisit and John J.Shaw
5. International Marketing – Philip Cateora and JohnGraham
6. International Business – By RogerBonnet
7. International Business - MichaelZinkata
8. International Business - Johnd.Daniels
9. International Business – RichardM.Shaffer
10. Restless Continent – MichaelWESley

SC 04: CAPITAL MARKET INSTRUMENTS

Total Credits: 4 **Credit Pattern: 3:1:0** **No of hours:5 per week**

1. Course Description:

Capital markets in recent times are flooded with new and innovative instruments enhancing vibrancy and volume of capital markets. Every advanced programme in commerce should consist of a course in analysis and evaluation of various instruments traded in capital markets today.

2. Course Objectives:

- To understand about the capital market, its operations and various instruments for investment
- To evaluate various financial instruments like stock, bond and debentures

- To understand various concepts and terminologies used in derivatives.
- To evaluate various financial derivatives such as forwards, futures, options, financial swaps, credit derivatives etc.

3. Pedagogy:

Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content. Tutorials include writing of assignments, Case study discussions, and seminar presentations.

4. Course Contents:Module 1: Introduction to Capital Market - Structure of Indian Financial Markets-Money Market -Instruments- Capital Market - Instruments- Innovations in capital markets- Angel Investors, Venture capital ,Unit Linked Insurance Plans, IPO issue- Book building process, Contemporary issues and challenges in Fixed Income security market, case studies.

Module 2: Valuations – Valuation of Stocks - Dividends Growth Model - Variable growth model – Bonds-valuation-YTC, YTM, duration of bond- Debentures – Types - Convertible Debentures. Global financial instruments-ADRs - GDRs – IDRs-Basic features – Benefits to issuing Company- ETFs - Meaning and Importance

Module 3: Derivatives – Origin - growth and Types of Derivatives – Benefits of Derivatives Market – Forwards and Futures – Difference- Basic Features – Classification of Futures- Pricing of Forwards and Futures- Margins – Hedging Using Futures Contract- concept of M2M.

Module 4: Options and Swaps – History- Types of options- - Options payoff Diagrams - Options Market in India – Swaps – Meaning – Currency Swaps – Interest Rate Swaps.

3.Course Outcomes:

CO-1: learning conceptual and practical knowledge on Capital market and its operations in India

CO-2: Valuation of financial securities like bond, debenture and stocks.

CO-3: Mechanism and application of forwards/futures, options, financial swaps.

CO-4: Learn online trading mechanism of derivatives instruments.

Skill Development

- Visit brokerage firms and list out new investment avenues.
- Determination of Intrinsic value of stocks with market data.
- Online trading in derivatives using futures and options.
- Collect contract specifications of different underlying assets.

References

1. Capital Market Instruments – By G. Kotreshwar, Chandana Publications (2014),Mysore
2. Financial Derivatives – By G.Kotreshwar, Chandana Publications (2014),Mysore
3. Derivatives and Risk Management- Dr.R.P. Rustagi

SC 05: SERVICES MARKETING

Total Credits: 4 Credit Pattern: 3:1:0 No of hours: 5 per week

1. Course Description:

The role of services has grown to an unprecedented level today. Every company, whether it is a manufacturing company or a product selling company, is dependent on the services for one thing or the other. The services provided by companies in the marketplace are also the factors which differentiate them from their competitors. So, it is vital for the commerce students to learn about the service marketing prevailing in today's scenario.

2. Course Objectives:

This course subject will help the students to:

- Learn the distinctive aspects of service marketing
- Understand the customers' perspective of service
- Recognise the importance of service innovation and design
- Gain knowledge on effective service technologies

3. Course Contents

Module 1: Introduction to services

Meaning of Services – Characteristics of services – Customer focus – Consumer behavior in services; Search, experience and acceptance properties – consumer choice – post-experience evaluation – Customer expectations of service – factors influencing customer expectation of service – Issues involving customer expectations – Case Study

Module 2: Understanding Customer Requirements

Understanding Customer Requirements through Marketing Research – Elements of Effective Marketing Research Programme – Relationship marketing – Customer profitability Segments – Service Recovery: Impact of Service Failure and Recovery – Customers' Response to Service Failures – Service Recovery Strategies – Case Study

Module 3: Service Innovation, Design and Standards

Concept of Service Innovation and Design – Challenges of Service innovation and Design – Types of service innovations – Stages in Service innovation and development – High-Performance Service Innovations – Customer service standards – Customer defined service standards – Types of customer defined service standards – Development of customer defined service standards – Case Study.

Module 4: Delivering and Performing Service

Employees' Roles in Service Delivery – Organizational Service Culture – Significant role of Service Employees – Customers' Roles in Service Delivery – Importance of Customers' roles – Customer Self-service technologies – Strategies for enhancing customer participation – Service through Intermediaries and Electronic Channels – Direct (Company owned Channels) – Franchising – Agents and Brokers – Electronic Channels – Effective service delivery through intermediaries – Case Study

Skill Development Component:

- ✓ Collecting information on service innovation by a select company and preparing a report on how the innovation took place and the outcome of the service innovation.
- ✓ Compare and contrast the Direct and Electronic channels of delivering services and preparing a report.

4. Course Outcome:

CO1: Learn the Concept of Services and intangible products

CO2: Comprehend the characteristics of service industry

CO3: Visualise the significance of service innovation and design

CO4: Employ various modes of service delivery in service organizations

5. Reference Books:

1. Service Marketing – K Rama Mohana Rao, Pearson Education, New Delhi
2. Essentials of Service Marketing – Jochen Wirtz, Pearson Education, New Delhi
3. Service Marketing – Valarie A. Zethaml, Mary Jo Bitner, MCGraw Publication, New Delhi
4. Service Excellence: Creating Customer Experiences that Build relationships (Marketing Strategy Collection) – Ruth N Bolton, Business Expert Press, New Delhi

SC 06 : PORTFOLIO MANAGEMENT

Total Credits: 4 Credit Pattern: 3:1:0 No of hours:5 per week

1.Course Description:

Portfolio management, analysis and construction is a course in financial management which includes portfolio investment analysis, risk and return analysis, optimal combinations of securities which lead to create effective return on investment.

2. Course Objectives:

- To provide an overview of various investment avenues available for investment

- To provide an overview of market efficiency and evaluate market efficiency
- To understand about fundamental and technical analysis for better investment
- To evaluate various portfolio theories and model like Markowitz, CAPM and APT
- To evaluate portfolio performance using various measures

3. Pedagogy:

Students must work out assigned individual topics, present seminars and participate in case studies or group discussions.

4. Course Contents:

Module 1: Efficient Market Concept - Random Walk- Levels of Efficiency – Weak – Semi Strong and Strong - Techniques for Measuring Efficiency - Empirical Tests – Behavioral Finance -Case Studies.

Module 2: Fundamental and Technical Analysis- Economic Analysis- Industry Analysis - Company Analysis - Forecasting Company Earnings - Valuation of Companies -Intrinsic and Market Value - Market Indicators - Forecasting Individual Stock Performance – Technical Analysis: Basic Tenets of Technical Analysis – Dow Theory – Behavior of Stock Prices – Major Trends – Charts and Trend Lines – Resistance and Support Lines – Different Patterns-Case Studies.

Module 3: Portfolio Analysis -Various Steps Involved in Portfolio Development- Theories Relating to Portfolio Analysis- Risk & Return – Mean Return – Variance Analysis -Standard Deviation- Beta and Alpha Measures- Portfolio Diversification- Markowitz Risks Return Optimization- Capital Asset Pricing Model- Arbitrage Pricing Theory- Case Studies.

Module- 4: Portfolio Performance Evaluation - Mutual Funds - Exchange Traded Funds (ETFs) - Performance Evaluation Measures– Sharpe - Treynor and Jensen's Ratios - Optimal Portfolio Selection-Case Study.

Skill Development

- Collect any five stocks/Mutual funds/ETFs historical prices available on NSE website and prepare comparative risk, return and relevant performance evaluation models report use of Excel spreadsheets.
- Fundamental analysis of securities with the help of qualitative and quantitative data available in respect of companies on various financial websites, etc. also practice use of technical charts in predicting price movements through line chart, bar chart, candle and stick chart, etc., moving averages, exponential moving average.

Course Outcomes

CO-1: Know the various investment avenues available for investment and assess the risk and return associated with investments alternatives.

CO-2: Application of fundamental and technical analysis for security valuation

CO-3: Enhance the knowledge in various theories of portfolio analysis, construction and performance evaluation of portfolios

CO-4: Acquire the practical knowledge on online trading of different financial securities.

References:

1. Portfolio Analysis and Management –Balla D- S Chand & Co
2. Investment Analysis and Portfolio Management-Prasanna Chandra-McGraw-Hill Publication.
3. Security Analysis and Portfolio Management – V. A. Avdhani, Himalaya Publication
4. Security Analysis and Portfolio Management – S. Kevin-PHI Publication
5. Security Analysis & Portfolio Management- Punithaathi Pandian-, Vikas Publishing House.

SC 07: MANAGEMENT INFORMATION SYSTEM

Total Credits: 4 Credit Pattern: 3:1:0 No of hours: 5 per week

1. Course Description:

Management Information System (MIS) is one of the most important tool in the hands of a company which desires to manage its business more effectively. MIS integrates the three key resources including technology, information and people so that overall internal control can be achieved. MIS is advantageous for both the manufacturing organizations and service organizations.

2. Course Objectives:

This course subject will help the students to:

- Learn the concept of Management Information System
- Recognise the applicability of Management Information System in business
- Understand the significance of enterprise management systems
- Gain knowledge on various enterprise management systems and models

3. Course Contents

Module 1: Introduction to Management Information Systems

Concept of Management Information System – Role of Management Information System in modern organizational scenario – Impact of Management Information System – Data Base Management System – interrelationship between Management Information System and the User – Information and Knowledge; Information – Classification of information – methods of information collection – implication of information – Case study

Module 2: E-Business Enterprise

Organization of E-enterprise; E-business – E-commerce – E-communication – E-collaboration – Strategic Business planning using Management Information Systems – Security Challenges in E-enterprises –Controlling security threats in E-business – impact of Information Technology on privacy – impact of Information Technology on Quality of Life – Case Study

Module 3: Business Process Re-Engineering (BPR)

Meaning of Business Process Re-Engineering – BPR models of the organization – Process Model – Value Stream model – Factors Causing

delays in Business process – Relevance of Information Technology in Business Process Re-Engineering – Decision Support Systems(DSS); Concept – Group Decision Support System (GDSS) – Knowledge Management – Knowledge Management Systems – Case study

Module 4: Enterprise Management Systems

Application of MIS in Manufacturing Sector – Production Management – Raw Material Management – Marketing Management - Financial Management – Personnel Management – Enterprise Resource Planning (ERP) – ERP Models – Benefits of ERP – ERP Implementation – Supply Chain Management – Case study

Skill Development Component:

- ✓ Collecting information on the Management Information System in an organization and preparing a report.
- ✓ Get a hands-on knowledge on an ERP application tool.

4. Course Outcome:

CO1: Learn the significance of Management Information Systems in Businesses

CO2: Gain knowledge on effective management of information

CO3: Learn about the Enterprise Resource Planning models

CO4: Understand the significance of Management Information System in Supply Chain Management

5. Reference Books:

1. Managing and Using Information Systems: A Strategic Approach – Keri E Pearlson, Carol S. Saunders, Dennis F. Galletta – Wiley Publication, New Delhi
2. Management Information Systems – Jane P Laudon & Kenneth C. Laudon, Pearson Education, New Delhi
3. Management Information Systems – Ramesh Behl, James A. and George M, McGraw Hill, New Delhi 300
4. Management Information Systems: Text and Cases – Waman Jawadekar, Sanjiva Shankar Dubey, McGraw Hill, New Delhi

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OE01: STOCK MARKETS AND INVESTEMENT DECISIONS

Total Credits:4 Credit Pattern: 3:1:0 No of hours: 5 per week

1. **Course Description**:

Stock markets are more popular today as they provide a wonderfulopportunity to the general public to invest their savings. This course provides thecoverage of fundamentals of stock markets, indices, instruments and trading instocks and shares including DEMAT Account.

2. **Course Objectives**:

The course is designed to meet the expectations of non-commercial graduates and intended to help students to:

1. Understand the role of stock markets as an avenue for investments.
2. Understand the different types of stock market instruments.
3. To make the students to be competent towards the basics relating to trading in stocks.
4. To gain knowledge on the trading activities

3. **Pedagogy:**

Teaching method comprises of lecture sessions and tutorials. Lecturesessions focus on providing conceptual understanding and analytical setting forselect aspects of the course content. Tutorials include writing assignments andvisits to stock brokers.

1. Course Contents:

Module 1: Stock Markets:

Meaning - History- Functions of Stock Exchange- Leading Stock Exchanges in India - NSE and BSE - Role of SEBI - Investor'sProtection – Grievance Redressal

Module 2: Stock Market Instruments

Short Term and Long TermInstruments – Shares - Types of Shares – Debentures - Types of debentures -Bonds - Types of Bonds - Benefits of Investments in Stocks - Stock v/sDebenture - Case studies

Module 3: Trading in Stock Market:

Trading Mechanism - PAN Card,Speculation- Types of Speculation - Advantages and Drawbacks of Speculation- DEMAT Account - Depository Services - NSDL - CSDL – Stock Market Trading types – IntradayTrading - Delivery Trading - Swing Trading - Positional Trading - Fundamental Trading - Technical Trading

Module 4: Stock Market Indices and Risk Management:

SENSEX – NIFTY- SENSEX S&P - CNX - MID CAP - SMALL CAP - LARGE CAP – Factorsimpacting on indices - Recent changes in the Stock Market Volatilities- RiskManagement – Systematic and Unsystematic risk, Case studies

Skill Development Components:

- ✓ Preparing a watch list of large-cap/ mid-cap/ small-cap stocks
- ✓ Observing the movement of stock prices and preparing weekly reports.

Course Outcomes:

CO1: Enhancing the knowledge on theoretical and practical concepts of Indian stock markets and Stock Market Instruments

CO2: Understanding the Trading mechanism in stock market

CO3: Analyze the Stock price movement using BSE-SENSEX and NSE-NIFTY asbenchmark indices

CO4: Learning online trading mechanism

References:

1. Capital Markets- By Dr. S. Guruswamy, McGraw Hill Publications.

2. Capital Market and Investment Management- By Dr. M.S. Khan, S.M.Farisal, Laxmi Publications, firstedition.

3. Capital Market Instruments- By Dr. G. Kotreshwar, Chandana Publications,Mysore.

4. Equity Shares, Preferred Shares and Stock Market Indices- By Sunil,Parameswaran, Mcgraw HillPublications.

OE 2 : MANAGEMENT OF ENTERPRISES

Total Credits:4 Credit Pattern: 3:1:0 No of hours: 5 per week

Course Description This course is designed to help the students to understand the basic concepts of management such as enterprise planning, organizing, coordination and controlling

Course Objectives:

- To make students understand fundamental concepts and principles of management, including the basic roles, skills, and functions of management.
- To enumerate the Importance of various structural forms in organizations
- To understand the importance of various dimensions of controls employed in organizations.

Pedagogy: Course content delivered through lecture session and tutorial sessions which includes group discussion, case study analysis, etc.,

Module 1: Introduction to Management - Meaning, nature, and characteristics of management, scope and Functional areas of management, goals of management, levels of management, a brief overview of the evolution of management theories,**Planning-** Nature, importance, types of plans, steps in planning, Organizing- nature and purpose, types of Organization, Staffing- meaning, the process of recruitment and selection.

Module 2: Organizing: Nature and purpose of organizing- Organization structure - Line and staff authority Departmentation & Bases of Departmentation - Span of control -centralization and decentralization- Delegation of authority – Span of Management –Informal Organisation & Grapevine. Impact of Technology on Organization structure.

Module 3: Coordination: Features of Coordination, Principles of Coordination, Coordination – The Essence of Management, Process of coordination in Management, Elements of coordination,

Module 4: Controlling: Managerial Control, Relationship between Planning and Control, Limitations of Control, Feedback, Types of Control Systems and Techniques, Management by Exception, Budgetary Control, Functional and Dysfunctional aspects of Budgetary Control, Internal Control Systems,Internal Audit,and Management Audit.

Skill Development:

1. Visit a company and enumerate different types of organisational structures.
2. Visit accompanies and study their system of delegation of responsibilities.
3. Visit a company to study the control systems employed to enhance organizational performance.

Reference Books

- Essentials of Management- Koontzand O'Donnell-McGraw Hill,
- Introduction to Management – Fred Luthans-McGraw
- The Practice of Management-Peter. F.Drucker
- Management-Stoner, Freemen and Gilbert

III SEMESTER

HC 08 : BUSINESS RESEARCH METHODS

Total Credits: 4 Credit Pattern: 3:1:0 No of hours:5 per week

1. **Course Description:** This course provides the coverage of business research methods, ethical issues in business research methods, research process, data collection methods, designing of questionnaire, various statistical tools like univariate and bivariate analysis and report writing.

2. **Course Objectives**: The course is envisaged to provide the student the knowledge and skill related to conduct of research related to business. This basic course familiarizes the student with the technicalities of executing a research assignment, in particular the applied research domain.

3. **Pedagogy:** The lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content. This session focuses on student involved and student driven content study. Identified groups of students make presentations and interact with both the faculty and the other students. The aspects reinforced through lecture and tutorial is taken up for practical study. Here the students would undertake field exercises related to different aspects of the course contents.

4. **Course Contents:**

Module: 1 Business Research: Meaning – types - process of research-management problem - defining the research problem - formulating the research Hypothesis - developing the research proposals - research design formulation - sampling design - planning and collecting the data for research - data analysis and interpretation - Research Application in business decisions - Features of good research study-Ethics in research, Plagiarism, Digital Technologies and falsifications.

Background to Research: Developing research questions-Research paradigms- Contributions of research to theory and practice- Importance of scientific research in business decision making - Types of research and research process

Module: 2 Types of Business Research Design: Exploratory and Conclusive Research Design Exploratory Research: Meaning, purpose – methods - secondary resource analysis, comprehensive case methods, expert opinion survey, focus group discussions - Conclusive research Design - Descriptive Research – Meaning - Types-cross sectional studies and longitudinal studies - Experimental research design-Meaning and classification of experimental designs - Pre experimental design, Quasi - experimental design – True experimental design, statistical experimental design - Observation Research – Meaning – Uses - Participation and Non-participation – Evaluation - Conducting an Observation study - Data collection.

Literature Review: Identifying - accessing and managing information and scholarly literature - Academic writing and referencing - Literature review development- Argumentation and synthesis

Module: 3 Measurement and Data Collection: Primary and Secondary data Primary data collection methods – Observations – survey - Interview and

Questionnaire - Qualitative Techniques of data collection. Questionnaire design – Meaning - process of designing questionnaire - Secondary data – Sources- advantages and disadvantages Measurement and Scaling Techniques: Basic measurement scales-Nominal scale - Ordinal scale - Interval scale - Ratio scale. Attitude measurement scale - Likert's Scale - Semantic Differential Scale - Thurston scale - Multi-Dimensional Scale – Data Processing

Sampling: Concepts - Types of Sampling - Probability Sampling - simple random sampling, systematic sampling - stratified random sampling - cluster sampling -Non ProbabilitySampling-conveniencesampling-Judgementalsampling-snowballsampling - quota sampling - Errors in sampling

Module: 4 Preparing the Data for Analysis: Editing, Coding, Classification, Tabulation, Validation Analysis and Interpretation. Errors in Hypothesis Application of statistical tools for the analysis of data. Technology in research. Report writing and presentation of results: Importance of report writing, types of research report, report structure, guidelines for effective documentation.

Skill Development

- Review a minimum of 10 research articleson your interesting research area.
- Prepare and present a project proposal of your choice.
- Conduct an interview to collect primary data and analyze the data using software.

Course Outcome:

CO1: Identify the Research problems in the area of Business and Commerce

CO 2: Write a literature review that synthesizes and evaluates literature in a specific topic area to justify a research question

CO 3: Apply appropriate research design and methods to address a specific research question and acknowledge the ethical implications of the research

CO 4: Develop a research proposal/research paper on the basis their study.

CO 5: Present and defend a research proposal/ research paper.

References:

1. Business Research Methods, William G. Zikmund, The DrydenPress
2. Research for Development: A Practical Guide, Sophie Laws, VISTAAR Publications
3. Research Methodology in Spcial Sciences - Krishnamachari
4. Research Methodology –C K Kothari

HC 09: OPERATIONS RESEARCH

Total Credits:4 **Credit Pattern: 4:1:0** **No of hours: 5 per week**

1. Course Description:

The course Operations Research covers linear and integer programming, transportation and assignment problems and their applications in decision making in business.

2. Course Objectives:

The objective of the course is to acquaint the students with the use of quantitative models in decision making.

3. Pedagogy:

The lecture sessions focus on providing conceptual understanding and solving problems of the course content. Students would make presentations and interact with both the faculty and the other students during tutorial sessions.

4. Course Contents:

Module -1: Introduction to Operations Research: Definition, scope, objectives, applications, models and limitations of Operations Research. Linear Programming Problem – Formulation of LPP - Graphical solution of LPP - Simplex Method.

Module -2: Transportation Problem: Formulation – solution - unbalanced Transportation problem - Finding basic feasible solutions – Northwest corner rule - least cost method and Vogel's approximation method - Optimality test: the stepping stone method and MODI method, AssignmentModel–Formulation-Hungarianmethodforoptimalsolution-Solving unbalanced problem.

Module –3: Sequencing Models. Solution of Sequencing Problem – Processing n Jobs through 2 Machines – Processing n Jobs through 3 Machines – Processing 2 Jobs through m machines – Processing n Jobs through Machines**.**

Module- 4 : Game Theory. Competitive games, rectangular game, saddle point - minimax (maximin) method of optimal strategies - value of the game - Solution of games with saddle points - dominance principle. Rectangular games without saddle point – mixed strategy for 2 X 2games.

Replacement Models- Replacement of Items that deteriorates, whose maintenance costs increase with time without change in the money value - Replacement of items that fail suddenly: individual replacement policy

Course Outcomes:

CO 1: Application of Linear Programming in cost minimization and profit maximization

CO 2: Conceptual knowledge and practical applications on Transportation and Assignments

CO 3: Understand the usage of game theory and Simulation for Solving Business Problems

CO4: Understand the applicability of replacement model in cost analysis

Skill Development

1. Developing solutions to business problems with LPP application.
2. Understanding scenarios and developing decision variables.
3. Selection of most likely and applicable machines through cost-benefit analysis.

References:

1.Operations Research: Frederick S Hillier and Gerald J Lieberman, Tata McGraw- Hill Publishing Company Limited, New Delhi.

2. Operations Research - Theory and Applications: J. K. Sharma, Macmillan India Ltd. New Delhi.1997.

3.Operations Research – Applications and Algorithms: Wayne L. Winston, Thomson Learning, New Delhi.

4. Operations Research :Panneeraselvam, Prentice Hall of India, New Delhi.

5. Practical Problems in Operations Research: Chawla, Gupta and Sharma, Kalyani Publishers. New Delhi.

SC08: ENTREPRENEURSHIP DEVELOPMENT

Total Credits: 4 Credit Pattern:3:1:0 No of hours:5 per week

1. **Course Description:**

The course will cover the characteristics of and types of entrepreneurs, identifying problems and opportunities, creative problem solving, developing aviable business model and entrepreneurial supporting system etc.

2. **Course Objectives:**

1. To familiarize the students with the concept and overview of entrepreneurship with a view to enhance entrepreneurial talent.
2. To impart knowledge on the basics of entrepreneurial skills and competencies to provide the students with necessary inputs for creation of new ventures.
3. To explore new vistas of entrepreneurship in 21st century environment to generate innovative business ideas.

3. **Pedagogy:**

The subject matter will be presented through lecture, classroomdiscussion, workshops, special lecture programmes from industry experts, casestudy analysis and industrial visits.

4. Course Contents:

Module - 1 Concept of Entrepreneurship

Evolution ofEntrepreneurship - Types of Entrepreneur - Theories of Entrepreneurship - Stages in EntrepreneurialProcess- Entrepreneurial Competencies - Role of Entrepreneurship in EconomicDevelopment - Factors affecting Entrepreneurship - entrepreneurial policy – culture and entrepreneurship-Case Study.

Module - 2 Establishing Enterprises:

Generating new ideas – EntrepreneurialMotivation - Identifying the Business Opportunities - Business Plan -Meaning ofbusiness plan - Business plan process - Advantages of business planning -Innovation, Creativity, Invention Vs, Innovation - Marketing plan - Production/operations plan - Organization plan - Financial plan- Final Project Report with Feasibility Study - preparing a model project reportfor starting a new venture – case studies.

Module - 3 Institutions Supporting System:

Role of Government in promotingEntrepreneurship - A brief overview of financial institutions in India – Centrallevel and state level institutions - SIDBI - NABARD - IDBI - SIDCO – IndianInstitute of Entrepreneurship - DIC - Single Window - Latest Industrial Policy ofGovernment of India- Start-up India- startups and climate for startupsMUDRAScheme. Start-up Karnataka – State's financing for start-ups at the state level.

Module - 4 Managing the Enterprise:

Financial Management: Working CapitalManagement - Financial Planning & Control - Marketing Management -Marketing Plan & Control - CRM – Product Development & Marketing –Production Management: Inventory Control, Productivity, and Break EvenAnalysis – Human Resource Management: Manpower Planning – LaborProductivity – Industrial Relations.

Skill Development Component:

- ✓ Visiting a start-up/ Entrepreneurship venture and conduct an interview with the entrepreneur on his/ her entrepreneurial journey.
- ✓ Visiting a start-up/ Entrepreneurship business which is financially supported by Central/ State Government schemes and preparing a report on the same.

Course Outcomes:

CO 1: Understanding the distinct entrepreneurial traits.

CO 2: Know the parameters to assess opportunities and constraints for new business ideas.

CO 3: Understand the systematic process to select and screen a business idea.

CO 4: Design strategies for successful implementation of ideas.

CO 5: Write a business plan.

CO 6: know the role of Central and State Government institutions in the development of Entrepreneurship in India.

References:

1. Vasant Desai, The Dynamics' of Entrepreneurial Development and Management, Himalaya Publishing House, 2009.

2. Poornima M. Charantimath, 'Entrepreneurial Development and Small Business Enterprises", Pearson Education Licensee, New Delhi2006.

3. Matthias Fink, Sascha Kraus, The Management of Small and

4. MediumEnterprises, Routledge Studies in Small Business,2009

S. Nagendra, V.S. Manjunath, "Entrepreneurship and Management",

Pearson Education Licensee, New Delhi2011.

SC 09 : INTERNATIONAL HUMAN RESOURCE MANAGEMENT

Total Credits:4 Credit Pattern:3:1:0 No of hours:5 per week

1. Course Descriptions:

This course provides the coverage of concept of IHRM, Human resources planning and procurement, human resource development and compensational and rewards system in the context of internationalization.

2. Course Objective:

Through this course, the students will be able to:

1. Understand the differences between domestic HRM and international HRM
2. Know the process of staffing and selection of personnel on international assignments.
3. Learn about the elements of international compensation packages.

3. Pedagogy:

Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content.

Course Contents:

Module 1: Nature of international Human Resource Management (HRM)

Approaches to HRM - differences between domestic HRM and IHRM - challenges of globalization and managing resources - Role of information technology in IHRM - Models of IHRM- Matching model - Harvard Model -

Contextual Model, and 5P Model European Model - Role of culture in International HRMHR practices in Japan, US, Europe and India- Country and Regional Cultures -Country Culture versus MNE Culture - Culture and employee management issues/ impact of Country culture on IHRM

Module2: Sourcing Human Resource for Global Markets:

Staffing – Approaches to Staffing – International Assignments – Reasons for international assignments - Types of International Assignments - Transferring staff for international assignments - recruitment and selection of expatriates – Roles of an Expatriate – Selection Criteria - issues in staff selection of expatriates - Training and development –Pre-departure expatriate training - developing international staff and multinational teams through international assignments.

Module 3: Performance Management:

Factors associated with individual performance and appraisal criteria used for performance appraisal of international employees – appraisal of host country nationals. Compensation -objectives of international compensation approaches of international compensation. Issues and challenges in international performance management -country specific performance management practices.

Module 4: Expatriate Failure:

Expat Failure - Causes of expatriate failure, Repatriation – Re-entry and career issues –Individual reactions to re-entry – job related factors and social factors – Responses by the MNE – Repatriation process – Designing Repatriation Programme - Labor relations – Key issues in international relations –strategic choices before firms - strategic choices before unions – union tactics.

Skill Development Component:

- ✓ Visiting an MNE and preparing a report on International Compensation mechanism adopted by the MNE
- ✓ Preparing a questionnaire, conducting an interview with a repatriate onhis/her experience on job related and social related factors post - repatriation and preparing a report.

Course Outcomes:

CO 1: Demonstrate an understanding of key terms, theories/concepts and practices within the field of IHRM

CO 2: Develop and ability to undertake qualitative and quantitative research and apply this knowledge in the context of an independently constructed work

CO 3: Identify and appreciate the significance of ethical issues in HR practices and the management of people in the workplace.

CO 4: Critically appraise the impact of cultural and contextual factors in shaping human resource practices in MNCs

References:

1. International Human Resource management –Pipparely, paperback 2011.

2. Principles of HRM—George W. BohalandarScott.A Snell. November,2016.

3. Fundamentals of HRM , Person , Garry dessler, October,2016.

4. HRM , John M. Ivancevich, Indian Edition

5. Human Resource Development, D.K. Bhattacharya, Himalaya publishing house 2015.

SC 10 :: INTERNATIONAL FINANCIAL MANAGEMENT

Total Credits:4 Credit Pattern: 3:1:0 No of hours:5 per hour

1. Course Description:

As there has been a significant increase in multinational corporate activities; multinational finance is an added dimension of every advanced course in the area of finance. Hence this course has been designed to highlight the important finance functions of an MNC operating in India.

2. Course Objectives:

- To provide an overview of International Financial Environment
- To understand about foreign Exchange market and evaluate exchange rate
- To provide an overview of international capital budgeting and working capital management
- To provide an overview of international project appraisal

3. Pedagogy:

The lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content. This session focuses on student involved and student driven content study. Identified groups of students make presentations and interact with both the faculty and the other students. The aspects reinforced through lecture and tutorial is taken up for practical study. Here the students would undertake field exercises related to different aspects of the course content.

4. Course Contents:

Module-1:International Financial Environment: Introduction - International Finance- Multinational Enterprise Financial Management - International Monetary System- Balance of Payments-Arbitrage - Types of Arbitrages –Parity Conditions- Interest Rate Parity- Purchasing Power Parity - International Fisher Effect.

Module-2: Foreign Exchange Market: Function and Structure of The Forex Markets- Participants-Exchange Rate Quotations, Nominal, Real and Effective Exchange Rates- Determination of Exchange Rates in Spot and Forward Markets- Exchange Rate Behaviour-Cross Rates- - Arbitrage Profit in Foreign Exchange Markets.

Module- 3: International Capital Budgeting: Concept - Evaluation of A Project - Factors Affecting - Risk Evaluation - Multinational Working Capital Management- Short-Term Financing- Financing Foreign Trade- Current Asset Management for the Multinational.

Module- 4: International Financial Markets Instruments -Foreign Portfolio Investment-International Bond & Equity Market- GDR- ADR- Foreign Bonds & Eurobonds- Global Bonds-Floating rate Notes-Zero Coupon Bonds,

Course Outcomes

CO-1: Enhance the knowledge on international financial environment.

CO-2: Understanding of Balance of Payment in Indian Scenario

CO-3: Practical approach on determination of foreign exchange rates

CO-4: Application of capital budgeting, cost of capital and working capital management in international transactions.

Skill Development:

- Collect one year exchange rate on daily basis and make report on microeconomic factors impact on exchange rate movement.
- Visit any RBI regulated banks and collect information regarding eligible to exchange foreign currency and how do banks exchange foreign currency?

References:

1. International Financial Management-Madhu Vij-Vikash Publication
2. International Financial Management-V. K Balla- S. Chand Publication
3. International Financial Management- Apte- McGraw Hill
4. International Financial Management-O.P Agarwal- Himalaya Publishing **House**

SC 11 : PROJECT MANAGEMENT

Total Credits: 4 per week **Credit Pattern: 3:1:0** **No of hours: 5**

1. **Course Description:**This course is structured for understand concept of project planning and analysis and financial requirement analysis. Further, study on monitoring and controlling and implementation of feasible project.
2. **Course Objectives:** This course will help the students

   - To learn concept of project planning, analysis and implementation.
   - To know market and financial analysis of project.

- To learn Monitoring and Controlling the Project management

3. Pedagogy:

Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding on project planning and analysis and tutorial session helps understand practical aspects of feasible project planning and implementation.

4. Course Content:

Module 1: Project Planning & Analysis: Forms of Project Organization – Project Planning – Project Control – Human Aspects ofProject Management – Generation and Screening of Project Ideas-Generation of Ideas – Preliminary Screening – Project Rating Index.

Module 2: Market and Financial Analysis: Market and Demand Analysis-Estimation of Cost of Project-Estimates of Sales and Production- Cost of Production- Working Capital Requirements and its Financing- Estimates of Working Results- Breakeven Point Projected Cash Flow Statement- Projected Balance Sheet-Appraisal -Criteria-Structure of Financial Institutions in India – Schemes of Assistance – Term Loans Procedures – Project Appraisal by Financial Institutions-Financial Feasibility Analysis–Preparation of Detailed Project Report.

Module 3: Monitoring and Controlling the Project:Successful Project Implementation-Project Review and Administrative Aspects- Evaluating the Capital Budgeting System of an Organization–Net Present Value – Benefit Cost Ratio – Internal Rate of Returns– Payback Period – Accounting Rate of Returns – Investment Appraisal in Practice-Project Auditing and Project Termination.

Module 4: Network Techniques for Project Management: Development of Project Network – Time Estimation- Project Time Control – What if' Analysis – Determination of Critical Path – Scheduling When Resources Are Limited – PERT and CPM Models – Network Cost System

Course Outcomes:

CO-1: Students would learn project **planning & analysis and implementation.**

CO-2:Describe the method of generating project ideas and screening them

CO-3: Students would learn to prepare a detailed project plan.

CO-4: To understand various financial and technical aspects regarding project management.

References:

Project Planning: Analysis, Selection, Implementation and Review-Prasanna Chandra - Mc-Graw Hill Education.

Project Management- K Nagarajan -New Age International Publishers.

Project Management- Samuel J and MantelJR- Wiley India.

Project Management and Control – Narendra Singh- HPH.

Project Management – Bhavesh M. Patel-Vikas Publication.

Project Management- The Managerial Process – Gray& Larson-TMH.

Skill Development:

- Students are asked to identify how the approaches to project appraisal and differ between commercial projects in the private sector and a public sector.
- Visit any organization which have undertaken large scale projects and study the risk associated with such projects and also study how they access and manage such risks.

SC 12: ELECTIVE GROUP A-BUSINESS TAXATION

PAPER1: GOODS AND SERVICES TAX AND CUSTOMS DUTY

Total Credits:4 Credit Pattern: 3:1:0 No of hours:5 per week

1. Course Description:

This paper is to educate about Indian tax system, its background, and its operation in the global competitive market. The importance and administration of the indirect taxes in the Indian market-oriented economy and its role in achieving the objectives of modern welfare government and to evaluate the impact of GST in the present Indian tax scenario.

2. Course Objectives:

- After completion of this course the students would be able:
- To provide an overview of GST, implementation and structure of GST in India
- To provide an understanding of levy, collection, valuation and input tax credit of GST
- To understand about GST registration returns and audit.
- To give an overview of customs duty and valuation of custom duty

3. Pedagogy:

1. Lecture:
2. Tutorial and bridge class (for non-tax students)
3. Live leading cases: pending and deciding in the high court and supreme courts.

4. Practical works:

Tax planning, Tax management, filing of various tax returns and working as consultants and tax advisers for small companies nearby dealers and companies relating to GST and Customs

5. Course Contents:

Module 1: Introduction To GST– Background--Constitutional Provision - Structure of Indian Tax System- Different Types of Taxes- Taxes Under Indirect Tax- Structure of GST -Types of GST – CGST- SGST- IGST- UTGST - Taxes Subsumed in GST - Taxes not Subsumed in GST- GST Council.

Module 2: Taxes Under GST- Supply of Goods & Services - Levy and Incidence of GST- Composition Levy Scheme in GST - Rates and Schedules- GST on Exports-Imports and SEZ Supplies- E-Commerce- Value of Supply- Input Tax Credit- Payment of Tax- Interest- Penalty-Accounts- Utilization of Input Tax Credit.

Module 3: Other Aspects Under GST – Registration Under GST-Tax Invoice, Credit and Debit Notes-Returns- Payment of Tax- Assessment and Audit- Appeals and Revisions.

Module 4: Customs Duty: **Customs Act-1962 - Customs Tariff Act-and Applicable Rules – Authority for Advanced Ruling - Provisions for Levy of Customs Duty- Types of Customs Duties- Classification of Goods -Valuation of Goods- Calculation of Assessable Value -Custom Duty Payable- Duty on Baggage- Goods Imported or Exported by Post and Stores- Duty Draw-Back Schemes- Impact of GST on Customs Duty- Case Studies.**

Skill Development:

- **Identify and evaluate impact of Goods and Service Tax (GST) on Indian economy or any selected business or manufacturing industries as students' choice.**
- **A comparison of select countries GST rate on selected goods or services with India, Further, analysis, make report and suggest.**

Course Outcomes

CO-1: Overview of Good and Services Tax system and structure in India.

CO-2: Practical application of levy, collection, valuation and ITC under GST

CO-3: Filing of online GST return

CO-4: Understanding the concept of Custom's duty, its valuation and duty drawback in India

References:

1. **Goods and Services Tax -HC Mehotra-Sahitya Bhavan Publication**
2. Goods and Services Tax with Customs Law-Dr Srinivas K.R- Dr. Jayaprasad and Dr Bhavani. M- Kalyani Publication
3. Goods and Services Law and Practice-CA Nitesh Parashar- Bharath's Publication
4. **GST Manual: CA G Shekar-Padhuka's Publication**
5. GST and Customs Law-Dr. K Vinod Singhania-Taxmann Publication

SC 13 : ELECTIVE GROUP B – FINANCIAL ACCOUNTING

PAPER-1: ACCOUNTING FOR SPECIAL TRANSACTIONS

Total Credits:4 **Credit Pattern:3:1:0** **No of hours:5**

1. Course Description:

This course focuses on contemporary areas of financial accounting which are likely to be of interest to a wide range of stakeholders including investors, employees, society, government agencies and public at large. The course provides the coverage of accounting for the interim, segment reporting, accounting for income taxes and goods and services tax, and fair value accounting.

2. Course Objectives:

The aim of this course to provide knowledge and skills relevant in accounting to the students on contemporary areas of financial accounting and to bring attitudinal changes to innovations in accounting and to develop professional knowledge and skills in contemporary areas

3. Pedagogy:

Course activities consist of lectures, case study analysis, group discussions, seminar presentation, assignment writing and tests. Reading and analysis of annual reports of companies is the integral part of instruction.

4. Course Contents:

Module 1: Interim and Segment Reporting: Meaning and relevance of Interim Financial Reporting and Segment Reporting – Recognition - measurement and disclosure requirements under Indian accounting standards - Problems and case study analysis

Module 2: Accounting for Income tax: Conceptual Framework of accounting for Income Tax by companies - Accounting for actual and deferred income tax - Journal Entries - ledger accounts and final accounts, Hybrid securities,

Module 3: Accounting for Goods and Services Tax: Conceptual framework of accounting for Goods and Services Tax by companies - Accounting for Output GST and Input GST credit - Journal Entries - ledger accounts and final accounts

Module 4: Fair Value Accounting: Definition and Relevance – Recognition - measurement and disclosure of fair value - Application of fair value in accounting - Problems and Case Study analysis.

Skill Development:

1. Collecting an annual report of a company and analysing the data
2. Problem solving on fair value accounting.

Course Outcomes:

CO 1: Know the measurement and disclosure of Interim Financial Reporting and Segment Reporting.

CO 2: Understand the accounting concept relating to levy of income tax

CO 3: Prepare accounting for Goods and Services Tax.

CO 4: Know and understand fair value and its applications in Accounting.

References:

1. Indian Accounting Standards.
2. International Financial Reporting Standards
3. Interim and Annual Financial Reports of Companies.
4. IT and GST filings of Companies.

Websites:www.iasb.org.
www.icai.org.,
www.mca.gov.in,
www.xbrl.org. www.cbdt.org.

SC 14 - ELECTIVE GROUP C: FINANCIAL MANAGEMENT

PAPER-1: CORPORATE RESTRUCTURING

Total Credits: 4 per week **Credit Pattern: 3:1:0** **No of hours: 5**

Course Description: This course provides the coverage of the corporate restructure and its various methods. Further helps to know merger and acquisition and takeover along with legal aspects of mergers, amalgamations acquisitions and takeovers.

Pedagogy:
Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding on corporate restructure, merger and acquisition and takeover. Tutorial session helps understand practical aspects of corporate restructure and merger acquisitions.

Course Objectives:

This course will help the students

- To learn concept of corporate restructuring, merger and acquisition and takeover.

- To know different types of corporate structure
- To learn various legal aspects of Mergers/amalgamations and acquisitions/takeovers.

Course Contents:

Module 1: Corporate Restructuring: Meaning-Significance and Forms of Restructuring–Sell-Off- Spin-Off- Divestitures- Demerger- Equity Carve Out (ECO)- Leveraged Buy Outs (LBO)- Management Buy Out (MBO)- Master Limited Partnership (MLP)- Limited Liability Partnership (LLP) and Joint Ventures.

Module 2: Introduction of Merger and Acquisition: Meaning-Types of Mergers–Merger Motives- Theories of Mergers-Mergers and Industry Life Cycle-Reasons for Failures of M &A-Synergy-Types of Synergy–Value Creation in M&A-**Merger Process-**Procedure for Effecting M & A-Five-Stage Model–Due Diligence–Types-Process and Challenges of Due Diligence-HR Aspects of M & A–Tips for Successful Mergers-Process of Merger Integration

Module 3: Acquisitions and Takeovers: Meaning and Types of Acquisition/Takeovers-Friendly and Hostile -Takeovers-Anti-Takeover Strategies-Anti-Takeover-Amendments-Legal-Aspects ofM&A-Combination and Competition.

Module 4: Legal Aspects of Mergers, Amalgamations Acquisitions and Takeovers:

Combination and Competition Act- Competition Commission of India (CCI)-CCI Procedure in Regard to the Transactions of Business Relating to Combination - Scheme of Merger/Amalgamation-EssentialFeatures of the Scheme of Amalgamation-Approvals for the Scheme-Step Wise Procedure-Acquisitions/Takeovers- Listing Agreement-The SEBI Substantial Acquisition of Shares and Takeover Code.

Course Outcomes:

After completion of this course, the students would be able to

CO-1: Explain the concept of corporate restructuring and major forms of corporate restructuring.

CO-2:Describe the process of value creation under different forms of Merger and Acquisition

CO-3:Evaluate the operational & financial performance of Merger and Acquisition

CO-4: Various legal aspects regarding mergers/amalgamations and acquisitions/takeovers

References:

1. Mergers, Acquisitions & Corporation Restructuring- Rabi Narayan Kar-International Book House Private Limited.

2. Mergers, Restructuring and Corporate Control-Fred Weston, Kwang S Sung, Susan E Hoag- Pearson, 1 st Edition, 2016.

3. Creating Value from Mergers and Acquisitions, Pearson Education, 2nd Edition, 2016.

4. Donald M. Depamphilis, Mergers, Acquisitions & Corporation Restructuring-Sudi Sudarasanam-International Book House Private Limited.

5. Mergers, Acquisitions & Corporate Restructuring- Prasad Godbole-Vikas Publication.

6. Mergers and Acquisitions & Takeovers-Machi Raju- International Book House.

8. Investment Valuation-Ashwath Damodaran- John Wiley & Sons Inc.

Skill Development:

- Visit any organisation which is under corporate restructure or merger and acquisition and compare and prepare pre and post restructure/merger financial statement.

- Prepare Legal Aspects of Mergers, Amalgamations Acquisitions and Takeovers

SC15 - ELECTIVE GROUP D: HUMANRESOURCE MANAGEMENT PAPER1: STRATEGIC MANAGEMENT OF HUMAN RESOURCES

TotalCredits:4 **Credit Pattern: 3:1:0** **No of hours:5**

1. Course Descriptions:

This course provides the exposure of Concept of Strategic HRM, Strategic Human Resources Planning and Procurement, Human Resource Development and Strategic Compensational and Rewards System.

2. Course Objective:

The objective of this course is to provide the student knowledge about human resources, their significance and managing them strategically in organizations.

3. Pedagogy:

Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content.

4. Course Contents:

Module – 1: Introduction to **Strategic** HRM,- The Strategic Role of Human Resource Management: Evolution of SHRM – globalization; -Nature, needfor SHRM, Benefits and short comings of SHRM -Aligning HR strategy with

corporate strategy – Vertical fit and Horizontal fit –- Planning and Implementing Strategic HR policies, HR strategies to increase firm performance, Investment Perspectives of HR- Investment Consideration, Investments in training and development, Investment Practices for Improved Retention, Investments Job Secure Work Courses, Non-traditional investment Approaches. Change Management and Knowledge Management (Only Concepts).

Module–2: Managing Strategic Organizational Renewal- Managing Change and Organizational Development - Instituting TQM programs - Creating Team-Based Organizations – Human Resource Excellence (HRE) and Business Process Reengineering ((BPR) - Flexible Work Arrangement- Establishing Strategic Pay Plans - Pricing Managerial and Professional Jobs - Compensation Trends - Objectives of International Compensation - Approaches to International Compensation - Issues related to Double Taxation -casestudies.

Module -3: Managing Global Human Resources - HR and the Internationalization of Business - Improving International Assignments through Selections - Training and development - Maintaining International Employees - Developing International Staff and Multi-National Teams

Module -4: Multi-National - Global and Transnational Strategies - Strategic Alliances - Sustainable Global Competitive Advantage - Globally Competent Managers Location and Production Facilities- Repatriation process - Current trends in SHRM, Virtual teams, Global inter dependence, Case Studies.

5. Skill Development Components:

- Student's visit any organization and submit a report on their H R practices and strategies adopted.
- Students visit an MNC companies and study their international assignments on Selection, and training process.
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6. Course Outcomes:

CO 1: Understand and discuss concepts of SHRM.

CO 2: Application of SHRM techniques in various organizational situations

CO 3: Evaluate the strengths and weaknesses of SHRM practices in organizations.

CO 4: Identify and assess ethical, environmental and/or sustainability considerations in SHRM decision-making and practice.

CO 5: Enlighten top executives on linkages between global and domestic HRM

References

1. Agarwala Tanuja, Strategic Human Resource Management, Oxford University Press, New Delhi.

2. Dhar, Rajib Lochan. (2008). Strategic Human Resource Management, Excel Books, New Delhi.

3. Tapomoy Deb, Strategic Human Resource Management, Atlantic Publishers, New Delhi.

4. Rajib Lochan Dhar, Strategic Human Resource Management, Excel Books, New Delhi.

5. Mohsin Shaikh, Essentials of Strategic Human Resource Management, Banyan Tree Consulting, Pune.

6. Armstrong, Michael & Baron Angela, Handbook of Strategic HRM, Jaico Publishing House, New Delhi.

7. Mello, Jeffrey A, Strategic Human Resource Management, Cengage Publications, New Delhi.

8. Regis, Richard, Strategic Human Resource Management & Development, Excel Books, New Delhi

9. Charles Greer, Strategic Human Resource Management – A General Management Approach, Pearson Education, New Delhi.

10 Catherine Truss, David Mankin and Clare Kelliher, Strategic Human Resource Management, Oxford University Press, New Delhi

11.Peter j. Dowling, Denice E. Walch, Randell S. Schuler, International

Human Resource Management Thomson south – western 2002.

SC16 - ELECTIVE GROUP E: MANAGEMENT ACCOUNTING

PAPER 1: MARGINAL COSTING AND DECISION MAKING

Total Credits:4 Credit Pattern: 3:1:0 No of hours:5 per week

1.Course Description:

This course provides the coverage concept of cost behavior analysis, break even analysis, multi-product break even analysis, graphs, marginal costing and standard costing and managerial decisions.

2. Course Objectives:

- To understand various concepts and techniques used in cost marginal costing
- To provide an overview of marginal cost and applicability of marginal cost in various decision-making areas
- To understand standard costing and analyses of various overhead variance
- **To understand about cost audit standards and cost audit**

3. Pedagogy:

Course activities consist of lectures, case study analysis, group discussions, seminar presentation, assignment writing and tests. Solving problems and evaluating decisions involving the financial and cost data of selected firms will be integral part of instruction.

4. Course Contents:

Module 1: Break Even Analysis- Introduction: Meaning- Terminology- Scope & Concepts- Cost Behavior Analysis- Break Even Analysis- Approaches of Break-Even Analysis in Relation to Cost & Revenue. Factors- Multiproduct Break-Even Analysis- Assumptions Underlying Break Even Analysis- Limitations of Break-Even Analysis- Case Studies.

Module 2: Contribution Concepts & Short-Term Profitability Analysis: Profitability Analysis Under Constrained Conditions- Profit- Volume Ratio & Its Uses- Profit Volume Graphs – Case Studies.

Module 3: Marginal Costing & Managerial Decisions: Profit Planning- Pricing Decision- Production Decision – Make or Buy Decision -Joint & By-Product Decision – Distribution Cost Analysis – Case Studies

Module 4: Standard Costing: Objectives – Principles - Determination of Standards for Material – Labor - Direct Expenses & Overhead Costs-Variable and Fixed Costs-Case Studies. Variance Analyses**:** Material – Labor - Overhead Variances - Sales & Profit Variances - Disposition of Variances - Assessing the Significance of Standard Cost Variance - Standard Cost Accounting - Cost Audit Standards - Case Studies

Course Outcomes

CO-1 : Application of tools and techniques of marginal costing in managerial decision making

CO-2 : Practical knowledge on overhead analysis and its appropriate Applicability

CO-3 : Enhance knowledge on application of Costing standards in Cost Audits.

CO-4: Preparation of Break-Even chart for taking managerial decisions.

Skill Development:

- Visit any manufacturing industries and collect cost related information, analyse the same and write a summary of report for management decision making.
- Select any five manufacturing industries in Mysore and collect cost related information. Further, prepare cost-volume-profit analysis as a management tool for decision making

References:

Management Accountancy: J. Batty :ELBS
Cost Accounting- A Manorial Emphasis: C.T.Horngel
Cost Analysis for Management Decisions: M.R.S. Murthy : Tata Mc GrawHill
A Dictionary of Managerial Finance, G. Kotreshwar, Chandana Publications (2014), Mysore.

IV SEMESTER

HC 10: INTERNATIONAL ACCOUNTING

Total Credits:4 **Credit Pattern: 3:1:0** **No of hours:5**

1. Course Description:

This course is designed to provide a deeper understanding of international accounting issues related to global financial reporting. It focuses on major diversities and challenges of financial reporting in the global arena, harmonization and international financial reporting standards. It also covers accounting for foreign currency transactions and major translation methods. It focuses on main issues in international financial statement analysis.

2. Course Objectives:

- To provide knowledge of international accounting practices in changing environment,
- To understand role of IFRS as a standard board to bring harmony in international accounting.
- To analyze difficulties in transaction entries with respect to companies' exposure in different markets.
- To understand applicability of harmonization in MNC's through accounting practices
- To understand implication of XBRL in financial reporting across the world.

2. Pedagogy:

Method of instruction consists of lectures, analysis of international financial statements, group discussions, seminar presentations, writing assignments and tests. Reading and analysis of annual reports of multi-national organizations will be integral part of instruction.

3. Course Contents:

Module 1: An Introduction to International Accounting: Definition - need and scope of international accounting - Factors that contribute to accounting diversity at the international level - Harmonization of accounting - International Financial Reporting Standards - Ethical issues in International Accounting - Analysis of annual reports and case studies

Module 2: Accounting for Foreign Exchange Rate Fluctuations: An overview of foreign currency markets and exchange rates - Foreign exchange exposure-transaction, translation and operating - Accounting for foreign currency transaction-Spot and Forward foreign currency transactions -

Single-transaction approach and Two-Transaction Approach - Functional versus Reporting currency - Foreign currency translation methods- Current rate method - Current/Non-Current method - Monetary/Non-Monetary method and Temporal method - Problems and Case study analysis

Module 3: International Transfer Pricing: Evolution - Meaning and Objectives of transfer pricing - Determinants of International Transfer Pricing -Major stakeholders affected by transfer pricing policies - Arm's Length price (ALP) - Steps in the process of computing ALP-ALP methods - Comparable Uncontrolled price method (CUP)-Resaleprice method (RPM) - Cost Plus method (CPM) - Profit Split method(PSM) - Transaction Net margin method(TNMM). Problems and Analysis of Case Studies.

Module 4: XBRL for International Financial Reporting: Framework of extensible Business Reporting Language. International XBRL Taxonomy Architecture - The IFRS XBRL Taxonomy - The US GAAP XBRL taxonomy etc. - XBRL implementation in countries around the world - Analysis of Case Studies.

Skill Development Components:

- Student's visit an organization and collect data related to the transfer pricing methods adopted.
- Students will solve case study on translation method.

Course Outcome:

CO1: Familiarize and understand the International Financial Reporting Standards (IAS or IFRS) and its application.
CO2: Application of different types of financial exposures in IFRS.
CO3: Enhance the knowledge on the Transfer Pricing policy in international business
CO4: Application of XBRL software in financial reporting.

References:

1. International Accounting by Shirin Rathore, Prentice-Hall of India, New Delhi
2. Comparative International Accounting by Christopher Nubs and Robert Parker, Pearson Education Asia, New Delhi.
3. Timothy Doupnik and Hector Perera. International Accounting, 4th Edition, McGraw-Hill Education.2015
4. International Accounting: A User Perspective by Shahrokh M. Saudagaran, South- Western Thomson Learning,Australia.
5. International Accounting by A.K.DasMohapatra, Prentice-Hall of India, New Delhi
6. The Analysis and use of Financial Statements by GerladI.White, AshwinipaulC.Sondhi and Dov Fried, John Wiley, New York.
7. The Economic Times, The Business Line and Financial Express dailypapers.
8. Journals on International Accounting.

Websiteswww.iasb.org.
www.worldbank.org.
www.unctad.org. etc.
w.w.w.xbrl.org.

HC 11 : STRATEGIC MANAGEMENT

Total Credits:4 **Credit Pattern: 3:1:0** **No of hours:5 per week**

1. Course Description:

This course provides the coverage of concept of strategic management, vision, mission and purpose of business definition, strategic analysis and choice strategic implementation and evaluation.

2. Course Objectives:

- To integrate the knowledge of functional areas of management.
- To help students to learn formulate and implement strategy.
- To evaluate the influence of internal and external factors in policy formulation.
- To understand importance of review of strategies before implementation and its evaluation.

- To expose students to various perspectives and concepts in the field of Strategic Management
- The course would enable the students to understand the principles of strategy formulation, implementation and control in organizations.
- To help students to develop skills for applying these concepts to the solution of business problems
- To help students master in the analytical tools of strategic management

3. Pedagogy:

Teaching method comprises of lecture sessions and tutorials. Lecture sessions focus on providing conceptual understanding and analytical setting for select aspects of the course content.

4. Course Contents:

Module 1: Strategic Management: Introduction to Management and Strategy, Need for Strategic Management- Strategic Management process – Strategic management in Business units – Corporate, divisional and functional level strategies, Strategic Management in Non -profit Organizations, - Participants in Strategic Management – Strategic Decision Making- Process of Strategic Decision Making, Strategic Planning- process of strategic planning, Strategic Formulation and Analysis- Vision, Mission, Goal and Objectives ,- Case Studies.

Module 2: Strategic Analysis and Choice: Environmental Analysis – Concepts of Strategic Choice, - Steps in the Process of Strategic Choice- Techniques used for Strategic Analysis-- Corporate Portfolio Analysis - Environmental Threat and Opportunity Profile (ETOP) – Boston Consultancy group (BCG) Matrix – General Electronics 9 Cell Matrix - Porter's Five Forces Model of competition –McKinsey's 7s Framework Model - Case Study.

Module 3: Strategy Implementation: Formulation of Strategy at Corporate, Business and Functional Levels, - Interrelationship between Formulation and Implementation.Issues in Implementation of Strategies - Project implementation –Procedural implementation - Resource Allocation -

Budgets - Organization Structure –Matching structure and strategy - Behavioral issues - Leadership style – Corporate culture - Values - Power - Social responsibilities – Ethics, Case Study- Case Study.

Module 4: Strategy Evaluation: Concept and purposes of strategic evaluation and analysis, GAP analysis;Role of organizational systems in evaluation,Strategic Control and Operational Control: Types of Strategic Controls, Process of Operational Control - Evaluation Techniques for Strategic and Operational Control-- Case Study.

Skill Development Components:

- Conduct survey and collect data relevant to the vision, Mission, Goal, and objectives of an organization.
- Students submit an organizational structure and strategy adopted in that organization.

Course Outcome:

CO 1 : Enlightening the top echelons on the linkages between vision, mission and strategies

CO 2 : Develop strategies keeping core competencies acquired over the years

CO 3 : Develop competitive building blocks and design approaches to increase Competitive advantage

CO 4 : Enlighten all stake holders on the linkages between strategy formulation, implementation and evaluation

CO 5 : Identify endogenous and exogenous forces influencing strategic decision making

References:

1. A concept of corporate planning-, RusselAckoff,Newyorkwiley
2. Business policy and strategic management- Tokyo, McGrawhill
3. Strategic Management-Text and Cases- V.S.P. Rao and V.Harikrishna
4. StrategicManagement-AzarKazmi
5. Strategic Management-FrancisCherunillam
6. Strategic Management-SubbaRao
7. Strategic Planning Formulation of Corporate Strategy -Ramaswamy
8. Strategic Management, 12th Ed. - Concepts and Cases - Arthur A. Thompson Jr. And A.J.Strickland
9. Management Policy and Strategic Management (Concepts, Skills and Practices R.M.Shrivastava
10. Strategic Management –Pearce
11. Strategy & Business Landscape -PankajGhemawat

SC 17: FOREIGN EXCHANGE MANAGEMENT

Total Credits:4 **Credit Pattern: 3:1:0** **No of hours:5 per week**

1. Course Description:

This course focuses on the international financial environment, foreign exchange flows, foreign exchange markets and payments.

2. Course Objectives:

The objective of this course is to understand the nature and functioning of foreign exchange markets, the determination of exchange rates and their forecasting in Indian context. The course enables the students to learn the basic skills required to be part of a foreign exchange division of any financial institution or state department.

3. Pedagogy:

The course is taught through the lecture and discussion mode. Practical exercises including actual calculation of exchange rates as well as interaction with foreign exchange divisions of banks would be part of the learning exercises.

4. Course Contents:

Module -1: Foreign Exchange Management- International Monetary System- International Financial Markets-Currency Basket, Currency Convertibility –. Foreign Exchange Rates- Direct and Indirect Quotes - Spot and Forward Foreign Exchange Markets-, Exchange Rates Determinations - Arbitrage Profit in Foreign Exchange Markets.

Module -2: Foreign Exchange Exposure-Management of Transaction Exposure- Management of Translation Exposure- Management of Economic Exposure- Management of Political Exposure-Management of Interest Rate Exposure.

Module -3: Foreign Exchange Rate Determination- Theories of Exchange Rate Determination- Measuring Exchange Rate Movements-Exchange Rate Equilibrium – Factors Effecting Foreign Exchange Rate- Determination Foreign Exchange Rates-Interest Rate Parity- Purchasing Power Parity & International Fisher Effect-Covered Interest Arbitrage

Module -4: Foreign Exchange Risk Management-Hedging Against Foreign Exchange Exposure – Forward Market- Futures Market- Options Market-Currency Swaps-Interest Rate Swap-Hedging Through Currency of Invoicing- Hedging Through Mixed Currency Invoicing –Country Risk Analysis.

Course Outcomes

CO-1: Acquisition of conceptual knowledge on international monetary system

CO-2: Overview on FOREX management and FOREX reserve

CO-3: Application of hedging against foreign exchange exposure

CO-4: Forecasting foreign exchange rates using various techniques.

Skill Development:

- Examine and make report on the foreign exchange risk faced by selected banks and their customer
- Examine and evaluate various foreign exchange risk management hedging and strategies

References**:**

1. Foreign Exchange Management and International Finance-Vivek Vishwan V-Viva Books Publication
2. Foreign Exchange & Risk Management- C Jeevanandam- Sultan Chand and Sons Publication
3. Foreign Exchange Management Manual-Taxmann Publication
4. Foreign Exchange Management-Richa Garg- Vrinda Publications (p) Ltd
5. Practitioner's Guide to Foreign Exchange Management- C.A. Sudha and G. Bhushan, Wolters Kluwer- Publication.

SC18: PROJECT WORK

Project Work would be commenced from the beginning of the fourth semester. Work load for Project Work guidance is 1 hour per batch of 4 students per week. Allotment of Guides shall be made in the beginning of the third semester. Students should select the topic in consultation with the guide during the third semester and complete the project in fourth semester.

SC 19 - ELECTIVE GROUP A: BUSINESS TAXATION

PAPER 2: CORPORATE TAX LAW AND PLANNING

TotalCredits:4 Credit Pattern: 3:1:0 No of hours:5 per week

1. Course Description:

This course is focus on different heads of income, taxable in the hands of companies, computation of grass total income, deduction, exemptions, set off and carry forward of loss. Tax planning relating to various managerial decisions for reducing the tax burden, allocation of investments, and maximize the company wealth. As a tax consultant of the corporate tax laws of the company to give advice to the drawing officers regarding TDS, advance payment of tax and remittances of tax, for his employees.

2. Course Objectives:

This course is intended to enable the students to:

- Understand the incidence based and residential status of the companies.
- Understand the different sources of income for corporate assesses.
- Analyze the tax planning to reduce the tax burden of the corporate Assessee
- Understand TDS, advance payment of Tax, remittance of corporate income tax, preparation of various tax returns and Forms.
- To understand assessment procedure and tax filing

1. Pedagogy:

The course content is covered class room lecture, remedial class for non-tax students, student seminar, case discussion, and work out the problem on the company problems as student, as consultant and as a tax authority and also visiting company and tax office for practical exposure.

2. Course Contents

Module 1: Introduction: Basic Framework of Corporate Tax Laws-Types of Company-Residential status of a Company and Incidence of Tax -Corporate Tax Planning-, Tax Evasion and Tax Avoidance. Tax Planning & Tax Management.

Module 2: Computation of Taxable Income- Computation of taxable income under different heads of income - House property - Profit and Gain from Business or Profession - Capital Gain and Income from Other Sources - Treatment of Corporate Loss - Carry Forward and Set-off of Losses - Deductions, Exemptions and Concisions from Gross Total Income - Minimum Alternative Tax Sec 115 JB - Importance and Objectives - Calculation on Book Profit -Case Studies.

Module 3: Tax Planning and Managerial Decision: Tax Planning Relating to Capital Structure - Make or Buy **-** Buy or Lease- Own or Lease - Purchase by Installment or by Hire – Shut Down or Continue Operations.

Module 4: Procedure for Assessment- Assessment Types- Hierarchy of Tax Authority Deduction of Tax at Source (TDS) - Duties and Responsibilities of TDS Officer -Collection of Tax at Source (TCS) - Remittance of Tax - Advance Payment of Tax- Tax Returns – Refunds - Appeals and Revisions - Preparation and Issue of Different Forms for Tax Collection - FORM-16 and FORM 3CA- 3CB and 3CD - Case Studies.

3. Course Outcomes

CO-1: Knowing overview of corporate tax system in India

CO-2: Exposure on practical approaches towards taxable income of the company

CO-3: Application of Income tax rules in managerial decisions such as, make or buy, dividend decisions, etc.

CO-4: Online filing of returns for corporate assesse

Skill Development

- Evaluate selected companies corporate tax planning and managerial decision making in terms capital structure and make or buy decision.
- Visit an audit office and practice corporate assesse return filing, TDS and TCS and other various practical aspects

References:

1. Direct Taxes-H.C. Mehrotra and Dr.S.P. Goyal -Sahitya Bhavn Publication.
2. Corporate Tax Planning & Business Tax Procedures-Vinod K Singhania & Monica Singhania-Taxmann Publication
3. **Simplified Approach to Corporate Tax Planning & Management-Dr Girish Ahuja- Bharat's Publication.Master Guide to Corporate Taxation-O. P Yadav- Lexis Nexis**
4. Corporate Tax Planning and Management- Lakhotia-Vision PublishersSC 18 –

SC 20: ELECTIVE GROUP B – FINANCIAL ACCOUNTING

PAPER 2: CONTEMPORARY AREAS OF FINANCIAL ACCOUNTING

Total Credits: 4 per week Credit Pattern: 3:1:0 No of hours: 5

Course Description: This course provides detailed insight into contemporary area of accounting includes human resource accounting, Investment Accounts, Price Level Accounting and Environmental Accounting.

Course Contents

Module-1: Human Resource Accounting – Importance - HRA for Managers & HR Professionals - Investment in Human Resources –Approaches Of HRA-Historical Cost Approach-Replacement Cost Approach-Opportunity Cost

Approach-Standard Cost Approach-Present Value Approach-The Economic Value Approach-Monetary Value and Non-Monetary Measures for Assessing Individual

Module-2: Investment Accounting - Fixed income bearing securities- Variable income bearing securities- Purpose of Investment ledger-Cum Interest- Ex Interest- Difference- Columnar Investment Accounts- Adjustment for Equity shares Investment accounts- Dividend Received- Bonus share- Right Shares.

Module-3: Price Level Accounting: Meaning and Scope-Inflation Accounting-Methods of Accounting for Changing Prices-Methods of Accounting for Changing Prices-Current Purchasing Power (CPP) Method-Current Cost Accounting Method (CCA) Method-Hybrid Method.

Module-4: Environmental Accounting: Introduction -Methodology of Environmental Accounting-Objectives of Environmental Accounting- Forms of Environmental Accounting-Environmental Issues Under the Expanded Model of Accounting.

Course Outcomes:

- Provide Detailed insight of Human resource Accounting.
- Understand concept of Accounting for Bonus shares, right shares and dividend.
- Application of different methods of Inflation accounting.
- Understand the concept of environmental accounting.

Skill Development:

- Analyse the impact of price level changes on balance sheet position of a company.
- Analyse the impact valuation of human Assets on the Balance sheet of a company.

Reference

1. Eric G. Flamholtz, Human Resource Accounting, Springer

2. Jac Fitz-enz, How to Measure Human Resource Management, McGraw Hill 3. Rakesh Chandra Katiyar, Accounting for Human Resources, UK Publishing

3. M. Saeed, D.K. Kulsheshtha, Human Resource Accounting, Anmol Publications.

4. D. Prabakara Rao, Human Resource Accounting, Inter India Publications.

5. Chandra, P., Financial Management - Theory and Practice, New Delhi, Tata McGraw Hill Publishing Company Ltd.

6. Contemporary Environmental Accounting, Schaltegger and Burritt (S&B)

SC 21 -ELECTIVE GROUP C: FINANCIAL MANAGEMENT

PAPER 2: FINANCIAL DERIVATIVES

TotalCredits:4 **Credit Pattern: 3:1:0** **No of hours:5**

1. **Course Description:**

The course is designed to provide basic knowledge about risk management and the new instruments of capital market i.e., financial derivatives used for managing risk. It mainly comprises of a description of the concepts of risk management, forwards/futures, options and swaps along with the trading mechanics and pricing of these instruments.

2.Course Objectives:

- To understand role and importance of risk management in hedging market and unsystematic risks.
- To understand the new evolution of commodities market in capital market.
- To critically understand and appreciate the role of derivatives market.

- To understand different valuation models to determine premium of options contract.
- To describe the role of swaps to hedge interest rate and currency risk.

3.Pedagogy:

Class room teaching of basic derivative concepts shall be followed by a series of individual seminar presentations, group seminars, discussions and case study analysis relating to futures, options and swaps. Assigned problems are to be worked on an individual basis, followed by group discussion of caseproblems.

4.Course Contents:

Module 1: Introduction to Derivatives: Types-Forwards - Futures - options – swaps -structure and operations, trading mechanisms,regulatory framework - Exchanges – Contract specification- Clearing house - Floor brokers - Initiating trade –mode of delivery of derivatives contract-short and long position.

Module2: Future and Forward Contracts: Structure of future and forward contracts -FRAs- Valuation of forward and future prices - Margins - Initial margins - Variation Margins-Maintenance margin-Cost of carry, Stock index futures - Valuation of stock index futures - hedging using stock index future contracts - Adjusting Beta of a portfolio using stock -Short hedge and long hedge using futures- Interest rate futures and currencyfutures.

Module 3: Options: Trading in Options **–**factors impacting Option Prices - Pricing of Options - Models of valuation - Binomial and Black-Scholes model-Straddles-strangle-protective put and call options-Bull-Bear spread- The Greeks.

Module4: Swaps: Evolution **-** Types of Swaps-Currency Swaps-Interest Rate Swaps - Designing Currency and Interest Rate Swaps - Valuation of Swaps.

Skill Development

1. **Trading in stock and index futures and options.**
2. **Analyzing option premium with live examples using black Scholes model.**

3. **Learning the worth of options using ITM, ATM and OTM.**
4. **Understanding of margin requirements and M2M concept.**
5. **Trading in stock and index futures and options.**
6. **Analyzing option premium with live examples using black Scholes model.**
7. **Learning the worth of options using ITM, ATM and OTM.**
8. **Understanding of margin requirements and M2M concept.**

Course Outcomes:

CO1 Understand the various financial derivative instruments such as options, futures, swaps and other derivative securities.

CO2 Application of derivative instruments in managing the risk of investing and hedging activity at the individual and the corporate level.

CO3 Comprehend the economic environment in which derivative instruments operate.

CO4 Employ theoretical valuation methods to pricing of financial derivative instruments by using different valuation models

References:

1. Introduction to Futures and Options Markets – By John Hull(PHI)
2. Derivatives and Risk Management- Dr. R P Rustagi

SC 22 -ELECTIVE GROUP D: HUMAN RESOURCE MANAGEMENT

PAPER 2: INDUSTRIAL RELATIONS & COLLECTIVE BARGAINING

Total Credits: 4 Credit Pattern:3:1:0 No of hours:5 per week

Course Description: Through this course students will get familiarize with industrial relations, its importance and collective bargaining procedure.

Pedagogy:

The Pedagogy consists of Lectures, Shared Experience, Case Study, Role Play, Assignment, Fieldwork/ Practical's, Seminars and Presentations.

Module 1: Industrial Relations: Concepts, definition and importance, factors affecting IR, approaches to IR, Impact of technology on IR, Trade Unions: nature, benefits problems and remedies, Trade Union Act 1926, Industrial dispute Act 1947, quality circles.

Module 2:. Collective Bargaining: concept, its relevance in IR, CB as an institution, ILO perception of CB, Objectives of CB, Structure, Functions, process, negotiations, bargaining approaches & techniques, patterns of bargaining.

Module 3: Industrial conflicts: meaning,a and causes, types, strikes and lockouts, machinery for resolving industrial disputes under law. Workers participation in Management: concepts, objectives, types, growth and development of workers participation in management.

Module 4 :. Grievances and Disciplines: grievances, redressal, discipline, standing orders, acts of misconduct, show cause notice, suspension, Enquiry procedure, Principles of natural justice, Punishments, Demotion suspension, Termination, Removal and dismissals, Conflicts Industrial disputes Lay off, Termination simplicitor, Retrenchment, closures,VRS.

Course Outcomes:

- To help students acquire solid theoretical, practical and ethical perspective on various¬ aspects of IR.
- To make the student aware of the present state of IR in India.
- To Understand the various processes and procedures of handling Employee Relations.
- To be acquainted with the concepts, principles and issues connected with Trade Unions,¬ Collective Bargaining and Grievance redressal

References:

- Industrial Relation - Ramaswamy
- Industrial Relation Sarma
- Industrial Relation - Venkatarathnam
- Industrial Relation - ArunMonnappa
- Industrial Relation -T VRao

SC23 - ELECTIVE GROUP E: MANAGEMENT ACCOUNTING

PAPER 2: COST MANAGEMENT

Total Credits:4 Credit Pattern:3:1:0 No of hours:5 per week

1. Course Description:

This course provides the coverage of a broader framework of various tools and strategies used for cost management and control.

2. Course Objectives:

The course is aimed at helping the students to:

• To understand the scope and need for cost control and management.

• To provide an understanding the basic cost control and management tools.

• Understand the importance of statistical tools and operation research in cost control and management

3. Pedagogy: Course activities consist of lectures, case study analysis, group discussions, seminar presentation, assignment writing and tests.

4. Course Contents:

Module 1: Cost Management- Cost Management System- Cost Management-Components of Cost Management- Activity Based Costing (ABC)-Activity-Based Management (ABM)-Concept and Uses- Relationship between ABC and ABM; Operational ABM and Strategic ABM; Techniques of ABM; Implementation Steps in ABM.

Module 2: Pricing Strategies- Factors Influencing Pricing Decisions- Short Run V/s. Long Run Pricing Strategy- Cost-Based Pricing- Economic Approach to Pricing- Pareto Analysis in Pricing Decisions-Activity-Based-Budgeting (ABB)- ABB and Traditional Budgeting- ABB Process- Capacity Utilization- Role of ABB in Cost Management.

Module 3:Cost Analysis- Job and Process Cost– Cost Estimation and Regression Analysis – and Cost Volume Profit Analysis.

Module 4:Application of Operation Research and Statistical Tools- Linear Programming- Network Analysis- Assignment- Transportation and Time Series Analysis- Time Series Analysis Including Moving Totals and Averages.

Skill Development:

- Visit any manufacturing industries and collect information on activity-based costing and activity-based management, analyse the same and write a summary of report on combination of ABC and ABM will play a role in cost controlling.
- Select any one manufacturing industry and collect cost related information. Further, prepare report on process costing.

Course Outcomes

At the end of the course, the students will be able to know:

CO-1: Application of tools and techniques in activity-based cost for managerial decision

CO-2: Practical approaches on cost volume profit analysis

CO-3; Theoretical and practical approaches on various Pricing strategies

CO-4: Application of operation research and statistical tools in cost management.

Skill Development:

- Visit any manufacturing industries and collect information on activity-based costing and activity-based management, analyse the same and write a summary of report on combination of ABC and ABM will play a role in cost controlling.
- Select any one manufacturing industry and collect cost related information. Further, prepare report on process costing.

References:

1. Cost Management: A strategic Emphasis, Blocher, Chen, Lin McGraw Hill
2. Cost Analysis for Management Decisions: M.R.S. Murthy, Tata McGraw Hill
3. Cost Accounting A Managerial Emphasis: Charles T Horngren, Srikant, PHI.
4. Principles & Practices of Cost Accounting: Ashish K. Bhattacharya A. H. Wheeler Publisher
5. Quantitative Techniques in Management: N.D. Vohra Tata McGraw Hill Book Co. Ltd.

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Mahajana Education Society (R.)
Education to Excel

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

Jayalakshmipuram, Mysuru –570012
Affiliated to University of Mysore
Re-accredited by NAAC with 'A' Grade
College with Potential for Excellence

BOARD OF STUDIES (BoS)

DEPARTMENT OF SOCIAL WORK

UG ☐

PG ☑

Master of Social Work Syllabus
2022-23

PG Wing Pooja Bhagavat Memorial Mahajana Education Centre
KRS Road, Metagalli, Mysuru-570016
Affiliated to University of Mysore,
Re-Accredited by NAAC with „A‟ Grade, College with Potential for Excellence

DEPARTMENT OF SOCIAL WORK

MASTER OF SOCIAL WORK - MSW

SYLLABUS

2022-23

SBRR Mahajana First Grade College [Autonomous] PG
WINGPooja Bhagavat Memorial Mahajana Education Centre
KRS Road, Metagalli, Mysuru 570 016

DEPARTMENT OF SOCIAL WORK

Motto

Imparting Education with Professional Approach to make finer citizens: Economically useful, socially responsible and culturally remarkable.

Our Vision:

- To develop necessary facilities to achieve accepted goals;
- To Provide enriching inputs for better careers;
- To Empower youth for contemporary social tasks;
- To support social endeavors and traditional values with sustainedefforts;

Our Mission:

- To blossom into an institute of excellence to empower the youth through quality education and provideprofessional leadership.
- To provide encouraging inputs for better careers and empower youth for contemporary social tasks.
- To support social endeavors and traditional values with sustained efforts.
- To provide excellent teaching and research ambience.
- To create quality human resource through scientific inquiry, applied research and innovation.
- To earn the grade to move from the existing college with Potential for Excellence into the grade of acollege with Excellence and Autonomy.

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)

POST GRADUATE WING

(Accredited by NAAC with 'A' grade)

Pooja Bhagavat Memorial Mahajana Education Centre.

Affiliated to University of Mysore.

Master of Social Work Regulations 2022-2023

GUIDELINES AND REGULATIONS LEADING TO MASTER OF SOCIAL WORK (TWO YEARS - SEMESTER SCHEME UNDER CBCS-CAGP)

Programme details

Name of the Department	: Department of Social Work
Subject	: Social Work
Faculty	: Social Science
Name of the Programme	: Master of Social Work
Duration of the Programme	: 2 years divided into 4 semesters

Regulations of the Programme Master of Social Work (MSW)

Preamble:

Social Work is a relatively young discipline among Social Sciences. It is a help rendering profession. Social Work teaches the art and science of rendering help to people in need of such help. Its philosophical premise is that Every Individual is worthy and capable. This profession is most suited for all those who are interested in bringing a difference among the people, society and the world around them.

The MSW programme offered by the SBRR Mahajana First Grade College PG Wing aims to train young graduates in the art and science of Social Work discipline. The two years, four semester course is a combination of theory and field work components. The department of Social Work, through its professional training in field work and application of theory into practice facilitates its students to become competent professional social works who can be readily absorbed by the job market. The student can also pursue M.Phil and Doctoral programme after the completion of the MSW programme. The opening for the trained social workers are in varied fields such as Industries, Hospitals, Communities, Correctional settings, Governmental welfare sectors, Family and Child welfare, non- governmental sector and many more.

1. Title of the Programme:

The programme shall be called ' Master of Social Work' (MSW).

2. Duration of the Programme:

The programme of study **for MSW Degree** shall extend over a period of four semesters spreading over two academic years. A candidate can avail maximum of 8 semester – 4 years (in one stretch) to complete master Degree (including blank semesters, if any).Whenever a candidate opts for blank semesters, he/she has to study the prevailing courses offered by the department whenhe/she continues his/her studies.

3.Period of the Programme:

Semester I and III July to December

Semester II and IV from January to June

4.Objectives of the Programme (Master of Social Work):

The objectives are met by providing a variety of experiences to learners to:

1. To provide education and training in social work to those desirous of making a career in social work practice.
2. To provide opportunities through intensive field practicum to work with variety of people in their development and provide service to those who are in need of it.
3. To provide inter-disciplinary collaboration for better understanding of human problems, services and issues related to human development.
4. To link theory with practice in every sphere of human service endeavors.
5. To develop requisite knowledge, skills and values in working with people.
6. To promote among learners a sense of responsibility and commitment to work with different sections of people and especially of the vulnerable sections of the society
7. To promote opportunities and to create awareness for personal growth.
8. To acquire knowledge and skills in undertaking practice-based research and to administer human service organizations.
9. To develop Professional Social Workers towards socio- economic and culturally responsible

PROGRAMME OUTCOME

1. The Social Work trainees shall apply the foundation knowledge, skills, values and ethics of social wor practice in the assessment and treatment of individuals, families, groups, organizations, an communities and be able to make a career in social work practice.
2. Demonstrate an understanding and appreciation for human diversity, to engage in non-discriminator culturally sensitive practice that seeks social and economic justice for clients, provide service to thos who are in need of it.
3. Recognize him/her self as a Professional Social Worker.
4. Facilitate inter-disciplinary collaboration for better understanding of human problems, services an issues related to human development.
5. Develop a professional identity as a social worker by applying professional values and ethics to socia work practice.
6. Link theory with practice in every sphere of human service interventions.
7. To develop requisite knowledge, skills and values in working with people.
8. Establish an interaction between social scientists, activists, policy makers and planners
9. Promotes among learners a sense of responsibility and commitment to work with different sections o people and especially of the vulnerable sections of the society
10. Promotes opportunities and to create awareness for personal growth.
11. Develops creative thinking and ability to apply theoretical knowledge in practice of social work
12. Ability to identify ways that they can maximize the strengths of the client context to design and promote effective programs for clients

1. Eligibility for Admission

Candidates who have passed BSW/ BA/ B.Sc. / B.Com. / BBA/BBM/ B.C.A / LLB of the University of Mysore or any other university recognized as equivalent there to, are eligible for admission to MSW course. Candidates will be selected for admission as per the general guidelines issued from the University of Mysore from time to time. The Department/University shall conduct entrance examination for admission to the course.

A minimum of 45% aggregate marks for GM and 40% aggregate marks for SC/ST in the qualifying examination is needed to appear for the entrance examination and as well as eligibility for the course.

The examination is of two hour duration and the question paper comprises of 100 objective type questions - 20% questions from general knowledge, 60% from science & social sciences, and another 20% questions will be from present social issues. Merit will be assessed on the basis of performance

in the entrance examination and performance in the undergraduate examination on equal weightage.

Note: Four seats shall be allotted to Graduates in Social Work of the University of Mysore and one seat shall be allotted to Graduates in Social Work of other University. The unfilled seats, if any, shall be shifted to the general category.

Scheme of Instructions:

2. Credits (Minimum) Matrix:

A candidate has to earn a minimum of 76 credits, for successful completion of a Master Degree. The 76 credits shall be earned by the candidate by studying Hardcore, Soft core and Open Elective. A candidate admitted to Masters of Social Work programme can exercise an option to exit with Bachelor Honors Degree/ PG diploma after earning 40 credits successfully.

A candidate can enroll for a maximum of 24 credits per semester.

Only such candidates who register for a minimum of 18 credits per semester in the first two semesters and complete successfully 76 credits in 4 successive semesters shall be considered for declaration of ranks, medals.

In excess to the minimum of 76 credits for masters degree in the concerned discipline / subject of study, a candidate can opt to complete a minimum of 18 extra credits to acquire **add on proficiency diploma** in that particular discipline / subject along with the masters‟ degree. In such of the cases wherein, a candidate opts to earn at least 4 extra credits in different discipline / subjects in addition to a minimum of 76 credits at masters level as said above then an **add on proficiency certification** will be issued to the candidate by listing the courses studied and grades earned.

3. Degree Awarding:

On successful completion of Two year programme, the students will be awarded the **Master of Social Work Degree by the University of Mysore**.

4. Attendance and Conduct:

Master of Social Work is a full time programme and students SHALL NOT take up any employment/course, part time or full time during their study. Students found violating this rule shall be removed from the course. Minimum attendance of 75% of actual working hours in all the courses is required. A student who does not satisfy the requirements of attendance and conduct shall not be permitted to write examination.

5. Medium of Instruction:

The medium of instruction shall be English. However a candidate will be permitted to write the

examination either in English or in Kannada.

6. CHOICE BASED CREDIT SYSTEM (CBCS):

Definitions:

Course- The course is governed by the regulations of Choice Based Credit System.

Every Course offered will have three components associated with teaching-learning processof the course, namely (i) Lecture - L (ii) Tutorial – T (iii) Practical – P , where

L Stands for lecture session,

T stands tutorial session consisting participatory discussion / self-study/ desk work/ brief seminar presentations by students and such other novel method make a student to absorb and assimilate more effectively the contents delivered in the Lecture classes.

P stands Practical session and it consists of hands on experience / Laboratory Experiments/ Field Studies/ Case studies that equip students to acquire the much required skill component.

In terms of Credits, every one hour session of L amounts to 1 credit per semester and a minimum of two hour session of T or P amounts to 1 credit per semester, over a period of one semester of 16 weeks for teaching-learning process. The total duration of a semester is 20 weeks inclusive of semester-end examination.

A course shall have either or all the three components.

The total credits earned by a student at the end of the semester upon successfully completing the course are L+T+P. the credit pattern of the course is indicates as L:T:P.

If a course is of 4 credits then the different credit distribution patterns in L: T: P: format could be

4 : 0 : 0,	1 : 2 : 1,	1 : 1 : 2,	1 : 0 : 3,	1 : 3 : 0,
2 : 1 : 1,	2 : 2 : 0,	2 : 0 : 2,	3 : 1 : 0,	3 : 0 : 1,
0 : 2 : 2,	0 : 4 : 0,	0 : 0 : 4,	0 : 1 : 3,	0 : 3 : 1,

The concerned BoS will chose the convenient credit pattern based on the requirements. However, generally, a course shall be of 3 or 4 credits.

Different courses of study are labeled and defined as follows.

Hard Core a course which should compulsorily be studied by a candidate as a core requirement **Soft Core** is a course where there is a choice or an option for the candidate to choose a course froma pool of courses from the main discipline/ subject of study.

Open Elective an elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure.

An elective course designed to acquire a special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an

advisory support by a teacher is called a **Self Study Elective**.

A core course offered in a discipline / subject may be treated as an elective by other discipline / subject and vice versa.

Project work/Dissertation work is a special course involving application of knowledge insolving / analyzing /exploring a real life situation / difficult problem. A project work up to 4 credits is called Minor Project work. A project work of 6 to 8 credits is called Major Project Work. Dissertation work can be of 10-12 credits. A Project/Dissertation work may be a hard core or a soft core as decided by the BoS concerned.

7. SCHEME OF EXAMINATION

The evaluation of the candidate shall be based on **continuous assessment**. The structure for evaluation is as follows:

Assessment and evaluation processes happen in a continuous mode. However for reporting purposes, a semester is divided into 3 discrete components identified as C1, C2 and C3.

The performance of the candidate in a course will be assessed for a maximum of 100 marks as explained as below:

The first component (C1), of assessment is for 15 marks. This will be based on test/assignment/ group study/field work/case analysis/seminar. During the first half of the semester, the first 50% of the syllabus will be completed. This shall be consolidated during the 8th week of the semester. Beyond 8th week, making changes in C1 is not permitted.

The second component (C2) of assessment is for 15 marks. This will be based on test/assignment/ group study/field work/case analysis/seminar. The continuous assessment and scores of second halfof the semester will be consolidated during the 16th week of the semester. During the second halfof the semester the remaining units in the course will be completed.

At the end of the semester final examination of 3 hours shall be conducted for each course. This forms the third/ final component of assessment (C3) and the maximum marks for the final component will be 70. Pattern of question paper pattern is given in Appendix I.

Assessment of Social Work Practicum

A viva - voce examination shall be conducted for each candidate in all semesters. The performance of the candidate shall only be assessed by a committee consisting of one faculty member of the Department of Social Work of Pooja Bhagavat Memorial Mahajana Education Centre and an external examiner. The number of such committees depends on the number of candidates. In case of non-availability of a qualified teacher, the two-member committee constituted for viva-voce examination will stand.

Minor/Major Project Evaluation

Students are given broader guidelines for undertaking empirical evidence-based project in the fourth semester, either independently or by forming a small team comprising of three to four students which carries 4 credits. Evaluation of the Project will be done along with the viva-voce examination by the viva-voce committee constituted for the assessment of social work practicum or similar committee may be constituted, if required.

In case of a candidate secures less than 30% in C1 and C2 put together in a course, the candidate is said to have DROPPED the course, and such a candidate is not allowed to appear for C3 in that course.

In case a candidate‟s class attendance in a course is less than 75% , the candidate is said to have DROPPED that course, and such a candidate is now allowed to appear for C3 in that course. In case a candidate secures less than 30% in C3, he/she may choose DROP/Make-Up option.

A MAKE UP examination for odd semester courses will be conducted along with next regular odd semester examinations and for even semester courses along with a next regular even semester examinations. If a candidate is still unsuccessful, he/she may opt for DROP or again take up Make UP examination: however, not exceeding double the duration norm in one stretch from the date of joining the course.

A candidate has to re-register for the DROPPED course when the course is offered again by the department if it is a hard core course. The candidate may choose the same or an alternative core/elective in case the dropped course is soft core/elective course. A candidate who is said to have DROPPED project work has to re-register for the same subsequently within the stipulated period. **The details of any dropped course will not appear in the grade card.**

If a candidate is not satisfied with the evaluation of C1 and C2 components, he/she can approach the grievance cell with the written submission together with all facts, the assignments, test papers etc., which were evaluated. He/She can do so before the commencement of semester end- examination. The grievance cell is empowered to revise the marks if the case is genuine and is also empowered to levy penalty on the candidate is his/her submission is found to be baseless and unduly motivated. This cell may recommend taking disciplinary/ corrective action on an evaluator if he/she is found guilty. The decision taken by the grievance cell is final.

8. Setting questions papers and evaluation of answer scripts.

I. Questions papers in three sets shall be set by the internal examiner for a course. Whenever there are no sufficient internal examiners, the chairman of BoE shall get the questions papers set by external examiners.

II. The Board of Examiners shall scrutinize and approve the question papers andscheme of valuation.

III. (i) There shall be single valuation for all theory papers by internal examiners. In case, the number of internal examiners falls short, external examiners maybe invited.

i. The examination for Practical work/ Field work/Project work will be conducted jointly by two internal examiners. However the BoE on itsdiscretion can also invite external examiners if required.

ii. If a course is fully of (L=0):T(P=0) type, then the examination forC3 Component will be as decided by the BOS concerned.

9. Challenge Valuation

A student who desires to apply for challenge valuation shall obtain a Xerox copy of the answer script by paying the prescribed fee within 10 days after the announcement of the result. He/She canchallenge the grade awarded to him/her by surrendering the grade card and by submitting an application along with the prescribed fee to the Controller of Examination within 15 days after the announcement of the results. This challenge valuation is only for C3 component.

The answer scripts for which challenge valuation is sought for shall be sent to examiner. The marks awarded will be the higher of the marks obtained in the challenge valuation and in maiden valuation.

The grade and the grade point earned by the candidate in the subject will be as given below.

Marks	**Grade (G)**	**Grade point GP=V x G**
30 - 39	4	V*4
40 - 49	5	V*5
50 - 59	6	V*6
60 - 64	6.5	V*6.5
65 - 69	7	V*7
70 - 74	7.5	V*7.5
75 - 79	8	V*8
80 - 84	8.5	V*8.5
85 - 89	9	V*9
90 - 94	9.5	V*9.5

95 - 100	10	V*10

V is the credit value of the course: G is the Grade: GP is the Grade point.

Overall cumulative grade point average (CGPA) of a candidate after successful completion the required number of credits (80) is given by

CGPA = sum of GP / Total number of credits

10. Classification of Results

The final grade point to be awarded to the student is based on CGPA secured by thecandidate and is given as follows,

CGPA	Numerical Index	Qualitative Index
4<= CGPA < 5	5	Second Class
5<= CGPA < 6	6	
6<= CGPA < 7	7	First Class
7<= CGPA < 8	8	
8<= CGPA < 9	9	Distinction
9<= CGPA <10	10	

Overall percentage = 10*CGPA or is said to be 50% in case CGPA <5

List of BOS members

Sl.No	Category	Name	Designation	Address for communication	e-mail and Mobile No.
1	Chairperson	Dr. Bhavana V	Asst. Professor	Department of Social Work, PoojaBhagavat Memorial MahajanaEducation Centre, KRS Road, Metagalli, Mysuru-570016	bhavanavenugopalpradeep@gmail.com 8095831765
2	Faculty of the Department				
		Dr. Indushekara G V	Asst. Professor	Department of Social Work, PoojaBhagavat Memorial MahajanaEducation Centre, KRS Road, Metagalli, Mysuru-570016	Indu.shekar.gv@gmail.com 9986966224
3.	Nominee bythe Vice Chancellor	Dr. Jyothi H P	Associate Professor and Chairperson	DoS in Social Work Manasa Gangotri University of Mysore Mysuru-570006	iamjyohp@yahoo.co.in9480363407
4	Two Experts from other University	Dr. Parashurama K.G	Professor and Chairman	Department of studies and research inSocial Work Tumkur University Tumkur	P_ram_BDVT@rediff.com 09900412819
		Dr. Kumudini Achchi	Asst Professor	PG Department of Social Work Jss college of Arts Commerce and Science, Mysuru	kumudiniachchi@gmail.com +91 9448504356
5	One Person from Industry/ Corporate sector/ alliedarea	Dr. Patricia NamithaMaria Viego	Social Welfare manager	Department of Medico Social Work St John's Medical College Hospital,Bengaluru	drpatriciaviego@gmail.com +91 8861770385
6	Alumnus	Mr. Jagadeesh M M	Executive-Corporate HR,Shahi Exports Pvt Ltd., Belandur Gate, Sarjapur Main Road, Bangalore-560102	Jagadeesh M M Ankanahalli, Manuganahalli (Post),BilikereHobli, Hunsur Taluk, Mysuru-571103	Jagadeeshmm22@gmail.com Jagadeesh.mahadevaswamy@shahi.co.in 7353632404

MASTER OF SOCIAL WORK
DISTRIBUTION OF COURSE CONTENT AND CREDITS
Honor's level

Papers offered

MSW-I Semester

Core papers for odd Semesters - Honor's level

Sl No.	Code No.	Paper title	L	T	P	Credits
1	10071	Social Work – History and Ideologies	2	1	0	3
2	10072	Society and Dynamics of Human Behavior	2	1	0	3
3	10073	Work with Individuals and Families	2	1	0	3
4	10074	Work with Groups	2	1	0	3
5	10075	Work with Communities	2	1	0	3
6	10076	Social Work Practicum – I	0	0	3	3
Total Credits						**18**

MSW-II Semester
Core papers for even semesters - Honor's level

Sl No	Code No.	Paper title	L	T	P	Credits
1	20071	Management of Developmental and Welfare Services	2	1	0	3
2	20072	Social Work Research and Statistics	2	1	0	3
3	20073	Social Work Practicum – II (Social Work Camp and Summer Placement)	0	0	3	3
4	20074	Social Work Practicum – III	0	0	3	3
5	20075	Communication and Counseling / or Gandhian Approach to Welfare and Development	2	1	0	3
6	20076	Personal and Professional Growth / or Population and Environment	2	1	0	3
Total						**18**

7	Open elective 20077	Social Work Practice with Children / or Science of Crime, Penology and Social Work Practice	3	1	0	**4**

MSW-III Semester

(Odd semester) Masters level

Sl No.	Code No.	Paper title	L	T	P	Credits
1	30071	Human Resource Management	2	1	0	3
2	30072	Social Work Practicum – IV	0	0	3	3
3	30073	Social Work with Tribal and Rural Communities/ or Organisational Behavior and Organisational Development	2	1	0	3
4	30074	Preventive and Social Medicine and Medical Social Work/ or Rehabilitation and Aftercare Services	2	1	0	**3**
5	30075	Social Policy, Planning and Development / or Legal System in India	2	0	0	**2**
Total Credits						**14**

6	Open elective 30077	Gerentological Social Work /or Management of Non-Governmental Organizations	3	1	0	**4**

MSW-IV Semester
Master's level - even Semester

Sl No	Code No.	Paper title	L	T	P	Credits
1	40071	Employee Relations and Legislation	2	1	0	3
2	40072	Mental Health and Psychiatric Social Work	2	1	0	3
3	40073	Major Project	0	0	4	4
4	40074	Social Work Practicum – V	0	0	3	3
5	40075	Social Work Practicum – VI (Block Placement)	0	0	3	3
6	40076	Human Resource Development and Employee Wellness /or Case studies	2 0	0 0	0 2	2 or 2
Total Credits						**18**

7	40077	Disaster Management / or Correctional Administration and Services	3	1	0	**4**

MASTER OF SOCIAL WORK
DISTRIBUTION OF PAPER CODE AND CREDITS
Honor's level

Paper Codes and Credits

1Core papers for odd semesters I semester MSW

Paper Code	Paper	L	T	P	Credits
10071	HC	2	1	0	3
10072	HC	2	1	0	3
10073	HC	2	1	0	3
10074	HC	2	1	0	3
10075	HC	2	1	0	3
10076	HC	0	0	3	3
Total					**18**

Core papers for even semesters II semester MSW

Paper Code	Paper	L	T	P	Credits
20071	HC	2	1	0	3
20072	HC	2	1	0	3
20073	HC	0	0	3	3
20074	HC	0	0	3	3
20075	SC	2	1	0	3
20076	SC	2	1	0	3
Total					**18**

20077	SWOE	3	1	0	4

Master's level

Core papers for odd semesters. III semester MSW

Paper Code	Paper	L	T	P	Credits
30071	HC	2	1	0	3
30072	HC	0	0	3	3
30073	SC	2	1	0	3
30074	SC	2	1	0	3
30075	SC	2	0	0	2
Total					**14**

30077	SWOE	3	1	0	4

Master's level - even semester

Paper code	Paper	L	T	P	Credits
40071	HC	2	1	0	3
40072	HC	2	1	0	3
40073	HC	0	0	4	4
40074	HC	0	0	3	**3**
40075	HC	0	0	3	**3**
40077	SC	2 0	0 0	0 2	**2** **Or** **2**
Total					**18**

SWOE-3	SWOE	3	1	0	4

HC= Hard Core Paper, SC= Soft Core Paper, OE= Open Elective,
SWP= Social Work Practicum, BP=Block Placement,
SP=Summer Placement, CS= Case Studies, RP= Research Project.

SYLLABI

Honor's level odd semester (I Semester)

Odd semester

Paper Title: SOCIAL WORK - HISTORY AND IDEOLOGIES

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This course aims at introducing the learners to a critical inquiry into the history and ideologies of social change and professional social work.

OBJECTIVES

a. Understand the history of evolution of social work profession, both in India and the West.
b. Develop insights into the origin and development of ideologies, approaches to social change.
c. Understand rationale, goals, ideals and ethics for social change.
d. Understand the perceptions of people and social problems, the status of benefactors and their motives.
e. Develop skills to understand contemporary reality in its historical context.
f. Understand self as a part of own environment and explore own assumptions, ideals, values to develop sensitivity to marginalization of vulnerable groups.

Course Outcomes (COs):
CO 1: To understand history and evolution of social Work profession, both in India and the West.
CO2: To develop insights into the origin and Development of Ideologies and Approaches to social Chang
CO 3: To develop Skills to understand contemporary reality in its historical context.

Course Content:

UNIT I

Introduction to Social Work: Social Work Definitions and meaning of Social Work; Basic assumptions of social work, Scope/Fields of Social Work; Social Work and other concepts: social service, social welfare, social development, social reform, social security - Interrelation between social work and other disciplines; - History of social work education in Western countries and India.

Professionalization of social work values, education, knowledge and professional associations - Goals, values, functions/roles and process of social work - Interface between professional and voluntary social work, social work ethics.

UNIT II

Indian History of Ideologies for Social Change -Ancient period: Vedic, Vedantic and non-Vedic Ideologies, Spirituality - Medieval period: Zoroastrianism and Islam in India - Mysticism of Bhakti and Sufi movements and Sikhism.

Modern period: Christianity in India - Hindu reform movements - Dalit movements - Gandhian ideology and Sarvodaya movement – Nationalism - Ideology of the Indian Constitution - Ideology of voluntary organisations and voluntary action. Relevance of Ideologies for contemporary Social Work practice.

UNIT III

Contemporary Ideologies for Social Change: Neoliberalism and Globalisation - Post modernism - Multiculturalism - Ideology of action groups and social movements -Ideology of non-governmental organisations. Role of state in providing social welfare services.

UNIT IV

Organized and scientific charity - Clinical social work - Ecological social work - Attributes of a profession.

Western History of Ideologies for Social Change: Western History of Social Work Profession - Medieval period: Judeo-Christian ideologies- Secular humanism and Protestantism - Modern period: Rationalism and Welfarism - Liberalism and democracy - Utilitarianism and Social Darwinism - Socialism and human rights.

Emerging ideologies of professional social work: Relevance of Ideologies for Contemporary Social Work practice.

Challenges for social workers in contemporary world.

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Journals/ Magazines.

Economic and Political Weekly, The Indian Journal of Social Work, Lokayan Bulletin and Vikalp.

Course Articulation Matrix - Social Work – History and Ideologies HC												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	2	3	3	3	3	2
CO3	2	3	3	3	3	3	3	3	3	2	3	3
Weighted Average	2.7	3	2.7	3	3	3	2.7	3	3	2.7	3	2.7

Odd Semester

Paper Title: SOCIETY AND DYNAMICS OF HUMAN BEHAVIOUR

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This course provides the learners basic understanding of relevant concepts from social sciences, the social phenomena and development process. Besides, helping/enabling the learner develop skills for social analysis, it aims to introduce the learners to the development of individual across the life span, with a system and an ecological perspective. It also provides an understanding of human development and behavior in contextual influences, including individuals in disadvantaged or special contexts. The theoretical inputs are to enhance the understanding of people‟s growth, health, and development at various stages as bio-psycho-socio-spiritual being over the life span.

OBJECTIVES

a. Understand the concepts to examine social phenomena.
b. Develop skills to analyse Indian society and change.
c. Understand the concepts **change and conflict**.
d. Understand interactional nature of growth and behavior at various stages in the life span and impact of cultural aspects on the individual.
e. Apply the information of growth, development and health in social work practice in general and to individuals, groups and communities in particular.

Course Outcomes (COs)
CO 1: Acquaint themselves with the basic concepts of Sociology like society, community, association, culture, social change, social stratification etc.
CO 2: Know the basic social institutions like family, marriage, kinship in a scientific way
CO 3: Explain social change and the factors affecting social change. Realize the importance of cultural lag to understand social change
CO 4: To understand psychological concepts and its relevance to Social Work

Course Content

UNIT I

Society and Culture: Social Structure – meaning, status and roles; Culture: meaning and contents - traditions, customs, values, norms, folklore and mores.

Socialization: Meaning, process of socialization – The development of self – Agencies of socialization.

Indian Society: Composition of Indian Society: The concept of unity amidst diversity- Social stratification in India: Meaning, caste, class divisions, Gender;

Types of social institutions: Marriage, Family, Religion, State and Law-Meaning and Functions; Social Control exercised through the social institutions;

Social Change: Meaning, characteristics and factors inducing change with reference to India.

UNIT II

Social Groups, and Social Control – Primary and Secondary Groups, in-groups and out-groups. Social control through social groups and social institutions. Social Process.

Development – social ideals of Indian Constitution. Fundamental Rights.

Social Analysis: Significance of social analysis: A brief analysis of socioeconomic, political and cultural systems – Inter-linkages in the Indian context.

Theories of Economic Development, Globalization and its impact on Developing Countries: Stages of growth theory – Structural internationalist theory.

Privatization, liberalization and structural adjustment programmes – Role of international financial institutions.

UNIT III

Life Span: Beginning of life – Human reproductive system, Fertilization and Foetal development – Delivery, Pre-natal and post-natal care and their importance in development. Development stages: Infancy, babyhood, childhood, puberty, adolescence, adulthood and aging:

Growth, characteristics, developmental goals, psycho-social adjustment and other adjustments, hazards, lifestyle effects – as relevant to each of these stages;

Principles of growth and development: methods of studying human behaviour, role of heredity and environment, social customs, traditions, values in parenting and child rearing practices; deprivation and development during stages of life span; Indian concept of life span stages.

UNIT IV

Basic human needs: Maslow‟s hierarchy of needs, physical, psychological and intellectual needs; Stress – Coping and social support.

Motivation, frustration and conflicts – Emotions and emotional behaviour. Personality: Definition, nature, types and assessment of personality. Intelligence: Concept, levels of intelligence, influence of heredity and environment, assessment of intelligence.

Relevance of psychology to social work practice across the stages of development period specific needs, tasks and challenges.

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Journals/ Magazines

Sociological Bulletin (Journal of the Indian Sociological Society).Contribution to Indian Sociology.

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Course Articulation Matrix - Course name: Society and Dynamics of Human Behavior (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3	3	2
CO3	2	3	3	3	3	2	3	2	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	2.7	3	3	2.7	3	2. 7	3	2.7	3	3	3	2.7

Odd Semester

Paper Title: WORK WITH INDIVIDUALS AND FAMILIES

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This course aims to develop simple to complex skills of working with individuals and families in various situations like crisis, preventive, facilitative and developmental.

OBJECTIVES

a. Understand casework as a method of social work, and appreciate its place in social work practice.
b. Understand the values and principles of working with individuals and families.
c. Develop the ability to critically analyze problems of individuals and families and factors affecting them.
d. Enhance understanding of the basic concepts, tools and techniques in working with individuals and families, in problem-solving and in developmental work.
e. Develop appropriate skills and attitudes to work with individuals and families.

Course Outcomes (COs):
CO 1: To understand the individual, family and their problems and the social contextual factors affecting them.
CO 2: To understand Social Casework as a method of Social Work practice.
CO 3: To develop an understanding of application of case works in diverse settings.

Course Content

UNIT I

Social case work: Definitions, scope, historical development - Influence of psychoanalysis on casework - Introduction of casework as a method of social work - Concepts of adjustment and maladjustment - Philosophical assumptions and casework values.

Principles of casework: Individualization, acceptance, non-judgmental attitude, participation, relationship, effective communication of feeling, client self-determination, and confidentiality.

Components of social casework: The person, the problem, the place and the process. Process in casework: Study, assessment, intervention, evaluation, follow-up, and termination.

UNIT II

Types of problems faced by Individuals and families; individual differences and needs - Family assessment in casework practice

Theories and approaches: Psycho-social approach, Functional approach, Problem-solving approach, Crisis Theory, Family intervention, Behavioural modification, Transactional analysis, Client Centered Approach and Holistic approach.

UNIT III

Tools for Help: Case work tools: Interview, home visit, observation, listening, communication skills, rapport building.

Records: Nature, purpose and principles of recording.

Techniques of casework: Supportive, resource enhancement and counseling.

Self as a professional: Professional self - Conflicts and dilemmas in working with individuals and families.

UNIT IV

Application of Method: Primary and secondary settings - Application of methods in family, women, and child welfare settings, marriage counselling centres, schools settings, medical and psychiatric settings, correctional institutions and industry.

REFERENCES

1. Banerjee, G. R. 1967 "Concept of Being and Becoming in the Practice of Social Work", Indian Journal of Social Work, Mumbai: Tata Institute of Social Sciences.

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Course Articulation Matrix - Work with Individuals and Families (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Odd Semester

Paper Title: Work with Groups

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION:

This course aims at developing the understanding of Group Work as a method, developing skills for intervention, and gaining knowledge of the scope of this method in various settings.

OBJECTIVES :

a. To develop awareness about the specific characteristics of Group Work and its contributions as a method of social work intervention,

b. To gain knowledge about group formation and the use of a variety of group approaches.

c. To develop understanding of concepts, dynamics and small group theory in relation to all types of groups, e.g. family, staff, committee, long - term client groups.

d. To identify the various situations and settings where the method could be used in the context of social realities of the country.

Course Outcomes (COs):
CO 1: Ability to Understand the nature and types of groups.
CO 2: Understand Social Group Work as a method of Social Work practice
CO 3: Know the basic concepts, tools, techniques, processes and Skills of working with groups.

UNIT I

Introduction and history of Group Work: Understanding of groups - Characteristics and significance of group - Definition of Social Group Work - Characteristics of Social Group Work - Purpose of Social Group Work; Historical evolution of group work with special emphasis on the Indian Context.

Type of Groups: Types and approaches based on objectives and purpose – Type of Membership – Time -Duration

Values and Principles in group work and Characteristics of Group formation: Values in social group work- Principles in group work - Assumptions underlying social group work - Factors of group formation - Formulation of goals - Identification of problems for work.

UNIT II

Group Processes and Group Dynamics: Importance of group processes - Typical patterns - Processes in different type of groups - Worker's skills in identifying and understanding processes.

Pre-group and Initial Phase: Planning model - Characteristics of pre group phase - Group structures Facilitation skills and role of worker in pre-group and initial phase.

Bond, sub-groups, role. Leadership - Isolation - Decision making - Conflict –Communication -Relationships.

UNIT III

- Middle Phase and Use of Program: Characteristics of middle phase - Group structures -Group dynamics - Facilitation skills - Role of group workers - - Comparison across phases
  - Concept and principles - Program planning - Skills in program planning- Models and Approaches of group work

Facilitation: Knowledge of skills and techniques for effective work with groups/problem solving.

UNIT IV

Recordings in Group work: Importance of recording in social group work - Principles of recording - Recording structure -Types of recording.

Evaluation in Groups and Termination Phase : Importance of evaluation - Types of evaluation - Methods of evaluation - Need for termination - Types of termination - Characteristics of termination phase - Worker's skills.

Application of Group Work: Application in health settings, school settings, family welfare settings, industrial settings, women and child welfare settings.

REFERENCE :

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i. Social Welfare, Albany: State University of NewYork.

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i. University Press.

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York:Rothman, B. The Haworth Press.

Course Articulation Matrix - Work with Groups (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO 11**	**PO 12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Odd Semester

Paper Title: WORK WITH COMMUNITIES

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

Community organization / development, as a method of social work practice, is seen as a means to facilitate communities towards self-directed change. It takes as its basis the inequalities in society manifested through processes of marginalization, Discrimination or disempowerment of groups, which have resulted in the loss of control over resources, be they tangible or intangible. The strategies of Community Organization practice being addressed as part of the course cover a range spanning different ideologies, from those being people-initiated, and those that are initiated by the elite. Community organization is seen as a means as well as an end, where Collective processes are to sustain the community's capacity to bringabout change.

OBJECTIVES:

a. Understand the critical elements of community organization practice.
b. Enhance critical understanding of the models and strategies for communityOrganization practice.
c. Make the micro-macro connections between the ranges of complex issues inPractice.
d. Develop attitudes conducive to participatory activities for civil society.

Course Outcomes (COs):
CO 1: Understand the fundamental concepts and components of community, community organization and social action
CO 2: Understand the models of community organization and social action
CO 3: Understand the relationship of community organization and soScial action with other methods of social work.
CO 4: Understand various social movements in India

Course Content

UNIT I

Community: Concept, characteristics, types and functions.

Community organization practice: Definition of community organization. Values andprinciples of Community Organizations. Ethics of community organization practice.

Understanding Human Rights in community organization practice.

Historical development of community organization practice.

Gender and Empowerment: Gender sensitive community organization practice

UNIT II

Models and Strategies of Community Organization - Locality Development Model - Social Planning Model - Social Action Model

Select methods of public interest: Mobilization, litigation, protests and demonstrations, Dealing with authorities

Public Relations, Planning, Monitoring and Evaluation - Roles in different models attributes and attitude.

UNIT III

Community Organization as a Method: Relevance of community organization as a Methodacross different spheres of social work intervention and relook at own attitudes.

Skills of Community Organization Practitioner: Participatory approaches - Problem analysis, resource mobilization, conflict resolution, organizing meetings, writing and documentation, networking, training.

Role of community organizer: Organizer, enabler, motivator, counselor…Fund raising and its techniques.

UNIT IV

Human rights : Understanding human rights, need for the protection of human rights.

Strategy and Roles: Unionization as a strategy – Advocacy in community organization.

Current debates in Community Organization Practice: Emerging issues - Impact ofMacro policies. NGO working with Community.

REFERENCES

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Journals

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Press.Development and change, Hague Blackwell Publisher.

Course Articulation Matrix - Work with Communities (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Odd semester

Title: SOCIAL WORK PRACTICUM - I

Credit pattern: L:T:P::0:0:3 **Total Credits: 3**

Orientation provides information regarding.

i. The importance and place of the practicum in the educational programme.

ii. The purpose, functions and ethics in professional practice.

In the first four weeks, the learners may make a local directory to include emergency numbers of Hospitals/ PHCs/ Police/ Panchayath Office and Network Agencies along with references to other developmental and welfare services in the location.

Visits - provide an exposure to and understanding of the services provided in responses to people's needs. (Agencies in health setting, education, community, institutional services, criminal justice system, civic administration, rehabi1itation etc.)

Structured experience laboratory - is a classroom activity, which provides opportunities through the games/activities, to form the involvement of self in various practice skills. These laboratory experiences are designed in small groups to encourage participation, sharing of the experience and aid in examining learning and applications of skil1s. These sessions have a specific objective of experiencing self, and applying /using self in practice. (Relationship skills, Communication skills etc., will be focused)

Concurrent practice learning of two-days a week - on going learning of practice is an opportunity to develop intervention skills in reality situations. This entails learning social work practice for two, or two and a half days or its equivalent, each week of the semester. The learners may be placed in agencies or in communities to initiate and participate in direct service delivery. Practice learning is a vital component of the educational opportunity to be provided to the learner. The teaching-learning process must be designed to help the learner to move on the mastering strategies, skills and techniques to practice social work.

Course Outcomes (COs):	
CO 1:	Work in agencies working in different types of areas of Social Work practice
CO 2:	Develop work plan in consultation with agency supervisor
CO 3:	Develop capacity for observation and analysis of social realities
CO 4:	Practice the methods of working with individuals and groups
CO 5:	Develop understanding of the needs, problems and Programmes for different target groups

Course Articulation Matrix - Social Work Practicum – I (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Honor's level even semester (II Semester)

Even semester

Paper Title: MANAGEMENT OF DEVELOPMENTAL ANDWELFARE SERVICES

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

The course aims to develop management competencies to function in organizations, participate as a team member and understand the role of a social work programmes manager.

OBJECTIVES

a. Understand the overall environment and its impact on the nature, structure and development of organizations in corporate, public and voluntary sectors in the context of social work profession.

b. Understand policies and procedures involved in establishing and maintaininghuman service organizations.

c. Acquire skills to network and participate in the management of resources –human, material and environmental.

d. Develop skills to participate in management of programmes, as a part of the inter-disciplinary team and initiate as well as develop new programmes.

e. Develop ability to analyze the practices applied in specific settings

Course Outcomes (COs):
CO 1: Understand the administration of welfare organizations and civil society organization / Non Government organization.
CO 2: Understand the scope for social work in welfare organizations and NGO's
CO 3: Understand the scope for social work in welfare organizations and NGO's
CO 4: Develop knowledge about registration procedure of organization

Course Content

UNIT I

Social Services: Social service, Social security, social development and social welfare – concept-Need for welfare and developmental organisations, Factors determining social welfare programmes, Development and Welfare organizations‟ response to societal needs; role of state, voluntary and corporate sector.

Management services: Types of settings, organizational characteristics like origin, nature, size, structure, and design, organizational climate and impact of socio-political environment - Management process: Vision, Planning, Organizing, Directing, Staffing, Coordination, Reporting, Budgeting.

Establishment: Registration, different types of legislations, legal status, constitution, rules and procedure, goals - Financial resources: Organizational Budget, Sources of finance, Fund Raising, Records, Audit.

UNIT II

Physical: All activities related to acquiring, hiring and maintaining importable structure and infrastructure, maintenance of premises and daily upkeep.

Enhancing the involvement and the potential of people in organization's executive boards, committees; professionals and other staff-relationship, communication, team work, and facilitating team building, supervision, and participation in training.

UNIT III

Programme Development: Programme management: long term, short term, andDocumentation.

Project proposals based on felt-needs, nature of resources, eligibility criteria, records, evaluation and research.

Impact analysis - Qualitative and quantitative.

UNIT IV

Public Relations: Public relations need and its promotion by all in the organisation. Representing the organization, networking, public, corporate and voluntary sector, resource building, accountability, transparency, use of media for publicity.

Change and its Management: Understand and manage change, innovation in a rapidly changing social environment: for policy programmes and structure.

Organizational understanding: Conflict, conflict resolution, creating positive climate.

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Course Articulation Matrix - Management of Developmental and Welfare Services (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	3	3	3	3	2	3	3	3	3	2
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	2.7	3	3	3	3	2.7

Even semester

Paper Title: SOCIAL WORK RESEARCH AND STATISTICS

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This course is to equip learners to utilize, and conduct research as service managers to improve services, evaluate, and develop new services and intervention methods: strategiesand techniques and also, be an effective consumer of other researches.

OBJECTIVES

a. To develop an understanding of scientific approach to human inquiry in comparison to the native or common sense approach in various aspects, and its process.
b. To understand major research strategies, meaning, scope and importance of social work research.
c. To develop an ability to see the linkages between practice, research, theory and their role in enriching one another.
d. To develop ability to conceptualize, formulate and conduct simple research projects/exercises (This would include a broad range of basic research skills such as conceptualization of a research strategy and problem; writing a research proposal; developing tools for col1ecting data; use of sampling, strategies; data collection, processing, presentation, analysis and interpretation; and writing research report etc).
e. To make informed assessment and judicious use of research studies and findings.
f. To develop skills for use of library and documentation services for research.

Course Outcomes (COs):	
CO 1:	Gain understanding of nature and relevance of social science research and its application in the study of social phenomena.
CO 2:	Learn steps and process of formulation of research design and carry out the same.
CO 3:	Learn method of conducting a review of literature.
CO 4:	Develop familiarity with qualitative and quantitative research methods
CO 5:	Learn how to prepare tools for collection of data
CO 6:	Learn process of data collection, organization, presentation, analysis and report Writing.

Course Content

UNIT I

Science - Meaning and assumptions, scientific approach in comparison to the native or common sense approach.

Scientific attitude; Scientific method; application of scientific method for the study of social phenomena.

Research: Definition and objectives, Social Work Research: Meaning, objectives, functions and limitations; Scope of social work research in India; Agencies sponsoring and conducting social work research, ethics in research.

Problem identification: Criteria for the selection of research problem; Problem formulation.Concepts, constructs, variables, conceptual and operational definitions.

Hypothesis: Meaning, importance, uses and requirements.

UNIT II

Design of research: Definition and importance; types of research design; exploratory, descriptive, experimental, evaluative design, participatory research and action research.

Source and Types of Data: Primary and secondary, objective and subjective, qualitative and quantitative.

Sampling: Sample and population: Rationale and Characteristics of sampling; methods of sampling, general considerations in the determination of sample size.

Methods of collection of primary data:

Observation: Structured and unstructured; participant and non-participant.

Questionnaire,interview schedule and interview guide. Pilot study and Pre-testing.

Scales: Need for scales, some prominent scaling

procedures.Case study: Meaning, uses, steps.

Secondary data: Official data, personal documents, problem in the use of secondary data

UNIT III

Processing of data: Content, editing, coding data classification, manual and mechanical tabulation of data; frequency distribution, diagrammatic and graphic presentation - use of computers.

Issues related to Social Work Research: Interpretation of data, research reporting: contents of research report: foot-note, references, bibliography, preparation of abstract; the art of making book review.

UNIT IV

Statistics: Definition, functions and importance Measures of

Central Tendency; Measures of Dispersion.

Chi-square, Correlation Coefficient, „t" distribution; Analysis of Variance and „ „F" distribution.

SPSS package.

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Course Articulation Matrix - Social Work Research and Statistics (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Even semester

Title: SOCIAL WORK PRACTICUM - II:

Credit pattern: L:T:P::0:0:3 **Total Credits: 3**

SOCIAL WORK CAMP:

Rural/ Tribal camps with a duration of 10 days - provide opportunities to experience rural life, analyze rural dynamics, and observe the functioning of local self government and voluntary organisations. This experience aids peer participation in planning for activities for own group and those for local people. It also helps develop skills to carry out, evaluate, and report the experience.

SUMMER PLACEMENT:

Summer Placement - provides an opportunity to experience day-to-day work in a setting. The learner gets involved with direct practice with the client system and with the ongoing management operations of the setting. The time frame recommended for this experience is about three weeks, after the first year of the post-graduate programme. The learner may use the same setting for data collection of Term project.

The student has to execute a term project during the summer placement and is expected to select a theme relevant to current social issues in consultation with the supervisor and make

an exhaustive survey of literature on the chosen theme including empirical studies made onthe same.

Further, the student shall also collect the experiences or opinions of people on the issues andmake a detailed presentation.

Flexibility is accorded in planning and executing the term project. Creative and analytical approaches are to be carried out.

Course Outcomes	
CO 1:	Provides an opportunity to experience rural life, analyze rural dynamics, and observe the functioning of local self-government and voluntary organisations
CO 2:	Aids peer participation in planning for activities for own group and those for local people
CO 3:	Helps develop skills to carry out, evaluate, and report the experience.

Course Articulation Matrix - Social Work Practicum – II (Social Work Camp and Summer Placement)

CO/PO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO10	PO11	PO12
CO1	2	3	3	3	3	3	3	3	3	3	3	3
CO2	2	2	3	2	3	3	2	2	2	2	2	3
CO3	2	3	3	3	2	3	3	2	3	3	3	2
Weighted Average	2	2. 7	3	2. 7	2. 7	3	2.7	2. 3	2. 7	2.7	2.7	2.7

Even semester

Title : SOCIAL WORK PRACTICUM - III

Credit pattern: L:T:P::0:0:3 **Total Credits: 3**

Concurrent practice learning of two-days a week - on going learning of practice is an opportunity to develop intervention skills in reality situations. This entails learning social work practice for two, or two and a half days or its equivalent, each week of the semester. The learners may be placed in agencies or in communities to initiate and participate in direct service delivery. Practice learning is a vital component of the educational opportunity to be provided to the learner. The teaching-learning process must be designed to help the learner to move on the mastering strategies, skills and techniques to practice social work.

Course Outcomes (COs):
CO 1: Develop work plan in consultation with agency supervisor
CO 2: Continue practicing the methods of working with individuals and groups
CO 3: Identify and utilize human, material and financial resources
CO 4: Develop process-oriented skills of working with individuals, families and groups with special reference to social support system

Course Articulation Matrix - Social Work Practicum – III												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO1**
CO1	3	3	3	2	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	2	3	3	3	2	3	3
CO3	3	3	3	2	3	3	3	3	3	2	3	3
Weighted Average	3	3	3	2	3	2.7	3	3	3	2.3	3	3

Even semester

Paper title: COMMUNICATION AND COUNSELING

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This paper relates the relevance of components of communication and counseling in social work practice.

OBJECTIVES

a. Understand the meaning and importance of communication in day-to-day life.

b. Focus on interpersonal communication of interviewing and allied aspects.

c. Develop holistic understanding of counseling as a tool for help.

d. Acquire knowledge of various approaches: their theoretical under-pinningsfor goals, values, processes and techniques,

e. Develop skills of application to real life situations.

Course Outcomes (COs):
CO 1: Provides an opportunity to experience rural life, analyze rural dynamics, and observe the functioning of local self-government andvoluntary organizations
CO 2: Aids peer participation in planning for activities for own group and those for local people
CO 3: Helps develop skills to carry out, evaluate, and report the experience.

UNIT I

Communication: Meaning and importance of communication.
Process of communication: Key elements in the communication process - Communication, message, audience; channel of communication. Verbal and non-verbal communication.

Basics of Communication.

Education and communication for national development.

Interpersonal communication: Interviewing - Objectives, principles of interviewing; listening,qualities of effective communicator.

Seminars, conferences, lectures, group discussion, panel discussion, symposium, workshop, role playing, simulation exercises, written communication, report writing, letter writing, article/essay writing, games, brain storming, street play, field work exposure.

UNIT II

Visual aids in communication: Poster making, use of notice boards, flip charts, charts, flash cards, photographs, pamphlets, slide shows

Mass Communication: Television, exhibition, newspapers and magazines, advertisements, radio, film, VCD/ DVD, e-mail, internet.

Impact of mass communication on society, family, marriage and child development. Communication Analysis and Planning: Planning and executing a communication campaign on an issue using various methods of communication.

UNIT III

Counseling: Definition, nature and goals, areas of counseling; Historical background and origins of counseling, ethical nature of counseling, qualities of an effective counselor.

Counseling Situations: Developmental, preventive, facilitative, and crisis.
Counseling and Psychotherapy - Skills in counseling - Establishing the relationship.Process of Counseling.
Approaches to Counseling: Approaches; Theoretical base, thrust, goals, key concepts, techniques - Approaches like person-centered, rational-emotive, behavioral approaches, gestalt, existential approaches, Egan‟s three stage model, eclectic model.

Indigenous Approach: Indigenous approaches of help and self-help like yoga, reflection. Act of Prayashchit.

UNIT IV

Couple and Family Counseling: Issues in such counseling, its process and stages.

Crisis Counseling, Group Counseling: Counseling for groups - Process, advantages and disadvantages of group counseling.

Practice of counseling in family counseling centers, family courts, counseling bureau. Premarital and marital counseling, vocational counseling centers, mental health centres, child guidance clinics, correctional institutions, deaddiction and rehabilitation centres, educational institutions.

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Course Articulation Matrix -Communication and Counseling (SC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Even semester

Paper Title : GANDHIAN APPROACH TO WELFARE ANDDEVELOPMENT

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

The course aims at sensitizing the learner to the Gandhian approach and to utilize some of theskills in practice.

OBJECTIVES

a. Develop an understanding of Gandhi‟s concept of society and his approach to social transformation.
b. Develop knowledge of the specific programmes formulated by Gandhi for rural reconstruction and the development of the weaker sections of society, with the focus on strategies and skills.
c. Develop the ability to identify similarities and differences between the Gandhian and professional social work approaches to social change, welfare and development.

Course Outcomes (COs):
CO 1: Understand the applicability of Gandhian methods in the contemporary political, economic and social demines.
CO 2: Perceive, understand and appreciate the socially relevant ideals of Gandhi.
CO 3: analyze the simple living, struggle for truth and principle of nonviolence practiced and propagated by Mahatma Gandhi.

Course Content

Unit I

Gandhian thought: Salient features of Gandhian thought; Gandhian values; Concepts and methods; Concept of a healthy society; Sarvodaya.

Unit II

Gandhian Approach: Economic and its organization: Ownership of property; Concept of trusteeship, distribution and economic equality; System of production, problems of mechanization, decentralization of production, rural- urban relationship

Unit III

Social Organisation: Marriage and family, position of women, social stratification, caste and untouchability, education and its role; Basic education.

Unit IV

Constructive programmes: Contents training of constructive workers, skills involved, nature of programmes; Boodan, Gramdan.

Gandhian and Vinbobha‟s movements with special reference to Bhoodan and Gramdan

Gandhian and Professional Social Work Approach: Similarities and differences between Gandhian and professional approach to social development and welfare

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Course Articulation Matrix - Gandhian Approach to Welfare and Development (SC)												
CO/PO	**PO1**	**PO2**	**PO 3**	**PO4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO 2**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Even semester

Paper title: PERSONAL AND PROFESSIONAL GROWTH.

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

The course aims at enhancing personal and professional effectiveness by developing a continuous awareness and deeper insight into one's being. It encourages value clarification, upholding of professional ethics, and ability to make effective choices for integration. It provides opportunities to understand stress, stressors and methods to handle stress experienced.

OBJECTIVES

a. Understand self as a being, as one in the process of becoming and experience self-awareness.
b. Examine own values and attitudes and explore choices made to express self in ownenvironment.
c. Develop positive life skills and practice self-help methods for integration and forstress reduction.
d. Understand and uphold professional values and ethics.

Course Outcomes (COs):
CO 1: Deep and well-informed awareness of their own skills, knowledge, and professional attributes interests, values and personality, and how these can be deployed in a variety of contexts. An ability to articulate their learning and development, critically
CO 2: Reflect on experiences (academic, extra-curricular, work and life), identify strengths, and to act on areas requiring further development.
CO 3: A critical awareness of personal capabilities, strengths and potential, and be able to communicate these constructively and realistically for a variety of contexts.

Course Content:

UNIT I

Self and Self Awareness: Understand self through a cognitive construct/paradigm (two/three models from among those available may be offered as workshops). Suggested approaches are: Rational Emotive Therapy, Gestalt Approach, Transactional Analysis, Reality Therapy, Yoga for Therapy, Meditation Techniques.

Explore self as being, and understand the process of becoming. (through observation)
Practice consciously measures to sustain and experience continuous awareness. Observation and Reflection: Theory and techniques.

Communication Choices: Communication mode and patterns and effectiveness, Interpersonal communication, nature of choices made.

UNIT II

Emotions and their Expression: Emotions, nature of expression.
Understand own pattern of communication, choices made to express emotions, modes used,examine need for change.
Communication: Informal and knowledge and skills of rapid reading, writing, creative writing, report writing and public speaking.

UNIT III

Creativity and Self: Understand brain functions: Creativity, need and development
Life Style: Conscious life style - enhanced life skills: Communication, decision making, empathy, critical thinking, use of time and money, building and sustaining bonds-relational, colleagial and personal.
Self defeating behaviour - nature and impact. Choices for change.

UNIT IV

Values, Attitude and Professional Ethics: Values and attitudes - their role in life, Value conflict - its impact, value clarification.
Integration: Through Eastern and Western approaches experience the processes of integration. Approaches recommended are: Yoga as a science, meditation (tool for meditation - own choice).
Stress / Burn out - Self help Methods: Stress, Stressors, nature and impact of stress,its expression, and burnout.
Spirituality and Growth.

REFERENCES:

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Course Articulation Matrix - Personal and Professional Growth (SC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	2	3	3	2	2	3	2	3	3	2	2
CO3	3	2	3	3	3	3	2	2	3	2	3	3
Weighted Average	3	2.3	3	3	2. 7	2.7	2.7	2.3	3	2.7	2.7	2.7

Even semester

Paper Title : POPULATION AND ENVIRONMENT

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

The content has two aspects to it. Population dynamics and its relatedness to the environment, natural resources, utilization and their preservation.

OBJECTIVES:

a. Understand characteristics, determinants of population growth.
b. Examine population policy, plan and initiatives.
c. Understand inter-relatedness of human life, living organisms and environment.
d. Examine utilization and management of resources.
e. Develop skills to participate in activities related to the two areas.

Course Outcomes (COs):
CO 1: Understand the concept of population
CO 2: Develop skills for planning and implementing Family Planning and welfare programmes.
CO 3: Study role of social workers in family welfare programmes and Environment Change.

Course Content

UNIT I

Characteristics of population: Population, determinants of growth. global concerns - Characteristics of Indian Population – Distribution by age, sex, literacy and occupation – Fertility trends - Birth and death ratio.

Population Policy, World Action Plan, Population Policy of India- Implementation; Initiatives – Government and NGO.

UNIT II

Family Planning: Objectives, scope, methods, implementation, mechanisms and progress.

Concept and Scope of Population education, family life education, sex education, and family planning education.

Population and Environment: Interrelatedness of human life, living organisms; Environment and natural resource – Environment, lifestyle, degradation. Environment management, maintaining, improving, enhancing – Current issues of Environment.

UNIT III

Natural Resources and Diversity: Utilisation and management – Forest, land, water, air, energy sources - Pollution - Sources, treatment, prevention - Soil, water, air, noise - Waste matter - disposal, recycling, renewal, problems, issues - Programmes for forest, land and water management.

UNIT IV

Environment Protection Laws and Role of Social Worker: Acts related to environmental protection – Forest conservation- Water pollution – Standards and tolerance levels – Unplanned urbanization- Environmental movements in India - Role of NGOs in Environmental issues – Government agencies in environmental protection – Social work initiatives at different levels.

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Course Articulation Matrix - Population and Environment (SC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO1**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Open Elective

Paper Title: SOCIAL WORK PRACTICE WITH CHILDREN

Credit pattern: L:T:P::3:1:0 **Total Credits: 4**

INTRODUCTION

Children are the future of human society. Profession of social work has to work with children in difficult circumstances while rendering services in varied settings. There is a need for social workers specially trained in working with the children and adolescents. Such trained social workers can render valuable services to children in need of professional help.

The current paper focuses on children as a special group for focused social work intervention through facilitating acquisition of knowledge about children from different perspectives, types of settings where the children can be helped and application of social work methods to render social work intervention to children.

OBJECTIVES

a. To understand children facing difficult circumstances and the impact of difficult circumstances on children‟s development.
b. To gain an overview of agencies where children form the major client group, and appropriate evaluation of children‟s problems.
c. To impart to the trainee, specific Social Work intervention methods in dealing with children as a client group; to understand the Rights of children in the legal, national and international context.

Course Outcomes (COs):
CO 1: Able to deliver services for children in appropriate manner.
CO 2: Students will be able to design, implement and evaluate a variety of strategies to provide services for Children

Course Content

UNIT I

Human reproductive system - beginning of life till beginning of adulthood. Understanding the children and adolescents from different perspectives - developmental, demographic, economic, psychological, sociological, environmental, familial, educational dimensions of child development. Issues in adolescence - self image, peer group, career choice, sexuality, education, vocation and other issues Healthy child development, importance of supportive environment in upbringing of the children.

UNIT II

Children in difficult circumstances - developmental delay, physical and intellectual handicaps; chronic illnesses, nutritional deficiencies, accidents, poverty, child labour, abandoned and orphaned children, adoption issues, children in institutions, psychological problems in children, self harm and suicides in children, addiction related problems in children, children brought up by single parent due to death, divorce and other related issues, problems in formal schooling, children living in difficult situations - children in streets, slums, war zones, migration, children in conflict with law, truancy, drug abuse, running away from homes, neglected children, child abuse, child trafficking, child marriage and any other. Special focus on adolescent issues as applicable.

UNIT III

Children in difficulties – Helping agencies, Settings and issues - paediatric hospitals, nursing homes, child care centres, child guidance clinics, residential care services for children - residential schools, orphanages, homes for children in conflict with law, agencies dealingwith differently abled children, any other.

Assessment, intervention, follow up and evaluation of children and adolescents facing difficulties.

UNIT IV

Social Work Intervention Programmes - Case work, group work, community organisation methods in helping children, school mental health programmes, home visits, school visits,life skills training, family life education for adolescents, creative use of play therapy, art, dance, drama and other mediums for helping children, child help lines, child care centres, adoption services, special rehabilitation services for rescued children and any other.

Legislations pertaining to children, legal protection, International, National and non- governmental organisations working with children, Rights of the children.

REFERENCES

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Course Articulation Matrix - Social Work Practice with Children (OE)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Open Elective

Paper Title: **SCIENCE OF CRIME, PENOLOGY AND SOCIAL WORK PRACTICE**

Credit pattern: L:T:P::3:1:0 **Total Credits: 4**

INTRODUCTION

The course aims at introducing to the students the concepts of crime, punishment and the impact of crime on victims. The focus is on facilitating understanding of the learner to deliberate social work interventions with the prevention of crime, handling the issues related to those clients who are in conflict with law as well as helping the victims to recover from theimpact of crime.

OBJECTIVES

a. To understand the concept of criminology and crime, as applicable to the Indian context with the impact of individual in conflict with law

b. To learn the dimensions of penology, Indian prison system, the impact of imprisonment on the individuals and prison administration

c. To understand the impact of crime on victims, compensation and hurdles in getting justice in the Indian context

c. To assimilate the practice of social work interventions in crime prevention, promotion of social health, dealing with persons in conflict with law, Human Rights issues in the context of under - trials, imprisonment, rehabilitation of released prisoners and victims.

Course Outcomes (COs):
CO 1: Understand major forms of crime
CO 2: Gain knowledge about major theories of crime
CO 3: Practice correctional Social Work in different institutional and no institutional settings
CO 4: Understand provisions of various social legislations in India

Course Content

UNIT I

Crime: Meaning and definition, historical perspective; Nature and Scope of Criminology, Causation of Crime, Characteristics and Classification of Crimes, Crime patterns - Habitual, Professional, Organised, White collar, Public order crimes; Gender related issues in crimes; Classification of offenders under Indian Penal Code. Trial duration and pending cases, its impact.

UNIT II

Penology: Meaning, definition, historical perspective, scope.

Theories of Punishment: Deterrent theory, retributive theory, preventive theory and reformative theory.

Efficacy of punishment.

Essentials of an ideal penal system, penal policy in India.

Forms of Punishment: Corporal and capital punishment - pros and cons. Agencies involved in criminal justice system: Correctional institutions. Impact of imprisonment, maintenance of prisons, staff dynamics.

UNIT III

Victimology: Meaning, definition, historical perspective, scope of the study. Problems of victims - physical, psychological, socio-cultural.

Victim offender relationship.

Hurdles in crime reporting, investigation and justice delivery in the Indian context.

Compensation and restitution measures.

UNIT IV

Social Work Practice in Correctional Setting: Scope for social work practice in institutional and non institutional settings.

Application of Social Work interventions with under - trials, prisoners, rehabilitation of prisoners, work with families of prisoners, work with victims of crime.

Human Rights in the context of crime and punishment - Agencies to protect Human Rights - National Human Rights Commission, State Human Rights Commissions, Right toinformation Act and in the context of Human Rights violation,

Social Work measures with the Police, the Judiciary and the prison staff - Job stress, burn out and other issues.

REFERENCES:

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Course Articulation Matrix - Science of Crime, Penology and Social Work Practice (OE)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

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Masters level- odd semester (III Semester)

Odd Semester

Paper Title: HUMAN RESOURCE MANAGEMENT

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

The main objective of this course is to prepare young graduates for management and administrative positions in various industrial, business, governmental/non-governmental organisations and service sector organisations.

OBJECTIVES

a. Develop managerial skills in different functional areas of management with practical focus on HRM.
b. Develop the competence to evolve the problem-solving approaches by applying conceptual and behavioural skills.
c. Develop interpersonal skills/ competence and leadership qualities to work in a group with team building approach.
d. Develop sound theoretical base in various concepts and theories to enable the student to develop a broad perspective of the management field.
e. Distinguish the strategic approach to Human Resources from the traditional functional approach.
f. Understand the relationship of HR strategy with overall corporate strategy.

CO 1:Course Outcomes (COs):	
CO 2:	Develop necessary skill set for application of various HR issues.
CO 3:	Develop the understanding of the concept of human resource management and to understand its relevance in organizations
CO 4:	Analyze the strategic issues and strategies required to select and develop manpower resources.
CO 5:	Integrate the knowledge of HR concepts to take correct business decisions.

Course Content

UNIT I

Human Resource Management: Concept, scope, philosophy and objectives; Evolution; Approaches, Structure and Functions; Line and staff relations of HRM; HRM Model. Hierarchy, formal and informal structure, Organogram, reporting structure.

Human Resource Planning: Concept and objectives; Human resource inventory; Human resource planning process; job analysis; job description; job specification; job design; career planning and career paths; job rotation.

UNIT II

Talent Acquisition: Goals; polices, sources and methods. Selection: Concept, process. Talent Acquisition Tests, Theories and issues in psychological testing, Intelligence testing – theoretical background, Aptitude Testing, Personality Assessment, MBTI. Placement, Induction and socializing the new employee. Talent retention: Concept, importance and methods.

UNIT III

Compensation Management: Factors influencing compensation plans and policies; Job evaluation - Fixation of salary, components of salary. Pay for performance – Incentive Schemes, principles and types, Employee Stock Option Plan, compensation survey / review

UNIT IV

Strategic Human Resource Management (SHRM): Business strategy and organizational capability, SHRM: aligning HR with Corporate strategy, Strategic HR planning and Development, Change Management and restructuring and SHRM, Corporate Social Responsibility (CSR), Corporate Ethics, Values and SHRM, Competencies of HR professional in a SHRM scenario.

REFERENCES

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Course Articulation Matrix - Human Resource Management (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Odd semester

Title: SOCIAL WORK PRACTICUM - IV

Credit pattern: L:T:P::0:0:3 **Total Credits: 3**

Workshops: Skills Development - help learners acquire specific skills for situations encountered during practice and acquire skills for intervention. These may be for problems/ concerns, issues or situations like work with alcoholics, HIV/AIDS affected persons, adolescents for life ski11s development, youth for leadership development and couples for marital relationship and enrichment work with elderly. These workshops are to enhance skills/ develop new skills for practice in specific situation, specific problems and issues.

Concurrent practice learning of two-days a week -on going learning of practice is an opportunity to develop intervention skills in reality situations. This entails learning social work practice for two, or two and a half days or its equivalent, each week of the semester.

The learners may be placed in agencies or in communities to initiate and participate in direct service delivery. Practice learning is a vital component of the educational opportunity to be provided to the learner. The teaching-learning process must be designed to help the learner to move on the mastering strategies, skills and techniques to practice social work.

Course Outcomes (COs):
CO 1: Shall initiate and participate in direct service delivery.
CO 2: Work in sensitive areas like work with alcoholics, HIV/AIDS affected persons, adolescents for life ski11s development, youth for leadership development and couples for marital relationship and **CO 3:** enrichment work with elderly.
CO 4: Shall identify research areas in the community

Course Articulation Matrix - HumSocial Work Practicum - IV (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	2	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	2	2	3	3	3	3	3
CO3	3	3	3	2	3	3	3	3	2	2	3	2
Weighted Average	3	3	3	2	3	2.7	2.7	3	2.7	2.7	3	2.7

Odd semester

Paper Title : SOCIAL WORK WITH TRIBAL AND RURAL COMMUNITIES.

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This course aims at introducing the learner the programmes of tribal and rural development, and the importance of social work practice with tribal and rural communities.

OBJECTIVES

a. Develop an understanding of tribal and rural communities.
b. Understand the characteristics and problems of tribal and rural communities.
c. Acquire knowledge about the contribution of Governmental and Non-governmental Organisations to tribal and rural development.
d. Develop an understanding of the functions of Panchayath Raj Institutions with particular reference to Karnataka.
e. Gain knowledge about the application of social work in tribal and rural development programmes.

Course Outcomes (COs):
CO 1: Able to Understand Tribal Community
CO 2: Develop adequate skills to prepare and implement integrated development plan & projects for tribal Communities
CO 3: Develop trainees as competent change agent in the field of tribal development.

Course Content

UNIT I

Tribe in relation to caste and nation - Nature and Characteristics of Primitive Cultures.

Tribes in India and their ecological distribution.

Emerging Trends in Tribal Social Institutions - Family and Kinship Systems, Jati Structure, Economic Structure, Political organizations.

Characteristics of Tribal Society - Economic, Social, Political and Cultural.

Problems of Tribal Life.

UNIT II

Government Programmes since Independence and their Impact on Tribal Societies

Programmes of Voluntary Agencies and their Impact on Tribal Societies.

Analysis and Assessment of Tribal Community Problems - Special Problems of the Tribals in a particular area.

Social Work Practice in Tribal Development: Community organization as a method of intervention, Participatory Rural Appraisal (PRA), Logical Framework approach/Analysis (LFA), Intervention strategies in community settings: awareness buildings, organizing, activating, people‟s participation, negotiating,• lobbying and, resolving group conflicts.

UNIT III

Rural Society and Poverty - Historical perspective - Dynamics in the village Society: Caste/class relationships - Control and Power, Conflict and Integration.

Poverty in the rural context - Its nature and manifestations.

Analysis of Basic Problems - Issues faced by the rural poor such as Indebtedness, Bonded labor, Low wages, Unemployment, Underemployment, and other forms of exploitations.

UNIT IV

Current Rural Development Programmes in India:

Council for the Advancement of People‟s Action and Rural Technology (CAPART) and other Rural Development.

Poverty alleviation programmes.

Panchayath Raj System in Karnataka and its role in rural and tribal development.

Role of social worker in tribal and rural development programme.

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Course Articulation Matrix - Social Work with Tribal and Rural Communities (SC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	2	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3	2	3
CO3	3	3	3	2	3	3	2	3	2	3	3	3
Weighted Average	3	3	3	2	3	3	2.7	3	2.7	3	2.7	3

Odd Semester

Paper Title: ORGANIZATIONAL BEHAVIOUR AND ORGANIZATIONAL DEVELOPMENT

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

The course aims to provide an understanding of human behavior at work so that the learner may acquire the skills required to analyze problems and develop a problem-solving approach.

OBJECTIVES:

a. To impart knowledge about individual, group and organizational dynamics and their consequences,

b. To make clear the concepts and approaches that help in developing models or systems that support human ingenuity.

c. To acquaint the students with the knowledge of theories and practices that govern human behavior at work,

d. To help the learner understand the value and worth of human resources in an organization.

e. To enable the students to become aware of their communication skills and sensitize them to their potential to become successful managers.

f. To gain self-confidence and healthy self-respect while retaining respect for other"s rights.

g. To understand the application of Transactional Analysis in several areas of employee management.

Course Outcomes (COs):
CO 1: Demonstrate the applicability of the concept of organizational behavior to understand the behavior of people in the organization.
CO 2: Analyze the complexities associated with management of the group behavior in the organization
CO 3: Demonstrate how the organizational behavior can integrate in understanding the motivation (why) behind behavior of people in the organization.

Course content

UNIT I

Conceptual Framework: Organization Behavior: Definition, concept, approaches and scope, historical background of Organization Behavior.

Introduction to Enneagram, personality types according to Enneagram. Emotional Intelligence; Attitude, Values, Personality; Job satisfaction, Employee Morale : Meaning, influences and outcomes - Measuring job satisfaction.

Assertiveness Training: Benefits of assertiveness – components of assertive behavior, measuring assertiveness, handling fear, handling anger, handling

depression, developing assertive behavior skills, assertiveness on the job, assertiveness in interpersonal relations.

UNIT II

Transactional Analysis (TA), TA and self awareness, Winners and Losers, Structural analysis, Life positions, transactions, games and strokes, Life scripts, TA applications in motivation, Leadership and Teamwork, TA in counseling.

Motivation: Concept and theories, techniques of motivation, role of reinforcement and punishment, motivation and organization reward system, awards, employee empowerment and engagement.

UNIT III

Leadership: Meaning, roles, skills, and styles, leadership theories, types of leadership, powerful persuasion strategies.

Group dynamics: Concept, types of groups, dynamics of group formation, decision making in groups.

Organization Development: Concept, emerging approaches and techniques, Foundations of OD, Organizational Diagnosis, OD interventions – An overview, individual and interpersonal interventions, team/group interventions, comprehensive interventions, organizational transformation, success and failure of OD, Planned Organizational change, feedback and OD.

UNIT IV

Organizational Conflict: Concepts, causes and types, conflict-resolution strategies.

Organizational change: Concept, forces of change and resistance to change, managing organizational change and diversity, facilitating creative and divergent thinking, planned organizational change.

Stress and Burn Out: Concepts, causes, consequences and coping strategies. Managerial Ethics: Individual ethics, ethical dilemmas in management, Ethical practices of Indian Managers, Corporate ethics.

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Course Articulation Matrix - Organisational Behavior and Organisational Development (SC3)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	2	3	3	3	3	3	3	2	3
CO2	2	3	2	2	3	3	2	3	2	3	2	3
CO3	3	3	2	2	3	3	3	3	3	3	2	3
Weighted Average	2.7	3	2.3	2	3	3	2.7	3	2.7	3	2	3

Odd semester

Paper code: SWSC-4

Paper Title: PREVENTIVE AND SOCIAL MEDICINE AND MEDICAL SOCIAL WORK

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This course introduces the basic health issues and the application of social work in health setting both in hospital and community.

OBJECTIVES

a. Understand the concept and dimensions of health.
b. Understand the issues related to the prevention, clinical features and treatment of major communicable and non-communicable diseases.
c. Trace the historical development of medical social work in India and abroad.
d. Understand the nature of medical social work services.
e. Understand the tenets of National Health Policy of India and modernization of community based health care services. .
f. Understand the health care services at different levels.

Course Outcomes (COs):
CO 1: Able to Understand the concept and dimensions of health.
CO 2: Able to Analyze issues related to the prevention, clinical features and treatment of major communicable and non-communicable diseases.
CO 3: Able to analyze Nature of medical social work services
CO 4: To gain understanding on health care services at different levels.

COURSE CONTENT

UNIT I

Concept of health : Physical, social, mental and spiritual dimensions of health - Positive health - Determinants of health - Health and development - Indicators of health. Concept of Prevention: Levels of prevention - Hygiene, public health, preventive medicine, community health, social medicine, community medicine.

Health Care of the Community; Concept of health care - Levels and principles of health care.

UNIT II

Communicable and Non-communicable Diseases: Leprosy, Tuberculosis, Sexually Transmitted Diseases (STDs), HIV/AIDS. Cancer, Hypertension, Accidents, Diabetes, Blindness, Neurological problems, Mental illnesses.

Maternal and Child Health Services - Immunization – Integrated Child Development Services (ICDS) Scheme - School health programmes.

UNIT III

Medical Social Work: Meaning, Definition and Scope - Historical background and nature: Medical Social Work in India and Abroad - Team work and Multidisciplinary approach in health care; Organization and administration of medical social work departments in hospitals.

Patient as a person and Role of Social Worker: Understanding the patient as a person; Illness behaviour and treatment behaviour of the patient - Impact of illness on the patient and family.

Role of social worker with patients and their families - Rehabilitation.

UNIT IV

National Health Policy of India, Directorate General of Health Services, Indian Council of Medical Research (ICMR), Health as a concurrent subject.

Health System in India - at the Centre, at the State level, at the district level, and village level.

Health Education and Communication.

Voluntary Health Agencies in India - International health - World Health Organisation (WHO), UNICEF, UNDP, FAO, ILO, World Bank.

Non - governmental and other Agencies - Ford Foundation, CARE, International Red Cross, Indian Red Cross and others.

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Course Articulation Matrix - Preventive and Social Medicine and Medical Social Work (SC4)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Odd Semester

Paper Title: **REHABILITATION AND AFTER CARE SERVICES**

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

Rehabilitation of differently abled people is a noble and worthy endeavor, requiring the combined knowledge of the psycho-social theory and practical skills and techniques of social work. The current paper facilitates social work students to work with the specific group of clientele suffering from various types of disabilities and impart application of specific professional social work methods to cater to the needs of this population.

OBJECTIVES:

a. To understand the concept of handicap, rehabilitation and the scope for practice.
b. To identify the specific client categories requiring the rehabilitation services, problem specificity and rehabilitation service interventions.
c. To acquaint oneself with different rehabilitation settings, different therapeutic approaches to rehabilitation process.
d. To acquire the social work skills adapted to facilitate the process of rehabilitation, the rights and legal provisions provided for differently abled people and assimilate the knowledge of social work practice to disability specific client service.

Course Outcomes (COs):
CO 1: Articulate the principles of independence, inclusion, choice and selfdetermination, empowerment, access, and respect for individual differences
CO 2: apply the principles of disability-related legislation including the rights of people with disabilities to the practice of rehabilitation counseling
CO 3: To develop understanding on different rehabilitation settings, different therapeutic approaches to rehabilitation process.

Course Content

UNIT I

Rehabilitation: Definition and scope for social work interventions; definition of Impairment, Disability, Handicap; causes of Handicap - heredity, acquired, Major illnesses - physical, neurological and psychiatric; Stress, vulnerability, coping and competence to deal with handicaps; Need for comprehensive rehabilitation – psycho-social rehabilitation

UNIT II

History, philosophy and principles of psycho-social rehabilitation; specific problem areas – physical handicap - vision, hearing, orthopedic, speech and language difficulties, mental retardation and others; neurological, psychiatric problems, disasters, alcohol and drug usage, terminal illnesses and any other.

Intervention in rehabilitation: Assessment, planning, intervention, evaluation, tools for assessment, follow-up services.

UNTI III

Rehabilitation Settings: Hospital based, day-care, night-care, quarter-way home, half- way-home, group home, hostels, long-stay homes, vocational guidance centre, sheltered workshop, occupational therapy centre, community based rehabilitation centre, home care, inclusive education and others

Approaches: Therapeutic community, behavior modifications, transactional analysis and eclectic approach

UNIT IV

Practice of Social work methods in the process of rehabilitation: Case work, group work, community organisation, research, administration and social action.

Legal provisions for differently abled people – The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1995, Rehabilitation Council of India: Formation, scope and functions, governmental policies and programmes, initiatives from the non- governmental sectors.

International trends and national initiatives in the rehabilitation scenario.

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Course Articulation Matrix - Rehabilitation and Aftercare Services (SC4)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Odd semester

Paper Title: SOCIAL POLICY, PLANNING AND DEVELOPMENT

Credit pattern: L:T:P::2:0:0 **Total Credits: 2**

INTRODUCTION

The course introduces the learner as to how policy is a link between Constitutional Principles, Development Plans, Legislative and Executive Actions. The analysis of these processes is to enable utilization of the knowledge to improve social work practice.

Further, it provides a critical and analytical framework to understand key concepts, development processes and current issues, pertaining to different parts of the world, with specific reference to India. This course is expected to provide the social work students with a context for micro-level interventions.

OBJECTIVES

a. Gain knowledge of policy analysis and the policy formulation process.

1. Acquire skills in critical analysis of social policies and development plans.
2. Develop an understanding of social policy in the perspective of national goals as stated in the Constitution, particularly with reference to Fundamental Rights and the Directive Principles of State Policy.

d. Critically understand the concept, content and process of social development.

e. Develop the capacity to identify linkages among social needs, problems, development issues and policies.

f. Locate strategies and skills necessary for social development and reinforce values of social justice, gender justice and equality.

Course Outcomes (COs):
CO 1: Develop understanding of the concept of social policy and social planning
CO 2: Understand Concept and nature of Development and Human Development
CO 3: Understand concept of social welfare and social welfare administration
CO 4: Acquire the social work skills adapted to facilitate the process of rehabilitation, the rights and legal provisions provided for differently abled people and assimilate the knowledge of social work practice to disability specific client service

Course Content

UNIT I

Social Policy and Constitution: Concept of social policy, sectoral policies and social services - Relationship between social policy and social development-- Values underlying social policy and planning based on the Constitutional provisions (i.e. the Directive Principles of State Policy and Fundamental Rights) and the Human Rights - Different models of social policy and their applicability to the Indian situation.

UNIT II

Sectoral Social Policies in India: Evolution of social policy in India in a historical perspective- Different sectoral policies and their implementation, e.g. Policies concerning education, health, social welfare, women, children, welfare of backward classes, social security, housing, youth, population and family welfare, environment and ecology, urban and rural development, tribal development and poverty alleviation.

UNIT III

Social Planning: Concept of social planning - Scope of social planning - the popular restricted view as planning for social services and the wider view as inclusive of all sectoral planning to achieve the goals of social development - Indian planning in a historical perspective - The Constitutional position of planning in India. The legal status of the NITI AYOG - Coordination between Centre and State, need for decentralization - Panchayath Raj - people participation.

UNIT IV

Social Development: Concept of social development - Current debates of development - Approaches to development - Development indicators.

Social Development in India: The historical and social context of development in India - Demographic transitions - Rural development: Agrarian and land reforms; Green Revolution - Industrialization and urban development - Labour relations-Gender issues - Environmental issues (land, water, forest) - Education - Health.

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Recommended Journals / Periodicals

Alternatives; Development and Change; Economic and Political Weekly.

Course Articulation Matrix - Social Policy, Planning and Development(SC5)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Odd Semester

Paper Title: LEGAL SYSTEM IN INDIA

Credit pattern: L:T:P::2:0:0 **Total Credits: 2**

INTRODUCTION

The course is to help learners understand the legal system and procedures in India. It supports understanding the processes in public interest litigation and develops skills for the same.

OBJECTIVES

a. Acquire information on the legal rights of people.

b. Develop an understanding of the legal system and get acquainted with the process of the legal system with emphasis on functioning in India.

c. Understand the role of the police, prosecution, judiciary and correction.

d. Gain insight into the problems faced by the people belonging to different strata of society, in interacting with this system.

3. Develop an understanding of the processes and problems of public interest litigation and legal aid to marginalized.

Course Outcomes (COs):	
CO 1:	Understand key concepts of deviance and crime
CO 2:	Practice correctional Social Work in different institutional and noninstitutional settings
CO 3:	Understand provisions of various social legislations in India

Course Content

UNIT I

Social Justice: Meaning and Concept; Social legislation: Meaning, definitions and concept. Social justice as an essential basis of social legislations; Social legislations in a welfare state with special reference to India.

Rights: Concept and definitions of Rights; types of Rights; Rights of women and children; Rights of Scheduled Castes and Scheduled Tribes; Rights of accused and offender under Constitution of India, Indian Penal Code and Criminal Procedure Code.

Meaning and concept of Law: functions, purpose and classification

UNIT II

Division of Law: Substantive Law and Procedural Law.

Legislations pertaining to Social Institutions: Marriage, divorce, maintenance of spouse, adoption.

Legislations for prevention of Crime and Deviance: Indian Penal Code (relevant chapters like of Offences against Public Tranquility, of Offences affecting the Public Health, Safety, Convenience, of Decency and Morals, of Offences relating to Religion, of Offences affecting the Human Body, of Offences relating to Marriage, of Cruelty by Husband or Relatives of Husband) Legislations pertaining to women.

UNIT III

Criminal Justice System in India:

Police: Structure, powers and functions and their role in maintaining peace and order in the society.

Prosecution: Meaning, structure, its role in criminal justice, trial participation.

Judiciary: Supreme Court, High Court - Constitution of Supreme Court and High Court: Powers and functions.

Sub-ordinate Courts - District Sessions Court, Magistrate Courts, and other subordinate courts.

UNIT IV

Correction and Correctional Laws: Corrective measures as per Criminal Procedure Code, Probation of Offenders Act, Juvenile Justice (Care and Protection of Children) Act.

Legal Aid: Concept of legal-aid, history of legal-aid, persons needing legal-aid, legal-aid schemes.

Public Interest Litigation: Meaning, Concept, Process and Problems.

Right to Information Act- Provisions and implementation.

Role of Social Worker: Social Work intervention, need, methods.

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Course Articulation Matrix -Legal System in India (SC5)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	2	2	2	2	2	2	2	2	2	2
CO2	3	3	2	2	3	2	2	2	2	2	2	2
CO3	3	2	2	2	2	2	2	2	3	2	3	3
Weighted Average	3	2.3	2	2	2.3	2	2	2	2.3	2	2.3	2.3

Open Elective

Paper Title: GERONTOLOGICAL SOCIAL WORK

Credit pattern: L:T:P::3:1:0 **Total Credits: 4**

INTRODUCTION

Changing demographic profile in India has led to rise in the number of elderly as never before. Along with the enhanced longevity, a number of issues related to care and management of elderly have come into focus. Social work as a profession concerned with providing professional service to the needy, has recognized the need to address the concerns of the senior citizens. The paper envisages training the learners in professional social work practice with the elderly.

The paper focuses on senior citizens as target client group for social work intervention; the paper deals with the issues, concerns, problems and social work methods in facilitating healthy adaptation of the client group in the current Indian context.

OBJECTIVES:

a. To get an overview of the perspectives on aging and scope for practice.
b. To understand the various challenges related to aging, healthy aging and problems of the elderly in difficult situations.
c. To identify agencies working with elderly, the different care settings and issues in working with elderly in different settings. To gain an insight into process of working withelderly.
d. To train the learners in applying specific social work intervention measures in working with senior citizens, care givers and to have an understanding of
e. National Policy on Older Persons, and the role of International and NGOs in improving the quality of life of the elderly.

Course Outcomes (COs):	
CO 1:	Able to understand perspectives on aging
CO 2:	Able to understand challenges and problems
CO 3:	Able to Demonstrate awareness in National Policy on Older Persons

Course Content

UNIT I

Gerontology – Definition and scope. Understanding the elderly – demographic, developmental, psychological, socio cultural, economic, and health perspectives. The issues pertaining to elderly- health, occupation, income, retirement planning, family support, gender issues, property Rights and any other

UNIT II

Developmental tasks in elderly: Issues in health care, changes in family structure, coping with aging process, challenges due to changing physiological, economic, safety, status in the family and other issues, Healthy aging, quality of life, coping with demise of the life partner, bereavement, resolving one‟s own death, and any other.

UNIT III

Care settings for elderly: General hospitals, geriatric wards/ hospitals, home-based care, homes
for the aged, nursing homes, day-care-centers, hobby centers, and facilities for homeless elderly, elder helpline, and senior citizen forum.

Tools for assessment of the problems of elderly, intervention and follow up services and evaluation.

UNIT IV

Social work intervention measures for senior citizens through methods of social work: Case work, group work, community organisation, welfare administration, social work research, social action

Care giver issues - Needs, burden, coping and training; training for caregivers of institutions for the elderly.

National Policy on Older Persons, Legal and governmental welfare benefits for senior citizens, Role of HelpAge India and other prominent Organisations working for elderly.

International scenario

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3. Dandekar, Kumudini. 1996 — The Elderly In India, New Delhi, Sage Publications.

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JOURNALS.

1. Indian Journal of Gerontology, C-207, Manu Marg, Tilak Nagar, Jaipur 302 004

2. R & D Journal of Helpage India . C-14, Qutab Institutional Area, New Delhi, 110016.

Course Articulation Matrix -Gerontological Social Work (OE)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2

Open Elective

Paper Title: MANAGEMENT OF NON- GOVERNMENTAL ORGANIZATIONS

Credit pattern: L:T:P::3:1:0 **Total Credits: 4**

INTRODUCTION

This course aims at introducing to students the concepts and principles involved in managing non-profits, particularly NGOs.

OBJECTIVES

a. Develop an understanding about the role of NGOs in societal development.
b. Develop knowledge about management of NGOs.
c. Develop the ability to identify collaborative strategies between NGOs and Governmentinstitutions.

Course Outcomes (COs):	
CO 1:	Able to understand role of NGOs in societal development
CO 2:	Understand the procedures for registration of NGOs
CO 3:	To provide managerial training and skills
CO 4:	Enhance the knowledge on the fundamentals of accounting

Course Content

UNIT I

Non Profits as Organisational Entities: Non-profits as modern organizational forms- NGOs asnon profit organizations involved in development work - common denominators and overlaps in business, public and non- profit managements - legal – rational structure of non-profits - trusts, societies and companies special reference to Trust Act, Societies Registration Act and Companies Act

UNIT II

Organisational Design: Vision, Mission and Goals of NGOs - matching intervention paradigms with mission and vision – translating vision and mission into action – Role of Strategic Planning

- Operational goals, Programmes and Projects - Division of responsibility, authority and power relations – Decision-making - Participation, empowerment, teamwork and ownership Voluntarism, Individual Autonomy and Organisational accountability, Transparency and Stakeholder Accountability - Knowledge generation and management - Leadership styles suited for NGOs.

UNIT III

NGO Environment: Interfacing with community and community based organizations - NGO- State relationship - Critical collaboration and autonomy - Managing and maintaining donor constituency – Other NGOs and CBO - Networking, Partnering, Collaborating, etc. – Relating to market and business-NGI- Corporate relationship.

NGO Capacity Building - Building the competencies in NGOs - Identification and procurement of right competencies, Training and development and performance appraisal – Organisational – techno - managerial capacity, Capacity for independence and autonomy and capacity for learningand change.

UNIT IV

Resource Management for Non- Profits:

Resource Mobilisation for NGO - Non-financial resource, natural resources, physical resources in the form of common property - Human capital resources and social capital financial resource – Institutional and non-institutional sources of funding - National and international Fund-raising strategies - Foreign contributions - Statutory obligations.

Accounting for Non- Profit Organisations: Basic accounting principles and concepts- Preparationand analysis of financial statements- Ratio analysis, cash flow and fund flow analysis - Responsibility accounting, performance budgeting and zero base budgeting; Financial Management: Investment, Financing – Management of working capital.

REFERENCES

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2. Drucker, Peter, 1983 Managing the Non-Profit Organisation, New Delhi, Macmillan

3. Gangrada, K.D, 1988 Social Welfare and Social Development, New Delhi, Northern Book Centre

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Course Articulation Matrix -GerontManagement of Non-Governmental Organizations (OE)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Master's level even semester (IV Semester)

Even Semester

Paper Title: EMPLOYEE RELATIONS AND LEGISLATIONS

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

The purpose is to provide an in-depth knowledge about the relationship between employer, employee and the state, to bring out the importance of cordial employee relations for organizational productivity and gain an understanding of the mechanism of inter-personal relations, collective bargaining and productivity improvement functions in the organisation through involvement of all groups.

OBJECTIVES

a. Develop the skills of interpersonal relationship as per organizational requirement.

b. Understand the trends and dynamics between the partners in the organisation.

c. Enhance the knowledge on organisational performance, role and responsibility.

d. Develop the knowledge on various statutory / legal aspects influencing theorganizations.

e. To stimulate thinking on rationale behind the Laws and their enforcement.

Course Outcomes (COs):
CO 1: Know the development and the judicial setup of Labour Laws.
CO 2: Describe the knowledge of Industrial Relations.
CO 3: Learn the laws relating to Industrial Relations, Social Security and Working conditions and also learn the enquiry procedural and industrial discipline.
CO 4: Apply the Industrial Disputes Act for employee

Course Content

UNIT I

Employee relations, History of industria1ization in India - Issues related to employees in organized and unorganized sector.

Concept, Definition, Philosophy and Principles of employee relations. Employee relations withspecial reference to Occupation - Safety - Health and Environment (OSHE) Education.

Analysis of the terms „industry“ and „industrial dispute“, industrial discipline – misconduct,disciplinary proceedings.

Domestic Enquiry: Contents and Process, Principles of Natural Justice, Tribunal;Discharge/Dismissal.

UNIT II

Trade Unions: Trade Unionism in India, emergence, history and growth, Trade Union as an organization – Various Trade Unions in India, Trade Union policies, Role of Trade Unions in India, Employers““ Associations – Objectives, structure and activities. Contemporary issues in employee relations.

UNIT III

Employee Legislations: - The Payment of Bonus Act, 1965, Employees Provident Fund (and Misc. Previsions) Act 1952, Workmen's Compensation Act 1923, Employees State Insurance Act 1948, Payment of Gratuity Act, 1972,Child Labour (Prohibition and Regulation) Act, 1986.

Fundamentals of Labour laws, The Constitution of India: Preamble, Fundamental Rights including writs, Directive Principles of State Policy, The Factories Act 1948, The Contract Labour (Regulation and Abolition) Act 1970,The Minimum Wages Act 1948 and The Payment of Wages Act 1936; The Apprentices Act, 1961,The Maternity Benefit Act 1961.

UNIT IV

The Trade Union Act 1926, The Industrial Employment (Standing Orders) Act 1946, The Industrial Dispute Act 1947, The Employment Exchanges (Compulsory Notification of Vacancies) Act 1958. Introduction to Right to Information Act, Intellectual Property Rights, Patent Law, Copyrights, Trademark Law.

Collective Bargaining: Definitions, characteristics, critical issues in collective bargaining, theories of collective bargaining, Hick“s Analysis of Wages settlement.

under collective bargaining, conflict-choice model of negotiation, Behavioral Theory of Labor Negotiation, Collective Bargaining in India, Collective bargaining in practice, levels of bargaining, coverage and duration of agreements, administration of agreements, negotiating a contract, the negotiation process, effective negotiation, negotiation and collective bargaining, post negotiation – Administration of the agreement.

Employee relations in knowledge based industry - Concepts of self-managed teams (SMT) - Changing employee/ employer and trade union relationship. Current rules of Taxation of Salaries.

Labor Welfare Officer - Duties and functions; Social Work in Industry.

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25. Tyagi, B. P. 1976 Labour Economics and Social Welfare, Meerut, Jai Prakash Nath & Co.

26. Vaid, K. N. 1970 Labour Welfare in India, New Delhi, Sri Ram Centre for Industrial Relations.

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Course Articulation Matrix -Employee Relations and Legislation (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3

CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Even Semester

Paper Title: MENTAL HEALTH AND PSYCHIATRIC SOCIALWORK

Credit pattern: L:T:P::2:1:0 **Total Credits: 3**

INTRODUCTION

This course is to provide awareness about mental health and mental health problemsand also application of social work in mental health settings.

OBJECTIVES

a. Understand the concepts 'mental health' and 'mental illness'.

b. Understand the signs and symptoms, etiology, diagnosis and treatment of mental health problems.

c. Understand different services for the care of mentally ill.

d. Understand historical background of psychiatric social work in India and abroad. Understand the nature of psychiatric social work services and relevance of team work.

e. Understand the nature of collaboration with voluntary organisations for the welfare of mentally ill.

f. Identify the issues related to psychiatric social work department in hospitals and community mental health settings.

Course Outcomes (COs):
CO 1: Able to understand psychological concepts and its relevance to Social Work
CO 2: Able to understand the basic concepts and processes in social psychology and its relevance to Social Work
CO 3: Able to understand determinants and processes of personality development
CO 4: Able to understand social attitudes and psycho-social behaviour

Course Content

UNIT I

Concept of mental health and mental illness - Mental health as a part of general health - Misconceptions about mental illnesses. General approaches to the mentally ill - International Classification of Mental Disorders.

Signs, symptoms, etiology, diagnosis, prognosis and management of the following:

- Neuroses
- Psychoses
- Psycho physiologic disorders
- Personality disorders
- Psychiatric disturbances in children and adolescents
- Organic psychotic conditions
- Mental retardation.

UNIT II

Introduction to Psychiatric Social Work: Meaning and Scope - Historical background of psychiatric social work in India and abroad - Reasons for its development as a specialty. Application of social work methods and other related techniques used in the field - Multi-disciplinary approach and team work in mental health care - Problems of hospitalization - Impact of mental illness on the patient, family and community.

Practice of Social Work: Importance of home visit and visit to the place of work - Role of family in the treatment of mentally ill - Preparing the family and community for the return of the affected individual, follow-up.

UNIT III

Care of mentally ill: Day-care centre, night-care centre, half-way-home, sheltered workshop, Occupational therapy units - Role of social worker and role of voluntary organisations.

Role of voluntary organisations, governmental-agencies and paraprofessionals in the welfare of mentally ill.

Role of social worker in mental health centers, departments of psychiatry in general hospitals, child guidance clinics, community mental health units, correctional institutions, industries, and family welfare centres.

Role of social worker with head injured, paraplegics and epileptics.

Role of social worker in the management of substance abuse – Educational avenues in psychiatric social work - Research avenue in the field of mental health for social workers.

UNIT IV

Organisation of psychiatric social work department - Functions; and collaboration with other departments.

Community mental health and social work, NMHP, Innovations like Satellite clinics, district mental health programme etc.

Rehabilitation and Acts: Occupational therapy - Principles and practice - Psychosocial rehabilitation.

Mental Health Act, 1987.

The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995.

REFERENCES

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26. National Mental Health Programme for India

Course Articulation Matrix -EMental Health and Psychiatric Social Work (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Even Semester

Title: **MAJOR PROJECT**

Credit pattern: L:T:P::0:0:4 **Total Credits: 4**

Students are given broader guidelines for undertaking empirical evidence-based project in the fourth semester, either independently or by forming a small team comprising of three to four students. In case of group project work, the group will be formed by the college or the university department by adopting random method of selection. The project shall comprise of selection of the topic, methodological details, analysis, interpretation and deductions made. The respective college / the department of the university will prepare the set of guidelines for presenting the report.

Evaluation of the Project will be done along with the viva-voce examination by the viva-voce committee constituted for the assessment of social work practicum or similar committee may be constituted, if required.

Course Outcomes (COs):
CO 1: Develop ability to initiate and conduct research
CO 2: Develop research Skills of identifying and selecting a research area and preparing research proposal
CO 3: Develop skills of doing literature review and steps of research methodology
CO 4: Familiarised with the process of data analysis and report writing
CO 5: To understand ethical considerations of research

Course Articulation Matrix -Major Project (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO1**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Even semester

Title : **SOCIAL WORK PRACTICUM – V**

Credit pattern: L:T:P::0:0:3 **Total Credits: 3**

Concurrent practice learning of two-days a week - on going learning of practice is an opportunity to develop intervention skills in reality situations. This entails learning social work practice for two, or two and a half days or its equivalent, each week of the semester. The learners may be placed in agencies or in communities to initiate and participate in direct service delivery.

Practice learning is a vital component of the educational opportunity to be provided to the learner. The teaching-learning process must be designed to help the learner to move on the mastering strategies, skills and techniques to practice social work.

Course Outcomes (COs):
CO 1: Shall initiate and participate in direct Service delivery.
CO 2: Work in areas like work with Human Resource Management, Psychiatric SocialWork and key areas
CO 3: Shall identify research areas in the community

Course Articulation Matrix -Social Work Practicum – V (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	2	2	3	3
CO2	3	3	3	3	3	3	3	3	2	2	3	3
CO3	3	3	3	3	3	3	3	3	2	2	3	3
Weighted Average	3	3	3	3	3	3	3	3	2	2	3	3

Even semester:

Title: **SOCIAL WORK PRACTICUM – VI**: (BLOCK PLACEMENT)

Credit pattern: L:T:P::0:0:3 **Total Credits: 3**

Block Placement - enables learners to integrate learning and generate newer learning by participating in the intervention process over a period of 6 weeks continuously, in a specific agency. Usually, block field work is provided at the end of the two-yearprogramme. There shall be a professionally qualified worker in the setting willing to plan orientation and provide consultation, when needed.

Course Outcomes (COs):
CO 1: Shall work in an organization continuously for 6 weeks and understand the work place better
CO 2: Work in areas relevant to social work interventions
CO 3: Shall identify research areas in the community / Human Resource Management / Psychiatric SocialWork

Course Articulation Matrix -SOCIAL WORK PRACTICUM – VI: (BLOCK PLACEMENT)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	2	2	3	3	3	2	2	3	3	3
CO2	3	3	2	2	3	3	3	2	2	3	3	3
CO3	3	3	2	2	3	3	3	2	2	3	3	3
Weighted Average	3	3	2	2	3	3	3	2	2	3	3	3

Even semester:

Paper Title: **HUMAN RESOURCE DEVELOPMENT ANDEMPLOYEE WELLNESS**

Credit pattern: L:T:P::2:0:0 **Total Credits: 2**

INTRODUCTION

The purpose of this course is to provide practical exposure and knowledge in behavioural science to develop skills not only to understand and analyse problems but also to develop a problem-solving approach to issues.

OBJECTIVES

a. To develop multi facets of the personality and to build self confidence.

b. To develop a spirit of continuous learning and innovation.

c. To strengthen the competency base of individuals, teams and organization andalso familiar with the organizational culture.

d. Understand and further the organization culture.

e. To appreciate the importance of bottom-line focus to the Human Resource function and trend toward HR Accountability.

f. To understand the various approaches to and techniques of measuring HR issues.

g. To create awareness of different types of information systems in an organization so as to enable the use of computer resources efficiently, for effective decision- making.

Course Outcomes (COs):
CO 1: Understand key functions in management as applied in practice.
CO 2: Understand and analyze different tends in HRD that have influenced both Human Resource Development and Human Development.
CO 3: Provide in-depth knowledge into the issues related to trainee, the trainer organization in the context of training and learning process
CO 4: Provide inputs on assessment and evaluation of training programme this is essential to determine training effectiveness

Course Content

UNIT I

Human Resource Development (HRD): Concept, origin and needs for HRD; Overview of HRD as a Total system; Approaches to HRD; human capital approach; social psychology approach and poverty alleviation approach; HRD and its dimensions, Competency Mapping.

UNIT II

HRD Interventions: Performance Measurement Systems – Fundamental issues. Feedback sessions. Organizational goal setting process, Key Result Area (KRA) and Key Performance Indicator (KPI),Coaching, Mentoring, career planning, career development, reward system, quality of work life. HRIS: - Computers and computer based Information Systems. Measuring HR : Changing role of HR, HR as a strategic partner, the need for measuring HR. Approaches to measuring HR: - Competitive Benchmarking, HR Accounting, HR Auditing, HR Effectiveness Index, HR Key Indicators, HR MBO (Management by Objectives).

Instructional Technology: Learning and HRD; Building Learning Organization: measuring learning – the intellectual capital, architecting a learning organization, Organizational Learning, models and curriculum; factors and principles of learning; group and individual learning; HRD trends; behavioural sciences; transactional analysis; Concepts of continuous learning, behavior modeling and self-directed learning; evaluating the HRD effort; data gathering; analysis and feedback; HRD experience in Indian organizations; future of HRD - Organization culture and development.

UNIT III

Talent Development: Concept and importance; Training Need Analysis, process of training, designing and evaluating training and development programs. Use of information technology, Types and Methods of Training: Training within industry (TWI), External; on the job and off the job; Training methods; lecture, incident process, role play, structured and unstructured discussion, in-basket exercise, simulation, vestibule, training, management games, case study, programmed instruction, team development, and sensitivity training; review of training programs.

UNIT IV

Employee Wellness: Concept, philosophy, principles and scope; Importance and relevance of wellness programs, Role of Welfare Officer as per the Factories Act 1948. Relevance - with reference to Accidents, Absenteeism, Alcoholism, Domestic Violence: Preventive and remedial measures. **Social Security**: concept, types, legal framework **Employee participation**: concept, levels of participation, barriers Employee Counseling. Role of Counselor in Organizations. Corporate Social Responsibility (CSR): CSR as a business strategy.

Environmental management systems ISO 14001, ISO 26000: Social responsibility guidance standard, environmental impact assessment.

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5. Fisher, Cynthia; Schoenfeldt, Lyle F. and Shaw, James, B. 1997 Human Resource Management, Third Edition, Boston, Houghton Mifflin Company.

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7. Moorthy, M. V. 1982 Priciples of Labour Welfare, New Delhi, Oxford & IBH.

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Course Articulation Matrix -Human Resource Development and Employee Wellness (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	2	2	3	2	2	2	2	2	2	2
CO2	3	2	2	2	3	2	2	2	2	2	2	2
CO3	3	2	2	2	3	2	2	2	2	2	2	2
CO4	3	2	2	2	3	2	2	2	2	2	2	2
Weighted Average	3	2	2	2	3	2	2	2	2	2	2	2

Even Semester
Even

Title: CASE STUDIES

Credit pattern: L:T:P::0:0:2 **Total Credits: 2**

Every Candidate is expected to take up five cases, study them in depth and present the intervention, if any. Case refers to a unit of study – an individual, an institution, a community or an incident. The candidate has to work under the guidance of faculty member and submit the report on or before the date prescribed.

The university or the college concerned can develop guidelines for undertaking case studies. However, the students are encouraged to start his/her work on case studies from the beginning of the course.

Evaluation of the case study will be done along with the viva-voce examination by the viva-voce committee constituted for the assessment of social work practicum or similar committee may be constituted, if required.

Course Outcomes (COs):
CO 1: Analyze the case using relevant theoretical concepts from unit
CO 2: Offer learners an opportunity to think and act critically reflect on their process of thinking and action and its consequences

Course Articulation Matrix -Case studies (HC)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Open Elective

Paper Tile: **DISASTER MANAGEMENT**

Credit pattern: L:T:P::3:1:0 **Total Credits: 4**

INTRODUCTION

The course aims at introducing students to acquire the required knowledge and skills in disaster management.

OBJECTIVES

a. Understand key concepts, theories and approaches of disaster management withspecific reference to Indian context

b. Develop skills to analyse factors contributing to disaster

c. Develop an understanding of the process of disaster management

d. Develop an understanding of the social worker‟s role in the team for disaster management.

Course Outcomes (COs):	
CO 1:	Able to concepts, theories and approaches of disaster management with specific reference to Indian context
CO 2:	Develop skills to analyse factors contributing to disaster
CO 3:	Develop an understanding of the process of disaster management
CO 4:	Develop an understanding of the social worker's role in the team for disaster management.

Course Content

UNIT I

Disasters: Concept, types and impact - Famine, floods, cyclones, hurricanes, warfare, earthquake, volcanoes; traditional and modern disaster threats and care factor, classification of disasters; Disaster management - Definition and concept; approaches to disaster management, importance and relevance of disaster management in the present environmental scenario, cases studies of disaster management.

UNIT II

Disaster and Social Work Intervention: Scope of disaster related intervention, intervention during disaster impact stage, trauma counseling and crisis intervention, post disaster management, damage assessment and long term rehabilitation and reconstruction, networking and co-ordination between government, NGOs, donor agencies, local bodies, police, military etc.

UNIT III

Disaster Prevention and Preparedness: Vulnerability analysis, hazard mapping, community based disaster preparedness programmes, training for CBDP, preparedness for post-disaster emergency response and long term rehabilitation, organization and planning, logistics; resource utilization, specialized skills and training needs; public awareness and education; first-aid training, civil defense training.

UNIT IV

Institutions and Instruments in Disaster Response: international decade for natural disaster reduction and UN resolutions, administration of relief in India - National, state, district and local levels; Disaster related legislations and policies; national and international donor agencies; NGOs, mental health institutions in disaster management and relief.

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Course Articulation Matrix -Disaster Management (OE)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Open Elective:

Paper Title: **CORRECTIONAL ADMINISTRATION AND SERVICES**

Credit pattern: L:T:P::3:1:0 **Total Credits: 4**

INTRODUCTION

This course introduces the basics of the administration of correctional institutions and the integrated services provided to persons in conflict with law so as to reintegrate them into the mainstream of society as law abiding citizens.

OBJECTIVES:

a. To acquaint with the correctional institution and non-institutional programmes.
b. To understand the different services for juvenile, young and adults offenders and also to understand the legal provisions and procedures for their assistance.
c. To understand the role of custodial staff in the process of correction and rehabilitation.
d. To understand the structure, function ,treatment and facilities provided by the institutions.

Course Outcomes (COs):
Able to recognize correctional institution and non-institutional programmes.
To gain understanding different services for juvenile, young and adults offenders and also to understand the legal provisions and procedures for their assistance
Ability to identify structure, function, treatment and facilities provided by the institutions.

Course content

UNIT I

Institutional systems - Introduction to correctional administration. History of Correctional Administration in India - Concept, objectives and functions of Correctional administration. Institutional protection for children and young offenders - Juvenile Justice (Care and Protection of Children) Act -2002, 2005.

Observation Home, Juvenile Home for Boys and Girls and their functions. District Shelter for boys and girls and their functions.

UNIT II

Institutional Treatment for Released Offenders and Convicts.

Prison - Historical development of prison system- Indian Prison Act, Prison Manual (Karnataka). Prison administration, prison labor, prison discipline and prison education Pre-release programmes, prisoners‟ welfare board.

Open-air prison - Historical development of Open-air prison system, organization and administration.

UNIT III

Non-institutional systems.

Probation and Parole - Historical development of probation system, principles and procedure.

Parole - Historical development of parole - functions and powers of Parole Board, Conditions under the Prison Manual. Indian Penal Code, provisions on Parole.

Pre-release preparation of the parolee.

UNIT IV

After care services:

Legal provision for establishing social institution.

Provision for assistance to released prisoners - Role of voluntary organization, corporate bodies and the state in the rehabilitation.

Prevention of Immoral Traffic Act - Its objectives; State Home for Women (Sthrinikethana) Citizen committees, Police help-line.

Social work intervention and Role of social worker in the prison administration. Social work practice in correctional services.

REFERENCES:

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Course Articulation Matrix -Correctional Administration and Services (OE)												
CO/PO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	2	2	2	2	2	2	2	2	2	2	2	2
CO2	2	2	2	2	2	2	2	2	2	2	2	2
CO3	2	2	2	2	2	2	2	2	2	2	2	2
Weighted Average	2	2	2	2	2	2	2	2	2	2	2	2

Scheme of valuation: MSW course

PATTERN OF QUESTION PAPER

Question Paper Pattern

(The Question paper comprising of 3 parts: A,B and C as follows)

Title of the Paper **Paper Code:**
Duration: 3 hours
Max.Marks:70

PART – A

There are 6 questions and a candidate has to answer any 4 questions. Each question carries 4 marks. This part covers all units of the syllabus.

Answer any Four 4x4=16

1.
2.
3.
4.
5.
6.

PART – B

There are 6 questions and a candidate has to answer any 4 questions. Each question carries 10 marks. This part covers all units of the syllabus.

Answer any Four 4x10-40

7.
8.

9.
10.
11.
12.

PART – C

There is a single question (with no choice) such as case study (may contain sub questions) coveringentire syllabus carrying 14 marks.

Answer the following. 1x14=14

13.

Mahajana Education Society (R)
Education to Excel
SBRR Mahajana First Grade College (Autonomous)
Post Graduate Wing
Pooja Bhagavat Memorial Mahajana Education Centre
KRS road, Metagalli, Mysuru

PROCEEDINGS OF THE BOS MEETING

The meeting of the Board of Studies of Master of Social Work (MSW) programme was held on 10.09.2022 at 10.30 am in the Department of Social Work, Pooja Bhagavat Memorial Mahajana Education Centre, PG Wing of SBRR Mahajana FGC, KRS Road, Metagalli, Mysuru.

Agenda of the meeting:

1. Welcoming the new members and thanking the members who previously served as BOS members
2. Presentation of the existing syllabus and getting approval
3. Approval of the list of panel of examiners for BOE
4. Any other issues with the permission of the chair

Proceedings:

1. The meeting started with welcoming the new members for the Board of studies by the Chairperson-BOS Dr. Bhavana V and thanking the members who previously served as BOS members.
2. The existing syllabi were presented by the Chairperson -BOS Mrs. Bhavana V and the suggestions from the members were taken.
3. The members have made a few suggestion
   a. POSH Act to be added in Employee relations and Legislation (40071- IVth Semester)

b. Students shall make presentations on the Case work and Group Work they have handled in their field work at the end of each semester

c. Structured lab activity to be conducted regularly by inviting field experts. This would give a connect between theory and field work

d. Suggestions were given to revise Case work and Goup work syllabus by the next BOS meeting

e. The members also suggested to make corrections in field work guidelines

4. The list of examiners for BOE was approved.

5. Any other issues: NIL

The Chairman-BOS concluded the meeting by thanking the members

Sl. No	Name of the member	Category	Signature
1.	**Dr. Bhavana V.**, Asst Professor and HOD, Department of Social Work, PBMMEC, Mysuru	**Chairperson**	
2.	**Dr. K.G Parashurama**, Professor and Chairman, Department of Social Work, Tumkur University, Tumkur	**Subject Expert**	ABSENT
3.	**Dr. Kumudini Achchi**, Assistant Professor, Department in Social Work, JSS College of Arts, Commerce and Science, Ooty road, Mysuru	**Subject Expert**	
4.	**Dr. Jyothi H.P**, Associate Professor and Chairperson, DoS in Social Work, Manasa Gangotri Mysuru and Registrar, University of Mysore, Mysuru	**Nominee by the Vice Chancellor**	ABSENT
5.	**Dr. Patricia Namitha Maria Viego,** Social Welfare manager, Department of Medico Social Work St John's Medical College Hospital, Bengaluru	**One Person from Industry/ Corporate sector/ allied area**	ONLINE
6.	**Mr. Jagadeesh M M,** Senior Associate-People and Community, Grant Thornton Global Delivery Private Limited, Bengaluru	**Alumnus**	ONLINE
7.	**Dr. Indushekara G.V** Asst Professor, Department of Social Work, PBMMEC, Mysuru	**Faculty of the Department**	

BHAVANA V.
BoS/BoE in Socialwork
SBRR Mahajana First Grade College (Autonomous)
Post Graduate Wing
Pooja Bhagavat Memorial Mahajana Education Centre
K.R.S. Road, Metagalli, MYSURU-16

Sl. No	Nameof themember	Category	Signature
1.	**Dr. Bhavana V.**, Assistant Professor andHOD, Department of Social Work,PBMMEC, Mysuru	**Chairperson**	
2.	**Dr.K.G.Parashurama**,ProfessorandChairman, Department of Social Work,TumkurUniversity, Tumakuru	**SubjectExpert**	
3.	**Dr. Kumudini Achchi,** AssistantProfessor, Department of Social Work,JSSCollegeofArts,Commercean d Science,OotyRoad,Mysuru	**SubjectExpert**	
4.	**Dr. Jyothi H. P.**, Associate Professorand Chairperson, DoS in Social Work,ManasaGangotriMysuruandRegistrar,University ofMysore, Mysuru	**Nominee by the ViceChancellor**	
5.	**Dr. Patricia Namitha Maria Viego,** SocialWelfareManager,DepartmentofMedico Social Work, St. John's Medical CollegeHospital,Bengaluru	**One Person fromIndustry / Corporate Sector /AlliedArea**	(online)
6.	**Mr. Jagadeesh M. M.**, Senior Associate – PeopleandCommunity,GrantThornton GlobalDeliveryPrivateLimited,Bengaluru	**Alumnus**	
7.	**Dr. Indushekara G. V.**,AssistantProfessor,DepartmentofSocialWork,PBMMEC, Mysuru	**Faculty of theDepartment**	

BHAVANAV.
Chairperson
BoS/BoE in Socialwork
SBRR Mahajana First Grade College (Autonomous)
Post Graduate Wing
K.R.S. Road, Metagalli, MYSURU-16

Sl. No	Name of the member	Category	Signature
1.	**Dr. Bhavana V.**, Asst Professor and HOD, Department of Social Work, PBMMEC, Mysuru	**Chairperson**	
2.	**Dr. K.G Parashurama**, Professor and Chairman, Department of Social Work, Tumkur University, Tumkur	**Subject Expert**	
3.	**Dr. Kumudini Achchi**, Assistant Professor, Department in Social Work, JSS College of Arts, Commerce and Science, Ooty road, Mysuru	**Subject Expert**	
4.	**Dr. Jyothi H.P**, Associate Professor and Chairperson, DoS in Social Work, Manasa Gangotri Mysuru and Registrar, University of Mysore, Mysuru	**Nominee by the Vice Chancellor**	
5.	**Dr. Patricia Namitha Maria Viego**, Social Welfare manager, Department of Medico Social Work St John's Medical College Hospital, Bengaluru	**One Person from Industry/ Corporate sector/ allied area**	
6.	**Mr. Jagadeesh M M**, Senior Associate-People and Community, Grant Thornton Global Delivery Private Limited, Bengaluru	**Alumnus**	Jagadeesh (online)
7.	**Dr. Indushekara G.V** Asst Professor, Department of Social Work, PBMMEC, Mysuru	**Faculty of the Department**	

BHAVANA V
Chairperson
BoS/BoE in Socialwork

DEPARTMENT OF STUDIES IN BIOTECHNOLOGY

Motto

- To provide Biotechnology educational Program with impetus to generate quality workforce.
- To create awareness about potentials of Biotechnology with socio-ethical implications.
- To instil spirit of innovation and creativity in young minds with sound research aptitude.
- To nurture confident individuals who are effective contributors towards growth of the nation

Vision

Our vision is to produce competent biotechnologists who can employ premium processes and applications which will profoundly influence existing paradigm of agriculture, industry, healthcare and restoration of environment providing sustainable competitive edge to present society**.**

Mission of the department

- To develop academic excellence in the field of Life science to cater the need of modern Industry.
- Providing hands on experience in various laboratory techniques and sophisticated analytical instruments and offering placement training.
- Training & re-training the young students in the areas of applied Life science to become a world class Bio-technologist /Microbiologist/Biochemist
- Initiate multidisciplinary programs through academia industry interface with special emphasis on implementation of bioprocess design and scale up.
- Emphasis on recent trends in bioengineering through organization of conferences, symposia, workshops.
- Faculty development programmers to nurture world class bioengineers with a potential to innovate, invent and disseminate knowledge for the benefit of society and environment.

Programme Outcome

- **PO1:** The programme focuses on basic understanding in the diverse fields of biotechnology.
- **PO2:** The programme emphasis on scientific research and its industrial applications.
- **PO3:** The programme gives emphasis on skill development and research training in the field of biotechnology.

- **PO4:** It enables the students to plan, design, execute, analyze, and solve industrial and research associated problems.
- **PO5:** The objective of this programme is to make students competitive.
- **PO6:** This programme is designed in such as way that they attain successful career in industries, research and academic institutions.
- **PO7:** The programmes comprehend and integrate theoretical and practical skills.
- **PO8:** The programme imparts knowledge in basic and applied disciplines of biotechnology.
- **PO9:** The students are motivated to develop a research plan to solve biotechnological problems.
- **PO10:** The Programme enhances the ability to design new biotechnological products
- **PO11:** The students can apply knowledge of biotechnology in an integrated manner.
- **PO12:** The Programme is designed in such as way that the student is trained enough to take employment in diverse areas of biotechnology as well as for further higher studies.

List of BoS Members

Sl. No	Name	Designation	Address for Communication	E.mail and Mobile Number
1.	Dr. Krishna Kumar H.N	**Chairman**	Assistant Professor & Coordinator Department of Biotechnology, PBMMEC, Metagalli, Mysuru- 570016	hnkrishnakumar@yahoo.co.in +91-9844522339
2.	Dr. Ramachnadra Kini	**Member** (Nominee, University of Mysore)	Professor Department of Studies in Biotechnology, University of Mysore, Mysuru	krk@appbot.uni-mysore.ac.in +91- 9448128916
3.	Dr. Raju	**Member** (Other University)	Associate Professor and Head Department of Biotechnology, KSOU, Mysuru	Raju_119@yahoo.com +91-94482672255
4.	Dr. Girish K	**Member** (Other University)	Assistant Professor Department of Biotechnology Government College for Women Kolar.	girishk77@yahoo.com 7892182353
5.	Dr Gururaj H.B	**Member** (Industry)	Co - founder Director , chief operations officer and chief scientific officer E2E BIOTECH PVT LTD AIC Jyothy Institute of Technology,Thathaguni,Bengaluru -560082	123guru@gmail.com +91-9886328682
6.	Prof. Ramesh S. R.	**Member**	Chief Scientist Department of Biotechnology, PBMMEC, Metagalli, Mysuru- 570016	rameshuom@gmail.com +91-9845363529
7.	Dr. Jyoti bala Chauhan	**Member**	Professor Department of Biotechnology, PBMMEC, Metagalli, Mysuru- 570016	drjyotibiotech@gmail.com +91-9448382736
8.	Ms. Smitha Grace S. R.	**Member**	Assistant Professor Department of Biotechnology, PBMMEC, Metagalli, Mysuru- 570016	Smithagrace13@gmail.com +91- 9945165301
9.	Dr.Nandini .B	**Member**	Assistant Professor Department of Biotechnology,	Bnandini2010@gmail.com +91-6363721581

			PBMMEC, Metagalli, Mysuru- 570016	
10.	Mr. Vishnu M. V.	**Member** (Alumni)	Medical Scribe Scribe EMR systems Pvt ltd., coimbatore	vishnumv279349@gmail.com +91-8129660206

PROGRAM STRUCTURE

I Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern			Total Credits
				L	T	P	
1	**22D101**	Molecular Cell Biology	FCHC	3	1	0	4
2	**22D102**	Fundamentals of Biochemistry	FCHC	3	1	0	4
3	**22D103**	Techniques in Biology	FCHC	3	1	0	4
4	**22D104**	**Practical IA** (Techniques in biology& Fundamentals of Biochemistry)	FCHC	0	0	2	2
5	**22D105**	**Practical IB** (Molecular Cell Biology/Genetics /Microbiology)	FCHC	0	0	2	2
Soft Core (Any ONE)							
1	**22D106**	Genetics	FCSC	3	0	0	3
2	**22D107**	Microbiology	FCSC	3	0	0	3
TOTAL CREDITS **5 Hard Core (3 theory + 2 practicals) :16 credits ,1 Softcore: 03 credits**							**19 CREDITS**

- **NOTE ADD ON COURSE: Interested students can opt for more than "ONESOFTCORE(THEORY)".**

II Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	**22D201**	Molecular Biology	FCHC	3	1	0	4
2	**22D202**	Genetic Engineering	FCHC	3	1	0	4
3	**22D203**	**Practical IIA**: (Molecular Biology and Genetic Engineering)	FCHC	0	0	2	2
4	**22D204**	**Practical IIB:** (Molecular Diagnostics /Food and Environmental Biotechnology/ Bioprocess technology)	FCHC	0	0	2	2
	Soft Core (Any TWO)						
1	**22D205**	Molecular Diagnostics	FCSC	3	0	0	3
2	**22D206**	Food and Environmental Biotechnology	SC	3	0	0	3
3	**22D207**	Bioprocess technology	SC	3	0	0	3
22D208 Biotechnology and its applications (For other discipline students)			OE	4	0	0	4
TOTAL CREDITS **4 Hard Core (2 theory + 2 practical's) :12credits** **2 Softcore: 06 credits 1 Open elective :04 credits**							**22 CREDITS**

III Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	**22D301**	Plant Biotechnology	HC	3	1	0	4
2	**22D302**	Animal Biotechnology	HC	3	1	0	4
3	**22D303**	Immunology	FCHC	3	1	0	4
4	**22D304**	**Practical-III:** Plant Biotechnology. Animal Biotechnology & Immunology	HC	0	0	4	4
Soft Core (Any TWO)							
1	**22D305**	Natural products & Drug discovery	SC	3	1	0	4
2	**22D306**	Biostatistics & Bioinformatics	SC	3	1	0	4
3	**22D307**	Genomics& Proteomics	SC	3	1	0	4
TOTAL CREDITS **4 Hard Core (3 theory + 1 practical's) :16 credits ,2Softcore: 08 credits**							**24 CREDITS**

IV Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	**22D401**	Project Work	HC	0	0	07	7
Soft Core (Any One)							
1	**22D402**	Molecular plant pathology	SC	3	1	0	4
2	**22D403**	Stem cell & regenerative medicine	SC	3	1	0	4
TOTAL CREDITS **1 Hard Core :10 credits ,1 Softcore: 03 credits**							**11** **CREDITS**

Mahajana Education Society (R)

Education to Excel

Pooja Bhagavat Memorial Mahajana Education CenterPost Graduate Wing of SBRR Mahajana First Grade College (Autonomous)

K.R.S. Road, Metagalli, Mysuru-570016

M.Sc. BIOTECHNOLOGY PROGRAM

Choice Based Credit System (CBCS)

Mahajana Education Society (R)

Education to Excel

Pooja Bhagavat Memorial Mahajana Education Center

Post Graduate Wing of SBRR Mahajana First Grade College (Autonomous)

MINIMUM CREDITS TO BE REGISTERED BY A STUDENT IN A NORMAL PHASE TO SUCCESSFULLY COMPLETE M.Sc., DEGREE IN BIOTECHNOLOGY FOR FOUR SEMESTER

School of Life Science – Biotechnology Program

Semesters	**Hard Core**		**Soft Core**		**Open Elective**		**Total**	
	Numbers	**Credits**	**Numbers**	**Credits**	**Numbers**	**Credits**	**Numbers**	**Credits**
I semester	05	16	01	03	-	-	05	19
II semester	03	12	02	06	01	04	06	22
III semester	04	16	02	08	-	-	06	24
IV semester	01	07	01	04	-	-	02	11
Total	**15**	**51**	**06**	**21**	**01**	**04**	**19**	**76**

I Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern			Total Credits
				L	T	P	
1	**22D101**	Molecular Cell Biology	FCHC	3	1	0	4
2	**22D102**	Fundamentals of Biochemistry	FCHC	3	1	0	4
3	**22D103**	Techniques in Biology	FCHC	3	1	0	4
4	**22D104**	**Practical IA** (Techniques in biology& Fundamentals of Biochemistry)	FCHC	0	0	2	2
5	**22D105**	**Practical IB** (Molecular Cell Biology/Genetics /Microbiology)	FCHC	0	0	2	2
Soft Core (Any ONE)							
1	**22D106**	Genetics	FCSC	3	0	0	3
2	**22D107**	Microbiology	FCSC	3	0	0	3
TOTAL CREDITS **5 Hard Core (3 theory + 2 practicals) :16 credits ,1 Softcore: 03 credits**							**19 CREDITS**

- **NOTE ADD ON COURSE: Interested students can opt for more than "ONESOFTCORE(THEORY)".**

MOLECULAR CELL BIOLOGY(FCHC)

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know –

1. The structures and purposes of basic components of prokaryotic and eukaryotic cells,especially macromolecules, membranes, and organelles.
2. Cell cycle and cellular processes.
3. Concept of cancer biology and signal transduction.
4. Phytochemicals in cancer treatment and stems cells.

Module- I

Organization of the cell **12 hours**

Universal features of cells, Ultra-structure of prokaryotic and eukaryotic cells (Plants and animals), Structure of plant cell wall, Structure of cell membrane and models, functions of cell membrane, Intracellular organelles: Structure and functions of Ribosomes, Golgi apparatus; Mitochondria, Chloroplast, Lysosomes, Centrosome, Endoplasmicreticulum, Nucleus-Internal organization, Chromatin- structure and function, cellular cytoskeleton.

Module - II

Cellular processes **12 hours**

Cell cycle and its regulation, Cell cycle check points, Molecular dynamics of cell division, interphase, Mitosis and meiosis, Cyclins and CDKs, Cell differentiation: Stem cells, Differentiation of stem cells into different cell types and organization into specialized tissues, apoptosis, necrosis & autophagyMolecular mechanisms of membrane transport active, passive and facilitated, Receptor mediated endocytosis.

Module - III

Cancer Biology **12 hours**

Introduction,Historical account, classification, Characteristics of cancer cells, hallmark features of cancer cells,Carcinogenesis, Exogenous and endogenous carcinogens, cancer initiation, promotion and progression, Cancer cell cycle, Viruses and cancer, Oncogenes, Tumor suppressor genes with examples, cancer therapy present and future, Role of p53 in cancer. Role of phytochemicals in cancer treatment, cancer stem cells.

Module - IV

Basics of Signal Transduction **12 hours**

Extra-cellular matrix components, Cell junctions, Cell adhesion molecules, Hormones and their receptors, Cell surface receptors as reception of extra-cellular signals, Types of cell signalling,

Growth factors- EGFR, VEGF, PDGF and theirSignalling, signalling through G-protein coupled receptors; Second messengers in signal transduction pathways: cAMP and calcium ions (Ca2+), signalling through Receptor tyrosine kinases ,MAP kinase pathway,P13K -Akt pathway.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : MOLECULAR CELL BIOLOGY (FCHC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	2	2	2	3	2	3	3	3	3	3	3	3
CO2	2	2	2	3	2	3	2	2	2	2	3	3
CO3	2	2	2	3	2	3	2	2	2	2	3	3
CO4	2	2	2	3	2	3	2	2	2	2	3	3
Weighted Average	**2**	**2**	**2**	**3**	**2**	**3**	**2.25**	**2.25**	**2.25**	**2.25**	**3**	**3**

PRACTICAL IB:

Course Outcome: Students should study this paper to know –

1. Structure of prokaryotic and eukaryotic cells using staining techniques
2. Structure of cellular organelle.
3. Enumeration & Measurement of cell.
4. Analysis of growth curve

Total Credit: 02 **Total hours**: 32

1) Microscopic examination of prokaryotic and eukaryotic cells using staining techniques.
2) Isolation of mitochondria by differential centrifugation.
3) Measurement of cell dimension by micrometery.
4) Cell Counting and viability by tryphan blue exclusion method.
5) Bacterial growth curve.
6) Study of mitosis in onion root tips.
7) Study of meiosis in onion flower buds.
8) Polytene chromosomes.
9) Study of chromosomes by air-dry technique.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : PRACTICAL - IB												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P. 2008. Molecular Biology of the Cell. (5th Ed.) New York: Garland Science.
2. Cooper, G. M., andHausman, R. E. 2013. The Cell: a Molecular Approach (6th Ed.). Washington: ASM, Sunderland.
3. Hardin, J., Bertoni, G., Kleinsmith, L. J., and Becker, W. M. 2012. Becker's World of the Cell. Boston (8th Ed.). Benjamin Cummings.
4. Kleinsmith, L.J.,and Kish, V. M. 1995. Principles of Cell and Molecular Biology (2ndEd.) Harper Collins College Publishers, New York, USA.
5. LodishH., and Berk A. 2016. Molecular Cell Biology (8th Ed.). New York. W H Freeman.
6. E-books
    - https://cdn.preterhuman.net/texts/science_and_technology/nature_and_biology/Cell_and_Molecular_Biology/Molecular%20Cell%20Biology%205th%20ed%20-%20Lodish%20et%20al.pdf
    - http://standring.weebly.com/uploads/2/3/3/5/23356120/8_-_unit_30c.pdf
    - file:///C:/Users/Dr.%20Divya/Downloads/Cancer%20Biology%204th%20ed%20-%20R.%20Ruddon%20(%20PDFDrive%20).pdf

Web links:

- https://www.slideshare.net/musselburghgrammar/cell-molecular-biology
- https://www.slideshare.net/TapeshwarYadav1/basics-of-molecular-biology-56429099
- https://slideplayer.com/slide/12568274.

FUNDAMENTALSOF BIOCHEMISTRY(FCHC)

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know –

1. The basics of biomolecules.
2. Functions of biomolecules in the biological system.
3. Interactions among the biomolecules in the nature.
4. The fundamental principles in sequencing of DNA.

Module 1: Basics of Chemical Bonding and Carbohydrates 18 hours

Bonding: Covalent bond; coordinate bond; coordinate bond formation in transition metals. Bonding of iron in hemoglobin and cytochromes, cobalt in Vit B12, magnesium in chlorophyll. Special properties of water; Structure and bonding, non-covalent interactions, reactions of carbohydrates.

Carbohydrates: Structure and classification of carbohydrates, monosaccharides (pentoses, hexoses), disaccharides (lactose, sucrose, maltose) and polysaccharides (starch, cellulose, glycogen and bacterial cell wall polysaccharides) explanations.

Module 2: Basics of Amino Acids and Proteins 10 hours

Amino acids: Nomenclature, classification and buffering properties, zwitterionic structure, reactions of Aminoacids.

Proteins: Primary, secondary, tertiary and quaternary structures, protein sequencing.

Factors responsible for protein folding: Anfinsen's experiment. Non-covalent interactions and S-S bridges in stabilizing the proteins, Denaturation and renaturation of proteins, molten globule, chaperones.

Module 3: Basics of Lipids& Enzymology 08 hours

Lipids: Classification & reaction of lipids; oils, fats, and waxes. Occurrence and properties of fatty acids, esters of fatty acids, cholesterol, phospholipids, glycolipids, sphingolipids, cerebrosides and gangliosides. Role in cell membrane.

Enzymology: Classification, enzyme activity, Michaelis-Menten kinetics, LB plot, inhibition - competitive, uncompetitive, non-competitive, determination of Ki, active site, allosterism - ATCase, isoenzymes- LDH, catalytic strategies, co-enzymes and cofactors, multienzyme complexes-PDC.

Module 4: Basics of Nucleic Acids 12 hours

Nucleic Acids: DNA as genetic material ,Griffith ,Avery & Macleod experiments , isolation of DNA & RNA from biological sources, secondary structure of DNA, Watson and Crick model,

Chargaff's rule; B and Z DNA. Features of mitochondrial, chloroplast DNA and plasmids. Secondary structure of tRNA and clover leaf model. Physiochemical properties of nucleic acids, melting of DNA, Tm; factors affecting Tm, Cot curve, classification of DNA basedon Cot curve.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : FUNDAMENTALSOF BIOCHEMISTRY(FCHC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	2	2	2	2	2	2	2	2	2	3	3
CO2	3	2	2	2	2	2	2	3	2	2	3	3
CO3	3	2	2	2	2	2	2	2	3	3	3	3
CO4	3	2	2	2	2	2	2	2	3	3	3	3
Weighted Average	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2.25**	**2.5**	**2.5**	**3**	**3**

REFERENCES:

1. Bahl, A. 2010. Advanced organic chemistry. S Chand & Company Limited.
2. Berg, J. M., Tymoczko, J. L., andStryer, L. 2006. Biochemistry: International edition. W H Freeman & Company Limited.
3. Berg, J. M.,Tymoczko, J. L, andStryer, L. 2002. Biochemistry (5th Ed.). W H Freeman.
4. Mathews, P. 2002. Advanced chemistry. Cambridge low price editions. Cambridge University Press, UK.
5. Morrison, R., and Boyd, R. 1992. Organic Chemistry (6th Ed.). Englewood Cliffs, NJ: Prentice Hall.
6. Nelson, D. L., Lehninger, A. L., and Cox, M. M. 2008. Lehninger principles of biochemistry. New York : W.H. Freeman.
7. Voet, D., andVoet, J. G.2010. Biochemistry,(4thEd.) New York: J. Wiley & Sons.
8. Videos for the concept:
   - www.khanacademy.org – Chemical Bonding, Chemistry of Biomolecules
   - www.yourgenome.org – Structure of DNA

Weblink:

- https://www.slideshare.net/AshfaqAhmad52/introduction-to-biochemistry-67924875
- https://slideplayer.com/slide/252874/

PRACTICAL IA:

Course Outcome: Students should study this paper to know –

1. Understanding the normality and molarity concepts.
2. Methodology applied to prepare buffers and solutions.
3. Estimating the carbohydrates, proteins and aminoacids.
4. Analysis of saponification and iodine value in lipids.

Total Credit: 02 **Total hours: 32**

1. Preparation buffers and solutions&Measurement ofpH.
2. Determination of pKa of aminoacids.
3. Estimation of reducing sugar by DNSmethod.
4. Estimation of proteins by Lowry'method.
5. Estimation of proteins by Bradford'method.
6. Estimation of proteins by Bicinchonicacid method.
7. Estimation of amino acids by Ninhydrin method.
8. Estimation of cholesterol by Zak's method.
9. Estimation of saponification and iodine value of lipids.
10. Estimation of total carbohydrates by phenosulfuric acid method.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name: PRACTICAL – IA												
PO / CO	**PO -1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

TECHNIQUES IN BIOLOGY (FCHC)

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know –

1. This paper is designed to give a brief introduction to most of the techniques used in thefield of biological analyses.
2. Nevertheless, the topics in this paper are to be taught compendiously.
3. The fundamental principles in cell homogenization.
4. Importance of bioanalytical techniques.

Module I: Biological samples: Types and preparation 12 hours Study Models: *In vivo* and *in vitro* models; Microbial, Animal, Plants; choice of models;types ofstudies, auxotrophs. Routes of exposure of test chemicals in animals. Culture: microbes, animaland plant cells in laboratory.

Cell fractionation techniques: Tissue homogenization, Cell lysis techniques, extraction of cellcellularcontents. Protein purification techniques: salting in, salting out, dialysis and ultrafiltration.

Centrifugation: Svedberg's constant, sedimentation velocity and sedimentation equilibrium.

Ultra centrifugation: Differential and density gradient centrifugation, centrifugal elutriation, isolation of cell organelles (e.g. Mitochondria) from biological tissue samples.

Module II: Spectroscopic analysis 12 hours

Principles and applications of colorimeter, spectrophotometer, fluorimeter, multiwell plate reader. Beer-Lambert's Law and its limitations. Extinction coefficient, chromogenic and fluorescent probes, their applications.Principle of flame photometry, and X-ray crystallography, IR, ESR, NMR& Raman’s spectroscopy.

Module III: Chromatographic and electrophoretic techniques: 12 hours Chromatography: Principles, working and applications of paper chromatography (radial, ascending, descending and 2-D), Thin layer chromatography,Brief introduction, application of Adsorption, Ion exchange, Gel filtration, Affinity, Gas chromatography. Chromatofocusing, HPLC, UPLC and FPLC.

Protein electrophoresis: Polyacrylamide gel electrophoresis, SDS-PAGE, IEF & 2DEF.Visualizing proteins using CBB, silver stain;glycoproteinsand lipoproteins staining,Brief introduction to Zymogram and reverse zymogram;

Nucleic acid electrophoresis: Agarose gel electrophoresis, Visualizing nucleic acids in using Ethidium bromide and UV. Fluorescence probes: SYBR green and Eeva green, Taq man, PFGE and capillary electrophoresis.

Module IV: Radiochemistry and Mass spectroscopy **12 hours**

Isotopes: Heavy isotopes and radio isotopes, half-life, decay constant, detection and quantitation; Principle and working of GM counter and scintillation counter (solid/liquid).

Mass spectroscopy Principle and construction of mass spectrometer.m/e, tof, MALDI and ESI.LC-MS, LC-MS-MS.

Applications of radioactivity: Radio isotopes in biology 3H, 14C, 32P, 131I, 35S; Labeling of proteins and nucleic acids, autoradiography, pulse chase method, carbon dating..

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : TECHNIQUES IN BIOLOGY (FCHC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	2	2	2	2	3	3
CO2	3	3	2	3	2	3	2	2	2	2	3	3
CO3	3	3	2	3	2	3	2	2	2	2	3	3
CO4	3	3	2	3	2	3	2	2	2	2	3	3
Weighted Average	**3**	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**3**

REFERENCES:

1. Bryce, C., and Balasubramanian, D.2004. Concepts in Biotechnology: Universities Press.
2. Crueger, W., andCrueger, A. 2017. Biotechnology: a textbook of industrial microbiology.Medtech.
3. Marshall, A. G.1978. Biophysical chemistry: principles, techniques, and applications: Wiley New York.
4. Micklos, D. A., andFreyer, G. A. 1990. DNA science; a first course in recombinant DNAtechnology: Cold Spring Harbor Laboratory Press.

5. Purohit, S., andMathur, S.1999. Drugs in Biotechnology fundamentals and applications. PurohitSS.,Ed.,Maximum Publishers, India.
6. Slater,A.., Scott, N., and Fowler, M. 2003. Plant Biotechnology: The Genetic Manipulation of Plants. Oxford University Press, Oxford, New York,
7. Walker, M., and Rapley, R. 2009. Route maps in gene technology. John Wiley & Sons.
8. Wilson, K., and Walker, J. 2010. Principles and techniques of biochemistry and molecular biology. Cambridge University Press.

Weblink:

- https://www.slideshare.net/mprasadnaidu/molecular-biology-tecniques.
- https://www.slideshare.net/MeenalAggarwal2/chromatographic-techniques.
- https://www.slideshare.net/JayashreeShanmugam14/cell-fractionation-115544348.

PRACTICAL IA:

Course Outcome: Students should study this paper to know –

1. Hands on training in chromatographic techniques
2. Analysis of biomolecules using spectroscopic techniques
3. Estimating the enzymes and their activity.
4. The concepts of homogenization and sedimentation and working of centrifugation techniques.

Total Credit: 02 **Total hours: 32**

1. Ascending, descending and circular paper chromatography for separation of amino acids.
2. TLC of amino acids (1D and2D).
3. Column chromatography- gel filtration.
4. Gel electrophoresis- native and SDS-PAGE and estimation of molecular weight of proteins.
5. Demonstration of HPLC, LC-MS, XRD, NMR, Confocal and Electronmicroscopy.
6. Wavelength scans of proteins and nucleic acids.
7. Preparation of homogenates and mitochondria from plant and animal tissues.
8. Estimation of molar extinction coefficient of methylene blue (Beer Lambert's Law).
9. Isolation of esterase from green peas using ammonium sulphate precipitation.
10. Estimation of esterase activity using colorimetric method.
11. Separation of WBC, RBC and platelets using gradient centrifugation.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : PRACTICAL - IA												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

GENETICS(FCSC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know –

1. The development of Genetics and the principles of Mendel.
2. The concepts of Viral, Bacterial, Fungal & Algal genetics.
3. Mutation and Mutagenesis.
4. Detailed account on transposable elements and transpositions.

Module- I **14 hours**

History and developments of genetics. Principle of Genetic Transmission: Mendel's' Experiments, Symbols and terminology, Principle of dominance and segregation, Principle of independent assortment, Mendelian inheritance and probability (Multiplication and Addition rites). Extensions of Mendelian Principles:co-dominance, incomplete dominance, gene interactions, multiple alleles, lethal alleles, pleiotropy, penetrance and expressivity, polygenic inheritance, linkage and crossing over, sex linked inheritance, sex limited and influenced traits, genome imprinting, extra nuclear inheritance.

Module- II **12 Hours**

Viral Genetics: Lytic and Lysogenic cycles, Phage Phenotypes, Phenotypic Mixing, Recombination and Mapping. **Bacterial Genetics:** Bacterial Transformation- Types of transformation mechanisms found in prokaryotes, Bacterial Conjugation- properties of the F plasmid, F^+ x F^- mating, F' x F^- conjugation, Hfr conjugation. **Fungal Genetics:***Neurospora*- Tetrad analysis and linkage detection - 2 point and 3 point crosses, chromatid and chiasma interference, Mitotic recombination in *Neurospora*. **Algal Genetics:** *Chlamydomonas*- unordered tetrad analysis - Recombination and Mapping.Floral meristems and floral development in *Arabidopsis,* ABC model.

Module- III **12 Hours**

Mutation and mutagenesis: Nature, type and effects of mutations. Mutagenesis – physical and chemical mutagens, base and nucleoside analog, alkylating agents, interrelating agents, ionizing radiation. Induction and detection of mutation in microorganisms and *Drosophila*. Site directed mutagenesis and its applications.

Recombination: Homologous and non-homologous recombination, Holliday model, site-specific recombination.

DNA Repair: Mechanism of genetic repair- direct repair, photoreactivation, excision repair, mismatch repair, post-replicative recombination repair, Repair of double-strand breaks,SOS repair.

Module- IV **10 Hours**

Sex Determination-Sex chromosomes, Chromosomal and genetic basis of sex determination. Sex determination in *C.elegans,Drosophila*, human and Plant(*Melandrium*). Dosage compensation-Genic balance, Gene dose, Molecular basis of dosage compensation in Drosophila and man.

Transposable elements- discovery in maize and bacteria, transposal elements in bacteria and bacteriophage, types and functions; Transposable elements in eukaryotes- Plants, *Drosophila* and Humans, mechanisms of transpositions.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : GENETICS (FCSC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

PRACTICALS IB :

Course Outcome: Students should study this paper to know –

1. Study of special chromosomes structures
2. Performing the techniques used inducing mutation
3. Determining the mutant tests
4. Differentiating the mutants of Drosophila

Total Credit: 02 **Total hours: 32**

1. Replica plating technique for transfer of bacterial colonies.
2. Ultra-violet killing curve and determination of mutant types in *Saccharomyces cerevisiae.*
3. Induction of mutation
4. Isolation of streptomycin resistant strain of *E .coli* by gradient plate method.
5. Ames test
6. Study of special chromosomes- B chromosomes, and sex chromosomes.
7. Determination of chiasma frequency in onion.
8. To solve genetic problems on linkage, ordered and unordered tetrads
9. Study of Mutations in *Drosophila*
10. Study of Autosomal and sex linked gene inheritance in *Drosophila*

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : PRACTICAL - IB												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Average												

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Web links

- https://www.youtube.com/watch?v=L42IwtPC7eM
- https://www.youtube.com/watch?v=3VrGkCm4sT4
- https://www.youtube.com/watch?v=l-9iUpFGbxE
- https://www.youtube.com/watch?v=pdEgBMXJdeg
- https://www.youtube.com/watch?v=VIS_4G3Ysyk
- https://www.youtube.com/watch?v=TfBnfxm0Xyc
- https://www.youtube.com/watch?v=he260FUU5_M
- https://www.youtube.com/watch?v=BlnUNmfGn7I
- https://www.youtube.com/watch?v=o4yJF90OR9M
- https://www.youtube.com/watch?v=_cJfsWYR42M

MICROBIOLOGY (FCSC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know –

1. The characteristics of microbes, their taxonomy and diversity.
2. The growth of microbes and their control.
3. The relationship between microbes and environment.
4. The beneficial and harmful effects of microorganisms.

Module I **12 hours**

The beginning of microbiology and Microbial Characteristics

Introduction to Microbiology and Microbes; History and scope of Microbiology – Hook,Antony van Leeuwenhoek and Cohn; Contribution of Pasteur and Koch. Prokaryotic cell structure, pure culture techniques; bacterial genetics: transformation, transduction and conjugation; antimicrobial resistance.Culture collection and Maintenance of cultures.

Module II **12 hours**

Microbial Taxonomy and Microbial diversity

Criteria for classification of bacteria; Bergy's manual, Cyanobacteria, acetic acid bacteria,lacticnacid bacteria and Mycobacteria.Archaea: Halophiles, Methanogens and thermophiles. Viruses: general properties of virus, viral structure, sub-viral particles – viroids and prions.Eukarya: algae and fungi, general characteristics and outline classification.

Module III **12 hours**

Microbial Growth and Control

Microbial growth: Growth curve, batch and continuous culture systemculture, factors affecting growth like temperature, acidity, alkalinity. Sterilization, disinfection and antisepsis: physical and chemical methods for controlof microorganisms, antibiotics,

Microbes and environment: Nutrient cycles (carbon and nitrogen cycle); microbial communication system; quorumsensing, prebiotics and probiotics.

Module IV **12 hours**

Beneficial and Harmful effects of Microorganism

Beneficial aspects of microbes and their metabolites in food industry, Bioremediation. Important microbial diseases of Plants caused by fungi, bacteria and viruses. Important infectious diseases of humans, caused by bacteria, protozoa and viruses - tuberculosis, malaria and AIDS. Emerging and

resurgent infectious diseases, SARS-COV 2 structure and virulence of virus.

Host-Microbe interaction (pathogen interaction, microbiome analysis method.)

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name : MICROBIOLOGY												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**2**	**2**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

REFERENCES:

1. Matthai, W., Berg, C. Y., and Black, J. G. 2005. Microbiology, Principles and Explorations. Boston, MA: John Wiley & Sons.
2. Parker, N, Schneegurt, M., ThiTu, A. H, Forster B. M., Lister P. 2017. Microbiology. Openstrax.
3. Pelczar, M. J., et al., 2001. Microbiology (5th Ed.). New York: McGraw-Hill.
4. Rekadwad, B, 2020. Microbial Systematics, Taxonomy, Microbial Ecology, Diversity. CRC Press.
5. Willey, J. M., Sherwood, L., Woolverton, C. J., Prescott, L. M., and Willey, J. M. 2011. Prescott's Microbiology. WilleyNew York, McGraw-Hill.

Weblink:

- https://www.slideshare.net/sarah_jumali/1-introduction-to-microbiology
- https://www.austincc.edu/cbeaman/micro%20ppt/chp%201%20combined.ppt

PRACTICALS IB:

Course Outcome: Students should study this paper to know –

1. Performing different aseptic techniques to grow microorganisms.
2. Identification of cultured microorganisms using staining techniques.
3. Determine the microbes using microscopic and biochemical analysis.
4. Understanding practically the role of antibiotics.

Total Credit: 02 **Total hours: 32**

1. Preparation of liquid and solid media for growth of microorganisms
2. Isolation and maintenance of organisms by plating, streaking and serial dilution methods, slants and stab cultures, storage of microorganisms
3. Isolation of pure cultures from soil and water
4. Microbial growth curve
5. Measurement of bacterial population by turbidometry and serial dilution methods.
6. Effect of temperature, pH, carbon and nitrogen sources on growth.
7. Microscopic examination of bacteria, yeast and molds& study of organisms by gram stain, acid fast stain and staining for spores.
8. Assay of antibiotics and demonstration of antibiotic resistance.
9. Biochemical characterization of selected microbes

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER I												
Course Name: PRACTICAL - IB												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

II Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern			Total Credits
				L	T	P	
1	22D201	Molecular Biology	FCHC	4	0	0	4
2	22D202	Genetic Engineering	FCHC	4	0	0	4
3	22D203	**Practical IIA**: (Molecular Biology and Genetic Engineering)	FCHC	0	0	2	2
4	22D204	**Practical IIB:** (Molecular Diagnostics /Food and Environmental Biotechnology/ Bioprocess technology)	FCHC	0	0	2	2
	Soft Core (Any TWO)						
1	22D205	Molecular Diagnostics	FCSC	3	0	0	3
2	22D206	Food and Environmental Biotechnology	SC	3	0	0	3
3	22D207	Bioprocess technology	SC	3	0	0	3
22D207 : Biotechnology and its applications (For other discipline students)			OE	4	0	0	4
TOTAL CREDITS **4 Hard Core (2 theory + 2 practicals) :12credits** **2 Softcore: 06 credits 1 Open elective :04 credits**							**22 CREDITS**

MOLECULAR BIOLOGY(FCHC)

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course outcome: After studying this paper the students will know –

1. To understand biological activities and metabolism at DNA and protein level
2. The course gives an in-depth insight into the molecular aspects of life - the central dogma.
3. It explains molecular aspects of genes and its regulation- genome- gene expressions heredity- recombination- protein synthesis- molecular basis of diseases- mutations genetic analysis etc.
4. Understand the molecular tools and its application in basic research and applied research in various fields of life sciences.

Module 1: 08 Hours

1. **Genome organization:** Prokaryotic and eukaryotic genome organization, central dogma, structural organization of chromosome, structure and functions of DNA & RNA, Biochemical evidences for DNA as genetic material.
2. **DNA**: Chemistry of DNA, Forces stabilizing DNA structure, Physical Properties of Ds DNA (UV absorption spectra Denaturation and renaturation), chemical that react with DNA, Interaction with small ions, DNA binding motifs: Zinc finger, leucine zipper, helix-turn- helix others motifs, DNA binding and kinks.

Module 2 12 Hours

1. **DNA topology:**Supercoiled form of DNA, Biology of supercoiled DNA, DNA topoisomerases, effect of supercoiling on structure of DNA and role of supercoiling in gene expression and DNA replication.
2. **DNA Replication:** Characteristics and functions of bacterial DNA polymerases I, Mechanism of prokaryotic DNA replication, models of replications in prokaryotes. Fidelity of replication,Eukaryotic DNA polymerases and mechanism of replication. Replication of viral DNA, DNA replication in telomeric regions,Telomerases,mechanisms of action of topoisomerase I and II ,Models of DNA replication, Inhibitors of replication.

Module 3: **14 Hours**

1. **Transcription:** Characteristics and function of bacterial RNA polymerases Eukaryotic RNA polymerases, mechanism of transcription and regulation. transcription factors, Stringent response. Post transcriptional modifications of mRNA mechanism of

splicing,Processing of tRNA and rRNA. Inhibitors of transcription. Mechanism of action of ribozymes.

2. **Translation:** Structure and role of tRNA in protein synthesis, ribosome structure, basic feature of genetic code and its deciphering, translation (initiation, elongation and termination in detail in prokaryotes as well as eukaryotes), Post translational processing,Control of translation in eukaryotes (Antisense RNA, Heme and interferon).

Module 4: **14 Hours**

1. **Regulation of Gene expression in prokaryotes and eukaryotes:** Positive and negative regulation. lac-, ara-, his- and trp- operon regulation; antitermination,global regulatory responses; Regulation of gene expression in eukaryotes: Transcriptional, translational and processing level control mechanisms.
2. **Protein localization&Gene Silencing**: Export of secretory proteins- signal hypothesis, transport and targeting of proteins to mitochondria, chloroplast, peroxisomes, Gene Silencing: Definition, types, RNAipathway, shRNA & CRISPR-CAS.
3. **Non coding RNA**: coding and non coding RNA,types of ncRNA : Short ncRNA(mi RNA,Sn RNA,Pi RNA,t-RNA &it's fragments,SnoRNA)long ncRNA ,functional significance of ncRNA

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : MOLECULAR BIOLOGY(FCHC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Watson, J.D.1994. Molecular Biology of the Cell. Garland Science, New York.
2. Cooper, G.M. 1997.The Cell: A molecular approach, ASM Press, USA.
3. Darnell, J. Lodish, H. and Baltimore, D. 1990. Molecular Cell Biology. Scientific American Books Inc. NY.
4. Elliott, W. H., and Elliott, D. C. 2006. Biochemistry and Molecular Biology (3rd Indian Ed.). Oxford University Press, Oxford.
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6. Karp, G. 1996.Cell and Molecular Biology concepts and experiments, John Wiley and Sons Inc. NY.
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10. Old, R.W., Primrose, S.B. 1993.Principles of gene manipulation - An introduction to genetic engineering (7th Ed.). Blackwell Scientific Publications.
11. Weblinks :
    i. https://www.slideshare.net/ShobhaSurbhaiyya/gene-silencing-69645867.
    ii. https://www.slideshare.net/lalvarezmex/dna-topology.
12. Research/Review articles:
    i. Anderson, P. and Ivanov, P., 2014. tRNA fragments in human health and disease. FEBS letters, 588(23), pp.4297-4304
    ii. Basto, A. P., et al., 2021. Micro RNAs in Tfh regulation: Small molecules with a big impact. European Journal of Immunology, 51(2), 292-295
    iii. Crick, F. H. 1958. On protein synthesis. In SympSocExpBiol (Vol. 12, No. 138-63, p. 8).
    iv. Karakar, D., *et al.*, 2021.The Role of Lnc RNAs in translation. Non coding RNA 7 (1):16. .

v. Langston, L. D., et al., 2006. DNA replication: keep moving and don't mind the gap. Molecular cell, *23*(2), 155-160.

vi. Mleczko, A. M., et al. 2014. Ex-translational function of tRNAs and their fragments in cancer. Acta Biochimica Polonica, *61*(2).

PRACTICALS IIA:

Course Outcome: Students should study this paper to know –

1. Perfuming the methodology applied to extract DNA & RNA from different sources.
2. Methods applied to purify the nucleic acids,
3. Estimation of extracted and purified DNA & RNA
4. Determining the purity, concentration and applying it for different digests and ligates.

Total Credit: 02 **Total hours: 32**

1. Estimation of DNA by diphenyl amine method.
2. Estimation of RNA by orcinol method.
3. Isolation of Genomic DNA from yeast cell,
4. Determination of purity and concentration of isolated DNA using spectrophotometer and agarose gel electrophoresis.
5. Determination of RNAse & DNAse activity
6. Isolation of RNA & analysis using Bleach Gel electrophoresis
7. Restriction digestion of plasmid and analysis
8. DNA ligation

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : PRACTICAL - IIA												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

GENETIC ENGINEERING (FCHC)

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know –

1. To understand cloning and expression vectors.
2. Methods involved in gene manipulation and techniques of gene analysis.
3. The vast knowledge of gene editing.
4. The knowledge about the Ex vivo and in vivo gene therapy.

Module-I **12 hours**

Cloning and Expression vectors: Plasmids, lambda vectors, M13 Phage, cosmids,phagemids, Artificial chromosome vectors-YACs, PACs and BACs, plant and animal viruses as vectors, Transposons, Expression vectors- prokaryotic (pRSET, pET), eukaryotic (pcDNA3, pCEP), Baculovirus and Pichia vector system, plant based vectors- Ti and Ri, binary and shuttle vectors,Gene cloning: genomic cloning, c-DNAcloning,

Module- II **12 hours**

Gene manipulation Restriction enzymes, restriction mapping, cloning in plasmid, Phage and cosmid vectors, insertion of foreign DNA into host cells-transformation, electroporation, transfection transient and stable, screening methods for transformants, downstream processing of recombinant proteins, affinity tags- His-tag, GST-tag, MBP-tag, Fc-tag. Construction and screening of genomic and cDNA libraries, chromosome walking, Chromosome Jumping, BAC libraries and assembly of BACs into contigs.

Module- III **14 hours**

Gene analysis techniques

Hybridization techniques- Southern, Northern, South-western, Far-western, Colony hybridization, fluorescence *in situ* hybridization, molecular probes-preparation, labelling, amplification, applications, Polymerase chain reaction-Principle, primer designing, Types- RT-PCR, Realtime PCR, colony PCR, Multiplex PCR, Hot-start PCR, asymmetric PCR, Sequencing methods-chemical sequencing of DNA (Maxam and Gilberts methods andSangers dideoxy method), automated DNA sequencing, sequencing by DE-MALDI- TOFMS,microarray. ChIP and Chip-on-chip techniques Chromogenic *in situ* hybridization, qPCR, next generation sequencing.

Module- IV **10 hours**

Gene therapy, transgenics and Genome editing

Ex vivo and *in vivo* gene therapy, Vectors and other delivery systems for gene therapy, Invitro

gene therapy, gene therapy of genetic diseases: eg.Neurologocal, metabolic disorders and cystic fibrosis, viruses for gene therapy- lentivirus, adenovirus. Gene targeting, knockout mice, genome editing by CRISPR-CAS

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : GENETIC ENGINEERING (FCHC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

PRACTICAL IIA:

Course Outcome: Students should study this paper to know –

1. Performing the competent cell preparation.
2. Isolating the plasmid and inducing the gene expression.
3. Determining the protease activity in extracted protein.
4. Producing the recombinant protein.

Total Credit: 02 **Total hours: 32**

1. Salt fractionation of Yeast protein and quantification.
2. Isolation of plasmids from bacteria by agarose gel electrophoresis.
3. Preparation of competent *E. coli* cells for Bacterial transformation.
4. Induction of gene expression and purification of the induced protein from the host.
5. Amplification, Purification and separation of PCR product.
6. Determination of Proteinase activity on proteins.
7. Production of recombinant protein.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : PRACTICAL - IIA												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Brown, T.A. 2010. Gene Cloning and DNA Analysis-An Introduction (6th Ed.). Blackwell Science.
2. Brown, T.A., 2011. Introduction to Genetics: A Molecular Approach (1st Ed.). Garland Science.
3. Desmond, S. T., and Nicholl, 2002. An Introduction to Genetic Engineering. (1st Ed.) Cambridge University Press. Cambridge.
4. Glazer, A. N., and Nikaido, H. 2007. Microbial Biotechnology Fundamentals of Applied Microbiology (2nd Ed.). Cambridge University Press.
5. Gupta, P. K. 2008. Molecular Biology and Genetic Engineering. Deep and Deep Publications, India.
6. Gupta, V. K., Schmoll, M., Maki, M., Tuohy, M., Mazutti, M. A. 2013. Applications of Microbial Engineering. CRC Press.
7. Jane, K. S. 2004 .Genetic Engineering: Principles and Methods (1st Ed.). Springer.
8. Lodish, H., Berk, A., Kaiser, C. A., Krieger, M. 2007 .Molecular Cell Biology (6th Ed.). WH Freeman and Company, New York.
9. Maheshwari, D.K., Dubey, R.C. and Kang, S.C. 2006. Biotechnological Applications of Microorganisms. I.K. International Publishing House, New Delhi.
10. Rehm, H. J., and Reed, G.2008. Biotechnology: Genetic Fundamentals and Genetic Engineering (2nd Ed.).Wiley India Pvt Ltd.
11. https://www.khanacademy.org
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Weblink:

- https://www.slideshare.net/SECBIO/genetic-engineering-13933607
- https://www.cabarrus.k12.nc.us/cms/lib/NC01910456/Centricity/Domain/7718/Biotechnology%20PP_Genetic%20Engineering_RD.pptx

MOLECULAR DIAGNOSTICS(FCSC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The course focuses on learning and understanding how the various moleculartechniques that were studied can be developed and utilized in diagnosis.
2. The course explains common analytical techniques and molecular techniques related tothe development and use of diagnostics.
3. Students learn about the clinical applications of molecular diagnostic in patients with infectious disease.
4. They can find their future focus in biotechnology companies developing and marketing Diagnostic kits.

Module-1 **08 hours**

Introduction and History of diagnostics:

1. Introduction and History of diagnostics of diseases, mode of infection, types of infectious diseases, philosophy and general approach to clinical specimens. genetic basis of diseases, inherited diseases. Infection – mode of transmission in infections, factors predisposing to microbial pathogenicity, inborn errors of metabolism.

2. Traditional disease diagnosis methods: Diagnosis of infectious diseases caused by bacteria, fungi, viruses, protozoa and Helminthes, Philosophy and general approach to clinical specimens, Sample collection- method of collection, transport and processing of samples, Interpretation of results, Normal microbial flora of the human body, Host - Parasite relationships.

Module- 2 **14 hours**

Molecular techniques for diagnosis

1. Basics and Implication of Molecular techniques in Genome resolution, detection and analysis of pathogen causing disease : PCR,Real-time; Multiplex; FISH; RFLP; DGGE; SSCP; Nucleic acid sequencing: new generations of automated sequencers; Microarray chips; EST; SAGE; microarray data normalization & analysis; molecular markers: 16S rRNA typing; MALDITOF-MS; Metabolite profile for biomarker detection the tissues in various disorders by making using LCMS & NMR technological platforms.

2. Biochemical tests & Immunoassays: Detection and quantification of biochemical parameters Types:RIA, ELISA, Chemiluminescent IA,FIAand specific applications; Immunohistochemistry – principle and techniques. Different Levels of Biosafety,

Containment.

Module-3 **12 hours**

Major Metabolic & Genetic disorders:

1. Traditional methods for the diagnosis of metabolic errors(Diabetes Type 1 & Type 2, hyperthyrodis&Hypothyrodism). Disease due to genetic disorders(Sickle cell anemia& Cystic fibrosis).Identifying human disease genes., Methods available for the diagnosis of genetic diseases and metabolic disorders.Blood (formation, composition, function and pathology of blood disorders (haemoglobinopathies,hemophilia), Muscle disorders (Duchene muscular dystrophy-DMD, Becker's muscular dystrophy-BMD, spinal muscular atrophy-SMA), Bone disorders
2. (Osteogenesis imperfecta, Rheumatoid arthritis), Skin disorder (Muir-Torre *syndrome*), Eye disorder (Retinitis pigmentosa).
3. Neonatal and Prenatal disease diagnostics. Gender identification using amelogenin gene locus. Amplification of Y chromosome specific Short Tandem Repeats (Y-STR). Analysis of mitochondrial DNA for maternal inheritance,Karyotyping& characteristics of Karyotyping.. Molecular diagnosis for early detection of cerebral palsy, Down syndrome etc.

Module-4 **14hours**

Cancer diagnosis:

1. Molecular Oncology Tests, Analysis of the Expression of Multiple Genes and Cancer Prognosis, Analysis of Lymph Nodes to Detect Metastasis of Breast Cancer, Screening for Colorectal Cancer: Stool-Based DNA Screening, Leukemias and Lymphomas, DNA Methylation Tests and Cancer, Predicting Risk of Developing Cancer.
2. Personalized Medicine: Pharmacogenomics and Companion Diagnostics, Cytochrome P450 and Drug Metabolism, Targeted Cancer Therapies and Companion Diagnostics Tests, Testing for HER2/neu Overexpression in Breast Cancer, Testing for Epidermal Growth Factor Receptor (EGFR), UGT1A1 Genetic Variants, Pharmacogenetics and Response to Antiretroviral Therapy, Thiopurine Methyltransferase and Metabolism of Thiopurine Drugs

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : MOLECULAR DIAGNOSTICS(FCSC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Bruns, D. E., Ashwood, E. R., and Burtis, C. A. 2007. Fundamentals of Molecular Diagnostics. Saunders Group.
2. Buckingham, L., and Flaws, M. L. 2007. Molecular Diagnostics: Fundamentals, Methods & Clinical applications. F.A. Davis Company
3. Burtis, C. A., Ashwood,E. R., and Bruns, D. E.2007: Tietz Textbook of Clinical Chemistry and Molecular Diagnosis (5th Ed.). Elsevier.
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5. Greenwood, D., Slack, R.C.B., and Peutherer, J.F. 1997.Medical Microbiology: A Guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Diagnosis and Control. (15th Ed.).Churchill Livingstone, London.
6. Leonard, D. G., Bagg, A., Caliendo, A. M., Deerlin, V. M., and Kaul, K. L. (Eds.) 2007. Molecular pathology in clinical practice, pp. 411-424, Springer.
7. McPherson, R. A., and Pincu, M. R. 2007. Henry's Clinical Diagnosis and Management by Laboratory Methods, Elsevier Health Sciences.

Weblinks :

- https://www.slideshare.net/Dentist_abdurrahman/genetic-disorders-47095869
- https://www.ihrp.uic.edu/files/4%20Screening%20and%20Diagnosis.ppt

PRACTICALS IIB:

Course Outcome: Students should study this paper to know:

1. The diagnosis of different hormones
2. The practical training of genome resolution and analysis
3. The metagenomic approach to identify the microbes.
4. Learning the techniques involved in microbial diagnosis such as PCR, ELISA.

Total Credit: 02 **Total hours: 32**

1. Hormone assay for thyroid (TSH, T3, T4)
2. Isolation of Genomic DNA from Spleen or Liver ,Quality / Quantity checking of Nucleic acids by a) UV Spectrophotometer and Agarose Gel Electrophoresis.
3. Isolation of Metagenome (sediment/soil).
4. Qualitative detection of HBsAg in human serum or plasma.using ELISA.
5. Nucleic acid labelling and Southern Hybridization.
6. RNA isolation &PAGE .
7. Culture independent analysis of microbes by DGGE (Denatured Gradient Gel Electrophoresis).
8. Molecular diagnosis of parasitic disease.
9. Identification of human bacterial pathogens by Polymerase chain reaction.
10. Demonstration of Karyotype analysis.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : PRACTICAL - IIB												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

FOOD AND ENVIRONMENTAL BIOTECHNOLOGY(SC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The knowledge about fermentation and fermented products and nutrition.
2. The functional foods and genetically modified foods.
3. The detailed account of Environment and bioremediation of pollutants.
4. The knowledge of phytoremediation

Module-I **12 hours**

Introduction to Food biotechnology: Fermented foods, milk-based products, fermented vegetables, fermented meats, fish, beverages, vinegar, mould fermentation - tempeh, soy sauce, rice wine. Enzymatic processing of fruit juices; DNA-based methods for food authentication, comparative methods of toxicity testing in (novel) foods, application of generic technologies in food and nutritional sciences; anti-cancer components in foods.

Module-II **12 hours**

Functional foods and Biotechnology: Biochemical processing in the improvement of functional foods with targeted health benefits and increased nutrient value; Pre- and Pro-biotics, single cell protein, single cell lipids. Manipulation of fruit ripening process. Food processing, principles and practices, food ingredients and processing aids from biotechnological processes, corn sweeteners, bacterial starter cultures, cold-adapted enzymes. Food spoilage, preservation, mycotoxins in food commodities. Genetically modified foods, designer foods, detection of GM foods, Nutraceuticals, Concept of food parks.

Module-III **12 hours**

Introduction to Environment, Renewable and non-renewable resources, current status of biotechnology in environment protection. Waste water management: Bioreactors for waste-water treatment, treatment of industrial effluents-dairy, distillery, paper and sugar industries. Membrane-based waste water treatment.Biotechnology &Environment, Biodiversity and its conservation, Microbial ecology.

Module-IV **12 hours**

Bioremediation: Concepts and principles, bioremediation using microbes, in situ and ex situ bioremediation, biosorption and bioaccumulation of heavy metals. Phytoremediation Xenobiotics: Degradation capabilities of microorganisms with reference to toxicology, pesticides, herbicides, polyaromatic hydrocarbons

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : FOOD AND ENVIRONMENTAL BIOTECHNOLOGY (SC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

REFERENCES:

1. Bagchi, D., Ghosh, D, K., Lau, F. C. 2010. Biotechnology in Functional Foods and Nutraceuticals (1st Ed.).CRC Press.
2. Das, S. 2014. Microbial Biodegradation and Bioremediation (1st Ed.). Elsevier.
3. Johnson-Green, P. 2018.Introduction to Food Biotechnology(1stEd.).CRC Press.
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Weblink:

- https://www.slideshare.net/HumairSindhi/applications-of-environmental-biotechnology-by-hameer-khan
- https://www.slideshare.net/IMANELADRAA/food-biotechnology-91606605

Practical II B

Course Outcome: Students should study this paper to know :

1. The methods of water and soil sampling.
2. The determination of impurities in water.
3. Estimating the BOD & COD of water
4. Methods to understand food adulterants and contaminates.

Total Credit: 02 **Total hours: 32**

1. Detection of coli forms for determination of the purity of potable water.
2. Methods of Water and Soil sampling and assessment of pH.
3. Determination of dissolved oxygen (DO) concentration of different water samples.
4. Determination of Biological oxygen demand (BOD) and Chemical oxygen demand (COD) of a sewage sample.
5. Isolation of Bacteriophages from sewage sample.
6. Determination of Total dissolved solids (TDS) of water sample.
7. Detection and Enumeration of Pathogenic and Indicator Organisms in Food.
8. Enumeration of Microbes from Fermented Foods.
9. Detection of Adulterants in Foods.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II

Course Name : PRACTICAL - IIB												
PO / **CO**	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

BIOPROCESS TECHNOLOGY(SC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The design of fermenters and the types of fermenters.
2. The concepts of downstream processing.
3. The role of bioprocess in agro -industry.
4. The mass production of vaccines and Mab Technology.

Module I: 12 hours

Basic principles: Isolation, screening and maintenance of industrially important microbes; effect of nutrients, temperature, pH for the growth of industrially important microorganisms; strain improvement for increased yield.

Batch and continuous fermenters: types of fermenters, chemostat, turbidostat, upstream processing: media formulation and optimization; sterilization; aeration, agitation, ph.

Module II: 12 hours

Downstream processing:

Separation of insoluble products – separation of cells and foam; filtration (plate filters, rotary vacuum filter), centrifugation (continuous, basket and bowl centrifuge), Stokes law, sedimentation, flocculation; cell disruption (mechanical and non-mechanical methods);chromatographic techniques, drying (spray, drum, freeze driers); storage and packaging.

Module III: 12 hours

Microbial products: Microbial production and application of vitamins, enzymes, organic acids (acetic, citric, gluconic, itaconic, lactic,), amino acids (glutamic acid, lysine, tryptophan), polymers (polysaccharides – xanthan, curdlan, dextran, pullulan,), antibiotics, ethanol, biosurfactants.

Module IV: 12 hours

Bioprocess in agro-industry: Isolation and screening of bioagents for the production ofbiofertilizers, biopesticides and plant growth promotion; mass cultivation, formulation and storage life; Bioprocess in sustainable agriculture (organic matter recycling, composting, Jeevamrutha). Production of vaccines, Mab technology

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : BIOPROCESS TECHNOLOGY(SC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

REFERENCES:

1. Biotol, 2004. Product Recovery in Bioprocess Technology. Elsevier India.
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3. CruegerW., and Crueger A. 1989. Biotechnology – A Textbook of Industrial Microbiology (2nd Ed).Panima Publishing Corporation, New Delhi.
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10. Shuler, M.L., and Kargi, F. 2002. Bioprocess Engineering: Basic Concepts. Prentice HallInternational, Englewood Cliffs.
11. Waites, M.J., Morgan, N.L., Rockey, J.S., and Higton, G. 2001.Industrial Microbiology –

An Introduction. Blackwell Science.

Weblink:

- https://www.slideshare.net/SMCTCR/biotechnologybioprocess-development-and-technology
- https://www.slideshare.net/yongkangbirdnest/lecture-2-introduction-to-bioprocess

PRACTICALS IIB:

Course Outcome: Students should study this paper to know

1. Production of alcohol from different sources
2. Determining the amount of invertase and catalase released from immobilized yeast.
3. Determination of vitamins and amino acids
4. Production of biofertilizers.

Total Credit: 02 **Total hours: 32**

1. Immobilization of yeast by calcium alginate gel entrapment and assay for enzymes-invertase and catalase.
2. Screening of antibiotic producing microorganisms .
3. Study of alcohol fermentation- alcohol from different substrates-estimation of alcohol content.
4. Bioassay methods- Vitamins and amino acids.
5. Production and analysis of SCP.
6. Cell disruption for endoenzymes by sonication.
7. Microbial production of glutamic acid.
8. Downstream process –purification of any one protein / enzyme from fermented broth.
9. Study of fermenter (demonstration).

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : PRACTICAL – IIB												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

OPEN ELECTIVE : BIOTECHNOLOGY AND ITS APPLICATIONS

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. To gain advanced knowledge and understanding of the core principles of Biotechnology to equip the students for a career in research and industry.
2. To provide strong fundamentals of Biotechnology and its industrial applications.
3. To skill the students in developing independent analytical thinking in all areas of Biotechnology.
4. The students will be able to apply their knowledge for advancing the area of Biotechnology through academic and industrial research.

Module I : 12 hours

Introduction to biotechnology. Principles of biotechnology, classification. Recombinant DNA Technology Introduction, outline of genetic engineering procedure, restriction endonucleases, cloning & expression vectors- plasmids, cloning in plasmid, transformation and detection of transformants-lacZ, genomic and cDNA libraries, gene analysis techniques-hybridization: Southern, Northern, Western, in situ, Polymerase chain reaction.

Module II : 12 hours

Microbial and food and environmental Biotechnology Basics of fermentation technology: Types of microbial culture- batch, continuous and fedbatch. Microbial production: Use of microbes in production of vitamins, enzymes, organic acids, amino acids, polysaccharides, flavors, sweeteners, proteins and antibiotics. Fermented food products- yogurt, cheese, tempeh, sauerkraut; beverages-wine and beer. Pre- and Pro-biotics, single cell proteins, Genetically modified foods, designer foods. Current status of biotechnology in environment. Bioconservation, biofuels, gasohol, biogas. Bioremediation: Concepts and principles, bioremediation using microbes, in situ and ex situ bioremediation, biosorption and bioaccumulation of heavy metals.

Module III : **12 hours**

Plant Biotechnology Landmarks in Plant tissue culture. Types of cultures- embryo, organ, callus and cell cultures, Somatic embryogenesis, Haploid Production, Androgenesis, Protoplast culture and somatic hybridization. Micropropagation- Methods and stages, applications. Synthetic seeds, somaclonal variation. Production of secondary metabolites by plant cells, Biotransformation. Plant transformation techniques: Direct and indirect methods of gene transfer in plants. Transgenic

plants and crop improvement- herbicide tolerance, disease resistance, abiotic stress tolerance, delayed ripening, improvement of nutritional quality, molecular pharming.

Module IV : **12 hour**

Animal Biotechnology Basics of animal cell culture techniques, cell lines, physical conditions for culturing animal cells, equipments required, scale-up of culture methods. Application of animal cell culture- Hybridomas, production of therapeutic antibodies, stem cell technology, cell and tissue engineering. Genetic engineering of animals: Methods for gene transfer in animals, microinjection, nuclear transplantation, retrovirus-mediated gene transfer, gene knockdown techniques. Transgenic- animals- sheep, pigs, cattle, chickens; applications of transgenic animals.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER II												
Course Name : OPEN ELECTIVE : BIOTECHNOLOGY AND ITS APPLICATIONS												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	2	2	2	3	2	3	2	2	2	3	2	3
CO2	2	2	2	3	2	3	2	2	2	3	2	3
CO3	2	2	2	3	2	3	2	2	2	3	2	3
CO4	2	2	2	3	2	3	2	2	2	3	2	3
Weighted Average	**2**	**2**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**3**

REFERENCES:

1. Chawla, H. S. 2000. Introduction to Plant Biotechnology(1st Ed.). Enfield, NH: Science Publishers.
2. Freshney, R. I. 2015.Culture of Animal Cells, A Manual of Basic Technique and Specialized Applications (7th Ed.). Wiley-Blackwell.
3. Nair, A. J. 2001. Principles of Biochemistry and Genetic Engineering.Laxmi Publications.
4. Razdan, M. K. 2003.Introduction to Plant Tissue Culture(2nd Ed.). Enfield, NH: Science Publishers.
5. Singh, R. 2003.Introduction to Biotechnology: Principles of biotechnology (2nd Ed.). Global Vision Publishing House.
6. Slater, A., Scott, N. W., and Fowler, M. R. 2008.Plant Biotechnology: an Introduction to Genetic Engineering. Oxford, Oxford University Press.
7. Thangadurai, D., Tanasupawat, S., Kanekar, P. P . 2019 Biotechnology of Microorganisms, Diversity, Improvement, and Application of Microbes for Food Processing, Healthcare, Environmental Safety, and Agriculture (1st Ed.).Apple Academic Press.

Weblink:

- https://www.slideshare.net/sardar1109/biotechnology-and-its-application-37416651
- https://slideplayer.com/slide/4372321/
- https://bichep.com/biotechnology-and-its-applications-ppt-revision/

III Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	22D301	Plant Biotechnology	HC	3	1	0	4
2	22D302	Animal Biotechnology	HC	3	1	0	4
3	22D303	Immunology	FCHC	3	1	0	4
4	22D304	**Practical-III:** Plant Biotechnology. Animal Biotechnology &Immunology	HC	0	0	4	4
Soft Core (Any TWO)							
1	22D405	Natural products & Drug discovery	SC	3	1	0	4
2	22D406	Biostatistics & Bioinformatics	SC	3	1	0	4
3	22D407	Genomics& Proteomics	SC	3	10	0	4
TOTAL CREDITS **4 Hard Core (3 theory + 1 practical's) :16 credits ,2Softcore: 06 credits**							**24 CREDITS**

PLANT BIOTECHNOLOGY(HC)

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The goal of this course is to introduce biotechnology methods in plants.
2. Handling of classical and modern plant biotechnology processes.
3. And understanding breeding of healthy plants for improved characteristics and plants forbiomolecule production.
4. The application in pharmaceutical and food industry, in agriculture and in ecology.

Module I: Techniques in plant tissue culture 12 hours

Methods in Plant Tissue culture: Concept of cellular Totipotency, Role of phytohormones in tissue culture techniques. Establishment of cultures- Nutritional requirements for in vitro cultures, Media preparation and sterilization.

Micropropagation: Propagation from shoot apical meristem, node cultures, stages of micropropagation and applications. **Germplasm preservation**: Plant germplasm storage using different methods. **Haploid Production**: Methods of androgenic haploid cultures. **Protoplast Culture and Somatic Hybridization**: Protoplast isolation, purification and culture, protoplast fusion, somatic hybridization, applications of somatic hybrids.

Module II: Genetic manipulation of plants 12 hours

Plant transformation techniques: Agrobacterium-plant interaction, Ti plasmids-DNA transfer, disarmed Ti plasmid. Agrobacterium-mediated gene delivery- binary and co-integrated vectors. **Direct gene transfer methods-** Particle bombardment, PEG-mediated, electroporation. **Transgenic plants:** Herbicide resistance, pest resistance, plant disease resistance, improvement of nutritional quality. Biosafety regulations of transgenics.

Module III: Applications of Plant Tissue culture 12 hours

Secondary metabolite production: Major secondary metabolic pathways- Phenyl propanoid pathways, Shikimate pathway; Induction of bioactive secondary metabolites by plant tissue culture; Value addition via biotransformation; hairy root cultures for production of pharmaceuticals. Bioreactor systems for mass cultivation of plant cells, Molecular pharming: edible vaccines

Module IV : Commercial product development 12 hours

Micro algal biotechnology: Cyanobacteria, culture media, cultivation methods, Medicinal compound from cyanobacteria. **Single-Cell Proteins (SCP):** Spirulina, Chlorella, Yeast as SCP;

Production and process; Health benefits of SCP. **Agricultural products:** biofertilizers and Vermiculture .**Biofuels:** production of Ethanol, Methane, and their applications. **Intellectual Property Rights (IPR):** IPRs and agricultural technology- implications for India. Plant Breeder's Rights. Labeling of GM crops and foods. Biodiversity, traditional knowledge, access and benefit sharing.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER III												
Course Name : PLANT BIOTECHNOLOGY(HC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	2	2	3	3	3	3	3
CO2	3	3	3	3	3	2	2	3	3	3	3	3
CO3	3	3	3	3	3	2	2	3	3	3	3	3
CO4	3	3	3	3	3	2	2	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Abdin, M.Z., Kiran, U., Kamaluddin and Ali, A. 2017. Plant Biotechnology: Principles and Applications. Springer.
2. Buchanan , B. B., Gruissem, W and Jones, R. L. 2015. Biochemistry & Molecular Biology of Plants. John Wiley& Sons.
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9. Umesha, S. 2013. Plant Biotechnology. TERI Press.

Weblink:

- https://www.slideshare.net/Wabworld/plant-biotechnology-129050729
- https://www.austincc.edu/awheeler/Files/BIOL%201414%20Fall%202010/chapter%206.ppt

ANIMAL BIOTECHNOLOGY (HC)

Total Credit: 04 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. Culturing of animal cells and steps in production of transgenic animals
2. Techniques in animal cell culture
3. Cloning of animals
4. Approaches for tissue engineering

Module I: 12 hours

Culture of animal cells: Advantages and limitations of tissue culture, aseptic handling, facilities required, media and cell lines, Different types of media ,preparation& Storage etc., Primary culture: Isolation of mouse and chick embryos, human biopsies, methods for primary culture, nomenclature of cell lines, sub culture and propagation, immortalization of cell lines, cell line designation, selection of cell line and routine maintenance. Secondary cell culture,

Cloning and Selection: Cloning protocol, stimulation of plating efficiency, suspension cloning, isolation of clones, isolation of genetic variants, interaction with substrate, selective inhibitors.

Module II: 12 hours

Cell separation and characterization: Density based, antibody based, magnetic and fluorescence based cell sorting. Characterization of cells based in morphology, chromosome analysis, DNA content, RNA and protein, enzyme activity, antigenic markers, cytotoxicity assays, cell quantitation, cell culture contamination: monitoring and eradication, cryopreservation.

Culturing of specialized cells: Epithelial, mesenchymal, neuro ectodermal, hematopoietic gonad and tumor cells, Lympocyte preparation, culture of amniocytes, fish cells, confocal microscopy. Stem cell culture and its applications

Organic and embryo culture: Choice of models, organ culture, histotypic culture, filter-well inserts, neuronal aggregates whole embryo culture eggs, chick and mammalian embryos.

Module III: 12 hours

Cell and Tissue engineering: Growth factors for *in situ* tissue regeneration, biomaterials intissue engineering, approaches for tissue engineering of skin, bone grafts, nerve grafts. Haemoglobin- based blood substitutes, bio artificial or biohybrid organs. Limitations and possibilities of tissue engineering, 3D bioprinting. ***In vitro* fertilization and Embryo transfer:** *In vitro* fertilization in Humans, Embryo transfer in Humans, Super ovulation and embryo transfer in farm animals e.g.: Cow

Cloning of Animals: Methods and uses. Introduction, nuclear transfer for cloning, cloning from- embryonic cells, adult and fetal cells. Cloning from short-term cultured cells: cloning of sheep, monkeys, mice, pets, goats and pigs. Cloning from long-term cultured cells: Cloning of cows fromaged animals. Cloning efficiency, cloning for production of transgenic animals, gene targeting for cloned transgenic animals, cloning for conservation, human cloning: ethical issues and risks.

Module IV: **12 hours**

Transfection methods and transgenic animals: Gene transfer, transfection of fertilized eggs or embryos, unfertilized eggs, cultured mammalian cells, targeted gene transfer.Transgenic animals and applications: mice and other animals, sheep, pigs, goats, cows and fish. The legal and socio- economic impact of biotechnology at national and international levels, public awareness.Biosafety regulations-guidelines for research in transgenic animals, public awareness of the processes of producing transgenic organisms

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER III												
Course Name : ANIMAL BIOTECHNOLOGY(HC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	2	2	3	3	3	3	3
CO2	3	3	3	3	3	2	2	3	3	3	3	3
CO3	3	3	3	3	3	2	2	3	3	3	3	3
CO4	3	3	3	3	3	2	2	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Ashish, S.V. andAnchal,S. 2013. Animal Biotechnology: Models in Discovery and Translation.Academic Press.
2. Freshney, R.I. 2015. Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications. John Wiley& Sons.

3. Gordon, I. 2004. Reproductive Techniques in Farm Animals. Oxford: CAB International.
4. Gorakh, M., Manishi, M., Birbal, S. andSanjeev, K. G.2019. Advances in Animal Biotechnology. Springer.
5. Myrone, M. L.,Gordon, D., Michael, F. G., Margaret A. L.,Gary J. N.,James P. N.AndRino, R.New Generation Vaccines (4th Ed.). CRC Press.
6. Niemann, H., and Wrenzycki,C. 2018. Animal Biotechnology 1:Reproductive Biotechnologies. Springer.
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8. Portner, R. 2007. Animal Cell Biotechnology: Methods and Protocols. Humana Press.
9. Richard, T. 2004. Gene Transfer to Animal Cells. Taylor & Francis.
10. Srivastava,A.K., Singh, R. K., and Yadav, M.P. 2018. Animal Biotechnology. Oxfordand IBH Publishing Press.

Weblink:

- https://www.slideshare.net/Pure-man/introduction-to-animal-biotechnology
- https://www.slideshare.net/Pure-man/introduction-to-animal-biotechnology
- https://slideplayer.com/slide/3514424/

IMMUNOLOGY (FCHC)

Total Credits: 04 **Total Marks: Theory 70+30 (100M)** **Total Hours:48 hours**

Course Outcome: Students should study this paper to know –

1. Role of immune system in maintaining health
2. Cellular and molecular basis of immune responses
3. How immune responses are triggered and regulated
4. How the knowledge of immunology can be transferred into clinical decision-making through case studies presented in class.

Module-I **14 Hours**

a) **Over view and Types of immunity:**

Innate immunity: anatomic barriers, physiologic barriers, phagocytic barriers, microbial antagonism, acute phase reactants, anti-microbial peptides, interferons, inflammation, Pattern Recognition Receptors (PRRs), Pathogen Associated Molecular Patterns (PAMPs) and Damage Associated Molecular Patterns (PAMPs). Complement system: components, pathways of activation and biological consequences.

Acquired immunity: Active **(**Naturally acquired and artificially acquired), Passive (Naturally acquired and artificially acquired), Adoptive immunity, Humoral and Cell mediated immune response

b) **Tissues of immune system:** Structural organization and functions of Lymphatic system, Primary lymphoid organs (Bone marrow, Thymus) Secondary lymphoid organs and tissues (Spleen, Lymph node, Tonsils, Adenoids, Peyer's patches, Lamina propria, Mucosa-associated lymphoid tissue, Gut-associated lymphoid tissue).

c) **Cells of the immune system:**Hematopoiesis, Biology, Development and Functions of PMNLs, NK cells, Macrophages, T-Lymphocytes, B-Lymphocytes, Dendritic cells

Module-II **12 Hours**

a) **Antigens, and Antibodies:** Antigens, Immunogens and Haptens, Factors influencing immunogenicity, adjuvants, epitopes, Structure and functions of immunoglobulins, Synthesis of immunoglobulins, Genetic basis of immunoglobulin diversity.

b) **MHC molecules:** Types, structure, diversity and functions

c) **Antigen recognition:** Thymus dependent and independent Antigens, Clonal selection and immunological memory of B and T cells, Antigen processing and presentation (Endogenous pathway, Exogenous pathway, Cross presentation), Superantigens.

d) **Monoclonal Antibodies:**Hybridoma technology and production of mAbs, types, and applications.Advantages and disadvantages of mAbs in therapy.

Module-III **12 Hours**

a) Immune System in Health and Disease: Immunological Tolerance and Autoimmunity, Autoimmune Diseases (Organ specific autoimmune diseases-Graves' disease, Myasthenia Gravis, Systemic autoimmune diseases-Multiple Sclerosis, Rheumatoid Arthritis, Systemic Lupus Erythematosus), Immunosuppression, Hypersensitivity(Type I, II, III & IV).

b) Vaccines and Vaccination: Principles of vaccination, Immune response to vaccines (Primary and Secondary response), Whole-Organism vaccines, Purified macromolecules as vaccines, Recombinant vaccines, DNA vaccines, Multivalent subunit vaccines and Edible vaccines, Vaccine safety, Reverse vaccinology. Overview of COVID-19 vaccines.

c) Primary & Secondary Immuno-Deficiency Disorders:

Primary: Wiscott-Aldrich syndrome, Severe combined immunodeficiency disease (SCID), DiGeorge syndrome, Ataxia-telangectasia, Leucocyte adhesion defects, Chronic granulomatous disease, X-linked agammaglobulinemia, Complement deficiencies. Gammopathies (Multiple myeloma).

Secondary: AIDS, Malnutrition, Drug regimen, Diabetes, Chronic infection.

Module-IV **10 Hours**

a) **Clinical Immunology**: **Transplantation of tissues and organs:** Nomenclature of transplantations, Transplantation reactions, HvG and GvH. Exception from rejections, Major and minor blood groups, Blood transfusion, tissue typing, Kidney and bone marrow transplantations. Immunosuppressive drugs. **Tumor immunology**: Neoplasms, tumor-associated antigens, immune response to tumor antigens, immunologic factors favoringtumor growth, immune surveillance,Tumor necrosis factor α and β.Metastatic processes, Immunodiagnosis, Antitumour drugs, Immunotherapy.

b) **Immunological Techniques:**.*In vitro* antigen-antibody reactions, serotyping, agglutination, complement fixation, immunoprecipitation, Immunodiffusion, ELISA, RIA, IHC, Immunoelectrophoresis.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER III												
Course Name : IMMUNOLOGY (FCHC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	2	2	3	3	3	3	3
CO2	3	3	3	3	3	2	2	3	3	3	3	3
CO3	3	3	3	3	3	2	2	3	3	3	3	3
CO 4	3	3	3	3	3	2	2	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Abbas A.K., Lichtman A.H. and Pillai S. (2014). Cellular and Molecular Immunology (10th Edition). Online Access: Elsevier Health Sciences.
2. Abbas, AK., Andrew,H., Lichtman, H., Pillai, S. 2012.Basic Immunology: Functions and Disorders of the Immune System, ; Saunders
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6. Berg J.M., Tymoczko J.L. and Stryer L. (2002). Biochemistry (5th Edition). International edition: WH Freeman & Company Limited
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12. MadhaveeLatha, P. 2012. A Textbook of Immunology. S. Chand Press.
13. Murphy, K., Travers, P., Walport, M. and Janeway, C. 2012. Janeway'sImmunobiology. Taylor & Francis.
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17. Paul, W. E. 2012. Fundamental Immunology. Raven Press.
18. Peter,DJ., Seamus, MJ., Dennis, BR. 2011. Roitt's Essential Immunology; Wiley & Sons, Incorporated, John
19. Pinchuk, G. 2001. Schaum's Outline of Immunology; McGraw-Hill
20. Ramesh, S. R. 2016. Immunology. Mc Graw Hill Education India Pvt. Ltd.
21. Richard C. and Geoffrey S. (2003). Immunology: A short course (6th Edition). Willey Blackwell.
22. Voet D. and Voet J.G. (2010). Text book of Biochemistry (4thEdition). New York: J. Wiley & Sons.

Videos on Immunology: www.imm.ox.ac.uk - from University of Oxford

PRACTICAL III:

Course Outcome: Students should study this paper to know

1. Hands on training in plant tissue culture
2. Performing the production of synthetic seeds.
3. Performing cell culture techniques.
4. Performing immunotechniques.

Total hours: 32 Total credits: 04

1. Preparation of plant tissue culture media ,Callus induction
2. Establishment of cell suspension cultures for plant secondary metabolite production
3. Encapsulation of somatic embryos and production of synthetic seeds
4. Organ cultures: Shoot tip, nodal, anther and leaf cultures
5. Secondary metabolite estimations: Colorimetry and TLC methods
6. Preparation of media, culture and maintenance of cell lines, trypsinization
7. MTT assay for cytotoxicity
8. Purification of IgG.

9. Slide agglutination test/ Blood grouping.
10. Immunoprecipitation test- Ouchterlony double diffusion.
11. Purification of IgY.
12. Immunofluorescence for localization of an antigen.
13. ELISA for quantification of an antigen.
14. Western blotting and detection.
15. Complement fixation
16. Clinical laboratory visits

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER III												
Course Name : PRACTICAL - III												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

NATURAL PRODUCTS AND DRUG DISCOVERY (SC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The prospects of Natural products in 21st Century.
2. The use of different natural sources for discovery of drug.
3. To perform molecular modelling.
4. Regulatory guidelines for preclinical studies

Module I: **12 hours**

Prospects of Natural Products research in the 21st Century: Introduction, use of natural products in traditional medicines, Marine natural products, Use of herbal remedies and the potential of drug development from natural products and novel drug templates: paclitaxel, podophyllotoxin, artimisinin etc. Recent development in the research on naturally occurring polyphenolic compounds: - Introduction, biosynthetic pathway, isolation and characterization, biological and pharmacological activities of different class of phytoconstituents - alkaloids, flavonoids, terpenoids, glycosides, steroids, saponins, (Antioxidant activity, cyto-toxic activity, anticancer and anti-microbial activity etc). aid design of clinical studies.

Module II: **12 hours**

Natural product drug discovery from different sources (marine, microbial, mineral etc): Introduction, recent developments, applications. Extraction and Isolation techniques: Introduction, Principle and Applications of different extraction & isolation methods vizSoxhlet extraction, microwave extraction, supercritical fluid extraction, solid phase extraction,Column chromatography, Flash chromatography.

Module III: **12 hours**

Target identification and molecular modelling: Identification of target or drug leads associated with a particular disease by different techniques including combinations of molecular modeling, combinatorial libraries and high-throughput screening (HTS); Use of bioinformatics and data processing in identification of lead compounds; Rational drug design, Modelling drug/receptor interactions with the emphasis on molecular mechanisms, molecular dynamics simulations and homology modelling; Conformational sampling, macromolecular folding, structural bioinformatics, receptor-based and ligand-based design and docking methods, in silico screening of libraries, semi-empirical and ab-initio methods, QSAR methods, molecular diversity, design of combinatorial libraries of drug-like molecules, macromolecular and chemical databases.

Module IV: **12 hours**

Lead optimization: Identification of relevant groups on a molecule that interact with a receptor and are responsible for biological activity; Understanding structure activity relationship; Structure modification to increase potency and therapeutic index; Concept of quantitative drug design using Quantitative structure–activity relationship models (QSAR models); Bioanalytical assay development in support of in vitro and in vivo studies (LC/MS/MS, GC/MS and ELISA). Preclinical development: Principles of drug absorption, drug metabolism and distribution - intestinal absorption, metabolic stability, drug-drug interactions, plasma protein binding assays, metabolite profile studies, Principles of toxicology, Experimental design for preclinical and clinical PK/PD/TK studies, Selection of animal model; Regulatory guidelines for preclinical PK/PD/TK studies; Scope of GLP, SOP for conduct of clinical & non clinical testing, control on animal house, report preparation and documentation. Integration of nonclinical and preclinical data tool.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER III												
Course Name : NATURAL PRODUCTS AND DRUG DISCOVERY (SC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	2	2	3	3	3	3	3
CO2	3	3	3	3	3	2	2	3	3	3	3	3
CO3	3	3	3	3	3	2	2	3	3	3	3	3
CO4	3	3	3	3	3	2	2	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Brahmachari, G. 2011. Bioactive Natural Products: Opportunities and Challenges in Medicinal Chemistry. World Scientific Publishing Company.
2. Charis, G. 2019. Nutraceuticals And Natural Product Pharmaceuticals. Academic Press.
3. Kratika, D., Swapnil, G., Naveen, C,.andVivek, D. 2015. Drug Discovery and Development in Medicinal Chemistry. NiraliPrakashan.
4. Kshirsagar, T. 2008. High-Throughput Lead Optimization in Drug Discovery. CRC

Press.

5. Moll, J., and Carotta, S. 2019. Target Identification and Validation in Drug Discovery: Methods and Protocols. Springer.
6. Olga, G. and Francisca, V. 2012. Drug Discovery From Natural Products. Royal Society Of Chemistry.
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10. Wade, R.C. and Salo-Ahen, O.M.H. 2019. Molecular Modeling in Drug Design.MDPI Press.

Weblink:

- https://www.slideshare.net/rahulbs89/role-of-natural-product-in-drug-discovery
- http://ccc.chem.pitt.edu/wipf/courses/5119_05_files/lecture_files/lecture.ppt

BIOSTATISTICS AND BIOINFORMATICS (SC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. Knowledge of basic statistical methods to solve problems.
2. Students are taught to operate various statistical software packages.
3. The in-depth knowledge about the bioinformatics.
4. Understanding about the sequence analysis tools and also about the drug discovery.

Module I: 12 hours

Biostatistics

Statistical concepts: Data structure, sampling methods, descriptive statistics - data collection, tabulation Measures of central tendency: mean, median, mode Measures of dispersion: Range, interquartile range, mean deviation, standard deviation, standard error, coefficient of variation, confidence limits.

ModuleII : 12 hours

Types of distribution of data: Normal, Binomial, Poisson

Hypothesis testing: Z-test, t-test, ANOVA, multiple comparisons – LSD and DMRT, chi- square test; Regression and correlation; Non-parametric significance tests; Experimental designs- CRBD, RCBD, LSD, factorial; data transformation- arcsine, log, square-root. Probability

Module III: 12 hours

Bioinformatics- an overview, Definition and History, Applications of Bioinformatics. Introduction to Genomics: Genome mapping, Genome sequencing, human Genome project. Introduction to Proteomics: Tools and techniques in proteomics.Sequence formats. Homology and similarity. Introduction to Data mining, NCBI, EBI, DDBJ, Database search software:ENTREZ, SRS, Expasy.Protein Sequence Databases, UNIPROT, Structure Database: PDB.

Sequence Analysis: definition of sequence analysis, Introduction to Sequences, alignments and Dynamic Programming; Local alignment and Global alignment (algorithm and example), Pair wise Alignment, and significance of alignment, Tools of sequence alignment, Homology sequence search, Nucleotide Sequence Analysis, Protein Sequence Analysis, Parameters of Blast, BlastN, BlastP, Interpreting Blast Results.

Module IV: 12 hours

Multiple sequence analysis, scoring pattern, exhaustive and heuristic algorithms; Parameters of CLUSTAL-W and CLUSTALX for multiple sequence alignment, interpretation;

Phylogenetic analysis: methods and tools.RASMOL Display Styles- Wire Frame, Ball and Stick, Space Fill, Ribbons, Cartoons

Drug discovery: Introduction, drug discovery technologies, virtual high-throughput *in silico* screening, Target validation EMBOSS Introduction to emboss Software package and its key features, other latest commercial softwares.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER III												
Course Name : BIOSTATISTICS AND BIOINFORMATICS (SC)												
PO / **CO**	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

REFERENCES:

1. Amdekar, S.J. 2014.Statistical Methods for Agricultural and Biological Sciences. Narosa Publishing House.
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Weblink:

- https://www.slideshare.net/hafidztio/biostatistics-and-statistical-bioinformatics
- https://www.slideserve.com/minna/statistics-in-bioinformatics-powerpoint-ppt-presentation
- https://www.powershow.com/viewfl/58edf7-MzAxN/Biostatistics_and_Statistical_Bioinformatics_powerpoint_ppt_presentation

GENOMICS & PROTEOMICS (SC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The concepts of genome, genome sequencing and genome mapping
2. The role of molecular markers in comparative genomics
3. The knowledge about structural and functional proteomics
4. Understanding about the mass spectra analysis.

Module I: 12 hours

Genome: Brief overview of prokaryotic and eukaryotic genome organization; extrachromosomal DNA: bacterial plasmids, mitochondria and chloroplast

Genome mapping: Genetic and physical maps; markers for genetic mapping; methods and techniques used for gene mapping, physical mapping, linkage analysis, cytogenetic techniques, FISH technique in gene mapping, somatic cell hybridization, radiation hybrid maps, *in situ* hybridization, comparative gene mapping.

Genome sequencing: Next generation sequencing, Human Genome Project, genome sequencing projects for microbes, plants and animals, accessing and retrieving genome project information from the web.

Module II: 12 hours

Comparative genomics: Identification and classification of organisms using molecular

markers- 16S rRNA typing/sequencing, SNPs; use of genomes to understand evolution of eukaryotes, track emerging diseases and design new drugs; determining gene location in genome sequence.

Functional genomics: Transcriptome analysis for identification and functional annotation of gene, Contig assembly, chromosome walking and characterization of chromosomes, mining functional genes in genome, gene function- forward and reverse genetics, gene ethics,Pharmacogenomics& Personalized medicine.

Module III: 12 hours

Introduction to proteomics: Proteome and nature of proteome, Proteins - amino acids,

peptides and polypeptides, separation of proteins /peptides by single and two-dimensional gel electrophoresis and detection- staining and immunoblot

ModuleIV: 12 hours

Structural and functional proteomics: Mass spectrometry – fundamentals, mass spectrometry ionization techniques, mass analyzers – MALDI-TOF, MS-MS, LC-MS-MS; In-gel digestion, PMF, Mass spectra analysis – search engines: Mascot, swiss-prot, protein prospector, identification, molecular weight, determination of peptide sequence, determination of post-translational modifications, peptide sequencing using tandem mass spectrometry, quantitative proteomics-iTRAQ, functional annotation of proteins, protein chips and functional proteomics; clinical and biomedical applications of proteomics.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER III												
Course Name : GENOMICS AND PROTEOMICS(SC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

REFERENCES:

1. Attwood, T.K., Smith, P., andPhukan, S. 2008. Introduction to Bioinformatics. Dorling Kindersley (India) Pvt. Ltd.
2. Baxevamis, A.D., and Ouellette, F.B.E. 2004. Bioinformatic: A practical guide to the analysis of genes and proteins. John Wiley& Sons.
3. Brown, T. A. 2006. Genomes (3rd Ed.). Garland Science Publication.
4. Higgins, D., and Taylor, W. 2000. Bioinformatics: Sequence, Structure and Data Banks. Oxford University Press.
5. Primrose, S. B., and Twyman, R.M. 2006.Principles of Gene Manipulation and Genomics. Blackwell Publication.
6. Singh, R. 2015. Bioinformatics: Genomics and Proteomics. Vikas Publishing House.
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8. Varga, G.M. 2014. Genomics and Proteomics for Clinical Discovery and Development. Springer.
9. Wajapeyee, N. 2014. Cancer Genomics and Proteomics: Methods and Protocols (2nd Ed.). Humana Press.
10. Winnacker, E. L. 2003. From Genes to Clones. VCH Press.

Weblink:

- https://www.slideshare.net/lasaga_garry/genes-genomics-and-proteomics
- https://slideplayer.com/slide/4786114/

IV Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	22D401	Project Work	HC	0	0	07	7
Soft Core (Any One)							
1	22D402	Molecular plant pathology	SC	3	1	0	4
2	22D403	Stem cell & regenerative medicine	SC	3	1	0	3
TOTAL CREDITS **1 Hard Core :10 credits ,1 Softcore: 03 credits**							**11** **CREDITS**

PROJECT WORK (HC)

Total Marks- 100 M

Course Outcome: Students should study this paper to know

1. Focuses on skill development
2. Promotes research training in the field of biotechnology
3. To enable students to plan, design, execute, analyze,
4. Ability to solve industrial and research associated problems.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER IV												
Course Name : PROJECT WORK (HC)												
PO / **CO**	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

MOLECULAR PLANT PATHOLOGY (SC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The concepts of plant pathology
2. The host pathogen interaction.
3. The genetics of plant diseases and resistance.
4. Application of molecular biology to conventional disease control strategies

Module I: 12 hours

The fundamentals of plant pathology: The concept of plant disease, the causal agents, the significance of plant diseases, the control of plant diseases. Fungal diseases: establishing infection – dispersal spores, finding a suitable host, spore attachment, germination process, penetration, germ-tube elongation, induction appressoria, cell-wall degrading enzymes. Development of disease – Basic concepts of necrotrophy and biotrophy, host barriers, the role of toxins and enzymes, biotrophy.

Module II: 12 hours

Bacterial and viral diseases: communication between bacteria, plant penetration, attachment, stimulation gene expression, cell wall degrading enzymes, toxins, hormones, extracellular polysaccharides, determinants of host specificity. Plant viruses: Structure and replication, infection,types of viruses, viroids.

Module III: 12 hours

Genetics of plant diseases and resistance: Genes and diseases, Mechanism of variability, stages of variation in pathogens, Types of plant disease resistance to pathogens. Defense mechanism of plants, Pre-existing, structural, chemical and induced biochemical defenses. Resistance genes: Gene-for-gene resistance, features of cloned resistance genes. MAP kinases, ion fluxes and calcium homeostasis, The oxidative burst, Nitric oxide, (p)ppGpp signaling,

Module IV: 12 hours

Application of molecular biology to conventional disease control strategies: Breeding

For resistance, the use of tissue culture in plant breeding, marker-assisted breeding, identification of novel resistance gene specificities, the use of chemicals for disease control, biological control-PGPR and PGPF. Transgenic approaches for crop protection- Bt cotton and brinjal.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER IV												
Course Name : MOLECULAR PLANT PATHOLOGY(SC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO 4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

REFERENCES:

1. Haq, I. U., and Ijaz, S., 2020. Plant Disease Management Strategies for Sustainable Agriculture Through Traditional and Modern Approaches. Springer Nature Switzerland.
2. Dickinson, M. 2004. Molecular Plant Pathology. Garland Science.
3. Singh, U. S., and Singh, R. P. 2017. Molecular Methods in Plant Pathology. CRC Press.
4. Wani, S. H. 2019. Disease Resistance in Crop PlantsMolecular, Genetic and Genomic Perspectives. Springer.

Weblink:

- https://www.slideshare.net/jeevaraj9/moleecular-mechanism-of-disease-diagnosis
- https://slideplayer.com/slide/10526875/

STEM CELL & REGENERATIVE MEDICINE(SC)

Total Credit: 03 Total Marks-Theory 70+30 (100 M) Total Hours: 48 hours

Course Outcome: Students should study this paper to know

1. The introduction to stem cells and the role of stem cells in organ development.
2. The concepts of tissue engineering and perspectives.
3. The cancer stem cell theory and regenerative medicines
4. Therapeutic and Regulatory aspects for stem cell research

Module I: 12 hours

Introduction to Stem Cells Overview of basic and translational research of stem cells. Differentiation in early development, Preimplantation development; From implantation to gastrulation. Pluripotent stem cells I: Rodent embryonic stem cells – Origin, properties, self-renewal pathways, application. Human embryonic stem cells- Derivation and maintenance, self-renewal pathways. Induced pluripotent stem cells- Generation, Characterization, Induced pluripotency-the underlying mechanism. Primordial and embryonic germ cells- Origin, Properties, Derivation and maintenance. Stem cells: Molecular and cellular basis of organ development

Module II: 12 hours

Tissue engineering principles and perspectives; Limitations and hurdles of using embryonic stem cells in tissue engineering; Amniotic fluid and amniocentesis; Isolation and characterization of amniotic fluid-derived stem cells.New technologies for genetic modification in stem cells, CRISPR/Cas9, TALENs/ZFN. Neurogenesis and neural stem cells I- Establishment of neural tissue, Molecular basis of neural induction. Neurogenesis and neural stem cells II- Neural stem cells in brain; Pluripotent stem cell-derived neural stem cells Hematopoietic stem cells-Embryonic hematopoiesis; Hematopoietic stem cell niche; Embryonic stem cell-derived Hematopoietic stem cells. Cord blood hematopoietic stem cells, Cord blood transplantation; Characteristics, Genomics and proteomics of cord blood stem cells

Module III: 12 hours

Stem cells in retina and inner ear- Sources and Properties Skin organization, Skin stem cells, bulge as a residence of skin stem cells, Cell signaling in skin stem cells. Skeletal muscle stem cells-Sources, Intrinsic and extrinsic regulation Stem cells in kidney-Anatomy of kidney development, Sources and characterization of kidney stem cells. Stem cells in liver, pancreas and intestine-Organization of adult liver and pancreas, Liver/Pancreatic stem cells, Intestinal stem cells. iPSCsfor disease modeling; Models of nuerological diseases, hematopoietic disorders,

cardiovascular conditions, metabolic disorders. Mesenchymal stem cells- Location, isolation and culture; tissue engineering.

Tissue engineering strategies for bone and cartilage defects. Neural stem cells for central nervous system repair, Therapeutic potential of neural stem cells; Cell replacement using neural stem cells.

Module IV: 12 hours

Therapeutic uses of stem cells Stem cells to treat diabetes and liver disease, β-cell replacement therapy; Sources of insulin producing cells; Hepatocyte transplantation; Challenges and future directions Cancer stem cell theory – Isolation and characterization of cancer stem cells; Implications for cancer treatment: Stem cells to treat heart disease, Distribution of stem cells in heart; Preclinical studies. Orthopedic applications of stem cells, Biology of musculoskeletal tissues; engineering.

Stem cells for the treatment of muscular dystrophy, Celluar environment of a dystrophic muscle; Myogenic stem cells from embryonic stem cells and inducible pluripotent stem cells; Current stem cell-based therapeutic approaches. Regeneration of epidermis, Epidermal stem cells; Stem cells in burned and skin ulcers Regulatory aspects for stem cell research; Regulation of use of human embryonic stem cells.

ARTICULATION MATRIX MAPPING OF COURSE OUTCOME (CO's) WITH PROGRAMME OUTCOME (PO I – PO XII)

SEMESTER IV												
Course Name : STEM CELL & REGENERATIVE MEDICINE(SC)												
PO / CO	**PO-1**	**PO-II**	**PO-111**	**PO-IV**	**PO-V**	**PO-VI**	**PO-VII**	**PO-VIII**	**PO-XI**	**PO-X**	**PO-XI**	**PO-XII**
CO1	3	3	2	3	2	3	3	3	2	3	2	3
CO2	3	3	2	3	2	3	3	3	2	3	2	3
CO3	3	3	2	3	2	3	3	3	2	3	2	3
CO4	3	3	2	3	2	3	3	3	2	3	2	3
Weighted Average	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**

REFERENCES:

1. Appasani, K., and Appasani, R. K. 2011. Stem Cells & Regenerative Medicinefrom Molecular Embryology to Tissue Engineering. Humana Press.
2. Dos Santos Goldenberg, R. C. · 2012. Resident Stem Cells and Regenerative Therapy.

Academic Press.

3. Institute of Medicine , Board on Neuroscience and Behavioral Health , National Research Council, Division on Earth and Life Studies, Board on Life Sciences, Committee on the Biological and Biomedical Applications of Stem Cell Research2002. Stem Cells and the Future of Regenerative Medicine. National Academies Press.

Weblink:

- https://www.slideshare.net/ManashPaul/stem-cell-and-regenerative-medicine.
- https://slideplayer.com/slide/5663236/.

Scheme of Evaluation (both Theory and Practicals)

SCHEME OF EXAMINATION

Program	Title of Course	HC/SC	L:T:P	CREDIT	C1	C2	C3	Total	Subject Code	QP Code
Master of science in Biotechnology	Molecular Cell Biology	FCHC	3:1:0	4	15	15	70	100	22D101	
	Fundamentals of Biochemistry	FCHC	3:1:0	4	15	15	70	100	22D102	
	Techniques in Biology	FCHC	3:1:0	4	15	15	70	100	22D103	
	Practical IA (Techniques in biology& Fundamentals of Biochemistry)	FCHC	0:0:2	2	15	15	70	100	22D104	
	Practical IB (Molecular Cell Biology/Genetics /Microbiology)	FCHC	0:0:2	2	15	15	70	100	22D105	
	Genetics	FCSC	3:0:0	3	15	15	70	100	22D106	
	Microbiology	FCSC	3:0:0	3	15	15	70	100	22D107	
	Molecular Biology	FCHC	3:1:0	4	15	15	70	100	22D201	
	Genetic Engineering	FCHC	3:1:0	4	15	15	70	100	22D202	
	Practical IIA: (Molecular Biology and GeneticEngineering)	FCHC	3:1:0	4	15	15	70	100	22D203	
	Practical IIB: (Molecular Diagnostics /Food and Environmental Biotechnology/Bioprocess technology)	FCHC	0:0:2	2	15	15	70	100	22D204	
	Molecular Diagnostics	FCSC	0:0:2	2	15	15	70	100	22D205	
	Food and Environmental Biotechnology	SC	0:0:2	2	15	15	70	100	22D206	
	Bioprocess technology	SC	0:0:2	2	15	15	70	100	22D207	
	Biotechnology and its applications	OE	4:0:0	4	15	15	70	100	22D208	

	(For other discipline students)									
	Plant Biotechnology	HC	3:1:0	4	15	15	70	100	22D301	
	Animal Biotechnology	HC	3:1:0	4	15	15	70	100	22D302	
	Immunology	FCHC	3:1:0	4	15	15	70	100	22D303	
	Practical-III: Plant Biotechnology. Animal Biotechnology& Immunology	HC	0:0:4	4	15	15	70	100	22D304	
	Natural products & Drug discovery	SC	3:1:0	4	15	15	70	100	22D305	
	Biostatistics & Bioinformatics	SC	3:1:0	4	15	15	70	100	22D306	
	Genomics& Proteomics	SC	3:1:0	4	15	15	70	100	22D307	
	Project Work	HC	0:0:7	7	15	15	70	100	22D401	
	Molecular plant pathology	SC	3:1:0	4	15	15	70	100	22D402	
	Stem cell & regenerative medicine	SC	3:1:0	4	15	15	70	100	22D403	

Question Paper pattern (THEORY)

SEMESTER M.Sc. EXAMINATION- JULY 2022
SCHEME: SEMESTER – CBCS
BIOTECHNOLOGY/MICROBIOLOGY/BIOCHEMISTRY
SUBJECT:
(Paper Code:----------)

Time: 03 Hours **Max. Marks: 70**

Instruction: Draw diagrams wherever necessary.

I. Answer any ten of the following: [10X2=20]

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

II. Answer any four of the following: [4X5=20]

13.
14.
15.
16.
17.
18.

III. Answer any three of the following: [3X10=30]

19.
20.
21.
22.
23.

****

POOJA BHAGAVAT MEMORIAL MAHAJANA EDUCATION CENTRE
PG WING OF SBRR MAHAJANA FIRST GRADE COLLEGE (AUTONOMOUS)
K.R.S. Road, Metagalli, Mysuru-570016
Accredited by NAAC with 'A' grade
Affiliated to University of Mysore

DEPARTMENT OF STUDIES IN BIOTECHNOLOGY

PROCEEDINGS OF THE BOARD OF STUDIES MEETING

The meeting of the Board of Studies for M.Sc., Biotechnology program was held on **13.09.2022 at 11.00 AM** at DOS in Biotechnology, Pooja Bhagavat Memorial Mahajana Education Centre, PG wing of SBRR Mahajana First Grade College (Autonomous), K.R.S. Road, Metagalli, Mysuru.

The following Board members were present/absent

Sl. No.	Name and Address	Signature
1	Dr. Krishna Kumar HN Chairman, Board of Studeis-Biotechnology PBMMEC, PG Wing, Metagalli, Mysuru	H.N. Krishnakumar 13/09/2022
2	Dr. Ramachnadra Kini Professor, DOS in Biotechnology, University of Mysore, Manasagangotri, Mysuru.	
3	Dr. Raju N.G. Associate Professor and Head Department of Biotechnology, Karnataka State Open University, Mysuru.	
4	Dr .Girish .K Assistant Professor Department of Microbiology Government College for Women, Kolar.	
5	Dr. Gururaj HB Co-Founder Director-Chief Operations & Chief Scientific Officer E2E Biotech Pvt.Ltd. AIC Jyothy Institute of Technology, Bengaluru.	

6	Dr. S.R. Ramesh Prof. & Chief Scientist, DOS in Life Sciences PBMME Centre, PG Wing of SBRR Mahajana First Grade College (Autonomous) K.R.S. Road, Metagalli, Mysuru.	
7	Dr. Jyoti Bala Chauhan Professor, DOS in Biotechnology PBMME Centre, PG Wing of SBRR Mahajana First Grade College (Autonomous), K.R.S. Road, Metagalli, Mysuru.	13/9/2022
8	Ms. Smitha Grace SR Assistant Professor, DOS in Biotechnology PBMME Centre, PG Wing of SBRR Mahajana First Grade College (Autonomous), K.R.S. Road, Metagalli, Mysuru.	13/9/2022
9	Dr. Nandini B Assistant Professor, DOS in Biotechnology PBMME Centre, PG Wing of SBRR Mahajana First Grade College (Autonomous), K.R.S. Road, Metagalli, Mysuru.	13/9/2022
10	Mr. Vishnu MV Medical Scribe, Scribe EMR systems Pvt. ltd. Coimbatore.	-Absent-

AGENDA

1. Approval of the syllabus for M.Sc., Biotechnology program
2. Approval of the panel of Examiners.
3. Any other subject: Nil

RESOLUTIONS

1. The board unanimously approved the syllabus for M.Sc., Biotechnology program
2. The board unanimously approved the panel of examiners.
3. Any other suggestions: Nil

The BOS chairman thanked all the members for their active participation and constructive suggestions.

H. N. Krishnakumar

(Dr. Krishna Kumar HN)
BOS Chairman

908Y

POST-GRADUATE WING OF SBRR MAHAJANA FIRST GRADE COLLEGE

(Autonomous)

Accredited by NAAC with 'A' grade

Pooja Bhagavat Memorial Mahajana Education Centre

K.R.S. Road, Metagalli, Mysuru-570016.

Affiliated to University of Mysore.

DEPARTMENT OF STUDIES IN BIOCHEMISTRY

REGULATIONS
2022-2023

UPDATED REGULATIONS FOR CHOICE BASED CREDIT SYSTEM (CBCS) AND CONTINUOUS ASSESSMENT GRADING PATTERN (CAGP) FOR

M.Sc., BIOCHEMISTRY PROGRAMME WITH EFFECT FROM 2022

PREAMBLE

The University Grants Commission (UGC) has stressed on speedy and substantive academic and administrative reforms in higher education for promotion of quality and excellence. The Action Plan proposed by UGC outlines the need to consider and adopt Semester System, Choice Based Credit System (CBCS), and Flexibility in Curriculum Development and Examination Reforms in terms of adopting Continuous Evaluation Pattern by reducing the weightage on the semester- end examination so that students enjoy a de-stressed learning environment. Further, UGCexpects that institutions ofhigher learning draw a roadmap in time bound manner to accomplishthe above.

ABOUT THE COURSE

The M.Sc., Biochemistry course of the University of Mysore is approved by the University Grants Commission. The syllabus is designed to provide a holistic insight intothe subject by experts of the University and was adopted for teaching in the Centre. The Department is well furnished and provided with state-of-the-art laboratory facilities. The Department has highly qualified andexperienced faculty for the students to learn and experiment, hands on, with techniques of great relevance to current day bio industries. Besides, the Centre also invites eminent Scholars, Scientists and Professors from UOM, CFTRI, DFRL and other institutions for special lecturesto enlighten students on most recent developments in the subject. The students are also encouraged to take part in scientific seminars, group discussions and quiz competitions apart from the other extracurricular activities. Our students have won prizes in intercollegiate essay, debate and music competitions.

OBJECTIVE

The Department makes it their mission to provide socially and industrially relevant post- graduate education and training. The Department also undertakes basic and appliedresearch in the area of Biochemistry as related to the sustainability of the Earth Ecosystem.

The Department endeavors to build and enhance the capabilities of the future generation by providing quality education that provides a deep insight into the subject that can be exploited to build sustainable bio-enterprises. The Department also strives to produce technically highly qualified and skilled scientists to help the bio-industries.

1. TITLE AND COMMENCEMENT

These Regulations shall be as per the University of Mysore regulations for Choice Based Credit System (CBCS) and Continuous Assessment Grading Pattern (CAGP) for M.Sc., Biochemistry program. These Regulations shall come into force from the academic year 2019.

2. PROGRAM OFFERED

(1) **M.Sc.,**: Biochemistry

3. ABOUT THE ASSESSMENT AND CREDITS:

Credit Distribution: The Choice Based Credit System (CBCS) comprises Hard Core, Soft Core subjects for Biochemistry Students and Open Elective for students other than Biochemistry.

Following shall be the minimum and maximum subjects per semester:

The credit pattern is Lecture (L); Tutorial (T); Practical (P); (L: T: P) Pattern.

Course is of 4 credits, and the different credit distribution patterns in L: T: P format is:

0 : 0,	2 : 1,	1 : 2,	0 : 3,	3 : 0,
1 : 1,	2 : 0,	0 : 2,	1 : 0,	0 : 1,
2 : 2,	4 : 0,	0 : 4,	1 : 3,	3 : 1,

The concerned BoS will choose the convenient credit pattern for every course based on the requirement.

One semester period is 16 weeks of teaching and learning.

Duration of semester is 20 weeks that includes semester end examinations.Credit Pattern:

Hard Core: 3 – 6 Credits **Soft Core:** 2 – 4 Credits **Open elective:** 4 Credits

Project Work: 6 Credits

Course Type	Credits
Hard Core	Minimum Credits - 42 and Maximum Credits - 52
Soft Core	Minimum Credits – 16
Open Elective	Minimum Credits - 4

- A Candidate can enroll for **maximum of 24 Credits per semester** inclusive of OpenElectiveearned from the other Departments.
- A Candidate has to earn a minimum of **76 Credits** for successful completion of aMastersdegree.
- A minimum 76 Credits and additional 18 Credits (76 + 18 = 94 Credits) shall acquireadd on Proficiency Diploma.

•

Continuous Assessment Pattern:

Continuous Assessment	Time Duration	Marks		Minimum 30% and an aggregate of 40% to declare pass
		Max	Min	
C1	1 week to 8 weeks	15	4.5	
C2	9 week to 16 weeks	15	4.5	
C3	Complete 16 weeks	70	21	

Finally, awarding the grades should be completed latest by 24th week of the semester.

4. ELIGIBILITY FOR ADMISSION

Students of Bachelors of Science degree from any UGC recognized Universities in life science subjects with Chemistry or Biochemistry as major subjects are eligible. Students from Foreign National degree will apply through equivalence committee. Minimum percentage of marks is as prescribed by the University of Mysore regulations for admission ie., **45% for general category and 5% relaxation for SC/ST students**.

5. SETTING QUESTIONS PAPERS AND EVALUATION OF ANSWERSCRIPTS

1. Questions papers in three sets shall be set by the internal examiner for a course. Whenever there are no sufficient internal examiners, the chairman of BOE shall get the questions papers set by external examiners.

The Board of Examiners shall scrutinize and approve the question papers and scheme of valuation.

2. (i) There shall be single valuation for all theory papers by internal examiners. In case, the number of internal examiners falls short, external examiners may be invited.

(ii) The examination for Practical work/ Field work/Project work will be conducted jointly by two internal examiners. However the BOE on its discretion can also invite external examiners if required.

5.0 Scheme of Instructions

5.1 A Masters Degree program is of 4/6 semesters-two/three year's duration forregular candidates. A regular candidate can avail a maximum of 8/12 semesters – 4/6 years (in one stretch) to complete Masters' Degree (including blank semesters, if any). Whenever, a candidate opts for blank semester(s)/DROP in a course or in courses or is compelled to DROP a course or courses as per the provision of the regulation, he/she has to study the prevailing courses offered by the department as perthe prevailing scheme, when he/she continues his/her study.

5.2 A candidate has to earn a minimum of 76 credits, for successful completion of Master's degree with a distribution of credits for different courses as given in the following table.

5.3

Course Type	**Credits**
Hard Core	A minimum of 42, but not exceeding 52
Soft Core	A minimum of 16
Open Elective	A minimum of 4

Every course including project work, practical work, field work, seminar, self- study elective should be entitled as

hard core or soft core or open elective by the BoS concerned.

Note: Minimum credit requirement for the award of master's degree in specific programmes, refer Annexure III

5.4 A candidate can enrol for a maximum of 24 credits per semester with the approval of the concerned department.

5.5 Only such candidates who register for a minimum of 18 credits per semester inthe first two semesters and complete successfully 76 credits in total of the 4 semesters shall be consideredfor declaration of ranks, medals and are eligible to apply for student fellowship, scholarship, free ships and hostel facilities.

5.6 In excess to the minimum of 76 credits for masters degree in the concerned discipline / course of study, a candidate can opt to complete a minimum of 18 extra credits to acquire **add on proficiency diploma** in that particular discipline

/course along with the masters' degree. In such of the cases wherein, a candidate opts to earn at least 4extra credits in different discipline / courses in addition to a minimum of 76 credits at masters level as said above then an **add on proficiency certification** will be issued to the candidate by listing the courses studied and grades earned.

5.7 A candidate admitted to Masters Program can exercise an option to exit with Bachelor Honors Degree / PG diploma after earning 40 credits successfully.

6.0. Continuous Assessment, Earning of Credits and Award of Grades

The evaluation of the candidate shall be based on continuous assessment. The Structure for evaluationis as follows:

Assessment and evaluation processes happen in a continuous mode. However, for reporting purposes, a semester is divided into 3 discrete components identified as C1, C2, and C3.

6.1 The performance of a candidate in a course (30:70 pattern) will be assessed for a maximum of 100 marks as explained below:

6.1.1 The first component (C1), of assessment is for 15 marks. This will be based on test/ assignment/seminar/quiz/group discussions, etc., during the first half of the semester; the first 50% of the syllabus will be completed. This shall be consolidated during the 8th week of the semester. Beyond 8th week, makingchanges in C1 is not permitted.

6.1.2 The second component (C2), of assessment is for 15 marks. This will be based on test/ assignment/seminar/quiz/group discussions etc. The continuous assessment and scores of second half of the semester will be consolidated during the 16th week of the semester. During the second half of the semester the remaining units in the course will be completed.

6.1.2.1. The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) will be proposed by the teacher(s) concerned before the commencement of the semester and will be discussed and decided in the respective Departmental Council. The students should be informed about the modalities well in advance. The evaluated courses/assignments during component I (C1) and component II (C2) of assessment are immediately returned to the candidates after obtaining acknowledgement in the register maintained by the concern teacher for this purpose.

6.1.3 Setting question papers and evaluation of answer scripts:

I. Question papers in two sets shall be set by the internal examiner and one set by external examiner for a course. Whenever there are no sufficient internal examiners, The Chairman, BoE shall get the question papers set by external examiners.

Whenever there are no external examiners, The Chairman, BoE shall get the question papers set by internal examiner.

II. The Board of Examiners shall scrutinize and approve the question papers and scheme ofevaluation.

III. (i) There shall be single evaluation for all theory papers by internal examiner and 25% ofthe total scripts will be reviewed by an external examiner.

(ii) The average of first valuation and the review evaluation will be considered as the final marks ofthe candidate.

(iii) If there is difference of marks in maiden and reviewed evaluation is greater than 15 marks then the script will go for third evaluation by the external examiner andmarks awardedin the third evaluation will be final.

(iv) The examination for Practical work/ Field work/ Project work will be conductedjointly by oneinternal and one external examiner.

(v) If a course is fully of (L=0): T: (P=0) type, then the examination for C3Component will be asdecided by the BOS concerned.

IV.Challenge Evaluation

A student who desires to apply for challenge evaluation shall obtain a Xerox copy of the answer script by paying the prescribed fee within 10days after the announcement ofthe results. He / She can challenge the grade awarded to him/her by surrendering the grade card and by submitting an application along with the prescribed fee to the Controller of Examinations within
15 days after the announcement of the results. This challenge evaluation is only for C3 component.

The answer scripts, for which challenge evaluation is sought for, shall be sent to external examiner.
The marks awarded in the challenge evaluation will be final.

6.1.4 In case of a course with only practical component a practical examination will be conductedwith two examiners (one Internal and one external)

A candidate will be assessed on the basis of

a) Knowledge of relevant processes
b) Skills and operations involved
c) Results / products including calculation and reporting.

If external examiner does not turn up then both the examiners will be internal examiners. The durationfor semester-end practical examination shall be decided by the Departmental council.

6.1.5 If **X** is the marks scored by the candidate out of 70 in C3 in theory examination, if **Y** is the marks scored by the candidate out of 70/50/40 in C3 in Practical examination, and if **Z** is the marks scored by the candidate out of 70/50/40 in C3 for a course of (L=0):T:(P=0) type that is entirely tutorial based course, then the final marks (M) in C3 is decided as per the following table.

L.T.P distribution	**Formula to compute Mark (M) in C3**
L:T:P	$\frac{[(L+T)*X]+[(T+P)*Y]}{L+2T+P}$

L:(T=0):P	(L*X)+(P*Y) L+P
L:T:(P=0)	X
L:(T=0):(P=0)	X
(L=0):T :P	Y
(L=0): (T=0):P	Y
(L=0): T:(P=0)	Z

Continuous Formative Evaluation/Internal Assessment (HC, SC & OE)

Credit Distribution: The Choice Based Credit System (CBCS) comprises HardCore, Soft Core subjects for Biochemistry Students and Open Elective for students other than Biochemistry.

Following shall be the minimum and maximum subjects per semester:

The credit pattern is Lecture (L); Tutorial (T); Practical (P); (L: T: P) Pattern.

Course is of 4 credits, and the different credit distribution patterns in L: T: P format is:

0 : 0,	2 : 1,	1 : 2,	0 : 3,	3 : 0,
1 : 1,	2 : 0,	0 : 2,	1 : 0,	0 : 1,
2 : 2,	4 : 0,	0 : 4,	1 : 3,	3 : 1,

The concerned BoS will choose the convenient credit pattern for every course based onthe requirement.

One semester period is 16 weeks of teaching and learning.

Duration of semester is 20 weeks that includes semester end examinations.

Credit Pattern:

Hard Core: 3 – 6 Credits **Soft Core:** 2 – 4 Credits **Open elective:** 4 Credits

Project Work:

Course Type	Credits
Hard Core	Minimum Credits - 42 and Maximum Credits - 52
Soft Core	Minimum Credits – 16
Open Elective	Minimum Credits - 4

- A Candidate can enroll for **maximum of 24 Credits per semester** inclusiveof OpenElective earned from the other Departments.
- A Candidate has to earn a minimum of **76 Credits** for successfulcompletion of a Masters degree.
- A minimum 76 Credits and additional 18 Credits (76 + 18 = 94 Credits) shallacquireadd on Proficiency Diploma.

Continuous Assessment Pattern:

The details of continuous assessment (30:70 patterns) are summarized in thefollowing table:

Component	Syllabus in a Course	Weightage	Period of Continuous Assessment	Marks
C1	First 50%	15%	First half of the semester To be consolidated by 8thweek	15
C2	Remaining 50%	15%	Second half of the semester. To be consolidated by 16thweek	15
C3	Semester-end examination (All units of the course)	70%	To be completed during 18th-20th Week.	70

Continuous Assessment	Time Duration	Marks		Minimum 30% and an aggregate of 40% to declare pass
		Max	Min	
C1	1 week to 8 weeks	15	4.5	
C2	9 week to 16 weeks	15	4.5	
C3	Complete 16 weeks	70	21	

Finally, awarding the grades should be completed latest by 24th week of thesemester.

Theory evaluation:

Component – I (C1): Periodic Progress, Progress Reports, test (15%)calculated for 15marks

Component – II (C2): Periodic Progress, seminar, test (15%) calculatedfor 15marks)

Component III: (C3): Final exam (end semester exam for 70marks) (70%)

Practical evaluation:

Component – I (C1): Periodic Progress, Laboratory record and Progress Reports (15%)

Component – II (C2): Results of Work, tour report, assignment, class tests,laboratory exercise and Draft Report (15%)

Component III: (C3): (70%) Practical exams to be conducted for 6 hours, students will prepare reagents and perform the experiments, report to the examiners. A viva voce will be conducted during practical examination foreach student and marks are allotted accordingly from the experimental efficiency and viva.

In case a candidate secures less than 30% in C1 and C2 put together in a course, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

Minor/ Major Project Evaluation:

Right from the initial stage of defining the problem, the candidate has to submit the progress reports periodically and also present his/her progressin the form of seminars in addition to the regular discussion with the guide. Components of evaluation are as follows:

Component – I (C1): Periodic Progress and Progress Reports (15%)Component –

II (C2): Results of Work and Draft Report (15%) Component– III (C3): Final

Viva-voce and evaluation (70%).

The report evaluation is for 40% and Viva-voce examination is for 30%.

6.2 In case a candidate secures less than 30% in C1 and C2 put together in a course, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

In case a candidate's class attendance in a course is less than 75%, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

Teachers offering the courses will place the above details in the Department Council meeting during the last week of the semester, before the commencement of C3, and subsequently a notification pertaining to the above will be brought out by the Chairman of the Department before the commencement of C3 examination. A copy of this notificationshall also be sent to the office of the Director & the Controller of Examinations.

6.3 In case a candidate secures less than 30% in C3, he/she may choose DROP/MAKEUP option.

In case a candidate secures more than or equal to 30% in C3, but his/her grade (G) = 4, as per section 6.9 below, then he/she may be declared to have been conditionally successful in this course, provided such a benefit of conditional clearance based on G=4 shall not be availed for more than 8 credits for the entire program of Master's Degree of two years.

In case a candidate secures more than 30% in C3, he/she may chooseDROP/MAKE-UP option.

The candidate has to exercise his/her option immediately within 10 days from the date of notification of results.

A MAKE UP examination for C3 shall be conducted in all the semesters. Candidates can register for the MAKE UP examination within 10 days from thedate of notification of results. The MAKE UP examination will be conducted within one month of the notification of the results.

If a candidate is still unsuccessful, A MAKE UP Examination for odd semester courses will be conducted along with next regular odd semester examinations and for even semester courses along with next regular even semester examinations; however, not exceeding double the duration norm in one stretch from the date of joining the course.

6.4 A candidate has to re-register for the DROPPED course when the course is offered again by the department if it is a hard core course. The candidate may choose the same or an alternate core/elective in case the dropped course is soft core / elective course. A candidatewho is said to have DROPPED project work has to re-register for the same subsequently within the stipulated period. **The details of any dropped course will not appear in the grade card.**

6.5 The tentative / provisional grade card will be issued by the Controller of Examinations at the end of every semester indicating the courses completed successfully. This statement will not contain the list of DROPPED courses.

6.6 Upon successful completion of Bachelors Honors/Master's Degree, a final grade card consisting of

grades of all courses successfully completed by the candidate will be issued by the Controller of Examinations.

6.7 The grade and the grade point earned by the candidate in the course will be as givenbelow.

Marks(M)	Grade	Grade Point (GP = V x G)
30-39	4	V*4
40-49	5	V*5
50-59	6	V*6
60-64	6.5	V*6.5
65-69	7	V*7
70-74	7.5	V*7.5
75-79	8	V*8
80-84	8.5	V*8.5
85-89	9	V*9
90-94	9.5	V*9.5
95-100	10	V*10

Here, **P** is the Percentage of marks (P = [(C1+C2) + M] secured by a candidate in a course which is rounded to nearest integer. **V** is the credit value of course. **G** is the Grade and **GP** is the Grade Point.

6.8 A candidate can withdraw any course within ten days from the date of notification of final results. Whenever a candidate withdraws a paper, he/she has to register for the same course in case it is hard core course, the same course or an alternate course if it is soft core/open elective.

A DROPPED course is automatically considered as a course withdrawn.

6.9 Overall Cumulative Grade Point Average (CGPA) of a candidate after successfully completing the required number of credits (76) is given by:

CGPA = ΣGP / Total Number of Credits

7. Classification of Results

The Final Grade Point (FGP) to be awarded to the student is based on CGPA secured by the candidate and is given as follows.

CGPA	NumericalIndex	Qualitative Index
4<= CGPA <5	5	Second Class
5<= CGPA <6	6	
6<= CGPA <7	7	First Class
7<= CGPA <8	8	
8<= CGPA <9	9	Distinction
= CGPA <10		

Overall Percentage = 10* CGPA or is said to be 50% in case CGPA<5

Medium of Instruction

The medium of instruction shall be English. However, a candidate will be permitted to write the examinations either in English or Kannada. This rule is not applicable to languages.

8. Attendance and Conduct

Students SHALL NOT take up any employment/course, part time or full time during their study.Students found violating this rule shall be removed from the course. Minimum attendance of 75% of actual working hours in all the courses is required. A student who does not satisfy the requirements of attendance and conduct shall not be permitted to write examination.

In the case of a candidate who represents his institution/University/Karnataka State/Nation in Sports/NCC/NSS/Cultural or any official activities, shortage of attendance up to maximumof 15 days in a Semester per course may be condoned, based on the recommendation and prior permission of the Head of the Institution concerned.

The Head of the Department shall notify the list of all students who have less than 75% attendance in each course at the beginning of the 16th week of the semester. A copy of the same should be sent to the Controller of Examination of the college.

9. Transfer within University and from other Universities

a) Transfer to a different institution within the University is permitted only at thebeginning ofthe academic year.

b) A Candidate seeking transfer to a different institution within University of Mysore shouldhave completed all the courses/papers of the previous semesters.

c) A Candidate from any other university can join a program of this college only at thebeginning of the academic year.

d) A Candidate from other university seeking admission by transfer to the collegeshould havecompleted all the courses of the previous semesters.

10. Provision for Appeal

If a candidate is not satisfied with the evaluation of C1 and C2 components, he / she can approach the grievance cell with the written submission together with all facts, the assignments, and test papers etc., which were evaluated. He/she can do so before the commencement of semester-end examination. The grievance cell is empowered to revise the marks if the case is genuine and is also empowered to levy penalty as prescribed by thecollege on the candidate if his/her submission is found to be baseless and unduly motivated. This cell may recommend takingdisciplinary/corrective action on an evaluatorif he/she found guilty. The decision taken by the grievance cell is final.

For every program there will be one grievance cell. The composition of the grievance cell is as follows.

1. The Controller of Examinations-ex-officio Chairman / Convener
2. One senior faculty member (other than those concerned with the evaluation of the course concerned) drawn from the department/discipline and/or from the sister departments/sister disciplines.
3. One senior faculty member / course expert drawn from outside the department.

11. Discipline

1) Every student is required to maintain discipline and decorum both inside and outside the campus in accordance with the instructions of the college and also as per the instructions issued by the University of Mysore/Government of Karnataka/UGC from time to time regarding Student Conduct Rules.

2) Any act of indiscipline of a student is first to be considered by the Disciplinary committee of the college for necessary action. If the issue demands more serious consideration, the act of indiscipline will be reported to the concerned authority who will initiate appropriate action.

3) Concerned authority may take necessary actions depending upon the prima facie evidence.

12. Any other issue not envisaged above, shall be resolved by the competentauthority of the autonomous college, which shall be final and binding.

Any matter which is not covered under this regulation shall be resolved as per the Mysore University Regulations in this regard.

Mahajana Education Society (R)
Education to Excel
SBRR Mahajana First Grade College (Autonomous)
Post Graduate Wing
Pooja Bhagavat Memorial Mahajana Education
CenterKRS Road, Metagalli, Mysuru

SCHOOL OF LIFE SCIENCES

M.Sc. BIOCHEMISTRY
Choice Based Credit System (CBCS)

Syllabi for M.Sc. Biochemistry

1-4 Semesters

2022-23

PG ☑

DEPARTMENT OF STUDIES IN BIOCHEMISTRY

Motto: Our motto is to provide impetus for education, training, opportunities and work environments that are characterized by honesty, liability, impartiality, and a commitment to understand concepts of life at the Biochemical and Molecular level for all cadres of society.

Vision: Our vision is to obtain a well-defined elucidation of the molecular interactions that underlie both normal physiology and disease states of life forms which is the foundation of etiology, drug designing and personalized medicine. Additionally, our goal is to understand the molecular mechanisms of and to develop new tools, for biology such as biosensors, biomarkers, study models and therapeutic molecules that will enhance the quality of life through better medical care, disease prevention measures, nutrition, and environmentally sound processes.

Mission: Provision of academic environment for promoting the quality of learning and research in biochemistry. To be a diverse, inclusive community that serves students, our professionals and the public through innovative education, individualized advising, holistic mentoring and cutting-edge molecular life science research that creates knowledge and solves real-life problems.

Objectives

To enable students to become Teachers in academia.
To enable motivated researchers in research institutions or industries.
To enable entrepreneurial skills so as to serve the industries as well as initiate ownfirms.

PO: Program outcome:

1. To develop an ability to acquire in-depth theoretical and practical knowledge of Biochemistry
2. To demonstrate an understanding of structure and metabolism of biological macromolecules and to understand the regulation and disorders of metabolic pathways.
3. To gain proficiency in laboratory techniques in biochemistry and biological sciences like immunology, physiology, molecular biology, enzymology and biotechnology.
4. To develop an ability to understand the technical aspects of existing technologies and to provide cost efficient solutions that help in addressing the biological and medical challenges faced by mankind. Additionally, the practical skills are improved which help their research experience among academic or industrial R&D programs.
5. To understand the published literature by using online and offline methods; to be able to apply the scientific method to the processes of experimentation and hypothesis testing. To develop an ability to translate knowledge of Biochemistry to address environmental, intellectual, societal, and ethical issues through innovative thinking and research strategies.
6. To develop an ability to put forward the scientific perception to a person/ community belonging to non-science background. Also, inculcate skills for teaching in academic institutions for undergraduate and postgraduate students.
7. Develop confidence in taking competitive examination in the field of life sciences both in India and abroad so that they can pursue higher education.

Pedagogies employed

1. The regular class room sessions will include the use of black board/ white board,power point presentations, video presentations.
2. The class room teaching will also use additional information and communicationstechnology (ICT).
3. Group discussions about the class and student seminars.
4. Tutorials include interaction with individual student for the preparation of seminars,practical problems.
5. Each student performs experiments as per the protocol in practical sessions.
6. Student seminar/ research paper presentation in each semester.
7. Project work on a small research problem.
8. Literature review in the form of Dissertation and presentation.
9. Invited talks from eminent scientists.
10. Laboratory / industrial visits to understand the real time processing/ functioning of acompany.

List of BoS Members

Sl. No.	Member	Name and address
1	Chairperson	**Dr. Mahadesh Prasad AJ, Professor,** DoS in Biochemistry School of Life Sciences, SBRMFGC (Autonomous) Pooja Bhagavat Memorial Mahajana Education Centre, Mysuru
2	Expert Member	**Dr. S. R. Ramesh, Chief Scientist,** School of Life Sciences SBRMFGC (Autonomous), Pooja Bhagavat Memorial Mahajana, Education Centre, Mysuru
3	Member	**Dr. Girish Chandran, Coordinator,** DoS in Biochemistry School of Life Sciences, SBRMFGC (Autonomous) Pooja Bhagavat Memorial Mahajana Education Centre, Mysuru
4	Member	**Dr. Kiran B.** , Assistant Professor, DoS in Microbiology School of Life Sciences, SBRMFGC (Autonomous) Pooja Bhagavat Memorial Mahajana Education Centre, Mysuru
5	University Nominee	**Dr. Gopal Marathe K., Professor,** DoS in Molecular Biology University of Mysore, Mysuru
6	Member from another College	**Mr. Bhargava C.S., Assistant Professor,** Dept. of Biochemistry, Maharani's Govt. Science College (Autonomous), Mysuru
7	Expert Member from External University	**Dr. Naveen Y.P.,** Assistant Professor and Young Researcher Dept. of Biochemistry, Adi Chunchanagiri University, Nagamangala, Mandya
8	Expert Member from External University	**Dr. Kumar J.R.,** Professor JSS AHER, Mysuru
9	Industry Member	**Mr. Sagar Krishna Bhat,** Molecular Biologist KAYPEEYES BIOTECH Pvt. Ltd. 13 & 14, Food Industrial Area, Metagalli, Mysuru 16
10	Alumni Member	**Ms. Milana C.,** Clinical Data Manager Starmark Software, Mysuru

Course Structure

M.Sc. DEGREE IN BIOCHEMISTRY (September 2022)

Credit Distribution for Each Semester:

CHOICE BASED CREDIT SYSTEM

Semesters	Hard Core (HC)		Soft Core (SC)		Open Elective (OE)		Total	
	Number of Papers	Credits	Number of Papers	Credits	Number of Papers	Credits	Number of Papers	Credits
I semester	6	19	01	03	-	-	7	22
II semester	4	11	02	06	01	04	7	21
III semester	4	12	02	08	-	-	6	20
IV semester	1	10	01	03	-	-	2	13
Total	15	52	06	20	01	04	22	76

Credits to be claimed for Successful award of M.Sc. degree in Biochemistry

	Minimum Required	Obtained
Minimum Credits from Hard Core	42	52
Minimum Credits from Soft Core	16	20
Minimum Credits from Open Elective	04	04
Minimum Total Credits	**76**	**76**

I Semester

Sl. No.	Title of the Paper	Course Type	Credit Pattern			Total Credits
			L	T	P	
1	Fundamentals of Biochemistry	FCHC	3	1	0	4
2	Techniques in Biology	FCHC	3	1	0	4
3	Molecular Cell Biology	FCHC	3	1	0	4
4	Bioorganic and Bioinorganic Chemistry	HC	3	0	0	3
5	**Practical 1A** Experiments in Biological techniques and Bioorganic chemistry & Tour Report (Laboratory Visit and Tour Report)	HC	0	0	4	2
6	**Practical 1B** Experiments in Cell Biology, Genetics and Bioinorganic chemistry & Seminar	HC	0	0	4	2
	Soft Core (Any One)					
7	Genetics	FCSC	3	0	0	3
	Membrane Biology	SC	3	0	0	3
TOTAL CREDITS: 22 6 Hard Core (HC): 19 Credits; 1 Soft Core (SC): 03 credits						

II Semester

Sl. No.	Course	Course Type	Credit Pattern			Total Credits
			L	T	P	
1	Molecular Biology	FCHC	3	1	0	4
2	Enzymology	HC	3	1	0	3
3	**Practical 2A** (Experiments in Molecular Biology and Energy Metabolism; Laboratory visits and Tour report)	HC	0	0	4	2
4	**Practical 2B** (Experiments in Enzymology and Research Paper presentation)	HC	0	0	4	2
	Soft Core (Any Two)					
5	Metabolism of Lipids	SC	3	0	0	3
6	Metabolism of Carbohydrates	SC	3	0	0	3
	Endocrinology	SC	3	0	0	3
	Open Elective papers offered for students of other disciplines					
7	**OE: Biology for Non-biologists**	OE	2	2	0	4
	OE: Nutrition in Health and Disease	OE	2	2	0	4
	Students of M.Sc. Biochemistry can opt from OE courses offered by non-science Master programs (minimum requirement 4 credits)					
TOTAL CREDITS: 21 4 Hard Core (HC): 11 Credits; 2 Soft Core (SC): 06 credits; 1 Open elective (OE): 04 credits						

III Semester

Sl. No.	Course	Course Type	Credit Pattern			Total Credits
			L	T	P	
1	Immunology	FCHC	3	1	0	4
2	Metabolism of Amino Acids and Proteins	HC	3	1	0	4
3	**Practical-IIIA** Experiments in Immunology and amino acid metabolism. Study tour and tour report.	HC	0	0	4	2
4	**Practical IIIB** Experiments in Metabolism and Review of Literature.	HC	0	0	4	2
	Soft Core (Any Two)					
5	Metabolism of Nucleic Acids	SC	3	1	0	4
6	Research Methodology, Biostatistics, and Bioinformatics	SC	3	1	0	4
	Physiology and Nutrition	SC	3	1	0	4
TOTAL CREDITS: 20 4 Hard Core (HC): 12 Credits; 2 Soft Core (SC): 08 credits						

IV Semester

Sl. No.	Course	Course Type	Credit Pattern			Total Credits
			L	T	P	
1	Research Project Work, Report and Viva Voce	HC	0	2	20	10
	Soft Core (Any One)					
2	Clinical Biochemistry	SC	3	1	0	3
3	Biotechnology	SC	3	1	0	3
TOTAL CREDITS: 13 1 Hard Core (HC): 10 Credits; 1 Soft Core (SC): 03 credits						

LTP: Lecture, Tutorial, Practical FCHC: Foundation Course Hard Core;FCSC: Foundation Course Soft Core.

M.Sc. Biochemistry I Semester	Fundamentals of Biochemistry Course Code: 22F101	FCHC – Foundation Course Hard Core
Total Hours: 48	Credits: 04 (LTP - 3:1:0)	Total Marks: 15+15+70 = 100

Module	Course contents	
1	**Basics of Chemical Bonding and Carbohydrates Bonding:** Covalent bond; coordinate bond; coordinate bond formation in transition metals. Bonding of iron in hemologlobin and cytochromes, cobalt in Vit B_{12}, magnesium in chlorophyll. Special properties of water; Structure and bonding, non-covalent interactions, reactions of carbohydrates. **Carbohydrates**: Structure and classification of carbohydrates, monosaccharides (pentoses, hexoses), disaccharides (lactose, sucrose, maltose) and polysaccharides (starch, cellulose, glycogen and bacterial cell wall polysaccharides) explanations.	12h
2	**Basics of Amino Acids and Proteins** **Aminoacids:** Nomenclature, classification and buffering properties, zwitterionic structure, reactions of Amino acids. **Proteins**: Primary, secondary, tertiary and quaternary structures, protein sequencing. **Factors responsible for protein folding**: Anfinsen's experiment. Non-covalent interactions and S-S bridges in stabilizing the proteins, Denaturation and renaturation of proteins, molten globule, chaperones.	12h
3	**Basics of Lipids & Enzymology Lipids:** Classification & reaction of lipids; oils, fats, and waxes. Occurrence and properties of fatty acids, esters of fatty acids, cholesterol, phospholipids, glycolipids, sphingolipids, cerebrosides and gangliosides. Role in cell membrane. **Enzymology**: Classification, enzyme activity, Michaelis-Menten kinetics, LB plot, inhibition - competitive, uncompetitive, non-competitive, determination of Ki, active site, allosterism - ATCase, isoenzymes- LDH, catalytic strategies, co-enzymes and cofactors, multienzyme complexes-PDC.	12h
4	**Basics of Nucleic Acids**: DNA as genetic material ,Griffith ,Avery & Macleod experiments , isolation of DNA & RNA from biological sources, secondary structure of DNA, Watson and Crick model, Chargaff's rule; B and Z DNA. Features of mitochondrial, chloroplast DNA and plasmids. Secondary structure of tRNA and clover leaf model. Physiochemical properties of nucleic acids, melting of DNA, T_m; factors affecting T_m, C_ot curve, classification of DNA based on C_ot curve.	12h

Learning Outcomes: After studying this paper the students will know –

a. Knowledge of Chemistry of biomolecules.
b. The fundamental principles in sequencing of DNA.
c. Importance of biomolecules in the biological system.
d. Structure and function of enzymes.

References:

1. Bahl, A. 2010. Advanced organic chemistry. S Chand & Company Limited.
2. Berg, J. M., Tymoczko, J. L., and Stryer, L. 2006. Biochemistry: International edition. W H Freeman & Company Ltd.
3. Berg, J. M., Tymoczko, J. L, and Stryer, L. 2002. Biochemistry (5th Ed.). W H Freeman.
4. Mathews, P. 2002. Advanced chemistry. Cambridge low price editions. Cambridge University Press, UK.
5. Morrison, R., and Boyd, R. 1992. Organic Chemistry (6th Ed.). Englewood Cliffs, NJ: Prentice Hall.
6. Nelson, D. L., Lehninger, A. L., and Cox, M. M. 2008. Lehninger principles of biochemistry. New York :
7. Voet, D., and Voet, J. G. 2010. Biochemistry, (4th Ed.) New York: J. Wiley & Sons.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	2	2	2	3	3	3
CO2	2	1	2	1	2	2	2
CO3	2	2	2	2	1	1	2
CO4	1	2	1	2	2	2	1
Weighted average	2	1.75	1.75	1.75	2	2	2

M.Sc. Biochemistry I Semester	Techniques in Biology Course Code: 22F102	FCHC – Foundation Course Hard Core
Total Hours: 48	Credits: 04 (LTP - 3:1:0)	Total Marks: 15+15+70 = 100

Module	Course contents	
1	**Biological samples: Types and preparation Study Models:** *In vivo* and *in vitro* models; Microbial, Animal, Plants; choice of models; types of studies, Auxotrophs. Routes of exposure of test chemicals in animals. Culture: microbes, animal and plant cells in laboratory. **Cell fractionation techniques:** Tissue homogenization, Cell lysis techniques, extraction of cellular contents. Protein purification techniques: salting in, salting out, dialysis and ultrafiltration. **Centrifugation:** Svedberg's constant, sedimentation velocity and sedimentation equilibrium. Ultra centrifugation: Differential and density gradient centrifugation, centrifugal elutriation, isolation of cell organelles (e.g. Mitochondria) from biological tissue samples.	12h
2	**Spectroscopic analysis** Principles and applications of colorimeter, spectrophotometer, fluorimeter, multiwall plate reader. Beer-Lambert's Law and its limitations. Extinction coefficient, chromogenic and fluorescent probes, their applications. Principle of flame photometry, and X-ray crystallography, IR, ESR, NMR & Raman's spectroscopy.	12h
3	**Chromatographic and electrophoretic techniques** **Chromatography:** Principles, working and applications of paper chromatography (radial, ascending, descending and 2-D), Thin layer chromatography, Brief introduction, application of Adsorption, Ion exchange, Gel filtration, Affinity, Gas chromatography. Chromato focusing, HPLC, UPLC and FPLC. **Protein electrophoresis:** Polyacrylamide gel electrophoresis, SDS-PAGE, IEF & 2DEF.Visualizing proteins using CBB, silver stain;glycoproteinsand lipoproteins staining,Brief introduction to Zymogram and reverse zymogram; **Nucleic acid electrophoresis:** Agarose gel electrophoresis, Visualizing nucleic acids in using Ethidium bromide and UV. Fluorescence probes: SYBR green and Eeva green, Taq man, PFGE and capillary electrophoresis.	12h
4	**Radiochemistry and Mass spectroscopy** **Isotopes:** Heavy isotopes and radio isotopes, half-life, decay constant, detection and quantitation; Principle and working of GM counter and scintillation counter (solid/liquid). **Mass spectroscopy** Principle and construction of mass spectrometer. m/e, tof, MALDI and ESI. LC-MS, LC-MS-MS. **Applications of radioactivity:** Radio isotopes in biology 3H, 14C, 32P, 131I, 35S; Labeling of proteins and nucleic acids, autoradiography, pulse chase method, carbon dating.	12h

Learning Outcomes: After studying this paper the students will know –

a. Techniques in Biology. T
b. he fundamental principles in cell homogenization.
c. Importance of bio analytical techniques.
d. Significance of radiochemistry and mass spectroscopy.

References: Slater, A.., Scott, N., and Fowler, M. 2003. Plant Biotechnology: The Genetic Manipulation of Plants. OxfordUniversity Press, Oxford, New York,////Wilson, K., and Walker, J. 2010. Principles and techniques of biochemistry and molecular biology. CambridgeUniversity Press.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	2	2	2	3	3	3
CO2	2	1	2	1	2	2	2
CO3	2	2	2	2	1	1	2
CO4	1	2	1	2	2	2	1
Weighted average	2	1.75	1.75	1.75	2	2	2

M.Sc. Biochemistry I Semester	Molecular Cell Biology Course Code: 22F103	FCHC – Foundation Course Hard Core
Total Hours: 48	Credits: 04 (LTP - 3:1:0)	Total Marks: 15+15+70 = 100

Module	Course contents	
1	**Organization of the cell** Universal features of cells, Ultra-structure of prokaryotic and eukaryotic cells (Plants and animals), Structure of plant cell wall, Structure of cell membrane and models, functions of cell membrane, Intracellular organelles: Structure and functions of Ribosomes, Golgi apparatus; Mitochondria, Chloroplast, Lysosomes, Centrosome, Endoplasmic reticulum, Nucleus-Internal organization, Chromatin- structure and function, cellular cytoskeleton.	12h
2	**Cellular processes** Cell cycle and its regulation, Cell cycle check points, Molecular dynamics of cell division, interphase, Mitosis and meiosis, Cyclins and CDKs, Cell differentiation: Stem cells, Differentiation of stem cells into different cell types and organization into specialized tissues, apoptosis, necrosis & autophagy Molecular mechanisms of membrane transport active, passive and facilitated, Receptor mediated endocytosis.	12h
3	**Cancer Biology** Introduction,Historical account, classification, Characteristics of cancer cells, hallmark features of cancer cells, Carcinogenesis, Exogenous and endogenous carcinogens, cancer initiation, promotion and progression, Cancer cell cycle, Viruses and cancer, Oncogenes, Tumor suppressor genes with examples, cancer therapy presentand future, Role of p53 in cancer. Role of phytochemicals in cancer treatment, cancer stem cells.	12h
4	**Basics of Signal Transduction** Extra-cellular matrix components, Cell junctions, Cell adhesion molecules, Hormonesand their receptors, Cell surface receptors as reception of extra-cellular signals, Typesof cell signalling, Growth factors- EGFR, VEGF, PDGF and theirSignalling, signalling through G-protein coupled receptors; Second messengers in signal transduction pathways: cAMP and calcium ions (Ca2+), signalling through Receptor tyrosine kinases ,MAP kinase pathway,P13K -Akt pathway.	12h

Learning Outcomes: After studying this paper the students will know –

a. Structural and functional components of a cell.
b. Role of cell cycle and its regulation.
c. Phytochemicals in cancer treatment and stems cells.
d. Receptors of signaling pathways.

References:

1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P. 2008. Molecular Biology of the Cell. (5thEd.) New York: Garland Science.
2. Cooper, G. M., and Hausman, R. E. 2013. The Cell: a Molecular Approach (6th Ed.). Washington: ASM,Sunderland.
3. Lodish H., and Berk A. 2016. Molecular Cell Biology (8th Ed.). New York. W H Freeman.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	2	2	2	3	3	3
CO2	2	1	2	1	2	2	2
CO3	2	2	2	2	1	1	2
CO4	1	2	1	2	2	2	1
Weighted average	2	1.75	1.75	1.75	2	2	2

M.Sc. Biochemistry II Semester	Bioorganic and Bioinorganic Chemistry Course Code: 22F104	HC – Hard Core
Total Hours: 48	**Credits: 03 (LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**Bonding:** Covalent bond; coordinate bond; coordinate bond formation in transition metals. Bonding of iron in hemologibin and cytochromes, cobalt in Vit B12, magnesium in chlorophyll.Special properties of water; Structure and bonding. Crystal field theory; Ligand field theory and Valence bond theory. Chelators; types of ligands and complexes.	**12h**
2	**Electrolytes, Non-Electrolytes and Electrodes** Osmotic pressure, vapor pressure, osmometer, Donnan membrane equilibrium. Hydrogen electrode, electrode potential, and redox potential.	**12h**
3	**Stereochemistry:** Importance of stereochemistry, position and order of groups around carbon. Geometric and optical isomerism; absolute and relative configuration.Symmetry view of chirality, relation between chirality and optical activity, representation of chiral structures by Fischer. Structure and stereochemistry of sugars and amino acids; anomer, epimer, diastereomer, sterioisomer, D and L, (+) and (-), R and S.	**12h**
4	**Mechanism of organic reactions and Heterocyclic compounds:** Intermediates and rearrangements in organic reaction. Reactionenergetic.Classification of rearrangement reactions.Reaction rates, order and molecularity of reaction.Mechanisms and stereochemistry of substitution (electrophilic and nucleophilic - sN1 and sN2 reactions) addition, elimination and rearrangement reactions.Mechanisms of ester hydrolysis.Property of aromaticity and resonance. Heterocyclic Compounds: Chemistry of furan, indole, thiazole, pterine, pteridine, isoalloxazine, pyrrole. Chemistry of porphyrins and heme and their biological importance.	**12h**

Learning Outcomes: After studying this paper the students will know –

a. The basics in chemical reactions.
b. Chemical bonding.
c. Stereochemistry of biomolecules.
d. Different types of heterocyclic compounds and their biological role.

References:

a. Bahl A. (2010) Advanced organic chemistry (22nd Edition). S Chand & Company Limited.
b. Mathews P. (2002) Advanced chemistry (5th Edition). Cambridge low price editions. Cambridge University Press UK.
c. Morrison R. and Boyd R. (1992). Organic Chemistry (6th edition). Englewood Cliffs, NJ: Prentice Hall.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	1	2	1	2	3	2
CO2	2	2	1	2	3	1	3
CO3	1	3	3	2	1	2	1
CO4	2	2	2	3	2	2	2
Weighted average	1.75	2	2	2	2	2	2

M.Sc. Biochemistry I Semester	Practical 1A (Experiments in Biological Techniques, Bioorganic chemistry & Tour Report) Course Code: 22F105	HC – Hard Core
Total Hours: 64	**Credits: 02 (LTP - 0:0:4)**	**Total Marks: 15+15+70 = 100**

1. Determination of pKa of amino acids.
2. Estimation of λmax and molar extinction coefficient (Beer Lambert's Law).
3. Isolation of starch from potatoes and estimation of purity.
4. Isolation of glycogen from chicken liver and estimation of purity.
5. Estimation of reducing sugar by DNS method.
6. Centrifugation.
7. Purification of casein from cow's milk.
8. Estimation of proteins by Lowry's method.
9. Estimation of proteins by Biuret Method.
10. Estimation of saponification of lipids.
11. Estimation of iodine value of lipids.
12. Wavelength scans of proteins and nucleic acids using a spectrophotometer.
13. Circular paper chromatography for separation of amino acids.
14. Ascending paper chromatography for separation of amino acids.
15. Descending paper chromatography for separation of amino acids.
16. 2D paper chromatography for amino acids.
17. Thin layer chromatography of amino acids (1D and2D).
18. Column chromatography for the separation of plant pigments.
19. Gel filtration (Size exclusion chromatography).
20. **Photometry**
21. Estimation of Phosphate ions using Fiske-Subbarow method.
22. Estimation of calcium.
23. Estimation of Iron using Wong's method.
24. Synthesis and purification of aspirin.
25. Estimation of polyphenols from plant samples.
26. Estimation of anthocyanins from plant samples.

Laboratory Visits:

27. Demonstration of native Poly Acrylamide Gel Electrophoresis (PAGE).
28. Demonstration of Sodium Dodecyl Sulphate-Poly Acrylamide Gel Electrophoresis (SDS-PAGE) and estimation of molecular weight of proteins.
29. Demonstration of High Performance Liquid Chromatography.
30. Demonstration of Liquid Chromatography Mass Spectroscopy (LC-MS).
31. Demonstration of X-Ray Diffraction crystallography (XRD).
32. Demonstration of Nuclear Magnetic Resonance (NMR).
33. Demonstration of Infra-Red Spectroscopy (IR).
34. Demonstration of Atomic Absorption Spectroscopy (AAS).

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	3	3	1	2	2	2
CO2	2	2	2	2	1	1	1
CO3	1	1	2	3	2	3	2
CO4	3	2	2	2	2	2	3
Weighted average	2.25	2	2.25	2	1.75	2	2

M.Sc. Biochemistry I Semester	Practical 1B (Experiments in Cell Biology, Genetics and Bioinorganic Chemistry & Seminar) Course Code: 22F106	HC – Hard Core
Total Hours: 64	**Credits: 02 (LTP - 0:0:4)**	**Total Marks: 15+15+70 = 100**

1. Distillation of water for biochemical assays.
2. Preparation buffers and solutions & Measurement of pH.
3. Microscopic examination of prokaryotic and eukaryotic cells using staining techniques.
4. Cell Counting using hemocytometer.
5. Micrometry.
6. Assessment of cell viability and cytotoxicity.
7. Preparation of liquid and solid media for growth of microorganisms
8. Isolation and maintenance of microorganisms (from soil and water) by plating, streaking and serial dilution methods, slants and stab cultures.
9. Culturing the anaerobic bacteria by candle jar method.
10. Gram staining
11. Ultra-violet killing curve and determination of mutant types in *Saccharomyces cerevisiae.*
12. Isolation of cell organelles.: Isolation of mitochondria from the animal sources and MTT reduction assay.
13. Estimation of mitochondrial enzymes: Succinate Dehydrogenase (ETC complex II)
14. Study of mitosis in onion root tips.
15. Study of meiosis in onion flower buds.
16. Study of special chromosomes- B chromosomes, and sex chromosomes.
17. Determination of chiasma frequency in onion.
18. Assessment of polytene chromosomes.
19. Study of chromosomes by air-dry technique
20. Study of Mutations in *Drosophila*
21. Study of Autosomal and sex-linked gene inheritance in *Drosophila*
22. To solve genetic problems on linkage, ordered and unordered tetrads

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	3	3	1	2	2	2
CO2	2	2	2	2	1	1	1
CO3	1	1	2	3	2	3	2
CO4	3	2	2	2	2	2	3
Weighted average	2.25	2	2.25	2	1.75	2	2

M.Sc. Biochemistry I Semester	Genetics Course Code: 22F107	FCSC – Foundation Course Soft Core
Total Hours: 48	Credits: 03 (LTP - 3:1:0)	Total Marks: 15+15+70 = 100

Module	Course contents	
1	**History and developments of genetics: Principle of Genetic Transmission:** Mendel's' Experiments, Symbols and terminology, Principle of dominance and segregation, Principle of independent assortment, Mendelian inheritance and probability (Multiplication and Addition rites). Extensions of Mendelian Principles:co-dominance, incomplete dominance, gene interactions, multiple alleles, lethal alleles, pleiotropy, penetrance and expressivity, polygenic inheritance, linkage and crossing over, sex linked inheritance, sex limited and influenced traits, genome imprinting, extra nuclear inheritance.	12h
2	**Viral Genetics:** Lytic and Lysogenic cycles, Phage Phenotypes, Phenotypic Mixing, Recombination and Mapping. **Bacterial Genetics:** Bacterial Transformation- Types of transformation mechanisms found in prokaryotes, Bacterial Conjugation- properties of the F plasmid, F^+ x F^- mating, F' x F^- conjugation, Hfr conjugation. **Fungal Genetics:** *Neurospora*- Tetrad analysis and linkage detection - 2 point and 3 point crosses, chromatid and chiasma interference, Mitotic recombination in *Neurospora*. **Algal Genetics:** *Chlamydomonas* - unordered tetrad analysis - Recombination and Mapping.Floral meristems and floral development in *Arabidopsis,* ABC model.	12h
3	**Mutation and mutagenesis:** Nature, type and effects of mutations. Mutagenesis – physical and chemical mutagens, base and nucleoside analog, alkylating agents, interrelating agents, ionizing radiation. Induction and detection of mutation in microorganisms and *Drosophila*. Site directed mutagenesis and its applications. **Recombination:** Homologous and non-homologous recombination, Holliday model, site-specific recombination. **DNA Repair**: Mechanism of genetic repair- direct repair, photoreactivation, excision repair, mismatch repair, post-replicative recombination repair, Repair of double- strand breaks, SOS repair.	12h
4	**Sex Determination**-Sex chromosomes, Chromosomal and genetic basis of sex determination. Sex determination in *C.elegans,Drosophila*, human and Plant(*Melandrium*). Dosage compensation-Genic balance, Gene dose, Molecular basis of dosage compensation in Drosophila and man. **Transposable elements**- discovery in maize and bacteria, transposal elements in bacteria and bacteriophage, types and functions; Transposable elements in eukaryotes-Plants, *Drosophila* and Humans, mechanisms of transpositions.	12h

Learning Outcomes: After studying this paper the students will know –

a. Model organisms available to study genetics.
b. Mutation and mutagenesis.
c. Types of DNA recombination and DNA repair.
d. Detailed account on transposable elements and transpositions.

References:

1. Buchanan, B.B., Gruissem, W., and Jones, R.L. 2010. Biochemistry and Molecular Biology of Plants. Ed. ASPP Press.USA.
2. Griffith, A. J. F., Gelbart, W.M., Muller, J. H., and Lewintin, R. C. 1999. Modern Genetic Analysis. W.H. Freeman and Co. New York.
3. Hartl, D. 1991. Basic Genetics (2nd Ed.). Jones and Barlett Publisher Inc. Boston.
4. Randhawa, S. S. 2017. Textbook of Genetics (Ist Ed.). S Vikas and Company, Jalandhar.
5. Tamarin, R. H. 2009. Principles of Genetics (7th Ed.) Tata-McGraw Hill, New Delhi.
6. Watson, J. D., Baker, T. A., Bell, S. P., Gann, A., Levine M., and Losick, R. 2004. Molecular Biology of the Gene (5th Ed.). Pearson Education Pt. Ltd., New Delhi, India.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	3	2	2	3	3	2
CO2	2	1	3	3	1	2	1
CO3	1	2	2	2	2	1	3
CO4	2	2	3	2	2	2	1
Weighted average	1.75	2	2.5	2.25	2	2	1.75

M.Sc. Biochemistry I Semester	Membrane Biology Course Code: 22F108	SC – Soft Core
Total Hours: 48	**Credits: 03 (LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Learning Objectives: Students should study this paper to know –

a. To study biological membrane structure and function.

b. To study physiological process of biological membranes

Module	Course contents	
1	**Physico-chemical properties of membranes:** Compositionsand supra molecular organization. Membrane lipid phases; bilayer phase, non-bilayer phase, phase transition and membrane potential. Models of membrane: Evolution in concept of membrane models, Gorter and Grendel's experiment. Bilayer structure; Danielle - Davson model of membrane, Singer and Nicholson's model and Newer models. **Membrane asymmetry;** Membrane lipids, proteins and carbohydrates and their lateral diffusion. Biogenesis of lipids and proteins, polarized cells, membrane domains; caveolae, rafts and protein turnover. Intracellular targeting of proteins. Biogenesis of sub cellular organelles.	**12h**
2	**Methods of study of membrane structure:** Lipid transfer proteins, phospholipases, chemical methods, amino-phospholipid translocation, TNBS reagent, freeze fracture and freeze etching. Lipid vesicles; liposome preparations and application, function of sterols in membranes. FRET, FRAP, single particle tracking, EM of membranes, calorimetry, confocal microscopy of membrane dynamics. Cell fusion, shedding of membrane.	**12h**
3	**Membrane transport:** Laws of diffusion across membranes; simple diffusion, facilitated diffusion and active transport. Glucose transporters, Ca^{2+} ATPase, Na^{+}-K^{+}ATPase (Structure and mechanism of action). Endocytosis, receptor mediated endocytosis, exocytosis, ion channels; gated and non-gated, aquaporin channel.Bacterial phosphotransferase system.	**12h**
4	**Nerve transmission:**Structure and types of Neuron. Acetylcholine receptor and neurotransmitters, mechanisms of nerve conduction, resting and action potential,ion channels, ionophores, patch clamp technique. Presynaptic and postsynaptic membranes. Nicotinic and muscarinic neurons. GABA, NMDA, structure and function. **Muscle contraction:** Mechanisms, role of calcium, calmodulin, and phospholamban.	**12h**

Learning Outcomes:

a. Understand properties of biological membrane, and different models of membranes explaining the biological function.

b. Understand membrane asymmetry and other properties using various methods.

c. Understand the complex mechanism involved in transportation of biomolecules across membranes.

d. Nerve transmission.

References:

1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P. 2008. Molecular Biology of the Cell. (5th Ed.) New York: Garland Science.
2. Cooper, G. M., and Hausman, R. E. 2013. The Cell: a Molecular Approach (6th Ed.). Washington: ASM, Sunderland.
3. Lodish H., and Berk A. 2016. Molecular Cell Biology (8th Ed.). New York. W H Freeman.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	3	2	1	2	1	2
CO2	2	1	2	2	1	3	2
CO3	1	2	1	1	2	2	1
CO4	2	2	3	2	1	1	-
Weighted average	2	2	2	1.5	1.5	1.75	1.25

II Semester

M.Sc. Biochemistry II Semester	Molecular Biology Course Code: 22F201	FCHC – Foundation Course Hard Core
Total Hours: 48	**Credits: 04 (LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Learning Objectives: Students should study this paper to know –

a. To understand biological activities and metabolism at DNA and protein level

Module	Course contents	
1	**Genome organization:** : Prokaryotic and eukaryotic genome organization, central dogma, structural organization of chromosome, structure and functions of DNA & RNA, Biochemical evidences for DNA as genetic material. **DNA**: Chemistry of DNA, Forces stabilizing DNA structure, Physical Properties of Ds DNA (UV absorption spectra Denaturation and renaturation), chemical that react with DNA, Interaction with small ions, DNA binding motifs: Zinc finger, leucine zipper, helix-turn- helix others motifs, DNA binding and kinks.	**08h**
2	**DNA topology:** Supercoiled form of DNA, Biology of supercoiled DNA, DNA topoisomerases, effect of supercoiling on structure of DNA and role of supercoiling in gene expression and DNA replication. **DNA Replication:** Characteristics and functions of bacterial DNA polymerases I, Mechanism of prokaryotic DNA replication, models of replications in prokaryotes. Fidelity of replication, Eukaryotic DNA polymerases and mechanism of replication. Replication of viral DNA, DNA replication in telomeric regions, Telomerases, mechanisms of action of topoisomerase I and II ,Models of DNA replication, Inhibitors of replication.	**12h**
3	**Transcription:** Characteristics and function of bacterial RNA polymerases Eukaryotic RNA polymerases, mechanism of transcription and regulation. transcription factors, Stringent response. Post transcriptional modifications of mRNA mechanism of splicing, Processing of tRNA and rRNA. Inhibitors of transcription. Mechanism of action of ribozymes , **Translation:** Structure and role of tRNA in protein synthesis, ribosome structure, basic feature of genetic code and its deciphering, translation (initiation, elongation and termination in detail in prokaryotes as well as eukaryotes), Post translational processing, Control of translation in eukaryotes (Antisense RNA, Heme and interferon).	**14h**
4	**Regulation of Gene expression in prokaryotes and eukaryotes:** Positive and negative regulation. lac-, ara-, his- and trp- operon regulation; antitermination,global regulatory responses; Regulation of gene expression in eukaryotes: Transcriptional, translational and processing level control mechanisms. **Protein localization & Gene Silencing**: Export of secretory proteins- signal hypothesis, transport and targeting of proteins to mitochondria, chloroplast, peroxisomes, Gene Silencing: Definition, types, RNAi pathway, shRNA & CRISPR-CAS.**Non coding RNA**: coding and non-coding RNA, types of ncRNA : Short ncRNA (mi RNA, Sn RNA, Pi RNA, t-RNA & it's fragments, SnoRNA) long ncRNA ,functional significance of ncRNA	**14h**

Learning Outcomes: After studying this paper the students will know –

The idea about the principles behind molecular biology.

Understand the molecular tools and its application in basic research

applied research in various fields of life sciences.

Regulation of gene expression

References:

1. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Watson, J. D.1994. Molecular Biology of the Cell. Garland Science, New York.
2. Cooper, G.M. 1997.The Cell: A molecular approach, ASM Press, USA.
3. Elliott, W. H., and Elliott, D. C. 2006. Biochemistry and Molecular Biology (3rd Indian Ed.). Oxford University Press, Oxford.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	3	3	3	1	3	3
CO2	3	1	2	1	2	2	2
CO3	2	2	1	2	3	1	1
CO4	1	1	3	3	2	2	-
Weighted average	2	1.75	2.25	2.25	2	2	1.5

M.Sc. Biochemistry II Semester	Enzymology Course Code: 22F202	HC - Hard Core
Total Hours: 48	**Credits: 03 (LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**General aspects:** Nature of enzymes, localization, isolation, purification and characterization of enzymes. Criteria of purity of enzymes, fold purity. Nomenclature and IUB classification of enzymes.Enzyme specificity, specific activity, assay methods; coupled enzyme assays, continuous, end point and kinetic assay.Units of enzyme activity, IU and Katal.	**12h**
2	**Enzyme kinetics:** Michaelis-Menten equation for uni substrate reactions, initial velocity approach, steady state approach. Vmax, Km and their significance.Linear transformation of Michaelis-Menten equation; Lineweaver-Burk plot, Eadie-Hofstee, Wolf and Cornish-Bowden.Scatchard plot. Rate of a reaction, order and molecularity. I order reaction kinetics. Rectangular hyperbola, Michaelis-Menten equation as rectangular hyperbola, linear transformation, calculation of slope, intercept. Reversible and irreversible inhibition; competitive, non competitive, uncompetitive product inhibition and suicide inhibition. Determination of Ki and Kd. Bisubstrate reaction: Cleland's notation with examples of ordered, ping-pong, and random reactions. General rate equation.	**12h**
3	**Cooperativity; Isozymes and Multifunctional enzymes** Binding of ligands to macromolecules; Scatchard plot, positive and negative cooperativity. Oxygen binding to hemoglobin.Hill equation, homotropic and heterotropic effectors, aspartyl trans carbamylase as an allosteric enzyme. Metabolic regulation of enzyme activity: Feedback regulation, fine control of enzyme activity. Isoenzymes; LDH, multifunctional enzymes (DNA polymerase) and multi enzyme complex (PDC).	**12h**
4	**Mechanisms of enzyme catalysis:** Active site structure; methods of determining active site structure. Isolation of ES complex, affinity labeling, chemical modification studies, site directed mutagenesis. Nature of enzyme catalysis: Transition state theory, proximity and orientation, orbital steering, acid base catalysis, covalent catalysis, metal ion catalysis, nucleophilic and electrophilic catalysis, intramolecular catalysis, entropy effects. Effect of temperature and pH on enzyme catalysed reaction. Fast reactions - Stopped flow, temperature jump method with examples of enzymes. Mechanisms of action of specific enzyme: Chymotrypsin; zymogen activation, acid-base catalysis, charge relay network. Lysozyme, alcohol dehydrogenase, ribonuclease, carboxypeptidase A, RNA as an enzyme, abzymes, coenzymic action ofNAD^+, FAD, TPP, PLP, Biotin, CoA, folic acid and lipoic acid.	**12h**

Learning Outcomes: After studying this paper the students will know –

a. Chemistry of enzyme catalysis.
b. Enzyme kinetics.
c. Regulation of enzyme activity
d. Enzyme inhibition

References:

a. Berg J.M., Tymoczko J.L. and Stryer L. (2006). Biochemistry: international edition: WH Freeman & Company Limited.
b. Boyer R.F. (2006). Biochemistry Laboratory: Modern Theory and Techniques.
c. Creighton T.E. and Chasman D.I. (1997). Protein structure: a practical approach: IRL press Oxford.
d. Palmer T, Bonner P.L. (2007). Enzymes: biochemistry, biotechnology, clinical chemistry: Elsevier.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	2	2	1	1	2	2
CO2	2	1	2	2	2	3	3
CO3	1	3	1	2	1	1	1
CO4	2	2	3	3	3	2	2
Weighted average	2	2	2	2	1.75	2	2

M.Sc. Biochemistry II Semester	Practical 2A (Experiments in Molecular Biology and Energy Metabolism; Laboratory visits and Tour report) Course Code: 22F203	HC – Hard Core
Total Hours: 64	**Credits: 02(LTP - 0:0:4)**	**Total Marks: 15+15+70 = 100**

Course objectives:

- To gain proficiency in laboratory techniques in molecular biology and energy metabolism.
- To learn the experiments to articulate the metabolic pathways.
- To test the markers for health and disease.
- To obtain real time knowledge from the industries and institutes of national and international repute.

Course Outcomes:

- Proficiency in laboratory techniques in molecular biology and energy metabolism.
- Proficiency in the experiments to articulate the metabolic pathways.
- Efficacy in testing the markers for health and disease.
- Proficiency in real time functioning of the industries and institutes of national and international repute.

1. Isolation of Genomic DNA from yeast cells and determination of purity.
2. Estimation of DNA by diphenyl amine method.
3. Isolation of RNA from yeast or plant cells.
4. Estimation of RNA by orcinol method.
5. Restriction digestion of DNA and agarose gel electrophoresis.
6. Determination of RNAse activity
7. Restriction digestion of plasmid and analysis
8. Polymerase Chain Reaction.
9. Estimation of Blood glucose: fasting, post prandial, random
10. Isolation of phospholipids and neutral lipids from hen yolk.
11. Estimation of phospholipids and neutral lipids using thin layer chromatography.
12. Estimation of neutral lipids (cholesterol) using Zak's method.
13. Estimation of triglycerides.
14. Estimation of HDL, LDL.
15. Assessment of membrane stability of RBCs.
16. Estimation of a keto acid.
17. Activity of lipases.
18. Estimation of acid value of lipids.
19. Estimation of peroxide value of lipids.
20. Study tour to Molecular Biology based industries and institutes.

21.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	1	2	1
CO2	3	1	3	2	2	2	2
CO3	1	3	1	1	2	1	3
CO4	2	2	1	3	1	3	2
Weighted average	2	2	1.75	2	1.5	2	2

M.Sc. Biochemistry II Semester	Practical 2B (Experiments in Enzymology and Research Paper Presentation) Course Code: 22F204	HC – Hard Core
Total Hours: 64	**Credits: 02(LTP - 0:0:4)**	**Total Marks: 15+15+70 = 100**

Course objectives:

- To gain proficiency in enzymology techniques.
- To study a recent research article in the field of Biochemistry and related streams, and present as a platform presentation.

Course Outcomes:

1. Proficiency in in enzymology techniques.
2. Proficiency in understanding a research article in the field of Biochemistry and related streams,
3. Efficiency in presenting a platform presentation.
4. Efficacy in isolating and purifying an enzyme and assess the parameters.

1. Estimation of activity of Salivary amylase.
2. Estimation of Specific activity of Salivary amylase.
3. Estimation of optimum pH for the activity of Salivary amylase.
4. Estimation of optimum buffer conjugates for activity of Salivary amylase.
5. Estimation of optimum buffer concentration for activity of Salivary amylase.
6. Estimation of temperature optimum for Salivary amylase.
7. Time kinetics of Salivary amylase.
8. Estimation of energy of activation of Salivary amylase.
9. Effect of enzyme concentration on activity of Salivary amylase.
10. Estimation of Km and Vmax of Salivary amylase.
11. Plotting Lineweaver-Burk plot for Salivary amylase.
12. Assessment of effects of selected metal ions and drugs on the activity of Salivary amylase.
13. Purification of Alkaline phosphatase from bovine milk by differential centrifugation.
14. Estimation of activity of Alkaline phosphatase.
15. Estimation of Specific activity of Alkaline phosphatase and fold purity.
16. Calculation of fold purity of Alkaline phosphatase.
17. Purification of Invertase from plant latex.
18. Estimation of activity of Invertase.
19. Estimation of Specific activity of Invertase.
20. Calculation of fold purity of Invertase.
21. Purification of Esterase from peas by using ammonium sulphate precipitation.
22. Estimation of activity of Esterase.
23. Estimation of Specific activity of Esterase and fold purity.
24. Calculation of fold purity of Esterase.
25. Purification of Proteases from plant latex.
26. Estimation of activity of Protease.
27. Estimation of Specific activity of Protease.
28. Calculation of fold purity of Protease.
29. Estimation of catalase activity and specific activity.
30. Assessment of clinically relevant enzymes: SGOT, SGPT, Creatine Kinase, Lactate Dehydrogenase.

31. Research paper presentation.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	1	2	1
CO2	3	1	3	2	2	2	2
CO3	1	3	1	1	2	1	3
CO4	2	2	1	3	1	3	2
Weighted average	2	2	1.75	2	1.5	2	2

M.Sc. Biochemistry II Semester	Metabolism of Lipids Course Code: 22F205	SC – Soft Core
Total Hours: 48	**Credits: 03(LTP - 3:0:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**Phospholipids, TG and Fatty acid degradation:** Degradation of triacylglycerols, phospholipids and sphingolipids and regulations; lipase, hormone sensitive lipase, phospholipases and sphingomyelinase. β-oxidation Knoop's experiment, saturated and unsaturated fatty acids.Regulatory aspects. Oxidation:α , β and ᵞ oxidation. Energetics and biosynthesis of fatty acids; fatty acid synthetase complex, chain elongation and desaturation.Pathways in plants and animals, conversion of linoleate to arachiodnante.Regulatory aspects.	**12h**
2	**Cholesterol synthesis, degradation, and regulations:** Metabolism of circulating lipids; chylomicrons, HDL, LDL and VLDL. Reverse cholesterol transport by HDL. Oxidized lipids and their metabolism, Mechanism of foam cell formation. Obesity, and mechanisms, exercise and regulation of energy metabolism.	**12h**
3	**Phospholipid biosynthesis and regulations:** Denovo pathway and inter conversion, biosynthesis of phospholipids, sphingolipids, ether lipids and glycolipids. Degradation and biosynthesis of gangliosides and cerebrosides.Biosynthesis of prostaglandins, thromboxanes, leukotrienes, and lipoxins. Role of Hormones in the regulation of lipid metabolism: HPA axis. Adrenal gland and pancreatic hormones.	**12h**
4	**Lipid mediators:** Eicosanoids, prostaglandins, leukotrienes, prostacyclins, thrombaxanes, DAG, ceramide and PAF. Role of anti-inflammatory drugs and eicosanoids. Integration of metabolic pathways: Integration of carbohydrate and lipid metabolism, and their regulation and manipulation.	**12h**

Learning Outcomes: After studying this paper the students will know –

a. Chemistry of lipid metabolism.
b. Importance of lipid metabolism.
c. Role of hormones in the regulation of lipid metabolism.
d. Lipid mediators and inflammation.

References:

a. Berg J.M., Tymoczko J.L. and Stryer L. (2006). Biochemistry: international edition: WH Freeman & Company Limited.
b. Devlin T.M. (2020). Textbook of biochemistry: with clinical correlations (8th Edition). New York: J. Wiley & Sons.
c. Nelson D.L., Lehninger A.L. and Cox M.M. (2008). Principles of biochemistry: Macmillan.
d. D. and Voet J.G. (2010). Biochemistry (4th Edition). New York: J. Wiley & Sons.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	1	2	1
CO2	3	1	3	2	2	2	2
CO3	1	3	1	1	2	1	3
CO4	2	2	1	3	1	3	2
Weighted average	2	2	1.75	2	1.5	2	2

M.Sc. Biochemistry II Semester	Metabolism Of Carbohydrates Course Code: 22F206	SC – SOFT Core
Total Hours: 48	**Credits: 04 (LTP - 3:0:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**Introduction:** Catabolism, anabolism, and amphibolic pathways. **Energy Utilization:** I, II and III laws of thermodynamics. Enthalpy, entropy, free energy and chemical equilibrium. High energy compounds: Energy currency, ATP, ADP, creatine phosphate, phosphoenol pyruvate as energy rich compound.	**12h**
2	**Catabolism and Anabolism of Carbohydrates** Cellular ingestion of glucose, glycolysis, energetics regulation. Pathways of utilization of pyruvate-lactate, ethanol, gluconeogenesis, regulation, Cori cycle, glucose paradox, citric acid cycle and its regulation, energetics, anaplerosis, glyoxylate cycle. HMP shunt pathway, inter conversion of hexoses. Utilization of non-glucose sugars. Biosynthesis of sucrose, lactose, starch and glycogen.	**12h**
3	**Mitochondrial electron transport**: Entry of reducing equivalents for oxidation; malate-aspartate shuttle, glycerol phosphate shuttle. Organization of respiratory chain complexes, structure and function of the components; Fe-S proteins, cytochromes, Q cycle, proton transfer, P/O ratio, respiratory control, oxidative phosphorylation, uncouplers and inhibitors, sequence of electron carriers based on red-ox potentials. ATP synthesis, ATP synthase complex, binding change mechanism, proton motive force, Mitchell's hypothesis. Substrate level phosphorylation, futile cycles and their application.	**12h**
4	**Hormonal regulation of glucose metabolism:** Effect of hormones on carbohydrate metabolism; insulin, glucagon, catecholamines, growth hormones, corticosteroids and thyroid hormones in different tissues. Secretion of Insulin and glucagon in response to various stimuli (Fasting, food, intestinal hormones etc.,) Role of Hormones in the regulation of carbohydrate metabolism: HPA axis. Adrenal gland and pancreatic hormones Disorders of carbohydrate metabolism: diabetes mellitus, classification and clinical diagnosis.	**12h**

Learning Outcomes: After studying this paper the students will know –

a. Chemistry of carbohydrate metabolism.
b. The fundamental thermodynamic principles in metabolism.
c. Importance of carbohydrate metabolism.
d. Role of hormones in the regulation of carbohydrate metabolism.

References:

a. Berg J.M., Tymoczko J.L. and Stryer L. (2002) Biochemistry (5th Edition). International edition: WH Freeman & Company Limited
b. Devlin T.M. (2020). Textbook of biochemistry: with clinical correlations (8th Edition). J. Wiley & Sons.
c. Nelson D.L., Lehninger A.L. and Cox M.M. (2008) Principles of Biochemistry (12th Edition). Macmillan.
d. Voet D. and Voet J.G. (2010) Text book of Biochemistry (4thEdition). New York: J. Wiley & Sons.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	1	2	2	2	2	1	1
CO2	2	1	1	1	1	2	2
CO3	3	2	2	2	2	2	3
CO4	2	2	1	3	3	3	2
Weighted average	2	1.75	1.5	2	2	2	2

M.Sc. Biochemistry II Semester	Endocrinology Course Code: 22F207	SC – Soft Core
Total Hours: 48	**Credits: 03(LTP - 3:0:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**Cell:** Structure of a cell, mitosis**,** meiosis**,** cell cycle and its regulation, different phases of cell cycle. Apoptosis, cyclins and CDKs. Cell-cell and cell-ECM interaction and ECM structure and function. **Endocrine System**: Endocrine organs in man. Location and inter relationship of endocrine glands in man; classification and chemistry of hormones, hormones of hypothalamus, pituitary, thyroid, parathyroid, pancreas, liver, adrenals, gonads and intestine.	**08h**
2	**Functions and abnormalities:** Hypo and hyper production of hormones secreted by;pituitary, thyroid, pancreas, adrenals and gonads. **Structure and control of hypothalamus function:** Hormones produced; GRH, somatostatin, TRH, CRH, GnRH. **Pituitary gland:** Structure, hormones of anterior, posterior and median lobes. Pro-opiomelanocortin. **Testes and ovaries:** Structure, hormones produced by testes and ovaries, menstrual cycle. Regulation of hormone production and release: hypothalamus-pituitary-target organ axis and regulation by feedback mechanism.	**14h**
3	**Mechanism of hormone action: Peptide hormones:** General mechanisms of cell signaling by hydrophilic factors, transmembrane receptors, transmembrane receptors, G protein coupled receptors, receptor tyrosine kinase, eicosanoid receptors. **Second messengers:** 1P3, DAG, cAMP, protein kinases. Nitric oxide signaling; generation and action. **Growth factors:** Structure, mechanism of action and receptors of EGF, PDGF, NGF and IGF. insulin receptor.	**12h**
4	**Mechanism of action of steroid hormones:** Conversion of cholesterol to steroid hormone.Steroid receptors, isolation and characterization of steroid receptors. Receptor down regulation, desensitization and up regulation. Pineal gland, melotonin and circadian rhythm. Chemistry and action of prostaglandins, prostacyclins and thromoxanes. Newly discovered hormones **Insect hormones:** Structure and function of moulting hormone, ecdysone, juvenile hormones, Pheromones. Application of insect hormones.	**14h**

Learning Outcomes: After studying this paper the students will know –

a. Understand the detailed structure of a cell
b. Involvement of various organelles in the synthesisof protein, amino acid and steroid hormones.
c. Understand the various endocrine organs in relation to the regulation of various metabolic processes.
d. Understand the hypo and hyperactivities of all the endocrine organs and their manifestation in various disorders.

References:

a. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P. 2008. Molecular Biology of the Cell. (5th Ed.) New York: Garland Science.
b. Cooper, G. M., and Hausman, R. E. 2013. The Cell: a Molecular Approach (6th Ed.). Washington: ASM, Sunderland.
c. Lodish H., and Berk A. 2016. Molecular Cell Biology (8th Ed.). New York. W H Freeman.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	3	3	3	1	3	3
CO2	3	1	2	1	2	2	2
CO3	2	2	1	2	3	1	1
CO4	1	1	3	3	2	2	-
Weighted average	2	1.75	2.25	2.25	2	2	1.5

M.Sc. Biochemistry II Semester	Biology for non-biologists Course Code: 22F208	Open Elective
Total Hours: 48	Credits: 04 (LTP - 2:2:0)	Total Marks: 15+15+70 = 100

Module	Course contents	
1	Introduction**:** History of Biology; Origin of Life-theories, The Scientific Study of Life; The Chemical Basis of Life ; The Molecules of Cells A Tour of the Cell ; The Working Cell Classification of Phyla, (microbes, plants and animals.) Photosynthesis: Using Light to Make Food; How Cells Harvest Chemical Energy	**12h**
2	The Cellular Basis of Reproduction and Inheritance Patterns of Inheritance	**6h**
3	Human Physiology: Basic structure and functioning, disorders of Nervous, renal, hepatic, muscle, blood, bone tissues. Reproduction, Hormones. Animal cell culture for research and therapy. Plant physiology: Meristems, primary and secondary growth, types of tissues, reproduction, flowers, fruits, seeds, germination. Plant hormones, Plant tissue culture for crop improvement.	**18 h**
4	Molecular Biology of the Gene. Importance of gene expression. DNA Technology and Genomics and Proteomics Human diseases: Communicable, non-communicable. Familial and Sporadic disorders.	**12**

Learning outcomes

1. Student would be able to work independently to use scientific methods during biology related investigations.
2. Use critical thinking and scientific problem-solving to make informed decisions in a real-world context.
3. Understand cellular processes in a living being.
4. Human diseases.

References:

1) Renato A Dela Pena Jr. General Biology. 2016. JFS Publishing
2) Holley D. General Biology I: Molecules, Cells and Genes. 2017. Dog Ear Publishing
3) Dela Pena Jr et al., General Biology. JFS Publishing Services 2016

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	2	2	1
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	2	1	2	2	1	1	2
Weighted average	2	1.5	2	1.75	1.5	1.5	2

M.Sc. Biochemistry II Semester	Nutrition in Health and Disease Course Code: 22F209	Open Elective
Total Hours: 48	Credits: 04 (LTP - 2:2:0)	Total Marks: 15+15+70 = 100

Module	Course contents	
1	*Food Physiology*: Concept of balanced diet and energy content of foods; Basal and resting metabolism- influencing factors, Absorption of carbohydrates, lipids, proteins, nucleic acids, minerals and vitamins. *Common metabolic disorders*: Diabetes mellitus, disorders of HDL-cholesterol, LDL cholesterol, triglycerides, phenylketonuria, albinism. *Antioxidants*: Free radicals: definition, formation in biological Systems. Natural anti-oxidants, defense against free radicals. Role of free radicals and antioxidants in health and disease. Nutrition and lifestyle choices impact the life cycle before and during pregnancy, during lactation and infancy, during childhood and adolescence, and through adulthood and aging. The function of the RDA, DRI, and Tolerable Upper Intake Level.	**14h**
2	*Vitamins*: Dietary sources, biochemical functions and specific deficiency diseases associated with fat and water soluble vitamins; Hypervitaminosis symptoms of fat-soluble vitamins. *Minerals*: Dietary sources and deficiency disorders of dietary calcium, phosphorus, magnesium, iron, iodine, zinc and copper. *Malnutrition and blood disorders*: Etiology, clinical features, metabolic disorders and management of Marasmus and Kwashiorkor, Nutritional anemia - vitamin B_{12}, folate and iron deficiency anemia; hemoglobinopathies and thalassemias.	**12h**
3	Selection of foods, preliminary preparation of food, principles of cooking, methods of cooking - Boiling, Steaming, Pressure cooking, Microwave oven, Frying (shallow, deep fat), Smoking point of oil, Combination method, methods of cooking: advantages and disadvantages. Effect of cooking on nutritive value, methods of enhancing nutritive value	**8h**
4	*Obesity*: Definition, classification and biochemical basis; Genetic and environmental factors leading to obesity; Obesity related diseases and management of obesity. *Cardiovascular disease:* Diseases of Liver, Gall bladder & Pancreas-Hepatitis, (A, B, and C), alcoholic liver disease, Gall stones, pancreatitis, Prevention and dietary management. Clinical significance of aspartate aminotransferase, alanine aminotransferase, lactate dehydrogenase, amylase, lipase and trypsin.Diagnosis of jaundice and clinical importance of bilirubin.	**14h**
5	Questionnaire based Survey by students. Setting up Diagnostic test camps. Arranging for nutrition counseling. Seminars by students.	

Upon completion of this course, student will be able to:

1. Describe how to properly design individualized eating plans by utilizing diet planning principles,
2. The Food Guide Pyramid, Exchange System
3. other food guide plans that incorporate personal foodpreferences.
4. Students will learn about food and its relationship to health, development, and disease/ disorders.

References:

1) Bansal. Nutrition in disease. 2012. Pustak Mahal
2) Chakraborthy and Chakraborthy. Textbook of Nutrition in Health and Disease. 2019. Springer
3) Nisha. Diet Planning for Diseases. 2006. Kalpaz Publications.
4) Esperanza J. Carcache de Blanco, Jay Mirtallo , " Nutrition: An Approach to Good Health and Disease Management ", Bentham Science Publishers (2016). https://doi.org/10.2174/97816810810831160101
5) Esperanza J. Carcache de Blanco and Jay Mirtallo. Influence of Socio-economic Status and Culture in Diet and Nutrition. 2020. Bentham.
6) Teresa Aldamiz- Echevarria Lois Maria, Recarte Garcia-Andrade Carlos and Millan Nunez-Cortes Jesus, Cardiovascular Risk Factors and Dietary Patterns, Current Nutrition & Food Science 2011; 7(2) . https://dx.doi.org/10.2174/157340111795713852
7) Berglund, Nutrition and Heart Disease: Causation and Prevention: 1st edition, edited by Ronald R Watson and Victor R Preedy, 2004, 354 pages, CRC Press, Boca Raton, FL, The American Journal of Clinical Nutrition, Volume 80, Issue 6, 2004
8) Martínez-González MA, Kim H, Prakash V, et al
9) Personalised, population and planetary nutrition for precision health
10) BMJ Nutrition, Prevention & Health 2021;4:doi: 10.1136/bmjnph-2021-000235
11) Lundstorm. Nutrition and Disease. Prevention and Therapy. Cambridge Scholars Publishing. 2020.
12) Coulston et al., Nutrition in the Prevention and Treatment of Disease. 2017. Academic Press.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	2	2	1
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	2	1	2	2	1	1	2
Weighted average	2	1.5	2	1.75	1.5	1.5	2

III Semester

M.Sc. Biochemistry III Semester	Immunology Course Code: 22F301	FCHC – Foundation Course Hard Core
Total Hours: 48	**Credits: 04(LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**Over view and Types of immunity:** **Innate immunity:** anatomic barriers, physiologic barriers, phagocytic barriers, microbial antagonism, acute phase reactants, anti-microbial peptides, interferons, inflammation, Pattern Recognition Receptors (PRRs), Pathogen Associated Molecular Patterns (PAMPs) and Damage Associated Molecular Patterns (PAMPs). Complement system: components, pathways of activation and biological consequences. **Acquired immunity:** Active **(**Naturally acquired and artificially acquired), Passive (Naturally acquired and artificially acquired), Adoptive immunity, Humoral and Cell mediated immune response **Tissues of immune system:** Structural organization and functions of Lymphatic system, Primary lymphoid organs (Bone marrow, Thymus) Secondary lymphoid organs and tissues (Spleen, Lymph node, Tonsils, Adenoids, Peyer's patches, Lamina propria, Mucosa-associated lymphoid tissue, Gut-associated lymphoid tissue). **Cells of the immune system:** Hematopoiesis, Biology, Development and Functions of PMNLs, NK cells, Macrophages, T-Lymphocytes, B-Lymphocytes, Dendritic cells	**14h**
2	**Antigens, and Antibodies:** Antigens, Immunogens and Haptens, Factors influencing immunogenicity, adjuvants, epitopes, Structure and functions of immunoglobulins, Synthesis of immunoglobulins, Genetic basis of immunoglobulin diversity. **MHC molecules:** Types, structure, diversity and functions **Antigen recognition:** Thymus dependent and independent Antigens, Clonal selection and immunological memory of B and T cells, Antigen processing and presentation (Endogenous pathway, Exogenous pathway, Cross presentation), Superantigens. **Monoclonal Antibodies:** Hybridoma technology and production of mAbs, types, and applications. Advantages and disadvantages of mAbs in therapy.	**12h**
3	**Immune System in Health and Disease:** Immunological Tolerance and Autoimmunity, Autoimmune Diseases (Organ specific autoimmune diseases-Graves' disease, Myasthenia Gravis, Systemic autoimmune diseases-Multiple Sclerosis, Rheumatoid Arthritis, Systemic Lupus Erythematosus), Immunosuppression, Hypersensitivity (Type I, II, III & IV). **Vaccines and Vaccination:** Principles of vaccination, Immune response to vaccines (Primary and Secondary response), Whole-Organism vaccines, Purified macromolecules as vaccines, Recombinant vaccines, DNA vaccines, Multivalent subunit vaccines and Edible vaccines, Vaccine safety, Reverse vaccinology.Overview of COVID-19 vaccines. **Primary & Secondary Immuno-Deficiency Disorders: Primary:** Wiscott-Aldrich syndrome, Severe combined immunodeficiency disease (SCID), DiGeorge syndrome, Ataxia-telangectasia, Leucocyte adhesion defects, Chronic granulomatous disease, X-linked agammaglobulinemia, Complement deficiencies. Gammopathies (Multiple	**12h**
	myeloma). **Secondary:** AIDS, Malnutrition, Drug regimen, Diabetes, Chronic infection	

4	**Clinical Immunology**: **Transplantation of tissues and organs:** Nomenclature of transplantations, Transplantation reactions, HvG and GvH. Exception from rejections, Major and minor blood groups, Blood transfusion, tissue typing, Kidney and bone marrow transplantations. Immunosuppressive drugs. **Tumor immunology**: Neoplasms, tumor-associated antigens, immune response to tumor antigens, immunologic factors favoring tumor growth, immune surveillance,Tumor necrosis factor α and β.Metastatic processes, Immunodiagnosis, Antitumour drugs, Immunotherapy. **Immunological Techniques:**. *In vitro* antigen-antibody reactions, serotyping, agglutination, complement fixation, immunoprecipitation, Immunodiffusion, ELISA, RIA, IHC, Immunoelectrophoresis.	**10h**

Learning Outcomes: After studying this paper the students will know –

a. Organs, tissues, cells and molecules of the immune system
b. Antibodies and infectious disorders
c. The immunological methods used to detect the disease
d. How the knowledge of immunology can be transferred into clinical decision-making through case studies presented in class.

References:

1. Abbas A.K., Lichtman A.H. and Pillai S. (2014). Cellular and Molecular Immunology (10th Edition). Online Access: Elsevier Health Sciences.
2. Abbas, AK., Andrew,H., Lichtman, H., Pillai, S. 2012.Basic Immunology: Functions and Disorders of the Immune System, ; Saunders
3. Abul, K.A., Andrew, H. L. and Shiv, P. 2019. Basic Immunology: Functions and Disorders of the Immune System. Elsevier India.
4. Ajoy, P. 2015. Textbook of Immunology: including Immunotechnology & Immunotherapy. Books & Allied Press.
5. Ashim, K. C. 2006. Immunology and Immunotechnology (1st ed.). Oxford University Press.
6. Berg J.M., Tymoczko J.L. and Stryer L. (2002). Biochemistry (5th Edition). International edition: WH Freeman & Company Limited
7. Brostoff, J., Seaddin, J. K., Male, D. and Roitt, I. M. 2002. Clinical Immunology. London: Gower Medical Pub.
8. Chapel,H., Haeney,M., Misbah,S., Snowden, N. 2014. Essentials of Clinical Immunology; Wiley-Blackwell
9. Coico, R. and Sunshine, G. 2015. Immunology – A Short Course (7th ed.). Wiley.
10. Delves P.J., Martin S.J., Burton D.R. and Roitt I.M. (2011) Roitt's essential immunology: John Wiley & Sons.
11. Hawley,L., Clarke, B., Ziegler, RJ. 2013. Microbiology and Immunology; LWW
12. Madhavee Latha, P. 2012. A Textbook of Immunology. S. Chand Press.
13. Murphy, K., Travers, P., Walport, M. and Janeway, C. 2012. Janeway's Immunobiology. Taylor & Francis.
14. Nelson D.L., Lehninger A.L. and Cox M.M. (2008). Principles of Biochemistry (12th Edition). Macmillan.
15. Owen J.A., Punt J., Stranford S.A. and Jones P.P. (2013) Kuby immunology: WH Freeman New York.
16. Parham, P. 2005. The Immune System. New York: Garland Science.
17. Paul, W. E. 2012. Fundamental Immunology. Raven Press.
18. Peter,DJ., Seamus, MJ., Dennis, BR. 2011. Roitt's Essential Immunology; Wiley & Sons, Incorporated, John
19. Pinchuk, G. 2001. Schaum's Outline of Immunology; McGraw-Hill

Ramesh, S. R. 2016. Immunology. Mc Graw Hill Education India Pvt. Ltd.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	3	2	1
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	2	1	2	2	1	1	-
Weighted average	2	1.5	2	1.75	1.75	1.5	1.5

M.Sc. Biochemistry III Semester	Metabolism of Amino acids and Proteins Course Code: 22F302	HC - Hard Core
Total Hours: 48	**Credits: 03 (LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**Proteins:** General mechanisms of degradation in cells; ubiquitin-proteosome pathway, lysosomal pathway. Degradation and biosynthesis of glycoproteins and proteoglycans. Degradation and Biosynthesis of heme and porphryns.	12h
2	**Non ribosomal peptide synthesis and Biosynthesis of physiologically active amines:** glutathione, gramicidine. Biosynthesis of physiologically active amines; serotonin, histamine, dopamine, norepinephrine and epinephrine.	12h
3	**Degradation and biosynthesis of individual amino acids:** Aliphatic, aromatic, and branched chain amino acids. Role of cofactors; PLP and THF in amino acid metabolism. Deamination, transamination, decarboxylation desulphuration process. Differences in the pathways in microorganisms, plants and animals. Regulation of amino acid biosynthesis;transglutaminase cycle, urea cycle.	12h
4	**Intermediatory metabolism and In born errors of metabolism:** Ketogenic and glucogenic amino acids. In born errors of amino acid degradation; PhenylKetonuria, alkaptonuria, maple syrup urine. Role of Hormones in the regulation of protein and amino acid metabolism: HPA axis. Adrenal gland and pancreatic hormones	12h

Learning Outcomes: After studying this paper the students will know –

a. Chemistry of protein and amino acid metabolism. .
b. Importance of protein and amino acid metabolism.
c. Role of hormones in the regulation of protein
d. Regulation of and disorders of amino acid metabolism.

References:

a. Berg J.M., Tymoczko J.L. and Stryer L. (2006). Biochemistry: international edition: WH Freeman & Company Limited.
b. Devlin T.M. (2020). Textbook of biochemistry: with clinical correlations (8th Edition). New York: J. Wiley & Sons.
c. Nelson D.L., Lehninger A.L. and Cox M.M. (2008). Principles of biochemistry: Macmillan.
d. Voet D. and Voet J.G. (2010). Biochemistry (4th Edition). New York: J. Wiley & Sons.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	1	2	2	1
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	2	3	2	1	1	1	3
Weighted average	2	2	2	1.25	1.5	1.5	2.25

M.Sc. Biochemistry III Semester	Practical 3A Experiments in Immunology and amino acid metabolism; Study Tour and tour report.) Course Code: 22F303	HC – Hard Core
Total Hours: 64	**Credits: 02(LTP - 0:0:4)**	**Total Marks: 15+15+70 = 100**

Course objectives:

- To gain proficiency in laboratory techniques in immunology and amino acid metabolism.
- To visit the industries and national laboratories involved in immunological research and metabolic studies and present a report on the same.

Course Outcomes:

- Proficiency in laboratory techniques in immunology
- Techniques in amino acid metabolism.
- Identification of antibody purity.
- Proficiency in preparing a tour report document after visiting immunology or biology based industries and research institutes.

1. Estimation of proteins using Bradford's method.
2. Estimation of proteins using Bicinchoninic acid method.
3. Estimation of A/G ratio in blood.
4. Estimation of aminoacids using ninhydrin method.
5. Purification of IgG.
6. Slide agglutination test/ Blood grouping.
7. Immunoprecipitation test: Ochterlony double diffusion assay.
8. Estimation of nitric oxide.
9. Estimation of Urea by DAMO method and Clinical significance.
10. Estimation of uric acid and Clinical significance.
11. Estimation of Creatinine and Clinical significance.
12. Study tour and report.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	1	2	2	1
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	2	3	2	1	1	1	3
Weighted average	2	2	2	1.25	1.5	1.5	2.25

M.Sc. Biochemistry III Semester	Practical 3B Experiments in Metabolism; Review of Literature Course Code: 22F304	HC – Hard Core
Total Hours: 64	**Credits: 02(LTP - 0:0:4)**	**Total Marks: 15+15+70 = 100**

Course objectives:

- To gain proficiency in metabolism related experiments.
- To articulate between different metabolic pathways.
- To understand the energetics of photosynthesis.
- To study the literature available about a specific scientific problem and prepare a standard document of Review of Literature, and present as a platform presentation.

Course Outcomes:

- Proficiency in metabolism related experiments.
- Proficiency to articulate between different metabolic pathways.
- Proficiency to understand the energetics of photosynthesis.
- Proficiency in studying the literature available about a specific scientific problem and prepare a standard document of Review of Literature, and present as a platform presentation.

1. Estimation of uric acid.
2. Estimation of purines.
3. Photo-oxidation of methylene blue.
4. Photosynthetic reduction of 2,6 di chloro phenol indophenol.
5. Identification and assessment of leguminous root nodules for Rhizobium.
6. Oxygen generation during photosynthesis.
7. Estimation of glutathione.
8. Estimation of bilirubin.
9. Review of Literature.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	3	3	3	1	3	3
CO2	3	1	2	1	2	2	2
CO3	2	2	1	2	3	1	1
CO4	1	1	3	3	2	2	-
Weighted average	2	1.75	2.25	2.25	2	2	1.5

M.Sc. Biochemistry III Semester	Metabolism of Nucleic Acids Course Code: 22F305	SC -Soft Core
Total Hours: 48	**Credits: 04 (LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Learning Objectives: Students should study this paper to know –
a. The basics of nucleic acid metabolism. b. To understand the nitrogen metabolism.

	Course contents	
1	**Purines and pyrimidines:** Pathways of biosynthesis and degradation of nucleic acids, purines and pyrimidines, uric acid formation. Salvage pathways, de novo biosynthetic pathways andregulations.	**12h**
2	Gout and Lysch-Nyhan syndrome. Conversion of nucleotides to deoxynuclotides. Mchanisms of action of methotrexate, 5-fluorouridine, azathymidine. **Biosynthesis of cofactors:** NAD+, FAD and coenzyme A, polyamine biosynthesis and their metabolic role.	**12h**
3	**Photosynthesis:** Photosynthetic apparatus in plants, photosystems I and II, light harvesting antenna complex. Electron flow and phosphorylation; cyclic and noncyclic, oxygen evolution, Calvin cycle. C3, C4 and CAM cycle. Photorespiration, bacterial photosynthesis. Regulation of photosynthesis. RUBISCO.	**12h**
4	**Nitrogen metabolism**: Importance of nitrogen in biological systems, nitrogen cycle. Nitrogen fixation; symbiotic and non-symbiotic, nitrogenase complex, energetics and regulation. Formation of root nodules in legumes. Assimilation of nitrate and ammonium ion.	**12h**

Learning Outcomes: After studying this paper the students will know –
a. Chemistry of nucleic acid metabolism. .
b. Importance of nucleic acid metabolism.
c. Mechanism of photosynthesis
d. nitrogen metabolism.

References:

a. Berg J.M., Tymoczko J.L. and Stryer L. (2006). Biochemistry: international edition: WH Freeman & Company Limited.
b. Chatterjee C.C. (2017) Human physiology: Medical Allied Agency:CBS Publishers and Distributors Pvt. LTD.
c. Devlin T.M. (2020). Textbook of biochemistry: with clinical correlations (8th Edition). New York: J. Wiley & Sons.
d. Nelson D.L., Lehninger A.L. and Cox M.M. (2008). Principles of biochemistry: Macmillan.
e. Voet D. and Voet J.G. (2010). Biochemistry (4th Edition). New York: J. Wiley & Sons.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	3	3	3	1	3	3
CO2	3	1	2	1	2	2	2
CO3	2	2	1	2	3	1	1
CO4	1	1	3	3	2	2	-
Weighted average	2	1.75	2.25	2.25	2	2	1.5

M.Sc. Biochemistry IV Semester	Research Methodology, Biostatistics and Bioinformatics Course Code: 22F306	SC – Soft Core
Total Hours: 48	**Credits: 04 (LTP - 3:0:0)**	**Total Marks: 15+15+70 = 100**

Module	Course contents	
1	**Research Methodology:** Definition –Characteristics, types. Identification of the problem, assessing the status of the problem, formulating the objectives, preparing the design (experimental or otherwise), actual investigation. Review of literature, Hypothesis, Data– Categorical, nominal & Ordinal. Methods of Collecting Data: Observation, field investigations, direct studies, questionnaires: Sources, methods-questionnaires, records, archives. Validation and standardization of the methods, modification and experimental design. Types of Report – Technical Reports and Thesis – Significance – Different steps in the preparation – Layout, structure and Language of typical reports - Illustrations and tables. Bibliography: Citations and references; Plagiarism – Citation and Acknowledgement (citation softwares) **Ethical Issues** – Ethical Committees, Types of experiments that require ethical clearance –GMO, animal ethics and human ethical guidelines, socio-environmental responsibilities. Commercialization – copy right – royalty – Intellectual Property rights (IPR) and patent law; Indian and International scenario, WIPO, – Reproduction of published material – Plagiarism – Citation and Acknowledgement – Reproducibility and accountability. Helsinki declaration.	**12h**
2	**Introduction to Biostatistics:** Introduction: Population, sample, sampling techniques, random sample. Mean, median, mode, range, variance, coefficient of variation, frequency, standard deviation, standard error. **Statistical tests:** Probability: Rules of probability, binomial distribution, normal distribution, area under the curve, Z value, choosing sample size, hypothesis testing, Student's t test. One way ANOVA, correlation and regression. Goodness of fit, test of independence. Non parametric statistics, sign test, rank sum test, rank correlation. **Statistics softwares.** Representation of statistical data line graph, histogram, bar diagram, pie chart, scatter diagram. Collection of data: Relevance of sample size.	**18h**
3	**Bioinformatics:** Biological databases: Introduction, classification of biological databases, retrieval of biological database systems. Molecular Modeling Database at NCBI, PDB, Molecular visualization software (RASMOL). Phylogenetics Clustal. Prediction of genes (Gene finder, ORF finder). Sequence comparison and database search: Introduction, different types of alignment. Iterative refinement methods, pattern matching in DNA and protein sequences, PAM matrices, BLAST, FAST and FASTA. nucleotide sequence analysis, single nucleotide polymorphism, primer designing. Emboss, prosite, prodom, protein expression profiling. Prediction of Secondary structure of proteins, softwares for secondary structure prediction, protein famil ies and classification, (trans membrane regions). CATH and SCOP. Introduction to drug designing: In silico analysis, physico-chemical property	**12h**

	prediction, aqueous solubility, Lipinski's rule of five.	
4	**Docking methods:** Three dimensional descriptions of binding site environment and energy calculation, automatic docking method. Three dimensional database search approaches, protein-protein interactions, design of ligands, drug-receptor interactions, automated structure construction methods	**6h**

Learning Outcomes: After studying this paper the students will know.

1. Basics and ethics in research. Various streams of ethical responsibilities of a researchers at societal, environmental, legal andemotional ethics.
2. Importance of plagiarism.National and international guidelines about Intellectual property rights.Basics and ethics inresearch.Writing and analysis of research articles.
3. Knowledge of basic statistical methods to solve problems.
4. The importance of statistics in research and prepares them for a career in research. Understanding about the sequence analysis tools and also about the drug discovery.

References:

a. Bulakh P.M., Patki P.S. and Chodhary A.S. (2010). Research Methodology. Expert Trading Corporation Dahisar West, Mumbai.
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CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	3	1	1	1	1	2	1
CO2	2	1	3	2	1	1	2
CO3	1	3	2	3	3	1	3
CO4	1	1	2	1	2	1	3
Weighted average	1.75	1.5	2	1.75	1.75	1.25	2.25

M.Sc. Biochemistry III Semester	Physiology and Nutrition Course Code: 22F307	SC -Soft Core
Total Hours: 48	**Credits: 04 (LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Learning Objectives: Students should study this paper to know –

a. To study different systems operating in living organisms.

Module	Course contents	
1	**Blood:** Composition, cells, plasma proteins and lipoproteins, preparation of plasma, serum, and different blood cells. Erythrocytes; shape and function. WBC; types, differential count and functions. Platelets and their function. Half-life of blood cells. Buffer systems, hemostasis, blood clotting, different pathways of blood clotting, mechanisms of initiation of clotting pathways, various enzyme complexes digestionof clot, anticoagulants, blood volume, blood pressure and its regulations. Plasma lipoproteins and their functions, HDL, LDL, VLDL, chylomicrons.	**12h**
2	**Respiratory System**: Lungs, structure and functions, gas exchange, oxygen binding by hemoglobin, factors affecting oxygenation and acid-base balance. **Nervous system:** Structure of a neuron, nerve transmission, mechanism of neurotransmission, action potential, synapse, different types of neurotransmitters, stimulatory and inhibitory, central and peripheral nervous system, neuro-muscular junction. Parts of brain, brain-gut interaction, ion channels, types of ion-channels, secretion of neurotransmitters, CSF; composition and function.	**12h**
3	**Excretory System**: Ultra structure of the nephron, glomerular filtration, filtration rate, mechanism of formation of urine, acid-base balance. Consequences of imbalance in acid-base balance, formation of kidney stones. Kidney function tests **Hepatobiliary System**: Anatomy of the liver, blood supply, cells; hepatocytes, endothelial cells and Kupffer cells, secretory and excretory functions and formationof bile. Role of liver in detoxification.	**12h**
4	**Digestive System**: GI tract, digestion and absorption of carbohydrates, proteins and lipids. Mechanism of HCI production in the stomach. Gastrointestinal hormones and role of pancreas in digestion. **Muscle physiology**: Types of muscle, structure of skeletal muscle and smooth muscle, muscle proteins; actin, myosin, tropomyosine, troponins. Mechanisms of skeletal and smooth muscle contraction, sliding filament model.	**12h**

Learning Outcomes: After studying this paper the students will know –

a. Biological processes involving membranes.
b. Importance of membranes in the biological system
c. Nutritional significance
d. Disorders related to nutrition and digestion.

References:

a. Berg J.M., Tymoczko J.L. and Stryer L. (2006). Biochemistry: international edition: WH Freeman & Company Limited.
b. Devlin T.M. (2020). Textbook of biochemistry: with clinical correlations (8th Edition). New York: J. Wiley & Sons.
c. Guyton and Hall. Human Physiology.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	2	2	1
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	2	1	2	2	1	1	2
Weighted average	2	1.5	2	1.75	1.5	1.5	2

IV Semester

M.Sc. Biochemistry IV Semester	Project Work Course Code: 22F401	HC -Hard Core
Total Hours: 320	**Credits: 10 (LTP - 0:2:20)**	**Total Marks: 15+15+70 = 100**

Objective:

To enhance the laboratory skills of the student.

To make the students efficient in identifying a research problem and plan a research work.

Project work:

Each student has to work on a unique and independent mini research project for 3-4 months and submit a dissertation with the research findings.

The quality of work and efficiency of the defense will be evaluated by two examiners during end semester exams.

Outcome:

Enhanced laboratory skills.

Efficiency in identifying a research problem and plan a research work.

Appropriate review of literature and selection of proper laboratory methods.

Application and importance of statistics.

Make the appropriate conclusions of the research data.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	2	2	1
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	2	1	2	2	1	1	2
Weighted average	2	1.5	2	1.75	1.5	1.5	2

M.Sc. Biochemistry IV Semester	Clinical Biochemistry Course Code: 22F402	SC – Soft Core
Total Hours: 48	**Credits: 03(LTP - 3:1:0)**	**Total Marks: 15+15+70 = 100**

Learning Objectives: Students should study this paper to know –

a. The basics of clinical biochemistry.
b. Clinical Diagnosis of different diseases.
c. Different types of clinical diagnosis.

Module	Course contents	
1	**Basic concepts:** Health and disease. Normal and pathological changes, affecting cells in the body. Cell death and the physiological causes; physical, chemical, biological agents and nutritional deficiency. Blood: Composition, cells, functions of plasma proteins and lipo-proteins in diseases. Disorders of hemoglobin; thalassemia, sickle cell anemia. Anemias; microcytic, normocytic and macrocytic. Diagnostic enzymology: Clinically important enzymes; alkaline phosphatase, AST, ALT and isoenzymes of creatine kinase and LDH	**12h**
2	**Endocrine system:** Endocrine system: Overview of the physiology of endocrine system. Laboratory diagnosis to assess the function of pituitary, thyroid, adrenals and gonads. Disroders; graves disease, Hashimoto disease, Addission's disease, hypo and hyper secretion of hormones. Acromegaly, gigantism.	**12h**
3	**Hepatobiliary, Kidney, and GI System:** Hepatobiliary system: Overview of hepatobiliary system. Biochemical indices of hepatobiliary diseases. Diagnosis of liver function tests. Bile pigments - formation of bilirubin, urobilinogen, bile acids. Jaundice; prephapatic, hepatic and post hepatic. Diseases of the liver - Hepatitis cholestasis, cirshosis, fatty liver and gallstones. Overview of renal system. Assessment of renal function; creatine clearance, renal calculi, uremia, laboratory investigation of kidney disorders. Gastrointestinal disorders: Fractional gastric analysis, hypo and hyper acidity, gastric ulcers, malabsorption syndrome, steatorrhea and diarrhoea.	**12h**
4	**Cardiac, Skeletal Muscles and Nervous System:** Overview of heart and skeletal muscles, CNS. Major Cardio vascular system, atherosclerosis, risk factors and pathogenesis. Diagnosis and prognosis. Assessment of CSF.	**12h**

Learning Outcomes:

a. Application of Biochemistry in the clinical diagnosis.
b. Importance of biochemical parameters in the clinical diagnosis.
c. Hepatobiliary disorders
d. GI tract disorders and diagnosis.

References:

a. Berg J.M., J.L. and Stryer L. (2006). Biochemistry: international edition: WH Freeman & Company Limited.
b. Chatterjee C.C. (2017). Human physiology: Medical Allied Agency:CBS Publishers and Distributors Pvt. LTD.
c. Devlin T.M. (2020). Textbook of biochemistry: with clinical correlations (8th Edition). New York: J. Wiley & Sons.
d. Guyton A.C. and Hall J.E. (2006). Text book of Medical Physiology. Elsevier India Pvt. Ltd. New Delhi.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	2	2	2	2	2	2	2
CO2	3	1	3	2	1	1	2
CO3	1	2	1	1	2	2	3
CO4	1	1	3	2	3	1	2
Weighted average	1.75	1.5	2.25	1.75	2	1.5	2.25

M.Sc. Biochemistry IV Semester	Biotechnology Course Code: 22F403	SC – Soft Core
Total Hours: 48	**Credits: 03 (LTP - 3:0:0)**	**Total Marks: 15+15+70 = 100**

Course Objectives

- To study the basics of microorganisms and its use in fermentation.
- To study the various factors governing the growth of microorganisms at laboratory scale and at industrial fermentation scale
- To study the methodology used in animal and plant cell culture.

Module	Course contents	
1	Historical Aspects - Discovery of microorganisms. Theory of spontaneous generation. Era of Louis Pasteur. Microbes and fermentation. Microbes and diseases Koch's Postulates. General characteristics: morphology, nomenclature and classification of bacteria, yeast, molds, fungi actinomycetes, rickettsia. Techniques - Isolation and culture of microorganisms - aerobic and anaerobic culture methods, culture media. Isolation of pure colony, characterization. Staining - Gram stain acid fast, endospore, flagella.	**12h**
2	Microbial Nutrition - Factors influencing growth, growth curve of bacteria. Measurement of growth, continuous culture, synchronous culture chemostat. Auxotrophs, autotrophs, heterotrophs, microorganisms. Growth curve and Diauxic growth curve. Methods of Control of Microorganisms - Bacteriostatic and bacteriocidal agents. methods of cultivations and preservation of microbes. Mechanisms of disinfection and sterilization. Physical and chemical methods.	**12h**
3	**Cell culture techniques:** Introduction to plant and animal tissue/cell culture.Laboratory design, aseptic conditions, equipments and materials for cell culture. Different constituents of culture medium, types of media and their applications. **Plant cell culture**: Micro propagation, callus culture, haploid production, somatic embryogenesis, somatic hybridization, cybridization and somaclonal variation. Production of disease free plants. **Animal cell culture:** Culture techniques, media, preparation of primary culture; disaggregation of tissue and primary cultures, chick embryo, HUVEC, characterization of cultures, ploidy, cell doubling time.	**12h**
4	**Cell lines:** Characteristics and routine maintenance, cell separation techniques. Measurement of viability and cytotoxicity. Scaling-up of animal cell culture; bioreactors used in animal cell culture, amplified cultures, continuous cultures andtheir applications. **Industrial applications:** Fermentor; stirred fermentor, micro carrier, encapsulation, hollow fiber chambers, packed glass bead reactors. Cell immobilization techniques. haracterization of the cultured cells, measuringparameters of growth. Cell synchronization, Somatic cell fusion, cell cloning and cryopreservation. **Applications of animal cell culture:** Organ and histotypic cultures; three dimensionalculture, tissue engineering; example skin .	**12h**

Course Outcomes

- Understand the principle and methodology employed in the growth of microorganisms
- Understand the various parameters affecting the growth of industrially important microorganisms.
- Understand the importance of plant and animal cell culture to produced therapeutically important secondary metabolites
- Understand the applications of industrial fermenters.

CO/PO							
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**
CO1	1	2	2	2	2	2	1
CO2	3	2	3	1	3	1	2
CO3	2	2	3	1	2	1	2
CO4	2	1	2	2	1	1	2
Weighted average	2	1.75	2.5	1.5	2	1.25	1.75

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Continuous Formative Evaluation/Internal Assessment (HC, SC & OE)

Credit Distribution: The Choice Based Credit System (CBCS) comprises Hard Core, Soft Core subjects for Biochemistry Students and Open Elective for students other than Biochemistry.

Following shall be the minimum and maximum subjects per semester:

The credit pattern is Lecture (L); Tutorial (T); Practical (P); (L: T: P) Pattern.

Course is of 4 credits, and the different credit distribution patterns in L: T: P format is:

0 : 0,	2 : 1,	1 : 2,	0 : 3,	3 : 0,
1 : 1,	2 : 0,	0 : 2,	1 : 0,	0 : 1,
2 : 2,	4 : 0,	0 : 4,	1 : 3,	3 : 1,

The concerned BoS will choose the convenient credit pattern for every course based on the requirement.

One semester period is 16 weeks of teaching and learning.

Duration of semester is 20 weeks that includes semester end examinations.Credit Pattern:

Hard Core: 3 – 6 Credits **Soft Core:** 2 – 4 Credits **Open elective:** 4 Credits

Project Work: 6 Credits

Course Type	Credits
Hard Core	Minimum Credits - 42 and Maximum Credits - 52
Soft Core	Minimum Credits – 16
Open Elective	Minimum Credits - 4

- A Candidate can enroll for **maximum of 24 Credits per semester** inclusive of OpenElective earned from the other Departments.
- A Candidate has to earn a minimum of **76 Credits** for successful completion of a Masters degree.
- A minimum 76 Credits and additional 18 Credits (76 + 18 = 94 Credits) shall acquire add on Proficiency Diploma.

Continuous Assessment Pattern:

The details of continuous assessment (30:70 patterns) are summarized in thefollowing table:

Component	Syllabus in a Course	Weightage	Period of Continuous Assessment	Marks
C1	First 50%	15%	First half of the semester To be consolidated by 8thweek	15
C2	Remaining 50%	15%	Second half of the semester. To be consolidated by 16thweek	15
C3	Semester-end examination (All units of the course)	70%	To be completed during 18th-20th Week.	70

Continuous Assessment	Time Duration	Marks		Minimum 30% and an aggregate of 40% to declare pass
		Max	Min	
C1	1 week to 8 weeks	15	4.5	
C2	9 week to 16 weeks	15	4.5	
C3	Complete 16 weeks	70	21	

Theory evaluation:

Component – I (C1): Periodic Progress, Progress Reports, test (15%) calculated for 15marks
Component – II (C2): Periodic Progress, seminar, test (15%) calculated for 15marks)
Component III: (C3): Final exam (end semester exam for 70marks) (70%)

Practical evaluation:

Component – I (C1): Periodic Progress, Laboratory record and Progress Reports (15%)
Component – II (C2): Results of Work, tour report, assignment, class tests, laboratory exercise and Draft Report (15%)
Component III: (C3): (70%) Practical exams to be conducted for 6 hours, students will prepare reagents and perform the experiments, report to the examiners. A viva voce will be conducted during practical examination for each student and marks are allotted accordingly from the experimental efficiency and viva.
In case a candidate secures less than 30% in C1 and C2 put together in a course, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

Minor/ Major Project Evaluation:

Right from the initial stage of defining the problem, the candidate has to submit the progress reports periodically and also present his/her progress in the form of seminars in addition to the regular discussion with the guide. Components of evaluation are as follows:
Component – I (C1): Periodic Progress and Progress Reports (15%)
Component – II (C2): Results of Work and Draft Report (15%)
Component– III (C3): Final Viva-voce and evaluation (70%).
The report evaluation is for 40% and Viva-voce examination is for 30%.
In case a candidate secures less than 30% in C1 and C2 put together in a course, the candidate is said to have DROPPED that course, and such a candidate is not allowed to appear for C3 in that course.

SCHEME OF EXAMINATION
DEPARTMENT OF STUDIES IN BIOCHEMISTRY

Program	*Title of Course*	*L:T:P*	*Credit*	*C1*	*C2*	*C3*	*Total*	*Subject Code*
Master of Science in Biochemistry	Fundamentals of Biochemistry	3:1:0	4	15	15	70	100	22F101
	Techniques in Biology	3:1:0	4	15	15	70	100	22F102
	Molecular Cell Biology	3:1:0	4	15	15	70	100	22F103
	Bioorganic and Bioinorganic Chemistry	3:0:0	3	15	15	70	100	22F104
	Practical 1A Experiments in Biological techniques and Bioorganic chemistry & Tour Report (Laboratory Visit and Tour Report)	0:0:2	2	15	15	70	100	22F105
	Practical 1B Experiments in Cell Biology, Genetics and Bioinorganic chemistry & Seminar	0:0:2	p2	15	15	70	100	22F106
	Genetics	3:0:0	3	15	15	70	100	22F107
	Membrane Biology	3:0:0	3	15	15	70	100	22F108
	Molecular Biology	3:1:0	4	15	15	70	100	22F201
	Enzymology	3:0:0	3	15	15	70	100	22F202
	Practical 2A (Experiments in Molecular Biology and Energy Metabolism; Laboratory visits and Tour report)	0:0:2	2	15	15	70	100	22F203
	Practical 2B (Experiments in Enzymology and Research Paper presentation)	0:0:2	2	15	15	70	100	22F204
	Metabolism of Lipids	3:0:0	3	15	15	70	100	22F205
	Metabolism of Carbohydrates	3:0:0	3	15	15	70	100	22F206
	Endocrinology	3:1:0	3	15	15	70	100	22F207
	OE: Biology for Non-biologists	2:2:0	4	15	15	70	100	22F208
	OE: Nutrition in Health and Disease	2:2:0	4	15	15	70	100	22F209
	Immunology	3:1:0	4	15	15	70	100	22F301
	Metabolism of Amino Acids and Proteins	3:1:0	4	15	15	70	100	22F302
	Practical-IIIA Experiments in Immunology and amino acid metabolism. Study tour and tour report.	3:0:0	2	15	15	70	100	22F303
	Practical IIIB Experiments in Metabolism and Review of Literature.	2:0:0	2	15	15	70	100	22F304
	Metabolism of Nucleic Acids	3:1:0	4	15	15	70	100	22F305
	Research Methodology, Biostatistics, and Bioinformatics	3:1:0	4	15	15	70	100	22F306
	Physiology and Nutrition	3:1:0	4	15	15	70	100	22F307
	Research Project Work, Report and Viva Voce	0.0.10	10	15	15	70	100	22F401
	Clinical Biochemistry	3:0:0	3	15	15	70	100	22F402
	Biotechnology	3:0:0	3	15	15	70	100	22F403

Scheme of Question Paper for (50 marks)
To be calculated for 15 marks for C1 and C2

TIME: 2 HOURS **MAX. MARKS: 50**

I. Answer any FIVE of the following: [5X2=10]
1 to 6

II. Answer any FOUR of the following: [4X5=20]
1 to 5

III. Answer any TWO of the following: [2X10=20]
1 to 3

The C1 and C2 can be reduced to 25 marks over 1 hour.
Should be calculated for 15 marks (proportionately).
Marks from Seminar or assignment or Class Exercise also can be included.

Scheme of Question Paper for End Semester Examination (70 marks) C3
TIME: 3 HOURS **MAX. MARKS: 70**

I. Answer any ten of the following: [10X2=20]
1 to 12

II. Answer any four of the following: [4X5=20]
13 To 18

III. Answer any three of the following: [3X10=30]
19 to 23

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Question Paper Pattern for Practical – C1 and C2

Time: 2 Hours **Max Marks: 50**

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1. Conducting an Experiment/Micro-preparation /Plant identification	20m
2. Critical comments /Identification/ Procedure Writing	10 m
3. Viva-voce examination	10m
4. Class Records/Submissions.	10m

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The C1 and C2 can be reduced to 25 marks over 1 hour.
Should be calculated for 15 marks (proportionately).
Marks from Seminar or assignment or Class Exercise also can be included.

Question Paper Pattern for Practical – End Semester Examination C3

Time: 6 Hours **Max Marks: 70**

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1. Conducting Experiment/Micro-preparation /Plant identification	20m
2. Minor experiment/ Demonstrations	15m
3. Critical comments /Identification/ Procedure Writing	10m
4. Viva-voce examination	20m
5. Class Records/Submissions.	5m

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APPROVED BY THE FOLLOWING BoS MEMBERS

Members:

Sl. No.	Member	Name and address	Signature
1	Chairperson	**Dr. Mahadesh Prasad AJ** **Professor,** DoS in Biochemistry School of Life Sciences, SBRMFGC (Autonomous) Pooja Bhagavat Memorial Mahajana Education Centre, Mysuru	
2	Expert Member	**Dr. S. R. Ramesh** **Chief Scientist,** School of Life Sciences SBRMFGC (Autonomous), Pooja Bhagavat Memorial Mahajana, Education Centre, Mysuru	
3	Member	**Dr. Girish Chandran** **Coordinator,** DoS in Biochemistry School of Life Sciences, SBRMFGC (Autonomous) Pooja Bhagavat Memorial Mahajana Education Centre, Mysuru	
4	Member	**Dr. Kiran B.** **Assistant Professor,** DoS in Microbiology School of Life Sciences, SBRMFGC (Autonomous) Pooja Bhagavat Memorial Mahajana Education Centre, Mysuru	
5	University Nominee	**Dr. Gopal Marathe K.** **Professor,** DoS in Molecular Biology University of Mysore, Mysuru	
6	Member from another College	**Mr. Bhargava C.S.** **Assistant Professor,** Dept. of Biochemistry Maharani's Govt. Science College (Autonomous), Mysuru	
7	Expert Member from External University	**Dr. Naveen Y.P.** Assistant Professor and Young Researcher Dept. of Biochemistry, Adi Chunchanagiri University, Nagamangala, Mandya	
8	Expert Member from External University	**Dr. Kumar J.R.** Professor JSS AHER, Mysuru	
9	Industry Member	**Mr. Sagar Krishna Bhat** Molecular Biologist KAYPEEYES BIOTECH Pvt. Ltd. 13 & 14, Food Industrial Area, Metagalli, Mysuru 16	Absent
10	Alumni Member	**Ms. Milana C.** Clinical Data Manager Starmark Software, Mysuru	Absent

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KRS Road, Metagalli, Mysuru

SCHOOL OF LIFE SCIENCES

M.Sc. MICROBIOLOGY PROGRAMME

[Choice Based Credit System (CBCS)]

PROGRAMME STRUCTURE

MINIMUM CREDITS TO BE REGISTERED BY A STUDENT IN A NORMAL PHASE TO SUCCESSFULLY COMPLETE M.SC. MICROBIOLOGY DEGREE IN FOUR SEMESTERS

Semesters	**Hardcore**		**Softcore**		**Open elective**		**Total**	
	Numbers	**Credits**	**Numbers**	**Credits**	**Numbers**	**Credits**	**Numbers**	**Credits**
I semester	06	20	01	03	-	-	06	23
II semester	04	12	01	03	1	04	07	19
III semester	05	16	02	06	-	-	07	22
IV semester	1	06	02	06	-	-	03	12
Total	**16**	**54**	**06**	**18**	**1**	**04**	**23**	**76**

Minimum Credits for Hard Core	42
Minimum Credits for Soft Core	16
Minimum Credits for Open Elective	04
Minimum Total Credits	76

I Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	**22E101**	Bacteriology	HC	3	1	0	4
2	**22E102**	Virology	HC	3	1	0	4
3	**22E103**	Techniques in Biology	FCHC	3	1	0	4
4	**22E104**	Molecular Cell Biology	FCHC	3	1	0	4
5	**22E105**	**Practical IA** (Techniques in Biology & Bacteriology & Virology)		0	0	2	2
6	**22E106**	**Practical IB** (Molecular Cell Biology & Environmental Microbiology)		0	0	2	2
		Soft Core (Any one)					
7	**22E107**	Environmental Microbiology	SC	3	0	0	3
8	**22E108**	Fundamentals of Biochemistry	FCSC	3	0	0	3
TOTAL CREDITS **6 Hard Core (4 theory + 2 practicals) :20 credits** **1 Softcore: 03 credits**							**23 CREDITS**

***Note: For students those who wish to have more than one softcore, Bridge course/Add-on course (theory) will be provided.**

II Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	**22E201**	Molecular Biology	FCHC	3	1	0	4
3	**22E202**	Genetic Engineering	FCHC	3	1	0	4
4	**22E203**	**Practical IIA**: (Molecular Biology & Genetic Engineering)		0	0	2	2
5	**22E204**	**Practical IIB:** (Microbial Physiology)		0	0	2	2
		Soft Core (Any one)					
6	**22E205**	Microbial Physiology	SC	3	0	0	3
7	**22E206**	Molecular Diagnostics	FCSC	3	0	0	3
8	**22E207**	Microbial Diversity	OE	3	1	0	4
TOTAL CREDITS **4 Hard Core (2 theory + 2 practicals) :12 credits** **1 Softcore: 03 credits** **1 Open elective :04 credits**							**15+4=19 CREDITS**

III Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	**22E301**	Medical Microbiology	HC	3	1	0	4
2	**22E302**	Immunology	FCHC	3	1	0	4
3	**22E303**	Food Microbiology	HC	3	1	0	4
4	**22E304**	**Practical-IIIA:** Immunology & Medical Microbiology & Food Microbiology		0	0	2	2
5	**22E305**	**Practical-IIIB** Genetics & Mycology		0	0	2	2
		Soft Core (Any Two)					
6	**22E306**	Genetics	SC	3	0	0	3
7	**22E307**	Mycology	SC	3	0	0	3
8	**22E308**	Genomics and Proteomics	SC	3	0	0	3
TOTAL CREDITS 5 Hard Core (3 theory + 2 practical) :16 credits 2 Softcore: 06 credits							**22 CREDITS**

IV Semester

Sl No	Code	Title of the Paper	Course Type	Credit Pattern L	T	P	Total Credits
1	**22E401**	Project Work	HC	0	1	5	6
2	**22E402**	Agricultural Microbiology	SC	3	0	0	3
3	**22E403**	Industrial Microbiology	SC	3	0	0	3
TOTAL CREDITS 1 Hard Core (PW) : 06credits 2 Softcore: 06credits							**12 CREDITS**

Grand Total Credits: 76

Syllabus

SCHOOL OF LIFE SCIENCE

ISEMESTER

HARDCORE: BACTERIOLOGY

TotalCredit:04 **Total Hours: 48 hours**

Course outcome: Students should study this paper to know –

1. The structure of bacteria and its identification
2. The different agents to inhibit bacteria
3. The concept and working principles of microscopes
4. Classification and salient features of different groups of bacteria

Module-I **12hrs**

Introduction: Important events in development of bacteriology, Scope and relevance of bacteriology. Economic importance of bacteria.

Cell Structure: An overview of bacterial size, shape and arrangement, structure, chemical composition of cell wall of Archaebacteria, gram-negative bacteria, gram-positive bacteria and acid fast bacteria, cell wall deficient organisms including L-form structure, composition and function of cell membrane, capsule, flagella, pili, Inclusion bodies, ribosomes, mesosomes, reserve food materials , magnetosomes and phycobilisomes, endospores, bacterial nucleic acids – chromosome, plasmid, transposons, integrons and antibiotic resistance cassettes.

Microscopy: Working Principles of bright field microscope, fluorescent microscope, dark field microscope, phase contrast microscope, stereo microscope, confocal microscopy and electron microscope. Preparation of sample for electron microscopic studies. Application and importance of above microscopes. Measurement of microscopicobjects.

Module-II **12hrs**

Bactericidal and bacteriostatic agents - Factors affecting static and cidal activity, phenols and phenolic compounds, alcohols, halogens, heavy metals, dyes, detergents, aldehydes Non-medical uses of antibiotics. Assay methods of antimicrobial agents – Phenol coefficient, qualitative assay of drugs (drug sensitivity testing), quantitative assays – liquid tube assay (MIC), agar tube assay. Agar plateassay

Module-III **12hrs**

Growth, Cultivation and control of Bacteria: Nutrient requirements, nutritional types of bacteria, culture media, classification of media.Growth:

Nutritional uptake, Growth kinetics, generation time, growth curve, factors affecting growth. Methods for measurement of microbial growth – direct microscopy, viable count estimates, turbidometry, and biomass. Aerobic, anaerobic, batch, continuous and synchronous cultures. Methods of pure culture isolation, Enrichment culturing techniques, single cell isolation, and pure culture development. Preservation and Maintenance of Microbial cultures: Repeated subculturing, preservation at low temperature, sterile soil preservation, mineral oil preservation, deep freezing and liquid nitrogen preservation, lyophilization. Advantages and disadvantages of each method. Control of microorganisms: Antimicrobial agents, physical and chemical methods. Principles, functioning and types of Biosafetycabinets.

Module-IV **12hrs**

Characteristics and Salient features of major groups of Bacteria: Archaebacteria: general **c**haracteristics and classification; extremophiles, halophiles, thermophiles and barophiles; General characteristics, classification, diversity and distribution, economic importance of .**Actinomycetes, Cyanobacteria**. **Bioluminescent bacteria;** characteristics and examples, mechanism of bioluminescence. General characteristics, life cycle, growth, multiplication and significance of Mycoplasma, Rickettsiae and Chlamydia

REFERENCES:

1. Black, J.G. 2012. Microbiology: Principles and Explorations (8th ed.). Wiley
2. Brown, A. 2011. Benson's Microbiological Applications Short Version (Brown, Microbioligical Applications) (12th ed.). McGraw-Hill Science/Engineering/Math
3. Hogg, S. 2013. Essential Microbiology (2nd ed.).Wiley-Blackwell
4. Leboffe, M.J., Pierce, B.E., and Ferguson, D. 2012. Microbiology Laboratory Theory & Application, Brief (2nd ed.). Morton Publishing Company

5. Madigan, M.T., D.P. Clark, Stahl, D., and Martinko, M.J. 2012. Brock Biology of Microorganisms (13th ed.). BenjaminCummings
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9. Sherwood, A. and Willey, W. 2007. Prescott, Harley, and Klein's Microbiology (7th Int. ed.).McGraw-Hill

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	2	3	3	2	3	3
Weighted average	3	3	2.75	3	3	3	2.75	3	3	2.75	3	3

HARDCORE: VIROLOGY

TotalCredit:04 **Total Hours: 48 hours**

Course outcome: Students should study this paper to know –

1. Structure and functioning ofviruses
2. Infectious cycle and replication pattern
3. Viruses as tool forvaccination
4. Host and virus specificresponses

Module-I **12hrs**

A) The science of virology: Concept and scope of virology. Definitive properties of viruses: Morphology, Ultra structure, Chemical composition - proteins, nucleic acids, and other contents. Classification and nomenclature of viruses. Evolutionary importance ofviruses.

B) Working with viruses: Visualization and enumeration of virus particles, Biological activity of viruses, Physical and chemical manipulation of the structural components of viruses, Characterization of viral product expressed in the infected cells. Isolation and purification of viruses, Detection of viruses: physical, biological, immunological and molecularmethods.

Module-II **12hrs**

A) Virus Infectious Cycle: Adsorption/attachment, Entry, Disassembly/uncoating, Nucleic acid and Protein synthesis, Intracellular trafficking, Assembly, Maturation andRelease.

B) Replication patterns of specific viruses: Viruses with RNA genomes; DNA genomes. Identification of virus prototypes associated with different virus replication schemes; Details on important viruses namely Herpes virus, Poliovirus, Influenza virus, coronavirus, SV40 and Adeno Virus, Poxviruses, Hepatitis Viruses,Retroviruses.

Module-III **12hrs**

A) Virus-Host Interactions: Types of infections: Acute (RSV, influenza, viral encephalitis), Persistent (Hepatitis B, C, HIV), Latent (HSV), Slow (scrapie). Maternal-fetal transmission, Transformation and oncogenesis resulting from virus infections (warts, lymphoma, hepato-cellular carcinoma). Vector- borne and emerging diseases (sources andcauses).

B) Host-responses to viruses: Innate (cytokines, interferons, NK cells) and adaptiveimmunity to viruses (antibody and cell-mediated immunity)

C) Prevention and control of viral diseases: Vaccines: History (smallpox, rabies, polio, measles, mumps, HPV, hepatitis B). Live-attenuated and killed-virus vaccines, subunit vaccines, nucleic acid based, & viral-vector-based vaccines. Pre- and post-exposure prophylaxis. **Antiviral drugs:** Nucleoside analogs, reverse transcriptase inhibitors, fusion inhibitors, maturation/protease inhibitors.

Module-IV **12hrs**

A) Propagation, purification, characterization and identification and genomics of plant viruses: General methods of propagation of plant viruses; purification of plant viruses using centrifugation, chromatography and electrophoresis techniques, methods employed in identification of plantviruses.

B) Sub-viral particles: Discovery, Structure, Classification, replication and diseases causedby Satellite, Satellites virus, Virusoids, Viroids andPrions.

C) Microbial viruses: Diversity, classification, characteristics and applications of bacteriophages, and general account on algal, fungal and protozoanviruses.

D) Viruses as tools: Study of gene expression and regulation in host cells, use as gene delivery vehicles to treat genetic disorders or asvaccines.

REFERENCES:

1. Cann, A.J. 2011. Principles of Molecular Virology (5th ed.).Elsevier
2. Carter, J., and Saunders, V.A. 2007. Virology: Principles and Applications,JohnWiley&Sons,westSusscex,England.
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4. Dimmock, N., Easton, A., and Leppard, K. 2009. Introduction to Modern Virology (6^{th} ed.).Wiley-Blackwell
5. Flint, J.S., Enquist, L.W., and Shalka, A.M. 2004. Principles of Virology: Molecular Biology,Pathogenesis, and Control of Animal Viruses, American Society forMicrobiology
6. Fujita, H.F.R., Entwistle, P.F., Evans, H.F. and Crook, N.E. 1998. Insect Viruses and Pest Management. John Wiley & SonsLtd.
7. Lobocka, J., Malgorzata, K., and Szybalski, W.T. 2012. Bacteriophages (2^{nd} ed.). AcademicPress
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9. van Regenmortel, M.H.V., and Mahy, B.W.J. 2009. Desk Encyclopedia of

General Virology (1st ed.). AcademicPress.

10. Wagner, E.K., Hewlett, M.J., Bloom, D.C., and Camerini, D. 2007. Basic Virology (3rd ed.). John Wiley &Sons.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

TECHNIQUES IN BIOLOGY (FCHC)

TotalCredit:04 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. This paper is designed to give a brief introduction to most of the techniques used in the field of biologicalanalyses
2. Nevertheless the topics in this paper are to be taughtcompendiously.
3. Techniques inBiology
4. The fundamental principles in cellhomogenization

Module I: Biological samples: Typesandpreparation 12 hours

Study Models: *In vivo* and *in vitro* models; Microbial, Animal, Plants; choice of models;types of studies, auxotrophs. Routes of exposure of test chemicals in animals. Culture: microbes, animal and plant cells inlaboratory.

Cell fractionation techniques: Tissue homogenization, Cell lysis techniques, extraction of cellcellularcontents. Protein purification techniques: salting in, salting out, dialysis and ultrafiltration.

Centrifugation: Svedberg's constant, sedimentation velocity and sedimentation equilibrium.

Ultra centrifugation: Differential and density gradient centrifugation, centrifugal elutriation, isolation of cell organelles (e.g. Mitochondria) from biological tissue samples.

ModuleII:Spectroscopicanalysis 12 hours

Principles and applications of colorimeter, spectrophotometer, fluorimeter, multiwell plate reader. Beer-Lambert's Law and its limitations. Extinction coefficient, chromogenic and fluorescent probes, their applications. Principle of flame photometry, and X-ray crystallography, IR, ESR,NMR& Raman's spectroscopy.

Module III: Chromatographic and electrophoretic techniques: 12 hours

Chromatography: Principles, working and applications of paper chromatography (radial, ascending, descending and 2-D), Thin layer chromatography,Brief introduction, application of Adsorption, Ion exchange,Gel

filtration, Affinity, Gas chromatography. Chromatofocusing, HPLC, UPLC and FPLC.

Protein electrophoresis: Polyacrylamide gel electrophoresis, SDS-PAGE, IEF & 2DEF.Visualizing proteins using CBB, silver stain;glycoproteinsand lipoproteins staining,Brief introduction to Zymogram and reverse zymogram;

Nucleic acid electrophoresis: Agarose gel electrophoresis, Visualizing nucleic acids in using Ethidium bromide and UV. Fluorescence probes: SYBR green and Eeva green, Taq man, PFGE and capillaryelectrophoresis.

Module IV: Radiochemistry andMassspectroscopy 12 hours

Isotopes: Heavy isotopes and radio isotopes, half-life, decay constant, detection and quantitation; Principle and working of GM counter and scintillation counter (solid/liquid).

Mass spectroscopy Principle and construction of mass spectrometer. m/e, tof, MALDI and ESI. LC-MS, LC-MS-MS.

Applications of radioactivity: Radio isotopes in biology 3H, 14C, 32P, 131I,35S; Labeling of proteins and nucleic acids, autoradiography, pulse chase method, carbon dating.

REFERENCES:

1. Bryce, C., and Balasubramanian, D. 2004. Concepts in Biotechnology, UniversitiesPress.
2. Crueger, W., and Crueger, A. 2006. Biotechnology: A Textbook of Industrial Microbiology, Science publishers Ltd.,England.
3. Halford, N.G. 2003. Plant Biotechnology: The Genetic Manipulation of Plants: Adrian Slater, Nigel Scott, Mark Fowler; Oxford UniversityPress, Oxford, NewYork.
4. Marshall, A.G. 1978. Biophysical Chemistry: Principles, Techniques,and Applications: Wiley NewYork.
5. Micklos, D.A., and Freyer, G.A. 1990. DNA Science; A First Course in Recombinant DNA Technology: Cold Spring Harbor LaboratoryPress.
6. Purohit, S., and Mathur, S. 1999. Drugs in Biotechnology Fundamentals and Applications. Purohit SS. Maximillan Publishers,India.
7. Walker, M., and Rapley, R. 2009. Route Maps in Gene Technology, John Wiley &Sons.

8. Wilson, K., and Walker, J. 2010. Principles and Techniques of Biochemistry and Molecular Biology, Cambridge UniversityPress.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	3	3	2	3	3	3	2	3	3	3
Weighted Average	3	3	3	3	2.5	3	3	3	2.75	3	3	3

HARDCORE: MOLECULAR CELL BIOLOGY(FCHC)

TotalCredit:04 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. The Cellularorganization.
2. Study of phytochemicals in cancerbiology.
3. Signaling transduction incells.
4. Structure and function ofcell.

Module-I **12hrs**

Organization of the cell

Universal features of cells, Ultra-structure of prokaryotic and eukaryotic cells (Plants and animals), Structure of plant cell wall, Structure of cell membrane and models, functions of cell membrane, Intracellular organelles: Structure and functions of Ribosomes, Golgi apparatus; Mitochondria, Chloroplast, Lysosomes, Centrosome, Endoplasmicreticulum, Nucleus-Internal organization, Chromatin- structure and function, cellularcytoskeleton.

Module-II **12hrs**

Cellular processes

Cell cycle and its regulation, Cell cycle check points, Molecular dynamics of cell division, interphase, Mitosis and meiosis, Cyclins and CDKs, Cell differentiation: Stem cells, Differentiation of stem cells into different cell types and organization into specialized tissues, apoptosis, necrosis & autophagyMolecular mechanisms of membrane transport active, passive and facilitated, Receptor mediatedendocytosis.

Module-III **12hrs**

Cancer Biology

Introduction,Historical account, classification, Characteristics of cancer cells, hallmark features of cancer cells,Carcinogenesis, Exogenous and endogenous carcinogens, cancer initiation, promotion and progression, Cancer cell cycle, Viruses and cancer, Oncogenes, Tumor suppressor genes with examples, cancer

therapy present and future, Role of p53 in cancer. Role of phytochemicals in cancer treatment, cancer stem cells.

Module–IV **12hrs**

Basics of Signal Transduction

Extra-cellular matrix components, Cell junctions, Cell adhesion molecules, Hormones and their receptors, Cell surface receptors as reception of extra-cellular signals, Types of cell signalling, Growth factors- EGFR, VEGF, PDGF and theirSignalling, signalling through G-protein coupled receptors; Second messengers in signal transduction pathways: cAMP and calcium ions (Ca2+), signalling through Receptor tyrosine kinases ,MAP kinase pathway,P13K -Akt pathway.

REFERENCES:

1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., and Walter, P. 2008. Molecular Biology of the Cell (5th ed.). New York: GarlandScience.
2. Lodish, H.F. 2016. Molecular Cell Biology (8th ed.). New York: W.H. Freeman.
3. Cooper, G.M., and Hausman, R.E. 2013. The Cell: a Molecular Approach. (6th ed.). Washington: ASM;Sunderland.
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5. Kleinsmith, L.J., and Kish, V.M. 1995. Principles of Cell and Molecular Biology (2nd ed.). Harper Collins College Publishers, New York,USA.
6. E-books

- https://cdn.preterhuman.net/texts/science_and_technology/nature_and_biology/Cell_and_Molecular_Biology/Molecular%20Cell%20Biology%205th%20ed%20-%20Lodish%20et%20al.pdf
- http://standring.weebly.com/uploads/2/3/3/5/23356120/8_-_unit_30c.pdf
- file:///C:/Users/Dr.%20Divya/Downloads/Cancer%20Biology%204th%20ed%20-%20R.%20Ruddon%20(%20PDFDrive%20).pdf

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	2	3	3	3	3	3	3	3
CO3	3	3	3	3	3	2	3	3	3	3	3	3
CO4	3	3	3	3	3	2	3	3	3	3	3	3
Weighted Average	3	3	3	3	2.75	2.5	3	3	3	3	3	3

SOFTCORE: ENVIRONMENTALMICROBIOLOGY

TotalCredit:03 Total Hours: 48hours

Course outcome: Students should study this paper to know –

1. The evolution of life, microorganisms and soilinteraction
2. Adaptation ofmicroorganisms
3. The ecological succession of microorganisms and itsadaptation
4. Bioremediation concept ofmicroorganisms

Module-I 12hrs

Introduction to Microbial Ecology: Evolution of Life on Earth; History and scope of ecology, Concept of autecology, synecology, population, community, biome. Ecological succession. Microorganism in aquatic Environment: major physical and chemical factors (light, temperature, gases, nutrients). Aquatic biota: phytoplankton, zooplankton, benthos, periphyton, macrophytes. Biofilms, Production in lakes, rivers, estuaries and wetlands. Nutrient dynamics in lakes, rivers, estuaries and wetland, Airspora of indoor and outdoor environment, factors affecting airspora, Techniques of trapping air bornemicroorganisms.

Module-II 12hrs

Soil Microbiology: Characteristics and classification of soil. Interactions between microorganisms: Mutualism, commensalism, ammensalism synergism, parasitism, predation, competition. Rhizosphere, rhizosphere microflora and its beneficial activity. Role of microorganism in nitrogen, phosphorous and sulphur cycles. Detrimental effects of diverted biogeochemical cycles. Biological nitrogen fixation in detail: Symbiotic, asymbiotic and associated nitrogen fixation. Structure, function and gentic regulation of nitrogenases. Viable but nonculturable bacteria. Impact of crop residues burning on soil fertility and agriculturally important microbes

A) Module-III 12hrs

Microbes in extreme environment: Microbes of extreme environments, Thermophiles, acidophiles, alkaliphiles, halophiles. barophiles and their survival mechanisms.

B) Space microbiology: Historical development of space microbiology, Life detection methods a) Evidence of metabolism (Gulliver) b) Evidence of photosynthesis (autotrophic andheterotrophic).

Module-IV 12hrs

Microbes in the degradation of wastes: Treatment of solid and liquid industrial wastes,Microbialdegradationofpesticides,Xenobiotics,degradationoflignin,

cellulose and pectin. Bioremediation. Geomicrobiology: Microbes in metal extraction, mineral leaching and mining, copper extraction by leaching and microbes in petroleum product formation. Global Environmental Problems: Global Warming, Acid rain, Ozone depletion. Biodeterioration of wood and metals.

REFERENCES:

1. Alexander, M. 1999. Biodegradation and Bioremediation. Academic Press,U.S.A.
2. Das, S. 2014. Microbial Biodegradation and Bioremediation (1st ed.). Elsevier academic Press,U.K.
3. Frederic, P.M., Agnes, F.V., and McBrewster, J. 2010. Bioleaching. VDM Publishing house,Mauritius.
4. Gabriel, B. 2005. Waste Water Microbiology. John Wiley & Sons publishers,U.K.
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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	2	3	3	3
Weighted Average	3	3	2.75	3	3	2.75	3	3	2.75	3	3	3

SOFTCORE: **FUNDAMENTALS OFBIOCHEMISTRY(FCHC)**

TotalCredit:03 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. The basics ofbiochemistry.
2. Lipids and metabolism
3. Importance ofbiochemistry.
4. Application of biochemistry knowledge in thesociety.

Module I: Basics of Chemical Bondingand Carbohydrates **18hrs**

Bonding: Covalent bond; coordinate bond; coordinate bond formation in transition metals. Bonding of iron in hemologlobin and cytochromes, cobalt in Vit B_{12}, magnesium in chlorophyll. Special properties of water; Structure and bonding, non-covalent interactions, reactions ofcarbohydrates.

Carbohydrates: Structure and classification of carbohydrates, monosaccharides (pentoses, hexoses), disaccharides (lactose, sucrose, maltose) and polysaccharides (starch, cellulose, glycogen and bacterial cell wall polysaccharides)explanations.

Module II: Basics of Amino AcidsandProteins **10hrs**

Aminoacids: Nomenclature, classification and buffering properties, zwitterionic structure,reactions ofAminoacids.

Proteins: Primary, secondary, tertiary and quaternary structures, protein sequencing.

Factors responsible for protein folding: Anfinsen's experiment. Non-covalent interactions and S-S bridges in stabilizing the proteins, Denaturation and renaturation of proteins, molten globule, chaperones.

Module III: Basics ofLipids&Enzymology **08hrs**

Lipids: Classification & reaction of lipids; oils, fats, and waxes. Occurrence and properties of fatty acids, esters of fatty acids, cholesterol, phospholipids, glycolipids, sphingolipids, cerebrosides and gangliosides. Role in cellmembrane.

Enzymology:Classification, enzyme activity, Michaelis-Menten kinetics, LB plot, inhibition - competitive, uncompetitive, non-competitive, determination of Ki, active site, allosterism - ATCase, isoenzymes- LDH, catalytic strategies, co-enzymes and cofactors, multienzymecomplexes-PDC.

Module IV: Basics ofNucleicAcids **12hrs**

Nucleic Acids: DNA as genetic material ,Griffith ,Avery & Macleod experiments , isolation of DNA & RNA from biological sources,secondary structure of DNA, Watson and Crick model,Chargaff's rule; B and Z DNA. Features of mitochondrial, chloroplast DNA and plasmids. Secondary structure of tRNA and clover leaf model. Physiochemical properties of nucleic acids, melting of DNA, T_m; factors affecting T_m, C_ot curve, classification of DNA based on $C_o$tcurve.

REFERENCES:

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2. Berg, J.M., Tymoczko, J.L., and Stryer, L. 2006. Biochemistry: International Edition: WH Freeman & CompanyLimited
3. Mathews, P. 2002. Advanced chemistry, Cambridge low price editions. Cambridge University Press,UK.
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6. Voet, D., and Voet, J.G. 2010. Biochemistry (4th ed.). New York: J. Wiley &Sons.

1. Videos for theconcept:

- www.khanacademy.org– Chemical Bonding, Chemistry ofBiomolecules
- www.yourgenome.org– Structure ofDNA

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	2	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	2	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	2	3	3	3
Weighted Average	3	3	3	2.5	3	2.75	3	3	2.75	3	3	3

PRACTICAL IA: (Techniques in Biology & Bacteriology & Virology)

Total Credit: 02 Total hours : 32

Course outcome: Students should study this paper to know –

1. Structure and functioning ofviruses
2. Infectious cycle and replication pattern
3. The fundamental principles in cell homogenization
4. The concept and working principles ofmicroscopes

1. Laboratory safety rules
2. Isolation and enumeration of bacteria from soil and water
3. Staining techniques – simple (positive and negative), differential (Grams and acid fast), structural (endospore and capsule)
4. Motility test (hanging drop method and soft agar method)
5. Biochemical tests for the identification of bacteria – catalase, IMViC, Urease, TSIA.
6. TLC of amino acids.
7. Bacterial growth curve.
8. Diauxic growth curve in *E.coli*
9. Isolation of coliphages from sewage
10. Study of morphological changes due to viral infection in plants
11. Ascending chromatography
12. Descending chromatography
13. Circular paper chromatography
14. Wavelength scan of proteins and Nucleic acids

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	2	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	2.75	3	3	3	3	3	3	3	3

PRACTICAL IB: (Molecular Cell Biology & Environmental Microbiology)

Total Credit: 02 Total hours : 32

Course outcome: Students should study this paper to know –

1. Phytochemical role in cellular process and cancerbiology
2. Importance of growth factors and cellularsignalling.
3. Importance of bioanalyticaltechniques
4. Techniques inBiology

1. Microscopic examination of prokaryotic and eukaryotic cells using staining techniques.
2. Measurement of cell dimension by micrometery.
3. Cell Counting and viability by tryphan blue exclusion method.
4. Study of mitosis in onion root tips.
5. Study of meiosis in onion flower buds.
6. Polytene chromosomes.
7. Determination of BOD of pollution water.
8. Determination of COD of polluted water.
9. Degradation of cellulose by *Chaetomium globosum*.
10. Bacterial examination of drinking water by membrane filters technique.
11. Identification and study of soil associated Mycorrhiza.
12. Study of important microbes in the degradation of wastes.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	2	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	2.75	3	3	3	3	3	3	3	3	3

II SEMESTER

HARDCORE: **MOLECULARBIOLOGY(FCHC)**

TotalCredit:04 **Total Hours: 48hours**

Course Outcome: After studying this paper the students will know –

1. To understand biological activities and metabolism at DNA and proteinlevel
2. The course gives an in-depth insight into the molecular aspects of life - the central dogma.
3. It explains molecular aspects of genes and its regulation- genome- gene expressions heredity- recombination- protein synthesis- molecular basis of diseases-mutationsgenetic analysisetc.
4. The student will get an idea about the principles behind molecularbiology

ModuleI: **08Hours**

1. **Genome organization:** Prokaryotic and eukaryotic genome organization, central dogma, structural organization of chromosome, structure and functions of DNA & RNA, Biochemical evidences for DNA as genetic material.

2. **DNA**: Chemistry of DNA, Forces stabilizing DNA structure, Physical Properties of Ds DNA (UV absorption spectra Denaturation and renaturation), chemical that react with DNA, Interaction with small ions, DNA binding motifs: Zinc finger, leucine zipper, helix-turn- helix others motifs, DNA binding and kinks.

ModuleII: **12Hours**

1. **DNA topology:**Supercoiled form of DNA, Biology of supercoiled DNA, DNA topoisomerases, effect of supercoiling on structure of DNA and role of supercoiling in gene expression and DNAreplication.

2. **DNA Replication:** Characteristics and functions of bacterial DNA polymerases I, Mechanism of prokaryotic DNA replication, models of replications in prokaryotes. Fidelity of replication,Eukaryotic DNA polymerases and mechanism of replication. Replication of viral DNA, DNA replication in telomericregions,Telomerases,mechanismsofactionoftopoisomeraseIandII ,Models of DNA replication, Inhibitors of replication.

ModuleIII: **14Hours**

1. **Transcription:** Characteristics and function of bacterial RNA polymerases EukaryoticRNApolymerases,mechanismoftranscriptionandregulation.

transcription factors, Stringent response. Post transcriptional modifications of mRNA mechanism of splicing,Processing of tRNA and rRNA. Inhibitors of transcription. Mechanism of action of ribozymes ,

2. **Translation:** Structure and role of tRNA in protein synthesis, ribosome structure, basic feature of genetic code and its deciphering, translation (initiation, elongation and termination in detail in prokaryotes as well as eukaryotes), Post translational processing,Control of translation in eukaryotes (Antisense RNA, Heme andinterferon).

ModuleIV: 14Hours

1. **Regulation of Gene expression in prokaryotes and eukaryotes:** Positive and negative regulation. lac-, ara-, his- and trp- operon regulation; antitermination,global regulatory responses; Regulation of gene expression in eukaryotes: Transcriptional, translational and processing level control mechanisms.

2. **Protein localization&Gene Silencing**: Export of secretory proteins- signal hypothesis, transport and targeting of proteins to mitochondria, chloroplast, peroxisomes, Gene Silencing: Definition, types, RNAi pathway, shRNA & CRISPR-CAS.

3. **Non coding RNA**: coding and non coding RNA,types of ncRNA : Short ncRNA(mi RNA,Sn RNA,Pi RNA,t-RNA & its fragments,SnoRNA)long ncRNA ,functional significance ofncRNA

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1. Weblinks:
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    ii. https://www.slideshare.net/lalvarezmex/dna-topology.
2. Researcharticle:
    i. Karakar, D and Ozpolat, B. 2021. The role of Lnc RNAsin Translation . Non coding RNA . 23:7-16.
    ii. Anderson, P and Ivanov P . 2014. t RNA fragments in healthand disease ,FEBS letters 588:4297-4304.
    iii. Mleczko, A.M ., Celichowski ,P., and Żywicka K.B, 2014. Ex-translational function of tRNAs and their fragments incancer,61(2): 211-216.
    iv. Afonso A.P and Micro L .G. 2021. RNAs in the TFh regulation : Small molecules with big impact ,European Journal ofImmunology 51:292-295.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	2	3	3	3	3
Weighted Average	3	3	2.75	3	3	3	3	2.75	3	3	3	3

HARDCORE: **GENETIC ENGINEERING(FCHC)**

TotalCredit:04 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. The basics of Geneticengineering.
2. Basic principles of gene cloning and geneproducts.
3. Applied aspects of Geneticengineering
4. Importance of Recombinant DNA Technology.

Module-I **12hours**

Cloning and Expression vectors: Plasmids, lambda vectors, M13 Phage, cosmids,phagemids, Artificial chromosome vectors-YACs, PACs and BACs, plant and animal viruses as vectors, Transposons, Expression vectors-prokaryotic (pRSET, pET), eukaryotic (pcDNA3, pCEP), Baculovirus and Pichia vector system, plant based vectors- Ti and Ri, binary and shuttle vectors,Gene cloning: genomic cloning,c-DNAcloning,

Module-II **12hours**

Gene manipulation Restriction enzymes, restriction mapping, cloning in plasmid, Phage and cosmid vectors, insertion of foreign DNA into host cells-transformation, electroporation, Transfection transient and stable, screening methods for transformants, downstream processing of recombinant proteins, affinity tags- His-tag, GST-tag, MBP-tag, Fc-tag. Construction and screening of genomic and cDNA libraries, chromosome walking, Chromosome Jumping, BAC libraries and assembly of BACs intocontigs.

Module-III **14hours**

Gene analysis techniques

Hybridization techniques- Southern, Northern, South-western, Far-western, Colony hybridization, fluorescence *in situ* hybridization, molecular probes-preparation, labelling, amplification, applications, Polymerase chain reaction-Principle, primer designing, Types- RT-PCR, Realtime PCR, colony PCR, Multiplex PCR, Hot-start PCR, asymmetric PCR, Sequencing methods- chemical sequencing of DNA (Maxam and Gilberts methods andSangers dideoxy method), automated DNA sequencing, sequencing by DE-MALDI- TOFMS,microarray.

ChIP and Chip-on-chip techniques Chromogenic *in situ* hybridization, qPCR, next generation sequencing .

Module-IV **10hours**

Gene therapy, transgenics and Genome editing

Ex vivo and *in vivo* gene therapy, Vectors and other delivery systems for gene therapy, Invitro gene therapy, gene therapy of genetic diseases: eg.Neurologocal, metabolic disorders and cystic fibrosis, viruses for gene therapy- lentivirus, adenovirus. Gene targeting, knockout mice, genome editing by CRISPR-CAS

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2. Brown, T.A. 2010. Gene Cloning and DNA Analysis-An Introduction (6th ed.). Blackwell SciencePress.
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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	2.75	3	3	3	3	3	3	3	3	3	3

SOFTCORE: MICROBIAL PHYSIOLOGY

TotalCredit:03 **Total Hours: 48hours**

Course Outcome: After studying this paper the students will know –

1. This course deals with characteristics, properties and biological significance of the biomolecules of life.
2. In depth knowledge of the energetic and regulation of different metabolic processes I n microorganisms.
3. The student develops understanding of the laws of thermodynamics, concepts of entropy, enthalpy and free energy changes and their application to biological systems and various biochemical studies andreactions.
4. Conceptual knowledge of aerobic and anaerobic respiration and various intermediary mechanisms involved, oxidativephosphorylation.

Module-I **12Hours**

1. **Microbial Physiology**: Microbial Physiology: Role of ATP in metabolism. Microbial enzymes: Structure and Classification, Mechanism of Enzyme actions: Lock and Key model, induced fit Theory, Factors affecting rates of enzyme mediated reactions (pH, temperature and substrate and enzyme concentration), Enzyme Inhibition and Enzyme regulation- types of enzymes.

Module-II **12Hours**

A) **Metabolism of Carbohydrate**: Metabolism of Carbohydrate: Glycolysis, Citric acid Cycle and different types of Phosphorylation, Homo and Hetero Lactic Fermentation, Utilization of sugars other than glucose: Lactose, Galactose, Maltose, Mannitol. Degradation of cellulose, Starch and Glycogen (bioenergetics).

Module-III **12Hours**

Metabolism of other Substrates: Movement of Molecules: Facilitated transport, Channels, Carrier Proteins, Primary Active Transport, ABC Transporters, Siderophores, Group Translocation. **Lipid metabolism:** β-

oxidation, Biosynthesis of fatty acids, degradation of fatty acids. **Nitrogen metabolism**: Nitrogen metabolism, Biological nitrogen fixation process, symbiotic and non symbiotic nitrogen fixation. Ureolytic bacteria and its fertility, degradation and biosynthesis of essential and non-essential amino acids. **Nucleic acid metabolism:** Biosynthesis and degradation of purines andpyrimidines.

Module-IV **12Hours**

A) Microbial Photosynthesis: Photosynthetic Pigments and apparatus in bacteria. Oxygenic andAnoxygenic. Photosynthesis. Autotropic CO2 fixation and mechanism of Photosythesis. Utilization of light energy by Halobacteria.

B) Autotrophic Mechanisms in bacteria: Hydrogen bacteria, Nitrifying bacteria, Purple sulphur bacteria,Non-sulfur bacteria, Green sulfur bacteria, Iron bacteria,Methylotrophs.

C) Microbial Stress Responses: Oxidative stress, Thermal stress, Starvation stress, Aerobic to anaerobictransitions. Biofilm and quorumsensing

REFERENCES:

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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	2	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	2.75	2.75	3	3	3	3	3	3	3	3	3

SOFTCORE: **MOLECULAR DIAGNOSTICS(FCSC)**

TotalCredit:03 **Total Hours: 48hours**

Course outcome: Students should study this paper to know

1. The course focuses on learning and understanding how the various molecular techniques that were studied can be developed and utilized indiagnosis.
2. The course explains common analytical techniques and molecular techniques related to the development and use ofdiagnostics.
3. Students learn about the clinical applications of molecular diagnostic in patients with infectiousdisease.
4. The student will get an idea about the concept of molecular diagnosis and underpinning the successful application of gene therapy or biologic response modifiers as well theycan find their future focus in biotechnology companies developing and marketing Diagnostic kits.

Module-I **08hrs**

Introduction and History of diagnostics:

1. Introduction and History of diagnostics of diseases, mode of infection, types of infectious diseases, philosophy and general approach to clinical specimens. genetic basis of diseases, inherited diseases. Infection – mode of transmission in infections, factors predisposing to microbial pathogenicity, inborn errors ofmetabolism.

2. Traditional disease diagnosis methods: Diagnosis of infectious diseases caused by bacteria, fungi, viruses, protozoa and Helminthes, Philosophy and general approach to clinical specimens, Sample collection- method of collection, transport and processing of samples, Interpretation of results, Normal microbial flora of the human body, Host - Parasiterelationships.

Module-II **14hrs**

Molecular techniques for diagnosis

1. Basics and Implication of Molecular techniques in Genome resolution, detection and analysis of pathogen causing disease : PCR,Real-time; Multiplex; FISH; RFLP; DGGE; SSCP; Nucleic acid sequencing: new generations of automated sequencers; Microarray chips; EST; SAGE; microarray data normalization & analysis; molecular markers: 16S rRNA typing; MALDITOF-MS; Metabolite profile for biomarker detection the tissues in various disorders by making using LCMS & NMR technologicalplatforms.

2. Biochemical tests & Immunoassays: Detection and quantification of biochemicalparameters

Types: RIA,ELISA,Chemiluminescent IA, FIA and specific applications; Immunohistochemistry – principle and techniques. Different Levels of Biosafety, Containment.

Module-III **12hrs**

Major Metabolic & Genetic disorders:

1. Traditional methods for the diagnosis of metabolic errors(Diabetes Type 1 & Type 2, hyperthyrodis&Hypothyrodism). Disease due to genetic disorders(Sickle cell anemia& Cystic fibrosis).Identifying human disease genes., Methods available for the diagnosis of genetic diseases and metabolic disorders.Blood (formation, composition, function and pathology of blood disorders (haemoglobinopathies,hemophilia), Muscle disorders (Duchene muscular dystrophy-DMD, Becker's muscular dystrophy-BMD, spinal muscular atrophy-SMA), Bonedisorders
2. (Osteogenesis imperfecta, Rheumatoid arthritis), Skin disorder (Muir-Torre *syndrome*), Eye disorder (Retinitispigmentosa).
3. Neonatal and Prenatal disease diagnostics. Gender identification using amelogenin gene locus. Amplification of Y chromosome specific Short Tandem Repeats (Y-STR). Analysis of mitochondrial DNA for maternal inheritance,Karyotyping& characteristics of Karyotyping.. Molecular diagnosis for early detection of cerebral palsy, Down syndromeetc.

Module-IV **14hrs**

Cancer diagnosis:

1. Molecular Oncology Tests, Analysis of the Expression of Multiple Genes and Cancer Prognosis, Analysis of Lymph Nodes to Detect Metastasis of Breast Cancer, Screening for Colorectal Cancer: Stool-Based DNA Screening, Leukemias and Lymphomas, DNA Methylation Tests and Cancer, Predicting Risk of DevelopingCancer.
2. Personalized Medicine: Pharmacogenomics and Companion Diagnostics, Cytochrome P450 and Drug Metabolism, Targeted Cancer Therapies and Companion Diagnostics Tests, Testing for HER2/neu Overexpression in Breast Cancer, Testing for Epidermal Growth Factor Receptor (EGFR), UGT1A1 Genetic Variants, Pharmacogenetics and Response to Antiretroviral Therapy, Thiopurine Methyltransferase and Metabolism of ThiopurineDrugs

REFERENCES:

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ii. https://www.ihrp.uic.edu/files/4%20Screening%20and%20Diagnosis.ppt

2. Researcharticles:

i.Dermime, S. 2013. Cancer Diagnosis, Treatment and Therapy.M J CarcinogeneMutagene 14:1-3.

ii. Egger, G.,*etal*., 2004. Epigenetics in human disease and prospects for epigenetic therapy. Nature, 429:457-463.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

PRACTICALS IIA:(Molecular Biology & Genetic Engineering)

Total Credit: 02 **Total hours: 32**

Course outcome: Students should study this paper to know

1. Makes students to understand the basic molecular tools and its application in basic research and applied research in various fields of lifesciences.
2. The fundamental cloningvectors.
3. Preparation of probes and its application in scientificfields
4. The course gives an in-depth insight into the molecular aspects of life - the central dogma

1. Estimation of DNA by diphenyl aminemethod.
2. Estimation of RNA by orcinolmethod.
3. Isolation of Genomic DNA from yeastcell
4. Determination of purity and concentration of isolated DNA using spectrophotometer and agarose gelelectrophoresis.
5. Determination of RNAse&DNAseactivity
6. Restriction digestion of plasmid andanalysis
7. DNAligation
8. Isolation of plasmids from bacteria by agarose gelelectrophoresis.
9. Preparation of competent *E. coli* cells for Bacterial transformation.
10. Induction of gene expression and purification of the induced proteinfrom thehost.
11. Amplification, Purification and separation of PCR product.
12. Determination of Proteinase activity on proteins

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

PRACTICALS IIB:(Microbial Physiology)

Course outcome: Students should study this paper to know

1. Overview of major biomolecules: Classification, structure, function of carbohydrates, lipids, proteins, aminoacids, nucleicacids.
2. Discuss the biosynthesis and the degradation pathways involved in the physiology ofmicrobes.
3. Conceptual knowledge of properties, structure, function of enzymes, enzyme kinetics and their regulation, enzyme engineering, Application of enzymes in large scale
4. This course deals with characteristics, properties and biological significance of the biomolecules of life.

1. Population growth of yeast – *S. cerevisiae*.
2. Population growth of bacteria – *E coli*.
3. Sugar fermentation tests.
4. Catalase activity.
5. Hydrolytic rancidity.
6. Casein hydrolysis.
7. Carbohydrate catabolism by microbes
8. Study of acid and pH stress tolerance by microbes.
9. Effect of molecular oxygen on microbial growth.
10. Effect of osmotic pressure on microbial growth.
11. Effect of relative humidity on microbial growth.
12. Effect of different wavelengths of light on microbial growth

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

OPEN ELECTIVE: MICROBIALDIVERSITY

TotalCredit:04 **Total Hours: 48hours**

Course Outcome: After studying this paper the students will know –

1. Describe common groups of bacteria and archaea in different ecosystems, and theirrole in biogeochemical key processes in theseenvironments.
2. Describe for cultivation-independent methods for studies of the composition ofmicrobial communities and for the function and occurrence of individualgroups.
3. Describe genomic-based methods to study microbial diversity in nature and forthe mechanisms behindit.
4. Describe important interactions within microbial communities andbetween microorganisms and plants andanimals.

ModuleI **8hours**

A) Viral Diversity: Morphology, ultra structure, chemical composition of virus, classification of viruses, Group I – T2 Bacteriophage, Group II – Banana bunchy top virus, Group III – Reovirus, Group IV- TMV, Group V – Rhabdovirus, Group VI – HIV, Group VII – Hepatitis virus. **Sub-viral particles**: Discovery, Structure, Classification, replication and diseases caused by Satellite, Satellites virus, Virusoids, Viroids andPrions.

ModuleII **8hours**

A)Bacterial Diversity: Archaebacteria, Photosynthetic Eubacteria, Chemoautotrophic and Methophilic Eubacteria, Gliding Eubacteria, Spirochetes, Rickettsiae and Chlamydiae, Actinomycetes, Mollicutes, Protists. Classification based on Bergey's manual (Determinative &Systematic).

ModuleIII **8hours**

A)Fungal Diversity: Classification, Distribution, Importance, Structure, reproduction and general characteristics of the fungal divisions: Zygomycota (*Rhizopus*), Ascomycota (*Neurospora*), Basidiomycota (*Agaricus*), Deuteromycota (*Penicillium*), Chytridiomycota (*Allomyces*) , Myxomycota and Yeast.

ModuleIV **8hours**

A) Importance and Conservation of Microbial Diversity: Importance of microbialdiversityinagriculture,forestry,environment,industrial&food

biotechnology, animal & human health. Metagenomics. Importance of conservation. *In situ* conservation and *Ex situ* conservation. Role of culture collection centers in conservation.

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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	2.75	3	3	3	3	3	3	3	3	3	3

III SEMESTER

HARDCORE: MEDICALMICROBIOLOGY

TotalCredit:04 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. Basis of microbialinfection
2. Mode of action of drugs onmicrobes
3. Diagnosis of microbial infectiousdiseases
4. Transducing signals in host

ModuleI **10hours**

A) Introduction to Medical Microbiology: History, Development and scope of Medical Microbiology. Concept of Disease, disorder, syndrome, Communicable diseases- Microbial infections and diseases. Factors responsible for microbial pathogenicity.

B) Microbial infections**:** Types of infections, modes of transmission, portal of entry: Urinary tract infection, sexually transmissible infection, Infection of the central nervous system, Infections of circulatory system, Oral cavity and respiratory infection, gastrointestinalinfection.

ModuleII **14hours**

A) **Nosocomial infection:** Incidence of nosocomial infections, types of nosocomical infections, emergence of antibiotic resistant microorganisms, hospital infection control programmes, preventing nosomical infections and surveillance, General concepts for specimen collection and handing of specimen, specimen processing andbiosafety.

B) Chemotherapeutic agents-antibiotics (Classification based on chemical structure, mode of action and range of effectiveness). Recent trends-Drug resistance and its consequences, antibiotic policy, NCCLS (CLSI) guidelines and standards, WHOguidelines.

C) G protein signaling-Establishment, spreading, tissue damage and anti-phagocytic factors; Evasion of host defense, non-specific host defense, toxigenesis-bacterial toxins and its types, Significance of quorum sensing in Gram positive and Gramnegative.

ModuleIII **12hours**

A) Epidemiology, Pathogenesis, Spectrum of disease, Laboratory diagnosis and Prevention**:** Diseases caused by Viruses: Chicken pox, Rabies virus, hepatitis, encephalitis, AIDS, Herpes simplex infections, Influenza,Dengue

B) Diseases caused by Bacteria: Tuberculosis, Leprosy, cholera, Typhoid, Botulism, Shigellosis, Helicobacter pylori infection, Salmonellosis, Tetanus. Diseases caused by Fungi: Candidiasis, Histoplasmosis, Blastomycosis, Coccidiomycosis, Dermatomycosis, Aspergillosis and Cryptococcosis,Anthrax

ModuleIV **12hours**

a. Diseases caused by Mycoplasma: *Mycoplasma pneumoniae, M. urealyticum, M.homonis*.

b. Diseases caused by Protozoa: Giardiasis, Trichomoniasis, Celebral Malaria, Toxoplasmosis,Cryptosporidium.
c. Disease caused by Chlamydiae: Psittacosis, Lymphogranuloma Venereum, Trachoma and Inclusionconjunctivitis.
d. Emergent Diseases: Hemorrhagic fever, Swine flu, SARS, Chikun gunya, Ebola, Hanta, Leptospoirosis, Marburg virusdisease

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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

Semester III: FCHC

IMMUNOLOGY (FCHC)

Total Credits: 04Total Hours:48hours

Course outcome: Students should study this paper to know –

1. Role of immune system in maintaininghealth
2. Cellular and molecular basis of immuneresponses
3. How immune responses are triggered andregulated
4. Organs, tissues, cells and molecules of the immunesystem

Module-I **14Hrs.**

a) **Over view and Types ofimmunity:**
Innate immunity: anatomic barriers, physiologic barriers, phagocytic barriers, microbial antagonism, acute phase reactants, anti-microbial peptides, interferons, inflammation, Pattern Recognition Receptors (PRRs), Pathogen Associated Molecular Patterns (PAMPs) and Damage Associated Molecular Patterns (PAMPs). Complement system: components, pathways of activation and biologicalconsequences.

Acquired immunity: Active **(**Naturally acquired and artificially acquired), Passive (Naturally acquired and artificially acquired), Adoptive immunity, Humoral and Cell mediated immune response

b) **Tissues of immune system:** Structural organization and functions of Lymphatic system, Primary lymphoid organs (Bone marrow, Thymus) Secondary lymphoid organs and tissues (Spleen, Lymph node, Tonsils, Adenoids, Peyer's patches, Lamina propria, Mucosa-associated lymphoid tissue, Gut-associated lymphoidtissue).
c) **Cells of the immune system:** Hematopoiesis, Biology, Development and Functions of PMNLs, NK cells, Macrophages, T-Lymphocytes, B-Lymphocytes, Dendriticcells

Module-II **12Hrs**

a) **Antigens, and Antibodies:** Antigens, Immunogens and Haptens, Factors influencing immunogenicity, adjuvants, epitopes, Structure and functions of immunoglobulins, Synthesis of immunoglobulins, Genetic basis of immunoglobulindiversity.
b) **MHC molecules:** Types, structure, diversity andfunctions
c) **Antigen recognition:** Thymus dependent and independent Antigens, Clonal selection and immunological memory of B and T cells, Antigen processing and presentation (Endogenous pathway, Exogenous pathway, Cross presentation),Superantigens.
d) **Monoclonal Antibodies:** Hybridoma technology and production of mAbs, types, and applications. Advantages and disadvantages of mAbs intherapy.

Module-III **12Hrs**

a) **Immune System in Health and Disease:** Immunological Tolerance and Autoimmunity, Autoimmune Diseases (Organ specific autoimmune diseases-Graves' disease, Myasthenia Gravis, Systemic autoimmune diseases-Multiple Sclerosis, Rheumatoid Arthritis, Systemic Lupus Erythematosus), Immunosuppression, Hypersensitivity (Type I, II, III &IV).

b) **Vaccines and Vaccination:** Principles of vaccination, Immune response to vaccines (Primary and Secondary response), Whole-Organism vaccines, Purified macromolecules as vaccines, Recombinant vaccines, DNA vaccines, Multivalent subunit vaccines and Edible vaccines, Vaccine safety, Reverse vaccinology. Overview of COVID-19 vaccines.

c) **Primary & Secondary Immuno-DeficiencyDisorders:**

Primary: Wiscott-Aldrich syndrome, Severe combined immunodeficiency disease (SCID), DiGeorge syndrome, Ataxia-telangectasia, Leucocyte adhesion defects, Chronic granulomatous disease, X-linked agammaglobulinemia, Complement deficiencies. Gammopathies (Multiple myeloma).

Secondary: AIDS, Malnutrition, Drug regimen, Diabetes, Chronic infection.

Module-IV **10Hrs.**

a) **Clinical Immunology**: **Transplantation of tissues and organs:** Nomenclature of transplantations, Transplantation reactions, HvG and GvH. Exception from rejections, Major and minor blood groups, Blood transfusion, tissue typing, Kidney and bone marrow transplantations. Immunosuppressive drugs. **Tumor immunology**: Neoplasms, tumor-associated antigens, immune response to tumor antigens, immunologic factors favoring tumor growth, immune surveillance,Tumor necrosis factor α and β.Metastatic processes, Immunodiagnosis, Antitumour drugs,Immunotherapy.

b) **Immunological Techniques:**. *In vitro* antigen-antibody reactions, serotyping, agglutination, complement fixation, immunoprecipitation, Immunodiffusion, ELISA, RIA, IHC,Immunoelectrophoresis.

REFERENCES:

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Videos on Immunology: **www.imm.ox.ac.uk - from University of Oxford**

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	2	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	2.75	3	3	3	3	3	3

HARDCORE: FOODMICROBIOLOGY

TotalCredit:04 Total Hours: 48hours

Course outcome: Students should study this paper to know –

1. Basis of food bornemicrobes
2. Nutritive value of foods/Nutraceuticals
3. Food bore pathogendetection
4. Expertise in detecting foodpoisoning

ModuleI 12hours

A) Introduction to food microbiology: Definition, concepts and scope. Food as substrate for microbes. Factors influencing microbial growth in food-Extrinsic and intrinsic factors. Principles of food preservation-Chemical preservatives and Food additives Asepsis-Removal ofmicroorganisms.

B) Contamination and food spoilage: fruits/ Vegetables, meat and meat products, Fish and sea foods spoilage of cannedfoods

ModuleII 12hours

A) Dairy Microbiology: Microbiology of raw milk, Milk as a vehicle of pathogens, Prevention of contamination of raw milk, Microbiology of processed milk, Spoilage and defects fermented milk and milk products, Microbiological standards for milk and milk products. Cream and butterbacteriology.

B) Probiotics: definition, types, properties, microbial group. Prebiotics: synbiotics and neutraceuticals, Taxonomy of Lactobacilli and Bifidobacteria, The Microecology of Lactobacilli in the Gastrointestinal Tract, Exopolysaccharide Production by IntestinalLactobacilli

ModuleIII 12hours

A) Food poisoning and intoxication: Significance of food borne diseases, Staphylo Food poisoning and intoxication: Significance of food borne diseases, Staphylococcal, Gasteroenteritis and enterotoxins: Types and incidence, Prevention of Staphylococcal and other food poisoning syndromes, *Clostridium perfringens* food poisoning and Botulism, *Bacillus cereus* food poisoning, Food borne Listeriosis by *Listeria monocytogenes*, Food borne Gastroenteritis by *Salmonella* and *Shigella, Vibrio, Campylobacter* and *Yersinia*, fungal spoilage andMycotoxins.

B) Food produced by Microbes: Microbial cells as food (single cell proteins) – mushroom cultivation. Bioconversions- production of alcohol-fermented beverages-beer and wine. Genetically modified foods. **Application of fungal pigments in foodindustry**

ModuleIV 12hours

A) Detection of food-borne microorganisms: Culture, Microscopic and Sampling methods.. Chemical: Thermostable nuclease *Limulus* Lysate for Endotoxins, Nucleic Acid (DNA) probes, DNA Amplification (PCR), Adenosine- Triphosphate Measurement, Radiometry, Fluoro-and Chromogenic substrates. Immunologic Methods: Fluorescent Antibody, Enrichment Serology, Salmonella 1-2. Test, Radioimmunoassay,ELISA.

B) Microbial indicators of food safety and quality control: Principles of quality control and microbiological criteria, Indicators of product quality and microbiological safety of foods, Food safety laws and standards, international – HACCP, ISO 9000 Series, GMP and LP, India – PFAA, FSSAI, FPO, MPO, CSO, the Agmark Standards, bureau of Indian Standard (BIS). Food testing laboratories in India SRI,FRAC.

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    a. [illegible] (Eds.) 2010. [illegible] Foodsand

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	2.75	3	3	3	3	3	3	3

HARDCORE: **GENETICS**

TotalCredit:03 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. The basics of genetictransmission
2. Study on microbial genetic factors andmutation.
3. Study ongenetic basis of sex determination and transposableelements
4. Mendel's Experiments and extra nuclearinheritance.

Module-I **14Hours**

History and developments of genetics. Principle of Genetic Transmission: Mendel's' Experiments, Symbols and terminology, Principle of dominance and segregation, Principle of independent assortment, Mendelian inheritance and probability (Multiplication and Addition rites). Extensions of Mendelian Principles:co-dominance, incomplete dominance, gene interactions, multiple alleles, lethal alleles, pleiotropy, penetrance and expressivity, polygenic inheritance, linkage and crossing over, sex linked inheritance, sex limited and influenced traits, genome imprinting, extra nuclear inheritance.

Module-II **12Hours**

Viral Genetics: Lytic and Lysogenic cycles, Phage Phenotypes, Phenotypic Mixing, Recombination and Mapping. **Bacterial Genetics:** Bacterial Transformation- Types of transformation mechanisms found in prokaryotes, Bacterial Conjugation- properties of the F plasmid, F^+x F^- mating, F' x F^- conjugation, Hfr conjugation. **Fungal Genetics:***Neurospora*- Tetrad analysis and linkage detection - 2 point and 3 point crosses, chromatid and chiasma interference, Mitotic recombination in *Neurospora*. **Algal Genetics:** *Chlamydomonas* - unordered tetrad analysis - Recombination and Mapping.Floral meristems and floral development in *Arabidopsis,* ABCmodel.

Module-III **12Hours**

Mutation and mutagenesis: Nature, type and effects of mutations. Mutagenesis – physical and chemical mutagens, base and nucleoside analog, alkylating agents, interrelating agents, ionizing radiation. Induction and detection of mutation in microorganisms and *Drosophila* . Site directed mutagenesis and its applications.

Recombination: Homologous and non-homologous recombination, Holliday model, site-specific recombination.

DNA Repair: Mechanism of genetic repair- direct repair, photoreactivation, excision repair, mismatch repair, post-replicative recombination repair, Repair of double-strand breaks, SOS repair.

Module-IV **10Hours**

Sex Determination-Sex chromosomes, Chromosomal and genetic basis of sex determination. Sex determination in *C.elegans*,*Drosophila*, human and Plant(*Melandrium*). Dosage compensation-Genic balance, Gene dose, Molecular basis of dosage compensation in Drosophila and man.

Transposable elements- discovery in maize and bacteria, transposal elements in bacteria and bacteriophage, types and functions; Transposable elements in eukaryotes- Plants, *Drosophila* and Humans, mechanisms of transpositions.

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1. Video links

- https://www.youtube.com/watch?v=L42IwtPC7eM
- https://www.youtube.com/watch?v=3VrGkCm4sT4
- https://www.youtube.com/watch?v=l-9iUpFGbxE
- https://www.youtube.com/watch?v=pdEgBMXJdeg
- https://www.youtube.com/watch?v=VIS_4G3Ysyk
- https://www.youtube.com/watch?v=TfBnfxm0Xyc
- https://www.youtube.com/watch?v=he260FUU5_M
- https://www.youtube.com/watch?v=BlnUNmfGn7I
- https://www.youtube.com/watch?v=o4yJF90OR9M
- https://www.youtube.com/watch?v=_cJfsWYR42M

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	2	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	2.75	3	3	3	3	3	3	3

SOFTCORE: **MYCOLOGY**

TotalCredit:03 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. Basis of fungaltaxonomy
2. Fungal characteristics' and its economicimportance
3. Expertise in detecting fungalidentification
4. Interaction of fungus with differentcommodity

ModuleI **12 hours**

A) Introduction: History and Development of Mycology, scope ofmycology. Recent developments inMycology.

B) Fungal taxonomy: Taxonomic problems associated with variationin fungi, Classification of fungi(Alexopoulos andMims).

ModuleII **12hours**

A) General characteristics of fungi and reproduction: Morphology and somatic structures: The thallus,organization, fungal cell, nuclear components, specialized somatic structures; Aggregation of hyphae, tissues, mycangia, General aspects of fungal nutrition and reproduction (Asexual, Sexual reproduction, Heterothalism andParasexuality)

B) Growth in Fungi and hyphal tropism: Mechanism of apical growth,**Hyphal tropisms: Spore tropisms,Phototropisms, Sexual tropisms**

ModuleIII **12hours**

A) **Human diseases:** Ringworm, athlete's foot, onychomycosis Infection. Animal Diseases: *Aspergillosis, Mucormycosis,candidiasis*

B) **Plant diseases:** Chytridiomycota, Zygomycota, Basidiomycota, Ascomycota,Deuteromycota, Oomycota,. Symbiotic fungi-Lichens.

ModuleIV **12hours**

A) Economic importance of fungi: Fungi as biocontrol agent, Economic importance of Fungi inAgriculture, Industry and medicine. Fungi as SCP, Fungi as parasites of human and plants. Role of fungi in bio deterioration of wood and paper. Mycorrhiza – ectomycorrhiza, endomycorrhiza, vesicular arbuscular mycorrhiza. Fungi as insect symbiont.

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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	2	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	2.75	3	3	3	3	3	3	3	3

SOFTCORE*:* GENOMICS ANDPROTEOMICS

TotalCredit:03 **Total Hours: 48 hours**

Course outcome: Students should study this paper to know

1. The concepts of genome, genome sequencing and genome mapping
2. The knowledge about structural and functional proteomics
3. Next generation sequencing, Human Genome Project.
4. Understanding about the mass spectra analysis.

Module-I **10 hours**

A) Genome - Overview Of Genome; Sequence Of Genome Acqusition And Analysis - Homologies - Snps -Genetic Analysis, LinkageMapping,

B) High Resolution Chromosome Mapping And Analysis - Physical Mapping, Yac, Hybrid Mapping, Strategies, Sequence Specific Tags (Sst), Sequence Tagged Sites(Sts), Ish, Fish, Rflp,Rapd.

Module-II **12hours**

A) DNA Sequencing - Methods, Maxam And Gilbert Method, Ladder, Fluorescent, Shot Gun, Mass Spectrometry, Automation Sequencing – Find Gene Mutations, Implications of DNA – Sequencing And Sequencing Genomes.

B) Genome Data Bank, Metabolic Pathway Data - Construction And Screening Of cDNA, Libraries And Microarrays - Application Of DNA Arrays - PCR - Variations In PCR - Gene Disruptions – Sage And Sade Pharmacogenomics

Module-III **12hours**

A) Protein Sequence Analysis - Introduction - Sequence Data Banks - Wbrf – Pir - Swissport - Databases, Data Mining - Algorithms Of Proteomics And Its Applications - ProteinExpression

B) Profiling - Protein - Protein Interaction - Protein Modifications.Automation - Nucleic Acid Data Bank – EMBL Nucleotide Sequence Data Bank - Aids Virus Sequence Data Bank - RNA Data Bank.

Module-IV **14hours**

A) Tools For Data Bank - Pairwise Alignment - Needleman And Wusch Algorighm – Smith Waterman - Multiple Alignment - Clustral - Pras -Blast - Fast, Algorithms To Analyse Sequence Data - Pdb, Cambridge Structure Data Base (Lsd), 2d Electrophoresis, IEF, HPLC, Protein Digestion Technique, Mass Spectrometry, MALDI-TOF, Peptides, Mass Finger, Printing, Protein.

REFERENCES:

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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	2	3	3	3	3	3	3
CO2	3	3	3	3	3	2	3	3	3	3	3	3
CO3	3	3	3	3	3	2	3	3	3	3	3	3
CO4	3	3	3	3	3	2	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	2	3	3	3	3	3	3

PRACTICALS IIIA: (Immunology & Medical Microbiology & Food Microbiology)

Total Credit: 02

Total hours: 32

Course outcome: Students should study this paper to

know

1. The immunological methods used to detect thedisease
2. How the knowledge of immunology can be transferred into clinical decision-making through case studies presented inclass
3. Interaction of microbes with different foodcommodity
4. The role of molecular markers in comparative genomics

1. Slide agglutination test/ Bloodgrouping.
2. Immunoprecipitation test- Ouchterlony doublediffusion.
3. ELISA for quantification of anantigen.
4. Western blotting anddetection.
5. Clinical laboratoryvisits

6. WIDAL Test,VDRL Test (RPR), HCG test (Agglutination inhibitiontest).
   CRP test, ASO Test (Anti streptolysin 'O'Test).
7. Detection and enumeration of Microorganisms present in Utensils and cannedfood.
8. Enumeration of bacteria in raw and pasteurized milk by SPCmethod.
9. Determination of quality of a milk sample byMBRT.
10. Litmus milk test.
11. Microbiological examination of Ice-cream and Dairyproducts
12. Pathogenic fungi of the skin(Dermatophytes).
13. Microbial flora of mouth – teeth crevices, Microbial flora ofsaliva.
14. Estimation of bacteria in urine by calibrated loop direct streakmethod.
15. Antimicrobial assay – sensitivity test (MIC) for pathogenicbacteria.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

PRACTICALS IIIB : (Genetics & Mycology**)**

Total Credit: 02
Total hours: 32

Course outcome: Students should study this paper to know

1. The fundamental of recombination andmapping
2. Importance of chromosomal sex determination and transpositionmechanism
3. Importance of fungi as proteinssupplements
4. Genetic and physical maps, markers for genetic mapping.

1. Replica plating technique for transfer of bacterialcolonies.
2. Ultra-violet killing curve and determination of mutant types in*Saccharomyces cerevisiae.*
3. Induction ofmutation
4. Isolation of streptomycin resistant strain of *E .coli* by gradient platemethod.
5. Determination of chiasma frequency inonion.
6. To solve genetic problems on linkage, ordered and unorderedtetrads
7. Isolation of slimemolds.
8. Isolation of aquaticfungi.
9. Isolation of soilfungi.
10. Isolation of fungi fromair.
11. Isolation of fungi from cereals and cereal basedproducts.
12. Study of the following representative genera: *Aspergillus, Penicillium, Fusarium, Neurospora, Saccharomyces, Erysiphae, Polyporus, Agaricus, Puccinia, Ustilago, Alternaria, Drechslera, Saprolegnia, Rhizopus, Trichoderma* and symbiotic fungi-Lichens.

13. Measurement of concentration of fungal conidia byHaemocytometer.
14. Measurement of fungal cells byMicrometer.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	3	3	3	3	3	3	3	3	3

IV SEMESTER

SOFTCORE: AGRICULTURALMICROBIOLOGY

TotalCredit:03 **Total Hours: 48hours**

Course outcome: Students should study this paper to know –

1. This paper of microbiology and biochemistry of soil is designed with the objective to provide general introduction of soil and in depth information on soil microbial diversity and the role of microorganisms in biogeochemical cycling of elements like C,N,P and trace elements and soilfertility.
2. The importance of physical, chemical and biological properties ofsoil.
3. Role of microorganisms in biogeochemicalcycling.
4. Microbiology and physiology of degradation of native and organic matter and Nitrogen fixation.

Module I **12 hours**

A) Introduction to Agricultural Microbiology:, Introduction to agricultural microbiology, concepts and scope of agricultural microbiology, Agronomy and production of important crop plants, Green revolution. Plant Pathology: Concept of disease, History of Plant Pathology, Significance of plant diseases, Symptoms and types of plant diseases, Kochrules

B) Transgenic Resistance: Gene-to-gene resistance (horizontal and vertical), functions of plant resistance genes, Resistance to viruses, fungi, bacteria and insects.

Module II **12 hours**

A) Parasitism and Disease Development Parasitism and pathogenecity, Host range of pathogens, Disease triangle, Diseases cycle / Infection cycle, Relationship between disease cycles and epidemics; Pathogens Attack Plants – Mechanical forces, Microbial enzymes and toxins, Growth regulators. Effect on physiology of Host – Photosynthesis, Translocation and transpiration, Respiration, Permeability, Transcription and translation. Environment and Plant Disease– Effect of Temperature, Moisture, Wind, Light, Soil, pH and structure, Nutrition and Herbicides.

B) Defense Mechanisms of Plant: Disease Pre-existing structural and chemical defenses, Induced structural and biochemical defenses. Microbe mediated strategies for abiotic stress management.

Module III **10 hours**

A) Plant Disease & their management: Tobacco Mosaic Disease, Sandal Spike Disease, Bacterial blight of Paddy, Citrus canker, Angular leaf spot of cotton, Late Blight of Potato, Downy Mildew of Bajra, Blast of paddy, Tikka disease of ground nut, Rust of coffee, Grain and Head smut of Sorghum. Powdery mildew of Cucurbits, Wilt of Tomato, and Root Knot of Mulberry. Bunchy top of Banana.

Module IV **14hours**

A) Microbes and Plant interaction-Mycorrhizae-Biology and their applications, Biofertilizers - microbial inoculants. Production and application of *Rhizobium, Azospirillum, Azotobacter,* phosphor bacteriaand

Cyanobacteria. PGPR's plant growth promoting *Rhizobacteria* and their uses.

B)Biological nitrogen fixation(BNF): Nitrification, denitrification; symbiotic nitrogen fixation (Rhizobium, Frankia), non-symbiotic nitrogen fixation (Azotobacter, Azospirillum); Nitrogenase enzyme, nif genes and molecular mechanism of nitrogen fixation. Role of nodulin genes in nodule development and symbiosis. Genetic engineering ofBNF

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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	2.75	3	3	3	3	3	3	3	3

SOFTCORE: INDUSTRIALMICROBIOLOGY

TotalCredit:03 Total Hours: 48hours

Course outcome: Students should study this paper to know –

1. Industrial microbiology & fermentation contains improved biochemical or physiological fermentation are mainly carried out by fungi and bacteria on large scale to produce commercialproducts.
2. The main objective of industrial fermentation is to produce highest quality and quantity of particles produce bycombining.
3. Microbes involved infermentation.
4. The basics of fermentationtechnology.

ModuleI 12hours

A) Introduction: Fermenter design and types of fermenters, achievement and maintenance of aseptic conditions, Types of fermentation processes (Surface, submerged, Batch, Continuous, solid-substrate, Dual, Fed batch fermentation and itsapplications),

B) Industrial Microorganisms: Screening, Isolation. Identification and characterization o**f** industrially important microbes. Strain improvement-mutation, recombination- gene regulation and genetic manipulation. Preservation of industrially important microbes. Culture collectioncentres**.**

ModuleII 12**hours**

A) Media for Industrial Fermentations: Media formulation, growth factors, carbon, nitrogen, Energy and Mineral sources, buffers, inhibitors, precursors, inducers, Oxygen requirements Antifoam agents and others, Sterilization: Sterilization of bioreactor, media, air and exhaust air and filtersterilization

B) Downstream processing and fermentation economics: Steps in recovery and purification Methods of cell separation – filtration and centrifugation, cell disruption, liquid liquid extraction, chromatography, membrane processes. Fermentation economics- expenses for industrial organisms, strain improvement, media sterilization, heating, cooling, aeration and agitation. Cost of Plant and equipments, batch process cycle time, continuous culture, recovery and effluent treatment, cast recovery due to waste usages andrecycling.

ModuleIII 12**hours**

A) Industrial production of energy fuels: Industrial alcohol production: Biosynthesis, methods of production, recovery and applications of ethanol, acetone – butanol and glycerol through microbialprocess.

B) Industrial production of Organic acids and Enzymes: biosynthesis, media, production process, product recovery and application of citric acid and lactic acid, Enzymes: Fungal and Bacterial Amylase; Bacterialproteases.

ModuleIV **12hours**

A) Industrial production of food additives: amino acid production, methods of production, product recovery of L-Glutamic acid and L-lysine (scaling downstream technique). Commercial uses of Amino acids Vitamins: Commercial production of Vitamin B12, and Riboflavin. Alcoholic beverages (Beer,Wine)

B) Industrial production of health care product: Penicillin and Streptomycin: Biosynthesis, production and recovery.

C) I P R: Patent Laws: Patent regulations of processes, products and microorganisms.

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CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	3	2.75	3	3	3	3	3	3	3	3

HARDCORE: Research Project Work, Report and Viva Voce
Credit: 06

Course outcome: Students should study this paper to know –

1. The mechanism of plant growth promotion. Production, application and use of microbes asbiofertilizers
2. Design of fermenter, media and the process of fermentation.Optimization of fermentationprocess.
3. Use of microbes for production of important industrialproducts.
4. The basic knowledge of intellectual property rights speciallypatents.

CO/PO												
CO	**PO1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Weighted Average	3	3	2.75	3	3	3	3	3	3	3	3	3

Mahajana Education Society (R)

SBRR Mahajana First Grade College (Autonomous)

Affiliated to University of Mysore

Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Post Graduate Wing

REVISED SYLLABUS

FOR M.Sc. DEGREE CHEMISTRY PROGRAMME

Under

Choice Based Credit System (CBCS) and

Continuous Assessment Grading Pattern (CAGP)

Effective from 2022-23

GUIDELINES AND REGULATIONS LEADING TO MASTER OF SCIENCE IN CHEMISTRY (TWO YEARS - SEMESTER SCHEME UNDER CBCS-CAGP)

Programme details

Name of the Department : PG Department of Chemistry

Subject : Chemistry

Faculty : Science

Name of the Programme : Master of Science (M.Sc.) in Chemistry

Duration of the Programme : 2 years divided into 4 semesters

Programme Objectives

- To provide the latest subject matter both theory as well as practicals in such a way to foster their core competency and discovery learning. A chemistry postgraduate as envisioned in this framework would be sufficiently competent in the field to understand further discipline specific studies as well as to begin domine related employment.
- To mould a responsible citizen who is aware of most basic domain-independent knowledge including critical thinking and communication.
- Enable the graduate to prepare for national as well as international competitive examinations, especially UGC-CSIR NET and UPSC civil service examinations.

Programme Outcomes

- Students will have a strong foundation in the fundamentals and applications of current theoretical and practical chemistry in Analytical, Inorganic, Organic and Physical Chemistry.
- Students will be able to design and carry out scientific experiments and accurately record and analyze the results of the experiments.
- Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
- Students will be able to explore new areas of research in both chemistry and allied fields such as Biochemistry, Material Chemistry, Pharmaceutical chemistry and Chemical biology and related technology.
- Students will understand the central role of chemistry to our society which includes understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.

Programme Specific Outcomes

- Global level research opportunities to pursue Ph.D. programme, targeted approach of CSIR – NET and competitive civil service examinations**.**
- Enormous job opportunities at all levels of teaching, chemical, pharmaceutical, food products, life oriented material industries**.**
- Specific placements in R & D and many pharmaceutical & other industries**.**
- Facile development for the synthesis of biologically significant organic molecules using the green route for chemical reactions for sustainable properties**.**
- To inculcate the scientific temperament in the students and outside the scientific community.
- Learnt to handle sophisticated equipment for the determination and characterization of chemical compounds.
- Use of the latest chemistry software to avoid the laborious work in research**.**

Pedagogies used in the programme

- Conventional method such as black board and chalk, and modern methods like power point presentation and information and communications technology (ICT) are used in class room teaching.
- Molecular models are used to teach molecular symmetry, stereochemistry and solid state chemistry topics.
- Each student performs experiments as per the protocol in practical classes.
- For the preparation of new compounds, each student can adopt new experimental setup, and also exposed to different analytical instruments for qualitative and quantitative analyses. In addition to this, students will acquire skill to handle various instruments independently.
- Students will be presenting seminars in each semester.
- Each student will be subjected to viva-voce examinations in every semester.
- Every student will work for project on a small research problem.
- Rigorous training will be giving for every student to interpret spectral data in the respective course including their dissertation.
- Special lectures are delivered by eminent scholars from different intuitions.
- National/International conferences are organized to upgrade the subject knowledge.

GENERAL REQUIREMENTS

Scheme of instructions

1. A Masters Degree programme is of 4 semesters-two Years duration. A candidate can avail a maximum of 8 semesters – 4 years (in one stretch) to complete Masters Degree (including blank semesters, if any). Whenever a candidate opts for blank semesters, he/she has to study the prevailing courses offered by the department when he/she continues his/her studies.

2. A candidate has to earn a minimum of 76 credits, for successful completion of a Master Degree. The 76 credits shall be earned by the candidate by studying Hardcore, Soft Core and Open Elective. A candidate may earn another 04 credits by studying MOOCs/SWAYAM courses.

3. **Minimum for Pass:** In case a candidate secures less than 30% in C_1 and C_2 put together, the candidate is said to have DROPPED the course, and such a candidate is not allowed to appear for C_3.

4. In case a candidate secures less than 30% in C_3, or secures more than 30% in C_3 but less than 50% in C_1, C_2 and C_3 put together, the candidate is said to have not completed the course and he/she may either opt to DROP the course or to utilize PENDING option.

5. **Credits (Minimum) Matrix:** A candidate has to study 42 credits from hard Core, a minimum of 24 credits in Soft Core (sum total of 4 semesters) and 04 credits in Open Elective (II or III Semester) for the successful completion of the Masters Degree programme.

6. All other rules and regulations hold good which are governed by the University of Mysore from time to time.

Definitions

1. In the Choice Based Credit System – Continuous Assessment Grading Pattern (CBCS-CAGP), programme means a course and a course means a paper.
2. **HC:** Hard Core; **SC:** Soft Core; **OE:** Open Elective

GENERAL SCHEME WITH RESPECT TO ASSESSMENT OF CREDITS

Semester	Hard Core		Soft Core			OpenElective
	Theory			Theory	Practicals	
I	I	3+0+0=3	A	2+0+0=2*	0+0+4=4[a]	--
	O	3+0+0=3	I	2+0+0=2*	0+0+4=4[a]	
	P	3+0+0=3	O	2+0+0=2*	0+0+4=4[a]	
	A	3+0+0=3	P	2+0+0=2*	0+0+4=4[a]	
II	I	3+0+0=3	A	2+0+0=2*	0+0+4=4[a]	4+0+0=4[b]
	O	3+0+0=3	I	2+0+0=2*	0+0+4=4[a]	
	P	3+0+0=3	O	2+0+0=2*	0+0+4=4[a]	
	G	3+0+0=3	P	2+0+0=2*	0+0+4=4[a]	
III	I	3+0+0=3	A	2+0+0=2	0+0+2=2[a]	4+0+0=4[b]
	O	3+0+0=3	I	2+0+0=2	0+0+2=2[a]	
	P	3+0+0=3	O	2+0+0=2	0+0+2=2[a]	
	G	3+0+0=3	P	2+0+0=2	0+0+2=2[a]	
IV	I	3+0+0=3	A	2+0+0=2	0+0+2=2[a]	--
	O	3+0+0=3	I	2+0+0=2	0+0+2=2[a]	
	P	3+0+0=3	O	2+0+0=2	0+0+2=2[a]	
	A	3+0+0=3	P	2+0+0=2	0+0+2=2[a]	
			D	--	0+0+4=4[c]	
Total Credits	48		24(48)			04

NOTE

A–Analytical; I–Inorganic; O–Organic; P–Physical; G-Spectroscopy; D-Dissertation/Project Work; (L+T+P)-Theory + Tutorial + Practical

*Courses are common for both first and second semesters.

[a] All students should opt practicals in soft core compulsorily in all semesters.

[b] Courses are common for both II and III Semesters and the candidate can opt either in II or III semester (For non-chemistry students only).

[c] Dissertation/Project work which is offered by the department during IV semester.

SCHEME OF STUDY AND EXAMINATION
FIRST SEMESTER
HARD CORE PAPERS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHI HCT: 1.1	Concepts & Models of Inorganic Chemistry	3	3	100	15	15	3	70
CHO HCT:1.2	Stereochemistry & Reaction Mechanism	3	3	100	15	15	3	70
CHP HCT: 1.3	Basic Physical Chemistry	3	3	100	15	15	3	70
CHA HCT: 1.4	Analytical data assessment and separation techniques	3	3	100	15	15	3	70

SOFT CORE PAPERS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHA SCT:1.1/2.1	Titrimetric Analysis	2	2	100	15	15	3	70
CHI SCT: 1.2/2.2	Chemistry of Selected Elements	2	2	100	15	15	3	70
CHO SCT: 1.3/2.3	Chemistry of Natural Products-I	2	2	100	15	15	3	70
CHP SCT: 1.4/2.4	Biophysical Chemistry	2	2	100	15	15	3	70

SOFT CORE PRACTICALS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHA SCP:1.1/2.1	AnalyticalPracticals-I	8	4	100	15	15	6	70
CHISCP: 1.2/2.2	InorganicPracticals-I	8	4	100	15	15	6	70
CHO SCP: 1.3/2.3	OrganicPracticals-I	8	4	100	15	15	6	70
CHP SCP: 1.4/2.4	PhysicalPracticals-I	8	4	100	15	15	6	70

SECOND SEMESTER
HARD CORE PAPERS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHI HCT: 2.1	Coordination Chemistry	3	3	100	15	15	3	70
CHO HCT: 2.2	Synthetic Organic Chemistry	3	3	100	15	15	3	70
CHP HCT: 2.3	Principles of Physical Chemistry	3	3	100	15	15	3	70
CHG HCT: 2.4	Molecular Symmetry and Spectroscopy	3	3	100	15	15	3	70

NOTE

Soft Core Theory: All courses are same as that described in first semester.
Practicals: Same as that of I Semester. Students who have conducted Analytical and Inorganic or Organic and Physical Practicals in the I Semester will get interchanged during II Semester.

OPEN ELECTIVE (for Non-Chemistry Students only)

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CH OET: 2.1/3.1	General Chemistry	4	4	100	15	15	3	70

NOTE: The students can study this course either in II or III Semester.

THIRD SEMESTER

HARD CORE PAPERS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHI HCT: 3.1	Advanced Inorganic Chemistry	3	3	100	15	15	3	70
CHO HCT: 3.2	Organometallic and Photochemistry	3	3	100	15	15	3	70
CHP HCT: 3.3	Advanced Physical Chemistry	3	3	100	15	15	3	70
CHG HCT: 3.4	Chemical Spectroscopy	3	3	100	15	15	3	70

SOFT CORE PAPERS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHA SCT: 3.1	Electrochemical methods of chemical analysis	2	2	100	15	15	3	70
CHI SCT: 3.2	Frontiers in Inorganic Chemistry	2	2	100	15	15	3	70
CHO SCT: 3.3	Chemistry of Natural Products-II	2	2	100	15	15	3	70
CHP SCT: 3.4	Material Chemistry	2	2	100	15	15	3	70

SOFT CORE PRACTICALS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHA SCP:3.1/4.1	Analytical Practicals - II	4	2	100	15	15	6	70
CHI SCP:3.2/4.2	Inorganic Practicals - II	4	2	100	15	15	6	70
CHO SCP:3.3/4.3	Organic Practicals - II	4	2	100	15	15	6	70
CHP SCP:3.4/4.4	Physical Practicals - II	4	2	100	15	15	6	70

Note:

OPEN ELECTIVE (for Non-Chemistry Students only)

The course is same as in II Semester

FOURTH SEMESTER

HARD CORE PAPERS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHI HCT: 4.1	Bioinorganic Chemistry	3	3	100	15	15	3	70
CHO HCT: 4.2	Heterocyclic and Bioorganic Chemistry	3	3	100	15	15	3	70
CHP HCT: 4.3	Nuclear, Radiation and Photochemistry	3	3	100	15	15	3	70
CHA HCT: 4.4	Optical, Thermal and Kinetic methods of analysis	3	3	100	15	15	3	70

SOFT CORE PAPERS

Course Code	Title	Contact Hours/ week	Credits	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (hrs)	Marks
CHA SCT: 4.1	Automated and Methods Chemical Analysis	2	2	100	15	15	3	70
CHI SCT: 4.2	Bioinorganic Photochemistry	2	2	100	15	15	3	70
CHO SCT: 4.3	Medicinal Chemistry	2	2	100	15	15	3	70
CHP SCT: 4.4	Quantum Chemistry and Biosensors	2	2	100	15	15	3	70

NOTE:

Practicals: Same as that of III Semester. Students who have conducted Analytical and Inorganic or Organic and Physical Practicals in the III Semester will get interchanged during IV Semester.

SCHEME OF EXAMINATION FOR C1, C2 AND C3 COMPONENTS

Preamble

In view of the CBCS syllabus, following is the model distribution of marks for C_1, C_2 and C_3 Components. At a glance, the model includes HC, SC and OE courses for the assessment of marks.

The following is the scheme which will be followed for the assessment of marks for HC, SC and OE courses irrespective of the credits associated with each course. 30% of the marks will be assessed for internals (C_1 and C_2) and remaining 70% will be for the Semester end Examinations (C_3). Each course carries 100 marks and hence 30 marks will be allotted to internals and remaining 70 marks will be for Semester end Examinations. Out of 30 marks for internals, 15 marks will be allotted to each C_1 and C_2 components.

Each course (HC/SC/OE) consists of three components namely C_1, C_2 and C_3. C_1 and C_2 are designated as Internal Assessment (IA) and C_3 as Semester end Examination. Each course (HC/SC/OE) carries **100 Marks** and hence the allotment of marks to C_1, C_2 and C_3 Components will be 15, 15 and 70 marks, respectively. i.e.,

C_1 Component	15 Marks	Assessment Marks
C_2 Component	15 Marks	
C_3 Component	70 Marks	Semester end Examination
Total	**100 Marks**	

The above Scheme will be followed for all the HC, SC and OE courses in all the four semesters.

1. HARD CORE (03 CREDIT COURSES)

Distribution of Marks for C_1 and C_2 Components

Assessment Marks (C_1 + C_2) consists of 30 marks. It will be divided into three parts *viz*., ***Internal Test, Home Assignment and Seminar***. Internal tests will be conducted during the 8th week of the semester for C_1 and 16th week of the semester for C_2. Home Assignment will be considered for C_1 Component and Seminar for C_2 Component only. Hence, a teacher from each unit of a course may be given one assignment (or in their personal interest one more may be given). Since each course has three units, the marks shall be divided equally. Allotment of marks for C_1 and C_2 is as follows: Out of 15 Marks for C_1, Internal test will be conducted for 30 Marks (10 Marks from each unit and reduced to 10 Marks) and Home Assignment will be given for 05 Marks (Each Home Assignment from every unit will be assessed for 05 Marks and finally reduced to 05 Marks). Assessment Marks for C_2 will be distributed as follows: Internal test will be conducted for 30 Marks (10 Marks from each unit and reduced to 10 Marks) and Seminar will be assessed for 20 Marks and finally its Marks will be distributed to each theory HC course. i.e.,

C_1		**C_2**	
Internal Test	30 Marks (10+10+10) **Reduced to 10 Marks**	Internal Test	30 Marks (10+10+10) **Reduced to 10 Marks**
Home Assignment	15 Marks (05+05+05) **Reduced to 5 Marks**	Seminar	20 Marks (05+05+05+05) **5 Marks will be distributed to each HC course**
Total	**15 Marks**	**Total**	**15 Marks**

Distribution of Marks for C_3 Component (Semester end Examination)

The question paper is of 3 hrs duration with the Maximum of 70 Marks. The following question paper pattern will be followed for all the theory courses (HC/SC/OE). Question paper will have FIVE main questions. All the questions will cover all the units of the course with equal marks distribution. Q. No. 1 is of Medium/ Short Answer Type questions which will have nine questions and each question carries two marks. A student has to answer any seven questions. Q. No. 2 to 5 carries 14 marks each and a student has to answer all the four questions (*No Choice*). Each main question will have three sub-sections a, b, c. An examiner may set the questions like (4+4+6) or (4+5+5) or as his/her wish. However, sub-section 'c' will have an internal choice. i.e.,

Model Question Paper Pattern

Max. Duration: 3 Hr **Max. Marks: 70**

Note: *Answer all the questions. Each question carries 14 marks.*
Q. No. 1: Nine Medium/ Short Answer Type Questions and any seven should be answered. Each question carries TWO marks. **(7 × 2 = 14)**

Q. No. 2 to 5: All the four questions have to be answered (*No Choice*). Each question carries **FOURTEEN** marks. An examiner may set the questions like (4+4+6) or (4+5+5) or as his/her wish. However, sub-section c will have an internal choice. (*Two marks questions shall be avoided for 2 to 5*). **(4 × 14 = 56)**

a)
b)
c) **OR** c)

2. SOFT CORE (02 CREDIT COURSES)

Distribution of Marks for C_1 and C_2 Components

Assessment Marks (C_1 + C_2) consists of 30 marks. It will be divided into two parts viz., ***Internal Test and Home Assignment***. Internal tests will be conducted during the 8th week of the semester for C_1 and 16th week of the semester for C_2. As far as Home Assignment is concerned, the concerned teacher will assign one or two Home Assignments to each student. Since each course has two units, the marks will be divided equally. Allotment of marks for C_1 and C_2 is as follows: Out of 15 Marks for IA, Internal tests will be conducted for 20 marks and reduced to 10 marks, whereas Home Assignment is for 05 Marks. i.e.,

C_1		**C_2**	
Internal Test	20 Marks (10+10) **Reduced to 10**	Internal Test	20 Marks (10+10) **Reduced to 10**
Home Assignment	10 Marks (05+05) **Reduced to 05**	Home Assignment	10 Marks (05+05) **Reduced to 05**
Total	**15 Marks**	**Total**	**15 Marks**

Distribution of Marks for C_3 Component (Semester End Examination)

The above described pattern (1.2) holds good in this case also.

3. PRACTICALS

The following Scheme will be applicable for all the four semesters (SC for chemistry students only)

Each practical consists of three components namely C_1, C_2 and C_3. C_1 and C_2 are designated as Internal Assessment (IA) and C_3 as Semester End Examination. Each practical carries **100 Marks** and hence the allotment of marks to C_1, C_2 and C_3 Components will be 15, 15 and 70 marks respectively. i.e.,

C_1 Component	15 Marks	Internal Assessment Marks
C_2 Component	15 Marks	
C_3 Component	70 Marks	Semester End Examination
Total	**100 Marks**	

Distribution of Marks for C_1 and C_2 Components

IA consists of **15 Marks**. It will be divided into three parts *viz*., ***Internal Test, Continuous Assessment and Record***. Continuous assessment refers to the daily assessment of each student based on his/her attendance, skill, results obtained etc. Thus, 05 marks are allotted for Continuous Assessment. Internal tests will be conducted for 05 Marks during the 8th week of the semester for C_1 and 16th week of the semester for C_2. Finally, remaining 05 Marks will be for the record. i.e.,

C_1		**C_2**	
Internal Test	05 Marks	Internal Test	05 Marks
Continuous Assessment	05 Marks	Continuous Assessment	05 Marks
Record	05 Marks	Record	05 Marks
Total	**15 Marks**	**Total**	**15 Marks**

Distribution of Marks for C_3 Component (Semester End Examination)

The end examination will be conducted for **70 Marks/course** with a maximum duration of 6 hours. Two experiments will be given to each student which carries 30 Marks each. Each student will be subjected to Viva-Voce Examination for which 10 Marks is allotted. i.e.,

Two Experiments	30+30 Marks
Viva-Voce	10 Marks
Total	**70 Marks**

Note: Examiners have to set at least one experiment from each part in the semester end Examination (C_3).

FIRST SEMESTER

CHI HCT: 1.1. CONCEPT AND MODELS OF INORGANIC CHEMISTRY

Objectives:

- To study the structures of ionic crystals and simple molecules through VSEPR model.
- To learn acid-base concepts and chemical reactions in non-aqueous, ionic liquids and supercritical fluids as media.
- To study the chemistry of f-block elements.

Course outcome:

- The periodic properties of the elements, structures of ionic solids and their lattice energy calculations. Further, the use of VSEPR concepts in analyzing the structures of simple molecules.
- Various acid-base concepts and their applications in different fields. Also, understand the utility of various non-aqueous solvents in inorganic synthesis.
- Complete understanding of the chemistry of lanthanides, actinides and their applications.

Pedagogy:

- Familiarize the students with the periodic properties of the elements using modern periodic table.
- Teaching through conventional method such as black board and chalk, and modern methods like power point presentation.
- For teaching structures of solids, crystal models (MX and MX2 types) are used.

Course content

UNIT-I

[16 HOURS]

Structures and energetics of ionic crystals: Introduction, MX (NaCl, CsCl, ZnS) and MX_2 (fluorite, rutile, β-crystobalite, cadmium chloride and cadmium iodide) types. The perovskite and spinel structures. Thermodynamics of ionic crystal formation. Hydration energy and solubility of ionic compounds, Lattice energy, Born-Haber cycle, Born-Lande equation.The Kapustinskii‘s equation, Consequences of lattice enthalpies.Applications of lattice energetics. Ionic radii, factors affecting the ionic radii, radius ratio rules.

Structures and energetics of inorganic molecules: Introduction, Bent‘s rule, Energetics of hybridization. VSEPR model for explaining structure of molecules including fluxional molecule. M.O. treatment of homo-nuclear and heteronuclear diatomic molecules. M.O. treatment involving delocalized π-bonding (CO_3^{2-} , NO_3^- , NO_2^-, CO_2 and N_3^-), M.O. correlation diagrams (Walsh) for triatomic molecules.

UNIT-II

[16 HOURS]

Modern concept of acids and bases: Lux-Flood and Usanovich concepts, solvent system and leveling effect. Hard-Soft Acids and Bases, Classification and Theoretical backgrounds.

Non-aqueous solvents: Classification of solvents, Properties of solvents (dielectric constant, donor and acceptor properties) protic solvents (anhydrous H_2SO_4, HF and glacial acetic acid)

aprotic solvents (liquid SO_2, BrF_3 and N_2O_4). Solutions of metals in liquid ammonia, hydrated electron. Super acids and super bases. Heterogeneous acid-base reactions.

Ionic liquids: Molten salt solvent systems, Ionic liquids at ambient temperature, Reactions in and applications of molten salt/ionic liquid media.

Supercritical fluids: Properties of supercritical fluids and their uses as solvents. Supercritical fluids as media for inorganic chemistry

UNIT-III

[16 HOURS]

Chemical Periodicity: Review of periodic properties

Lanthanoid chemistry: General trends, Electronic, optical and magnetic properties. Abundance and extraction, **General principles**: conventional, solvent extraction and ion-exchange methods. Separation from monazite. Chemistry of principal oxidation states (II, III and IV). Stability of tetrahalides, dihalides and aqua ions of simple lanthanide compounds. Redox potentials.**Uses:** lanthanides as shift reagents, lanthanides as probes in biological systems. High temperature super conductors.

Actinoid chemistry: General trends and electronic spectra**.** Occurrence and preparation of elements, **Isolation of the elements**: thorium and uranium, enrichment of uranium for nuclear fuel, uranium hydrides, oxides and chlorides. Chemical reactivity and trend. Chemistry of trans-uranium elements.

Supramolecular Chemistry: Introduction, selectivity and Supramolecular Interactions.

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8. Ionic liquids-Classes and Properties (Ed) by Scott T. Handy, Intech Publisher (2011).
9. Lanthanide and Actinide Chemistry, Simon Cotton, John Wiley and Sons Ltd., (2006).
10. Supramolecular Chemistry, Peter J. Cragg, Springer (2010).

CHO HCT: 1.2. STEREOCHEMISTRY AND REACTION MECHANISM

Objectives

- To understand detailed molecular structures of organic compounds.
- To learn bonding and chemical reactions of organic compounds.
- To study different chemical reactions involved in organic synthesis.

Course Outcome

- Optical and geometrical isomerism of Organic compounds. Application of stereochemistry in the study of regioselective and regiospecific reactions.
- The study of HMOT and its applications to simple organic molecules, and also understand the concept of aromaticity and methods of determining reaction mechanism.
- Nucleophilic, electrophilic and elimination reactions.

Pedagogy

- Molecular models are used to teach stereochemistry.
- Teaching through conventional method such as black board and chalk, and modern methods like power point presentation.

Course content

UNIT-I

[16 HOURS]

Stereoisomerism: Projection formulae [flywedge, Fischer, Newman and sawhorse], enantiomers, diastereoisomers, mesomers, racemic mixture and their resolution, configurational notations of simple molecules, DL and RS configurational notations.

Optical isomerism: Conditions for optical isomerism: Elements of symmetry-plane of symmetry, centre of symmetry, alternating axis of symmetry (rotation-reflection symmetry). Optical isomerism due to chiral centers and molecular dissymmetry, allenes and biphenyls, criteria for optical purity.

Geometrical isomerism: Due to C=C, C=N and N=N bonds, *E*, *Z* conventions, determination of configuration by physical and chemical methods. Geometrical isomerism in cyclic systems.

Conformational analysis: Elementary account of conformational equilibria of ethane, butane and cyclohexane. Conformation of cyclic compounds such as cyclopentane, cyclohexane, cyclohexanones and decalins. Conformational analysis of 1,2-, 1,3- and 1,4- disubstituted cyclohexane derivatives and *D*-Glucose, Effect of conformation on the course and rate of reactions.

Stereoselectivity: Meaning and examples of stereospecific reactions, stereoselective reactions, diastereoselective reactions, regioselective, regiospecific reactions, enantioselective reactions and enantiospecific reactions.

UNIT-II

[16 HOURS]

Basics of organic reactions: Meaning and importance of reaction mechanism, classification and examples for each class.

Bonding in organic systems: Theories of bonding-molecular orbital approaches. Huckel molecular orbital theory and its application to simple π-systems: ethylene, allyl, cyclopropyl, cyclobutadienyl, cyclopentadienyl, cyclohexatrienyl systems. Calculation of the total π-energy, and M.O. coefficients of the systems.

Aromaticity: Concept of aromaticity, Huckel's rule, Polygon rule, annulenes, heteroannulenes and polycyclic systems.
Structure and reactivity: Brief discussion on effects of hydrogen bonding, resonance, inductive and hyperconjugation on strengths of acids and bases.
Methods of determining organic reaction mechanism: Thermodynamic and kinetic requirements for reactions, kinetic and thermodynamic control. Identification of products. Determination of reaction intermediates, isotope labeling and effects of cross over experiments. Kinetic and stereochemical evidence, solvent effect. Formation, structure, stability, detection and reactions of carbocations (classical and non-classical), carbanions, free radicals, carbenes, nitrenes, arynes and ylides (Sulphur, nitrogen and phosphorous).

UNIT-III

[16 HOURS]

Aliphatic Nuleophilic Substitution reactions: Kinetics, mechanism and stereochemical factor affecting the rate of S_N1, S_N2, $S_{RN}i$, S_Ni, S_N1', S_N2', S_N1i and $S_{RN}1$ reactions, Neighbouring group participation.
Electrophilic substitution reactions: Kinetics, mechanism and stereochemical factor affecting the rate of S_E1 & S_E2
Aromatic electrophilic substitution reactions: Mechanism of nitration, halogenation, sulphonation, Friedel-Crafts alkylation and acylation, Mannich reaction, chloromethylation, Vilsmeier Haack reaction, Diazonium coupling, Gattermann–Koch reaction, Mercuration reaction.
Aromatic nucleophilic substitution reactions: S_N1, S_N2 and benzyne mechanism, Bucherer reaction, von Richter reaction.
Mechanism of Addition reactions: Addition to C=C multiple bonds involving electrophiles, nucleophiles. Markownikoff's rule and anti-Markownikoff's rule.
Additions to carbonyl compounds: Addition of water, alcohol, bisulphate, HCN and amino compounds. Hydrolysis of esters.
Elimination reactions: Mechanism and stereochemistry of eliminations - E_1, E_2, E_{1cB}. *cis* elimination, Hofmann and Saytzeff eliminations, competition between elimination and substitution reactions, decarboxylation reactions. Chugaev reaction.

References

1. Stereochemistry of carbon compounds, Ernest L. Eliel.
2. Stereochemistry: P. S. Kalsi.
3. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
4. Organic Chemistry, Vol-I by I. L. Finar.
5. Advance Organic Chemistry, IV edition, Jerry March.
6. Advance Organic Chemistry, III edition, Part-A and Part-B, Francis A. Carey and Rechard J. Sundberg.
7. Organic Chemistry, III edition, V. K. Ahluwalia and Rakesh Kumar Parashar.
8. Reactive intermediates in Organic Chemistry, N. S. Isaacs.

CHP HCT: 1.3. BASIC PHYSICAL CHEMISTRY

Objectives

- To understand thermal properties of chemical compounds.
- To study the rate of chemical reactions including fast reactions and factors influencing the reaction rate.
- To understand the theory of electrochemistry in solution.

Course Outcome

- The completion of this course will enable the students to gain the knowledge on fundamentals and theoretical background on the concepts of chemical thermodynamics, chemical kinetics and electrochemistry of solutions.
- This helps in understanding the stability and energetics of reaction.

Pedagogy

- Teaching through conventional method such as black board and chalk, and modern methods like power point presentation.
- To teach electrochemical aspects through animations.

Course content

UNIT-I

[16 HOURS]

Chemical Thermodynamics: Entropy: Physical significance, entropy changes in an ideal gas. Variation of entropy with temperature, pressure and volume. Entropy changes in reversible and irreversible processes.

Free energy: Helmholtz and Gibbs free energies, Gibbs-Helmholtz equation and its applications, Maxwell‘s relations and its applications. Nernst heat theorem: its consequences and applications. Third law of thermodynamics: statements, applications and comparison with Nernst heat theorem.

Partial molar properties: Physical significance, determination of partial molar volumes by intercept method and from density measurements. Chemical potential and its significance. Variation of chemical potential with temperature and pressure. Formulation of the Gibbs – Duhem equation. Derivation of Duhem-Margules equation.

Fugacity: Relation between fugacity and pressure, variation of fugacity with temperature and pressure. Determination of fugacity of gases.

Activity and activity coefficient: Variation of activity with temperature and pressure. Determination of activity co-efficient by depression in freezing point and solubility measurements by electrical methods.

Thermodynamics of dilute solutions: Raoult‘s law, Henry‘s law. Ideal and non-ideal solutions.

UNIT-II

[16 HOURS]

Chemical Kinetics: Complex reactions: Kinetics of parallel, consecutive and reversible reactions. Chain reactions: Branched chain reactions, general rate expression, Auto catalytic reactions (Hydrogen-Oxygen reaction), oscillatory reactions and explosion limits.

Theories of reaction rates: Collision theory and its limitations, Activated complex theory (postulates -derivation) and its applications to reactions in solution. Energy of activation, other activation parameters - determinations and their significance. Lindemann theory, Hinshelwood‘s theory of unimolecular reactions.

Reactions in solution: Ionic reactions - salt effects, effect of dielectric constant (single sphere models). Effect of pressure, volume and entropy change on the rates of reactions. Cage effect with an example.

Fast reactions- Introduction, study of fast reactions by continuous and stopped flow techniques,

relaxation methods (T-jump and P-jump methods), flash photolysis, pulse and shock tube methods.

UNIT-III

[16 HOURS]

Electrochemistry of solutions: Factor effecting electrolytic conductance. Debye-Hucke theory

- Concept of ionic atmosphere. Debye-Huckel-Onsager equation of conductivity and its validity. Debye-Huckel limiting law (DHL), its modification for appreciable concentrations. A brief survey of Helmholtz-Perrin, Guoy-Chapman and Stern electrical double layer (no derivation). Transference number: True and apparent transference numbers, Abnormal transference numbers, effect of temperature on transference numbers. Liquid junction potential-determination and minimization.

Energetics of cell reactions: Effect of temperature, pressure and concentration on energetics of cell reactions (calculation of ΔG, ΔH and ΔS).

Irreversible electrode process: Introduction, reversible and irreversible electrodes, reversible and irreversible cells. Polarization, over voltage - concentration over voltage, activation over voltage and ohmic over voltage. Experimental determination of over voltage. Equations for concentration over potential, stationary and non-stationary surface. Butler-Volmer equation, Tafel equation. Hydrogen oxygen over voltage. Effect of temperature, current density and *p*H on over voltage.

References

1. Thermodynamics for Chemists by S. Glasstone, Affiliated East-West Press, New Delhi, (1965).
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3. Text Book of Physical Chemistry by Samuel Glasstone, MacMillan Indian Ltd., 2nd edition (1974).
4. Elements of Physical Chemistry by Lewis and Glasstone, 2nd Edn. Macmillan & Co Ltd., New York.
5. Chemical Kinetics by K.J. Laidler, Tata McGraw-Hill Pub, Co Ltd, New Delhi.
6. Chemical Kinetics by Frost and Pearson.
7. Kinetics and Mechanism of Chemical Transformation by J. Rajaram and J.C. Kuriacose, Macmillan, New Delhi.
8. Chemical Kinetics by L.K. Jain.
9. Introduction to Electrochemistry by S. Glasstone, Affiliated East-West Press, New Delhi,
10. Electrochemistry –Principles and Applications by E.G. Potter, Cleaver-Hume press Ltd, London.
11. Modern Electrochemistry Vol. I and II by J.O.M. Bockris and A.K.N. Reddy, Pentium Press, New York (1970).

CHA HCT: 1.4. ANALYTICAL DATA ASSESSMENT AND SEPARATION TECHNIQUES

Objectives:

- To familiarize statistical methods to validate analytical methods.
- To learn sampling techniques and conventional volumetric methods.

Course outcome:

- To enhance the skills on sampling, purification, characterizations and data analysis using instrumental techniques.
- Build a foundation of chemical principles for understanding the chemical constituents in samples.
- To understand the basic Principle of Instrumentation and analytical applications.

Pedagogy:

- Teaching through conventional method such as black board and chalk, and modern methods like power point presentation.
- To evaluate validation parameters, MS-Office tools *viz.,* MS-Excel sheets can be used.

Course content

UNIT-I

[16 HOURS]

Analytical chemistry: Its functions and applications; analytical problems and procedures, analytical techniques and methods, method validation.

Calibration and standards: Calibration, chemical standard and reference material.

Quality in analytical laboratories: quality control, quality assurance and accreditation system.

Errors in analytical measurements: measurement errors, absolute and relative errors, determinate and indeterminate errors and accumulated errors-sources, effects on results and control.

Assessment of accuracy and precision: Accuracy and precision, standard deviation, relative standard deviation, pooled standard deviation, variance, overall precision, and confidence interval.

Significance testing: Significance tests- Outlier, Q-test, F-test, t-test, and analysis of variance (ANOVA). Significant numbers.

Calibration and linear regression: Calibration, linear regression, standard addition, internal standardisation, internal normalization, external standardisation.

Figures of merit of Analytical methods: sensitivity and detection limit, linear dynamic range.

Quality control and chemometrics: Control charts, collaborative testing and multivariate statistics.

UNIT-II

[16 HOURS]

Principles of chromatography- Chromatographic separations and classification of principal chromatographic separations. Chromatographic mechanisms-sorption isotherms; adsorption systems-stationary and mobile phases, partition systems-stationary and mobile phases. Characterization of solutes-distribution ratio, retention factor, retention time and retardation factor.

Sorption processes- adsorption, partition, ion- exchange and size exclusion.

Chromatographic performance- Efficiency and resolution. Peak asymmetry- kinetic and temperature effects. Isolation of separated components.

Quantitative and qualitative analyses.

Thin layer chromatography (TLC) - Principles and procedures, stationary and mobile phases, solute- detection, alternative TLC procedures and applications of TLC.

Gas chromatography (GC) - Principles and types. Mobile phases, Sample injections, columns and stationary phases. Temperature control and solute detection; thermal conductivity detector (TCD), flame ionization detector (FID), nitrogen-phosphorus detector (NPD) and electron capture detector (ECD). Instrument control and data processing. GC-procedures- temperature programming and special procedures used in GC. Quantitative and qualitative analyses.

High performance liquid chromatography(HPLC): Principles, mobile phases, solvent delivery systems, sample injection system, column and stationary phases. Solute detection -UV-visible, fluorescence, refractive index and electrochemical detectors. Instrument control and data processing. Modes of HPLC. Optimisation of separations, qualitative and quantitative analyses.

UNIT-III

[16 HOURS]

Ion-exchange chromatography (IEC): Principles, apparatus and instrumentation, and applications.

Size-exclusion chromatography (SEC): Principles, apparatus and instrumentation, and applications.

Affinity chromatography (AFC): Principles, methodology and applications.

Supercritical fluid chromatography (SFC): Properties of supercritical fluids, instrumentation and operating variables, comparison of SFC with other chromatographic techniques, applications.

Supercritical fluid extraction (SFE): Advantages, instrumentation, choice of supercritical fluids, off-line and on-line extraction, applications.

Electrophoresis (EP) and electrochromatography(EC): Principles- high performance capillary electrophoresis and capillary electrochromatography, running buffers, supporting medium, sample injection, solutes- detection, instrument control and data processing. Modes of EP and EC- capillary zone electrophoresis (CZE), micellar electrokineticchromatography (MEKC), capillary gel electrophoresis (CZE), capillary isoelectric focusing (CIEF). Capillary electrochromatography (CEC), features, basis of separations. Qualitative analysis by CE and CEC and applications.

Solvent and solid phase extraction: Extraction techniques, extraction efficiency and selectivity. Solvent extraction (SE) - Extraction of organic acids and bases, extraction of metals. Methods of extraction and applications. Solvent phase sorbents, solid phase extraction (SPE) formats. Automated solid phase extraction. Solid phase micro extraction (SPME). Applications of SPE and SPME.

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2. Analytical Chemistry, G.D. Christian, 5th edition, 2001, John Wiley & Sons, Inc, India.
3. Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, 1993, Prentice Hall, Inc. New Delhi.
4. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, 2003, Pearson Education Pvt. Ltd., New Delhi.
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8. Modern Analytical Chemistry, David Harvey, McGraw Hill, New Delhi, 2000.

SOFT CORE PRACTICALS

CHA SCP: 1.1/2.1. ANALYTICAL CHEMISTRY PRACTICALS-I

[128 HOURS]

Course Objective

- To understand basic concepts by carrying out analytical experiments.
- The experimental results are subjected to validation of analytical parameters

Course Outcomes

- After studying this course the student to:
- Analyze various samples with different classical and simple instrumental skills.
- Obtain knowledge for selection of analytical methods with suitable technique being adopted for the analysis different samples like, water, laboratory chemicals and reagents, body fluids such as urine etc.
- Distinguish classical and instrumental methods.
- Propose and conduct experiment for quantification of individual analytes

Pedagogy

- Computer aided applications for the evaluation of experimental results.
- Each student performs experiments as per the protocol in practical classes.

Course experiments

Part-A

1. Determination of total acidity of vinegar and wines by acid-base titration.
2. Determination of purity of a commercial boric acid sample, and Na_2CO_3 content of washing soda.
3. Analysis of chromate-dichromate mixture by acid-base titration.
4. Determination of replaceable hydrogen and relative molecular mass of a weak organic acid by titration with NaOH.
5. Determination of ephedrine and aspirin in their tablet preparations by residual acid-base titrimetry.
6. Determination of purity of aniline and assay of chlorpromazine tablets by non-aqueous

acid-base titration.

7. Periodate determination of ethylene glycol and glycerol (Malprade reaction).
8. Determination of carbonate and bicarbonate in a mixture by *p*H-metric titration and comparison with visual acid-base titration.
9. Determination of purity of a commercial sample of mercuric oxide by acid-base titration.
10. Determination of benzoic acid in food products by titration with methanolic KOH in chloroform medium using thymol blue as indicator.
11. Determination of the *p*H of hair shampoos and *p*H determination of an unknown soda ash.
12. Analysis of water/waste water for acidity by visual, *p*H metric and conductometric titrations.
13. Analysis of water/waste water for alkalinity by visual, *p*H metric and conductometric titrations.
14. Determination of carbonate and hydroxide-analysis of a commercial washing soda by visual and *p*H-titrimetry.
15. Determination of ammonia in house-hold cleaners by visual and conductometric titration.
16. Potentiometric determination of the equivalent weight and Ka for a pure unknown weak acid.
17. Spectrophotometric determination of creatinine and phosphorus in urine.
18. Flame emission spectrometric determination of sodium and potassium in river/lake water.
19. Spectrophotometric determination of *p*Ka of an acid-base indicator.

PART-B

1. Determination of percentage of chloride in a sample by precipitation titration-Mohr, Volhard and Fajan‘s methods.
2. Determination of silver in an alloy and Na_2CO_3 in soda ash by Volhard method.
3. Mercurimetric determination of blood or urinary chloride.
4. Determination of total hardness, calcium and magnesium hardness and carbonate and bicarbonate hardness of water by complexation titration using EDTA.
5. Determination of calcium in calcium gluconate/calcium carbonate tablets/injections and of calcium in milk powder by EDTA titration.
6. Analysis of commercial hypochlorite and peroxide solution by iodometric titration.
7. Determination of copper in an ore/an alloy by iodometry and tin in stibnite by iodimetry.
8. Determination of ascorbic acid in vitamin C tablets by titrations with $KBrO_3$ and of vitamin C in citrus fruit juice by iodimetric titration.
9. Determination of iron in razor blade by visual and potentiometric titration using sodium metavanadate.
10. Determination of iron in pharmaceuticals by visual and potentiometric titration using cerium(IV) sulphate.
11. Determination of nickel in steel by synergic extraction and boron in river water/sewage using ferroin.
12. Determination of total cation concentration of tap water by ion-exchange chromatography.
13. Determination of magnesium in milk of magnesium tablets by ion-exchange chromatography.
14. Cation exchange chromatographic separation of cadmium and zinc and their estimation by EDTA titration.
15. Gas chromatographic determination of ethanol in beverages.

16. Determination of aspirin, phenacetin and caffeine in a mixture by HPLC.
17. Solvent extraction of zinc and its spectrophotometric determination.
18. Anion exchange chromatographic separation of zinc and magnesium followed by EDTA titration of the metals.
19. Separation and determination of chloride and bromide on an anion exchanger.
20. Thin layer chromatographic separation of amino acids.

References

1. Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch 8th edition, 2005, Saunders College Publishing, New York.
2. Analytical Chemistry, G.D. Christian, 5th edition, 2001 John Wiley & Sons, Inc, India.
3. Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, 1993, Prentice Hall, Inc. New Delhi.
4. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, 2003, Pearson Education Pvt. Ltd., New Delhi.
5. Analytical Chemistry Principles, John H. Kennedy, 2nd edition, Saunders College Publishing, California, 1990.
6. Practical Clinical biochemistry methods and interpretations, R. Chawla, J.P. Bothers Medical Publishers (P) Ltd., 1995.
7. Laboratory manual in biochemistry, J. Jayaraman, New Age International Publishers, New Delhi, 1981.
8. Practical Clinical Biochemistry by Harold Varley and Arnold.Heinmann, 4th edition.

CHI SCP: 1.2/2.2. INORGANIC CHEMISTRY PRACTICALS-I

Objectives: **[128 HOURS]**

- To understand basic concepts by carrying out different experiments.
- To develop the skill for the qualitative and quantitative analysis of various samples.

Course outcome:

- Determination of various analytes presents in different ore samples by volumetric, gravimetric and spectrophotometric methods.
- The chemistry of redox, complexometric and indirect methods
- The principle in the semi-micro analysis of an inorganic salt mixture

Pedagogy:

- Each student performs experiments as per the protocol in practical classes.
- Handling the instrument and pyrolysis for quantitative determination of analyte.

Course experiments

PART – A

1. Determination of iron in haematite using cerium (IV) solution (0.02M) as the titrant, and gravimetric estimation of insoluble residue.
2. Estimation of calcium and magnesium carbonates in dolomite using EDTA titration, and gravimetric analysis of insoluble residue.
3. Determination of manganese dioxide in pyrolusite using permanganate titration.
4. Quantitative analysis of copper-nickel in alloy/mixture:
    i. Copper volumetrically using KIO_3.

ii. Nickel gravimetrically using DMG

5. Determination of lead and tin in a mixture: Analysis of solder using EDTA titration.
6. Quantitative analysis of chloride and iodide in a mixture:
   i. Iodide volumetrically using KIO_3
   ii. Total halide gravimetrically
7. Gravimetric analysis of molybdenum with 8-hydroxyquinoline.
8. Quantitative analysis of copper(II) and iron(II) in a mixture:
   i. Copper gravimetrically as CuSCN and
   ii. Iron volumetrically using cerium(IV) solution
9. Spectrophotometric determinations of:
   a. Titanium using hydrogen peroxide
   b. Chromium using diphenyl carbazide in industrial effluents
   c. Iron using thiocyanate/1,10-phenanthroline method in commercial samples
   d. Nickel using dimethylglyoxime in steel solution
10. Micro-titrimetric estimation of :
    a) Iron using cerium(IV)
    b) Calcium and magnesium using EDTA
11. Quantitative estimation of copper (II), calcium (II) and chloride in a mixture.
12. Circular paper chromatographic separation of: (Demonstration)
    a. Iron and nickel
    b. Copper and nickel

PART – B

Semimicro qualitative analysis of inorganic mixtures containing **TWO** anions and **TWO** cations (excluding sodium, potassium and ammonium cations) and **ONE** of the following less common cations: W, Mo, Ce, Ti, Zr, V and Li.

References

1. Vogel's Text Book of Quantitative Chemical Analysis – 5th edition, J. Basset, R.C. Denney, G.H. Jeffery and J. Mendhom.
2. A Text Book of Quantitative Inorganic Analysis by A.I. Vogel, 3rd edition.
3. Spectrophotometric Determination of Elements by Z. Marczenko.
4. Vogel's Qualitative Inorganic Analysis – Svelha.
5. Macro and SemimicroInorganicQualitative Analysis by A.I. Vogel.
6. Semimicro Qualitative Analysis by F.J. Welcher and R.B. Halin.
7. Quantitative Chemical Analysis by Daniel C. Harris, 7th edition, (2006).

CHO SCP: 1.3/2.3. ORGANIC CHEMISTRY PRACTICALS-I

[128 HOURS]

Objectives:

- To understand synthetic methods by carrying out different experiments.
- To develop the skill for the separation and qualitative analysis of binary mixtures of organic compounds.

Course outcome:

- Students are involved in the multi-step synthesis of different organic compounds.

- Understand the qualitative analysis of binary mixture of organic compounds through separation, identification of functional groups and preparation of solid derivatives.

Pedagogy:

- Each student performs experiments as per the protocol in practical classes.
- Experimental setup for the synthesis of organic compounds by every individual.

Course experiments

PART-A

Multistep synthesis

1. Preparation *p*-bromoaniline from acetanilide**.**
2. Preparation of *n*-nitroaniline from acetalinide.
3. Oxidation of cyclohexanol to adipic acid.
4. Esterification: Preparation of benzoccaine from *p*-nitrotoluene.
5. Diazotization (Sandmeyer‘s reaction): Preparation of *p*-chlorobenzoic acid from *p*-toluidine.
6. Preparation benzilic acid from benzoin**.**
7. Preparation of *o*-hydroxy benzophenone from phenyl benzoate *via* Fries rearrangement.
8. Preparation of benzanilide from benzophenone oxime *via* Beckmann rearrangement.
9. Preparation of benzoic acid from benzaldehyde (Cannizzaro Reaction).
10. Preparation of 2,4-dinitrophenylhydrazine from 2,4-dinitrochlorobenzene.
11. Preparation of *m*-nitrobenzoic acid from methylbenzoate.
12. Preparation of chalcone.

PART-B

Qualitative analysis: Separation of binary mixtures, identification of functional groups and preparation of suitable solid derivatives.

References:

1. Vogel' text book of practical organic chemistry, V edition, B. S. Furniss, A. J. Hannaford, P. W. G. Smith, A. R. Tatehell.
2. Elementary practical organic chemistry, Part-I: Small scale preparations, Part-II: Qualitative organic analysis, By Arthur I, Vogel.
3. Hand book of organic analysis, H. T. Clarke and Norman Collie.
4. Experiments in Organic Chemistry, Louis F. Fieser.
5. Laboratory manual of Organic Chemistry by B. B. Dey and M. V. Sitaraman.
6. Practical Organic Chemistry by Mann F. G. and Saunders.

CHP SCP: 1.4/2.4. PHYSICAL CHEMISTRY PRACTICALS-I

[128 HOURS]

Objectives:

- To understand the rate of chemical reactions and factors influencing the reaction rate by carrying out kinetic experiments.
- To understand basic concepts of electrochemistry by carrying out experiments.

Course outcome:

- After the completion of this course, the students can able to develop the experimental skill and theoretical interpretation of experimental results of many physical chemistry

experiments of chemical kinetics in solution phase, thermodynamics, electrochemistry and spectrophotometry.

- This helps in academics, research and industries.

Pedagogy:

- Each student performs experiments as per the protocol in practical classes.
- To optimize the reaction conditions for understanding the rate of chemical reactions.

Course experiments

PART - A

1. Study of kinetics of hydrolysis of methyl acetate in presence of two different concentrations of HCl/H_2SO_4 and report the relative catalytic strength.
2. Study of kinetics of reaction between $K_2S_2O_8$ and KI, first order, determination of rate constants at two different temperatures and E_a.
3. To study the kinetics of saponification of ethyl acetate by conductivity method at two different concentrations of NaOH and report the relative catalytic strength.
4. Determination of partial molar volume of salt-water system ($NaCl-H_2O/KCl-H_2O/KNO_3-H_2O$) systems.
5. To study the kinetics of reaction between acetone and iodine - determination of order of reaction with respect to iodine and acetone.
6. Study the kinetics of decomposition of diacetone alcohol by NaOH, determine the catalytic coefficient of the reaction and comparison of strength of alkali.
7. Determination of energy of activation for the bromide-bromate reaction.
8. Kinetics of reaction between sodium formate and iodine and determination of energy of activation.
9. Determination of heat of solution of organic acid (benzoic acid/salicylic acid) by variable temperature method (graphical method).
10. Determination of degree of association of benzoic acid in benzene by distribution method.
11. To determine the eutectic point of a two component system (Naphthalene-*m*-dinitrobenzene system).
12. Analysis of a binary mixture (Gylcerol & Water) by measurement of refractive index.
13. Determination of the molecular weight of a polymer material by viscosity measurements (cellulose acetate/methyl acrylate).

PART – B

1. Conductometric titration of a mixture of HCl and CH_3COOH against NaOH.
2. Conductometric titration of sodium sulphate against barium chloride.
3. pH titration of (a) HCl against NaOH (b) Copper sulphate against NaOH and (c) CH_3COOH/HCOOH against NaOH - determination of K_a.
4. Determination of equivalent conductance of weak electrolyte (CH_3COOH) at infinite dilution following Kohlrausch law.
5. Determination of dissociation constant and mean ionic activity coefficient of weak acids ($CH_3COOH/HCOOH/ClCH_2COOH$) by conductivity method.
6. Potentiometric titration of KI *vs* $KMnO_4$ solution.
7. Determination of dissociation constant of a weak acid ($CH_3COOH/HCOOH/ClCH_2COOH$) by potentiometric method.
8. Potentiometric titration of a mixture of halides (KCl+KI/KCl+KBr/KBr+KI) against $AgNO_3$.

9. To obtain the absorption spectra of coloured complexes, verification of Beer's law and estimation of metal ions in solution using a spectrophotometer.
10. Potentiometric titration of $K_2Cr_2O_7$ against FAS determination of redox potential and concentration of Fe^{2+} ions.
11. Conductometric titration of oxalic acid against NaOH and NH_4OH.
12. Coulometric titration I_2 vs $Na_2S_2O_3$.
13. Determination of acidic and basic dissociation constant and isoelectric point of an amino acid by pH metric method.
14. Kinetics of photodegradation of indigocarmine (IC) using ZnO/TiO_2 as photocatalyst and study the effect of [ZnO/TiO_2] and [IC] on the rate of photodegradation.

References:

1. Practical Physical Chemistry – A.J. Findlay.
2. Experimental Physical Chemistry – F. Daniels *et al*.
3. Selected Experiments in Physical Chemistry – Latham.
4. Experiments in Physical Chemistry – James and Prichard.
5. Experiments in Physical Chemistry – Shoemaker.
6. Advanced Physico-Chemical Experiments – J. Rose.
7. Practical Physical Chemistry – S.R. Palit.
8. Experiments in Physical Chemistry – Yadav, Geol Publishing House.
9. Experiments in Physical Chemistry – Palmer.
10. Experiments in Chemistry – D.V. Jahagirdar, Himalaya Publishing House, Bombay, (1994).
11. Experimental Physical Chemistry – R.C. Das and B. Behera, Tata Mc Graw Hill.

SOFT CORE PAPERS

CHA SCT: 1.1/2.1. TITRIMETRIC ANALYSIS

Objective:

- To familiarize statistical methods to validate analytical methods.
- To learn sampling techniques and conventional volumetric methods.

Course Outcome:

After studying this course the student able to:

- Understand on quantitative and qualitative methods of analysis with relevant equilibrium chemistry.
- Develop the ideas with the fundamental aspects in analytical chemistry.
- Build the interest in students in developing good experimental protocols, and in interpreting experimental results.
- Gain analytical knowledge for the quantitative analysis of various samples of different origin under titrimetric aspects.
- Learn statistical aspects from which the spirit of assessing the results will be enhanced.
- Learn method development and validation features so that they will become outstanding basement for their career in various industries.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room

teaching.

Course content

UNIT-I

[16 HOURS]

Titrimetric analysis: An overview of titrimetry. Principles of titrimetric analysis. Titration curves. Titrations based on acid-base reactions - titration curves for strong acid and strong base, weak acid and strong base and weak base and strong acid titrations. Selecting and evaluating the end point. Finding the end point by visual indicators, monitoring *p*H and temperature.

Quantitative applications – selecting and standardizing a titrant, inorganic analysis - alkalinity, acidity and free CO_2 in water and waste waters, nitrogen, sulphur ammonium salts, nitrates and nitrites, carbonates and bicarbonates. Organic analysis - functional groups like carboxylic acid, sulphonic acid, amine, ester, hydroxyl, carbonyl. Air pollutants like SO_2. Quantitative calculations. Characterization applications - equivalent weights and equilibrium constants.

Acid-base titrations in non-aqueous media: Role of solvent in acid-base titrations, solvent systems, differentiating ability of a solvent, some selected solvents, titrants and standards, titration curves, effect of water, determining the equivalence point, typical applications - determination of carboxylic acids, phenols and amines.

UNIT-II

[16 HOURS]

Precipitation titrations: Titration curves, feasibility of precipitation titrations, factors affecting shape - titrant and analyte concentration, completeness of the reaction, titrants and standards, indicators for precipitation titrations involving silver nitrate, Volhard, Mohr and Fajan‘s methods, typical applications.

Complexometric titrations: Complex formation reactions, stability of complexes, stepwise formation constants, chelating agents, EDTA - acidic properties, complexes with metal ions, equilibrium calculations involving EDTA, conditional formation constants, derivation of EDTA titration curves, effect of other complexing agents, factors affecting the shape of titration curves - completeness of reaction, indicators for EDTA titrations - theory of common indicators, titration methods employing EDTA - direct, back and displacement titrations, indirect determinations, titration of mixtures.

Redox titrations: Balancing redox equations, calculation of the equilibrium constant of redox reactions, calculating titration curves, detection of end point, visual indicators and potentiometric end point detection. Quantitative applications-adjusting the analyte‘s oxidation state, selecting and standardizing a titrant. Inorganic analysis- chlorine residuals, dissolved oxygen in water, water in non-aqueous solvents. Organic analysis-chemical oxygen demand (COD) in natural and waste waters, titrations of mercaptans and ascorbic acid with I_3^- and titration of organic compounds using periodate.

References

1. Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch, 8th edition, 2005, Saunders College Publishing, New York.
2. Analytical Chemistry, G.D. Christian, 5th edition, 2001, John Wiley & Sons, Inc, India.
3. Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, 1993, Prentice Hall, Inc. New Delhi.

4. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, 2003, Pearson Education Pvt. Ltd., New Delhi.
5. Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, 1993 prenticeHall, Inc. New Delhi.
6. Analytical Chemistry Principles, John H. Kennedy, 2nd edition, Saunders College Publishing, California, 1990.
7. Principles and Practice of Analytical Chemistry, F.W. Fifield and Kealey, 3rd edition, 2000, Blackwell Sci., Ltd. Malden, USA.
8. Modern Analytical Chemistry, David Harvey, McGraw Hill, New Delhi, 2000.

CHI SCT: 1.2/2.2. CHEMISTRY OF SELECTED ELEMENTS

Objectives:

- To learn basic chemistry of some selected group elements from periodic table.
- To understand properties of metal-metal bonding and cluster compounds.

Course outcome:

- Understand the chemistry of hydrogen and group 2 elements.
- The chemistry of pseudohalogens, interhalogens and their halogen compounds.
- The chemistry of xenon and other noble gas compounds.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.Course content

UNIT-I

[16 HOURS]

Compounds of hydrogen: The hydrogen and hydride ions, Dihydrogen and hydrogen bonding. Classes of binary hydrides: Molecular hydrides, saline hydrides and metallic hydrides.
The Group 1 elements: Occurrence, extraction and uses. Simple compounds: Hydrides, halides, oxides, hydroxides, oxoacids, nitrides, solubility and hydration and solutions in liquid ammonia. Coordination and organometallic compounds. Applications.
The Group 2 elements: Occurrence, extraction and uses. General properties. Halides, hydrides and salts of oxo acids. Complex ion in aqueous solution and complexes with amido and alkoxy ligands.
The Group 15 elements: Introduction, oxides and oxoacids of nitrogen and phosphorus.

UNIT-II

[16 HOURS]

The Group 17 elements: Occurrence, recovery and uses. Trends in properties and pseudohalogens. **Interhalogens**: Physical properties and structures, chemical properties, cationic interhalogens. **Compounds with oxygen**: Halogen oxides, oxoacids and oxoanions**.** Trends in rates of redox reactions and redox properties of individual oxidation states**.**
Chemistry of astatine.
The Group 18 elements: Occurrence, recovery and uses. Synthesis and structure of xenon

fluorides, Reaction of xenon fluorides, xenon-oxygen compounds, Organoxenon compounds, other compounds of noble gases.

M-M bonds: Multiple metal-metal bonds.

Cluster compounds: carbonyl and carbide clusters.

References

1. Basic Inorganic Chemistry – 3rd edition. F.A. Cotton, G. Wilkinson and P.L. Gaus, John
2. Wiley and Sons (2002).
3. Inorganic Chemistry, 3rd edition. James E. Huheey, Harper and Row Publishers (1983).
4. Inorganic Chemistry, 3rd edition. G.L. Miessler and D.A. Tarr, Pearson Education (2004).
5. Inorganic Chemistry, 4th edition. C.E. Housecroft and A.G. Sharpe, Pearson Education Ltd. (2012).
6. Chemistry of the Elements – N.N. Greenwood and A. Earnshaw, Pergamon Press (1985).
7. Inorganic Chemistry, 6th edition. D.F. Shriver, M. Weller. T. Overton, J. Rourke and F.

CHO SCT: 1.3/2.3. CHEMISTRY OF NATURAL PRODUCTS-I

Objectives:

- To learn the nomenclature, classification, purification, structure and synthesis of some natural products.
- To understand the biological functions of biomolecules.

Course outcome:

- Acquire the knowledge of chemistry of lipids, prostaglandins and terpenoids.
- Understand the biological importance of chlorophyll and porphyrins.
- Chemistry of flavonoids and isoflavonoids.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern method like power point presentation is used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Lipids: Nomenclature, classification, purification, structure and synthesis of fatty acids, phospholipids, sphingolipids. Biological importance of lipids (Lecithin, sphingolipids, oils and fats).

Prostaglandins: Introduction, classification and biological importance of PG‘s. Constitution of PGE1. Synthesis of PGE & F series.

Terpenoids: Introduction, classification and general methods of structural elucidation. Chemistry of pinene, camphor, caryophyllene, santonin. Biosynthesis of terpenoids.

UNIT-II

[16 HOURS]

Porphyrins: Introduction, structure and biological functions of haemin. Vitamin B12: structure and as coenzyme in molecular rearrangement reactions; Chlorophyll: structure and biological importance.

Flavonoids and Isoflavonoids: Occurrence, nomenclature and general methods of structure determination. Isolation and synthesis of Apigenin, Luteolin, Kaempferol, Quercetin, wedelolactone, Butein, Daidzein. Biosynthesis of flavonoids and isoflavonoids: Acetate Pathway and Shikimic acid Pathway. Biological importance of flavonoids and isoflavonoid

References

1. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
2. Organic Chemistry, Vol-II by I. L. Finar.
3. Schaum's outline of theory and problems of Organic Chemistry, Harbert Meislich, Howard Nechamkin and Jocob Sharefkin.
4. Natural products: Their chemistry and biological significance, J. Mann, R. S. Davidson, J. B. Banthorpe and J. B. Harborne.
5. Synthetic drugs, Gurdeep R. Chatwal.
6. Heterocyclic chemistry by Achison.
7. Heterocyclic chemistry by Smith and Joule.
8. Heterocyclic chemistry by Pacquete.

CHP SCT: 1.4/2.4. BIOPHYSICAL CHEMISTRY

Objectives:

- To understand the physico-chemical principles of biological fluids.
- To learn the pharmacokinetics, pharmacodynamics, toxicokinetics of biological systems.

Course outcome:

- After the completion of this course, the students gain the knowledge on theory and principles of biophysical chemistry and pharmacokinetics.
- This course helps to understanding the bio-availability and different pharmacokinetic parameters of drugs in the living system.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Biophysical Chemistry: Electrophoresis - Principles of free electrophoresis, zone electrophoresis, gel electrophoresis and its applications in qualitative and quantitative study of proteins. Determination of isoelectric point of a protein. Electro-osmosis and streaming potential and its biological significance. Biological significance of Donnan membrane phenomenon. Micelles and its involvement during digestion and absorption of dietary lipids. Diffusion of solutes across bio-membranes and its application in the mechanism of respiratory exchange. ‒Salting In‖ and ‒Salting Out‖ of proteins. Osmotic behaviour of cells and osmo-regulation and its application in the evolution of excretory systems of organisms. Effect of temperature and *p*H on the viscosity of bio-molecules (albumin solution). Significance of viscosity in biological systems - mechanism of muscle contraction, polymerization of DNA and nature of blood flow through different vessels. Effect of temperature, solute concentration (amino acids) on surface tension. Biological significance of surface tension - stability of Alveoli in lungs, interfacial tension in living cells (Danielli and Davson model). Application of sedimentation velocity and

sedimentation equilibrium method for molecular weight determination of proteins.

UNIT-II

[16 HOURS]

Pharmacokinetics: Introduction, biopharmaceutics, pharmacokinetics, clinical pharmacokinetics, pharmacodynamics, toxicokinetics and clinical toxicology. Measurement of drug concentration in blood, plasma or serum. Plasma level-time curve, significance of measuring plasma drug concentrations.

One compartment open model: Intravenous route of administration of drug, elimination rate constant, apparent volume of distribution and significance. Calculation of elimination rate constant from urinary excretion data, clinical application.

Two compartment model: Plasma level-time curve, relationship between tissue and plasma drug concentrations, Apparent volumes of distribution. Drug clearance, clinical example. Plasma level-time curve for a three compartment open model.

Drug absorption: Factors affecting the rate of drug absorption - nature of the cell membrane, Route of drug administration - Oral drug absorption, Intravenous infusion and intravenous solutions, Effect of food on gastrointestinal drug absorption rate.

References

1. Introduction to Physical Organic Chemistry, R.D. Gilliom, Madison – Wesley, USA (1970).
2. Physical Organic Chemistry- Reaction Rate and Equilibrium Mechanism – L.P. Hammett, McGraw HillBook, Co., (1970).
3. Biophysical Chemistry- Principle and Technique – A. Upadhyay, K. Upadhyay and N. Nath, Himalaya Publishing House, Bombay, (1998).
4. Essentials of Physical Chemistry and Pharmacy – H. J. Arnikar, S. S. Kadam, K.N. Gujan, Orient Longman, Bombay, (1992).
5. Applied Biopharmacokinetics and Pharmacokinetics - Leon Shargel, Andrew YuPrentice-Hall International, Inc (4^{th} edition).
6. Essentials of Physical Chemistry and Pharmacy – H.J. Arnikar, S.S. Kadam, K.N. Gujan, Orient Longman, Bombay, (1992).

SECOND SEMESTER
HARD CORE PAPERS

CHI HCT: 2.1. COORDINATION CHEMISTRY

Objectives:

- To understand the preparation, properties, electronic configuration and structural elucidation of coordination compounds.
- To learn the reaction mechanism, stereochemistry and photochemistry of coordination compounds.

Course outcome:

- Gain the knowledge of preparative methods of coordination compounds and geometries of different coordination numbers.
- Understand the CFT and MOT bonding theories of metal complexes.
- Electronic spectra, magnetic properties and infrared spectroscopy of coordination compounds. In addition, understand the reaction mechanism and photochemistry of coordination compounds.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Preparation of coordination compounds: Introduction, Preparative methods- simple addition reactions, substitution reactions, oxidation-reduction reactions, thermal dissociation reactions. Geometries of metal complexes of higher coordination numbers (2-8).

Stability of coordination compounds: Introduction, trends in stepwise stability constants, factors influencing the stability of metal complexes with reference to the nature of metal ion and ligands, the Irving-William series, chelate effect.

Determination of stability constants: Theoretical aspects of determination of stability constants of metal complexes by spectrophotometric methods.

Crystal field theory: Salient features of CFT, d-orbital splitting in octahedral, tetrahedral, square planar and tetragonal complexes, Jahn-Teller distortions, measurement of 10 Dq and factors affecting it. Evidences for metal-ligand covalency.

Molecular Orbital Theory: MOT to octahedral, tetrahedral and square planar complexes without and with pi-bonding.

UNIT-II

[16 HOURS]

Electronic spectra: Introduction, selection rules and intensities, electronic spectra of octahedral and tetrahedral complexes, Term symbols for d^n ions, Orgel and Tanabe-Sugano diagrams, charge-transfer spectra. Ligand-field transition. Charge transfer and energy applications. Optical rotatory dispersion and Circular dichroism. Magnetic circular dichroism.

Magnetic properties: Introduction, magnetic susceptibility and its measurements, spin and orbital contributions to the magnetic moment, the effects of temperature on μeff, spin-cross

over, ferromagnetism, anti-ferromagnetism and ferrimagnetism.

Applications of infrared spectroscopy of coordination compounds: Metal complexes of ammine, nitro, nitrito, hydroxo, carbonato, sulphato, cyano, cyanato and thiocyanato complexes.

UNIT-III

[16 HOURS]

Reactions and Mechanisms: Introduction. Substitution reactions- Inert and labile compounds, mechanisms of substitution. Kinetic consequences of Reaction pathways- Dissociation, interchange and association. Experimental evidence in octahedral substitution- Dissociation, associative mechanisms, the conjugate base mechanism, the kinetic chelate effect.

Stereochemistry of reactions- Substitution in *trans* and its complexes, isomerization of chelate rings. Substitution reactions of square-planar complexes-kinetics and stereochemistry of square-planar substitutions, evidence for associative reactions, explanations of the *trans* effect.

Electron-transfer processes: Inner-sphere mechanism and outer-sphere mechanism, conditions for high and low oxidation numbers.

Photochemistry of coordination compounds: Photochemistry of chromium(III) ammine compounds, Light-induced excited state spin trapping in iron(II) compounds and MLCT photochemistry in pentammineruthenium(II) compounds.

References

1. Physical Inorganic Chemistry- A Coordination Chemistry Approach- S.F.A. Kettle, Spektrum, Oxford, (1996).
2. Inorganic Chemistry-4th edition. C.E. Housecroft and A.G. Sharpe, Pearson Education Ltd. (2012).
3. Inorganic Chemistry-5th edition. G.L. Miessler, P. J. Fischer and D.A. Tarr, Pearson (2014).
4. Inorganic Chemistry-6th edition. D.F. Shriver, M. Weller. T. Overton, J. Rourke and F. Armastrong, Oxford University Press (2014).
5. Inorganic Chemistry- 3rd edition, James E. Huheey, Harper and Row Publishers, (1983).
6. Basic Inorganic Chemistry- 3rd edition, F.A. Cotton, G. Wilkinson and P.L. Gaus, John Wiley and Sons, (2002).
7. Infrared and Raman Spectra of Coordination Compounds, Part-B- 6th edition, K. Nakamoto, John Wiley and Sons (2009).

CHO HCT: 2.2. SYNTHETIC ORGANIC CHEMISTRY

Objectives:

- To understand the reactions of organic compounds involving various reagents.
- To learn the synthesis and retro-synthesis of different organic compounds.

Course outcome:

- Students are familiar about chemistry of oxidants, reductants and their applications in the organic synthesis.
- Understand the various catalysts in organic synthesis by known naming reactions.
- Retro-synthesis and molecular rearrangement.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern method like power point presentation is used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Oxidation: Oxidation with chromium and manganese reagents (CrO_3, $K_2Cr_2O_7$, PCC, PDC, Sarret reagent, MnO_2, $KMnO_4$), peroxides and peracids, periodic acid, OsO_4, SeO_2, NBS, Oppenauer oxidation, Sharpless epoxidation.

Reduction: Catalytic hydrogenation (homogeneous and heterogeneous) – catalysts (Pt, Pd, Ra-C, Ni, Ru, Rh), solvents and reduction of functional groups, catalytic hydrogen transfer reactions. Wilkinson catalyst, $LiAlH_4$, $NaBH_4$, DIBAL-H, Sodium cyanoborohydride, Birch reduction, Leukart reaction (reductive amination), diborane as reducing agent, Meerwein-Ponndorf-Verley reduction, Wolff-Kishner reduction, Clemensen reduction, stannous chloride, Organoboron compounds: Introduction and preparations; Hydroboration and its applications; Reactions of organoboranes: isomerization reactions, oxidation, protonolysis, carbonylation, cyanidation. Reactions with aldehydes or ketones (*E* and *Z*-alkenes).

UNIT-II

[16 HOURS]

Reagents and reactions in organic synthesis: Use of following reagents in organic synthesis and functional group transformations: Lithium diisopropylamide (LDA), Gilmann reagent, dicyclohexyl carbodimide (DCC), dichlorodicyanoquinone (DDQ), Silane reagents-trialkylsilyl halides, trimethylsilyl cyanide, trimethyl silane; phase transfer catalyst, crown ethers, cyclodextrins, Ziegler-Natta catalyst, diazomethane, Woodward and Prevost hydroxylation, Stark enamine reaction, phosphorous ylides - Wittig and related reactions, Sulphur ylides – reactions with aldehydes and ketones, 1,3-dithiane anions - Umpolung reaction, Peterson reaction. Palladium reagents: Suzuki coupling, Heck reaction, Negishi reaction. Green Chemistry: Definition and principles.

UNIT-III

[16 HOURS]

Molecular rearrangements: Introduction Carbon to carbon migration: Pinacol-pinacolone, Wagner-Meerwein, Benzidine, benzylic acid, Favorskii, Fries rearrangement, dienophile rearrangement. Carbon to nitrogen migration: Hofmann, Curtius, Lossen, Schmidt and Beckmann rearrangements. Miscellaneous rearrangements: Wittig, Smiles, Bayer-Villeger rearrangement and Barton reaction.

Retrosynthesis: Introduction to disconnection approach: Basic principles and terminologies used in disconnection approach. One group C-X and two group C-X disconnections. Synthons and synthetic equivalents. Retrosynthesis and synthesis of benzofurans, *p*-methoxy acetophenone, saccharine, α-bisabolene, nuciferal, tetralone, ibuprofen; Functional group transformations in organic synthesis: nitro to keto, nitro to amine, acid to alcohol etc.

References

1. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
2. Organic Chemistry, Vol-I & II by I. L. Finar.
3. Advance Organic Chemistry, IV edition, Jerry March.
4. Advance Organic Chemistry, III edition, Part-A and Part-B, Francis A. Carey and Rechard J. Sundberg.
5. Organic Chemistry, III edition, V. K. Ahluwalia and Rakesh Kumar Parashar.
6. Organic named reactions and molecular rearrangements, Gudeep Raj.
7. Modern synthetic reactions, II edition, H. O. House.
8. Organic synthesis, Jagadamba Singh and L. D. S. Yadav.
9. Green Chemistry, K. R. Desai.
10. Principles of Organic synthesis, R. O. C. Norman and J. M. Coxon.
11. Organic synthesis II edition, V. K. Aluwalia and Renu Agarwal.
12. Organic synthesis, Robert E. Ireland.
13. Schaum's outline of theory and problems of Organic Chemistry, Harbert Meislich, Howard Nechamkin and Jocob Sharefkin.
14. Organic chemistry by Clayden, Greeves, Warren and Wothers.

CHP HCT: 2.3. PRINCIPLES OF PHYSICAL CHEMISTRY

Objectives:

- To understand the theoretical calculations of energies of simple molecules.
- To learn the calculation of different energies by statistical thermodynamics.
- To understand the basics of polymers, their kinetics and applications.

Course outcome:

- Principles of Quantum chemistry and theoretical calculations of energies of molecules and chemical reactions.
- Apply solutions of the Schrödinger equation for simple systems (particle in a box, rigid rotor, harmonic oscillator) to real systems (vibrational, rotational, and electronic energy states) in determining the energy of stationary states.
- Explain angular momentum as possessed by atomic or molecular systems, various descriptions of how angular momentum can be coupled, and how conservation of angular momentum is important to spectroscopy.
- Concepts and applicability of statistical thermodynamics in the calculations of different energies in the reacting system. Applications of phase rule for separation of the metals from ore.
- Fundamentals of polymers and their applications in controlling the quality and waste management of polymer product.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern method like power point presentation is used in class room teaching.
- Assigning the students to solve the problems to understand the concepts.

Course content

UNIT-I

[16 HOURS]

Quantum Chemistry: Introduction to quantum mechanics: Schrödinger wave equation, time-independent and time dependent Schrödinger wave equation and the relation between their solutions. Eigen functions and Eigen values. Physical interpretation of wave function. Concept of operators – Laplacian, Hamiltonian, Linear and Hermitian operators. Angular momentum operators and their properties. Commutative and non-commutative operators. Normalization, orthogonality and orthonormality of wave functions. Postulates of quantum mechanics. Solutions of Schrödinger wave equation for free particles, particle in a ring, particle in three dimensional box. Quantum mechanical degeneracy, tunnelling (no derivation). Wave equation for H-atom, separation and solution of R, ϕ and θ equations. Application of Schrodinger equation to rigid rotator and harmonic oscillator. Eigen functions and Eigen values of angular momentum. Ladder operator method for angular momentum.

UNIT-II

[16 HOURS]

Statistical thermodynamics: Objectives of statistical thermodynamics, concept of distribution, types of ensembles. Thermodynamic probability and most probable distribution law. Partition functions – definition, evaluation of translational, rotational and vibrational and electronic partition functions for monoatomic, diatomic and polyatomic gaseous molecules. Sackur-Tetrode equation for entropy of translation function. Calculation of thermodynamic functions and equilibrium constants in terms of partition functions. Different distribution laws (Types of statistics): Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Statistics (derivation of the three distribution laws). Comparison of Bose-Einstein and Fermi-Dirac Statistics with Maxwell-Boltzmann statistics. Problems and their solutions.

Phase rule studies: Thermodynamic derivation of phase rule. Application of phase rule to the two component systems - compound formation with congruent melting point and incongruent melting points, Roozeboom‘s classification. Application of phase rule to three component systems- systems of three liquids and systems of two salts and water.

UNIT-III

[16 HOURS]

Polymers: Fundamentals of polymers - monomers, repeat units, degree of polymerization. Linear, branched and network polymers. Classification of polymers, Polymerization - condensation, addition, free radical, ionic, co-ordination polymerization and ring opening polymerization. Molecular weight and size, polydispersion. Average molecular weight concepts – number, weight and viscosity average molecular weight. Determination of molecular weights - viscosity method, osmotic pressure method, sedimentation and light scattering methods. **Kinetics of Polymerization** - Condensation, addition, free radical, ionic, co-ordination polymerization.

Phase transitions in polymers and thermal characterization: Glass transition, crystallinity and melting- correlation with the polymer structure.

Polymers in solution: Criteria of polymer solubility, thermodynamics of polymer solutions. **Colloids:** Types and classification, Micelles: Surface active agents, micellization, hydrophobic interaction, critical micellar concentration (CMC), factors affecting the CMC of surfactants, micellar catalysis.

References

1. Text Book of Physical Chemistry by Samuel Glasstone, MacMillan Indian Ltd., 2nd edition (1974).
2. Quantum Chemistry – A.K. Chandra. 2nd edition, Tata McGraw Hill Publishing Co. Ltd., (1983).
3. Quantum Chemistry – Eyring, Walter and Kimball. John Wiley and Sons, Inc., New York.
4. Quantum Chemistry – I.N. Levine. Pearson Education, New Delhi, (2000).
5. Theoretical Chemistry – S. Glasstone. East West Press, New Delhi, (1973).
6. Quantum Chemistry – R.K. Prasad, New Age International Publishers, (1996).
7. Text Book of Polymer Science, F.W. Billmeyer, Jr., John Wiley, London (1994).
8. Polymer Science. V. R. Gowrikar, N.V. Vishwanathan and J. Sreedhar, Wiley Eastern, New Delhi (1990).
9. Fundamentals of Polymer Science and Engineering. A. Kumar and S.K. Gupta, Tata – McGraw Hill New Delhi (1978).
10. Polymer Characterization, D. Campbell and J.R. White, Chapman and Hall, New York.
11. Fundamental Principles of Polymer Materials, R.L. Rosen, John Wiley and Sons, New York.

CHG HCT: 2.4. MOLECULAR SYMMETRY AND SPECTROSCOPY

Objectives:

- To understand the concepts of symmetry and symmetry operations and their application to CFT, hybridization, MOT and vibrational spectroscopy.
- To learn the theory and applications of microwave, vibration and Raman spectroscopy.
- To understand the principles and applications of UV-Visible and resonance Raman spectroscopy.

Course outcome:

- Molecular symmetry and applications of group theory to CFT, hybridization, MOT and vibrational spectroscopy.
- Theory and principles of Rotation, Vibration and Raman Spectroscopy.
- Theory and principles Electronic and Resonance Raman spectroscopy.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Molecular models are used to teach symmetry aspects of molecules
- Modern methods like power point presentation and animations are used in class room teaching.
- Students will be assigned to solve the numerical problems.

Course content

UNIT-I

[16 HOURS]

Molecular symmetry and group theory: Symmetry elements and symmetry operations.

The Point Groups Used with Molecules: Concept of a group, definition of a point group. Classification of molecules into point groups. Subgroups.

Hermann-Maugin symbols for point groups. Multiplication tables (C_{2V}, C_{2h} and C_{3V}). Matrix notation for the symmetry elements. Classess and similarity transformation.

Representation of groups: The Great Orthogonality theorem and its consequences.

Character tables (C_s, C_i, C_2, C_{2v}, C_{2h} and C_{3v}). Symmetry and dipole moment.

Applications of group theory: Group theory and hybrid orbitals.

Symmetry in Chemical bonding: Group theory to Crystal field theory and Molecular orbital theory (octahedral and tetrahedral complexes).

Symmetry in Vibrational Spectroscopy: Determining the symmetry groups of normal modes for non-linear molecules (H_2O, NH_3, CH_4, trans-N_2F_2) and linear molecules (CO, HCl, HCN and CO_2) (Integration method).

UNIT-II

[16 HOURS]

Microwave spectroscopy: Moment of inertia expression for linear di-atomic molecules. Rotation spectra of diatomic Molecules - rigid and non rigid rotator model. Rotational quantum number and the selection rule. Effect of isotopic substitution on rotation spectra. Classification of polyatomic molecules based on moment of inertia. Rotation spectra of polyatomic molecules (OCS CH_3F and BCl_3). Applications - Principles of determination of Bond length and moment

of inertia from rotational spectra. Stark effect in rotation spectra and determination of dipole moments.

Vibration spectroscopy*:* Vibration of diatomic molecules, vibrational energy curves for simple harmonic oscillator. Effects of anharmonic oscillation, expressions for fundamental and overtone frequencies. Vibration - rotation spectra of carbon monoxide. Vibration of polyatomic molecules – The number of degrees of freedom of vibration. Parallel and perpendicular vibrations (CO_2 and H_2O). Combination, difference and hot bands. Fermi resonance. Force constant and its significance. Theory of infrared absorption and theoretical group frequency. Intensity of absorption band and types of absorptions. Applications: Structures of small molecules: XY_2 – linear or bent, XY_3 – planar or pyramidal.

Raman spectroscopy: Introduction, Raman and Rayleigh scattering, Stokes and anti-Stokes lines, polarization of Raman lines, depolarization factor, polarizability ellipsoid. Theories of Raman spectra - classical and quantum theory. Rotation-Raman and vibration-Raman spectra. Raman activity of vibrations, rule of mutual exclusion principle. Vibration modes of some simple molecules and their activity.

UNIT-III

[16 HOURS]

UV Visible spectroscopy: Quantitative aspects of absorption – Beer's law, Technology associated with absorption measurements. Limitations – real, chemical, instrumental and personal. Theory of molecular absorption. Vibration-rotation fine structure of electronic spectra. Types of absorption bands: n to π*, π to π*, n to σ* and σ to σ*, C-T and ligand field. Instrumentation.

Applications: Qualitative and quantitative analysis of binary mixtures, measurements of dissociation constants of acids and bases, determination of molecular weight. Woodwards empirical rules for predicting the wavelength of maximum absorption for olefins, conjugated dienes, cyclic trienes and polyenes, α,ß-unsaturated aldehydes and ketones, benzene and substituted benzene rings.

Resonance Raman Spectroscopy: Resonance Raman Effect and its applications. Non-linear Raman effects: Hyper, stimulated and inverse Raman effects. Coherent Anti-Stokes Raman Scattering and its applications.

References

1. Chemical Applications of Group Theory, 3rd edition, F.A. Cotton, John Wiley and Sons (2006).
2. Molecular Symmetry and Group Theory – Robert L Carter, John Wiley and Sons (2005).
3. Symmetry in Chemistry - H. Jaffe and M. Orchin, John Wiley, New York (1965).
4. Molecular Symmetry – David J. Willock, John Wiley and Sons Ltd., (2009).
5. Group Theory and its Chemical Applications - P.K. Bhattacharya, Himalaya Publications, New Delhi (1998).
6. Fundamentals of Molecular Spectroscopy, C.N. Banwell and E.M. McCash. 4th edition, Tata McGraw Hill, New Delhi.
7. Fundamentals of molecular spectroscopy, G. M. Barrow, MgGraw Hill, New York (International students Edition), 1974.

8. Theoretical chemistry, S. Glasstone, affiliated East-West Press Pvt. Ltd, New Delhi, 1973.
9. Spectroscopy, B.P. Straughan and S. Walker, John Wiley & Sons Inc., New York, Vol. 1 and 2, 1976.
10. Vibration Spectroscopy Theory and Applications, D.N. Satyanarayana, New Age International, New Delhi (2004).
11. Spectroscopy, B.P. Straughan and S. Salker, John Wiley and Sons Inc., New York, Vol.2, 1976.
12. Organic Spectroscopy, William Kemp, English Language Book society, Macmillan, 1987.
13. Instrumental methods of analysis, H. H. Willard, L. L. Merritt and J. A. Dean, 7th Edition, 1988.
14. Physical methods in inorganic chemistry, R. S. Drago, affiliated East-West press Pvt. Ltd., (Student Edition) 1978.

OPEN ELECTIVE (FOR NON-CHEMISTRY STUDENTS ONLY)
CH OET:2.1/3.1- GENERAL CHEMISTRY

Objectives:

- To understand the basic concepts of chemistry including periodic properties of elements, structure and bonding.
- To learn the applications of synthetic products and biological importance of natural products. .
- To understand the basic concepts of thermodynamics, chemical kinetics, ionic equilibria and electrochemistry.
- To learn the statistical evaluation of experimental data. Applications of titrimetric methods and separation techniques.

Course outcome:

- Periodic properties of elements, structure and bonding of ionic compounds as well as various concepts of acids and bases.
- Hybridization, bonding and molecular structure of simple organic molecules. And also, biological importance of natural products.
- Basic concepts of thermodynamics, chemical kinetics, electrochemistry and ionic equilibria and their applications.
- Statistical evaluation of experimental data, concept of titrimetric and chromatographic methods.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.
- Students will be assigned to solve the numerical problems to understand the concepts.

Course content

UNIT-I

[16 HOURS]

Periodic table and chemical periodicity: Periodic properties of elements, State of Matter, their resources. Important periodic properties of the elements, covalent radii, ionic radii, ionization potential, electron affinity and electronegativity.

Structure and Bonding: Properties of ionic compounds, structure of crystal lattices (NaCl, CsCl, ZnS, Wurtzite and rutile), Lattice energy, Born-Haber Cycle, radius ratio rules and their limitations.MO treatment for homo- and heteronuclear diatomic molecules. VSEPR model to simple molecules. Factors affecting the radii of ions, covalent character in ionic bonds, hydration energy and solubility of ionic compounds.

Concepts of Acids and Bases: Review of acid base concepts**.** Lux-Flood and solvent system oncepts. Hard-soft acids and bases. Applications.

UNIT-II

[16 HOURS]

Bonding and molecular structure: Introduction to organic chemistry, atomic orbitals, sigma and pi bond formation-molecular orbital (MO) method, sp, sp^2 and sp^3 hybridization, bond length, bond dissociation energies and bond angles (open chain and cyclic compounds). Electronegativity and polarity of the bonds. Classifications and reactions of organic compounds (with examples).

Acids and bases: Hydrogen bonding, resonance and inductive effective on strengths of acids and bases.

Biological importance of natural products: Amino acids, proteins, carbohydrates (cellulose, starch, glycogen), lipids (fats and oils, phospholipids), prostaglandins, nucleic acids, steroids, alkaloids, vitamins, flavonoids.

Applications of synthetic products: Dyes, drugs, polymers (plastics), soaps and detergents, pesticides and pheromones.

UNIT-III

[16 HOURS]

Thermodynamics: First and second laws of thermodynamics. Concept of entropy and free energy, entropy as a measure of unavailable energy. Entropy and free energy changes and spontaneity of process.

Chemical kinetics: Rate and order of reaction. Factor affecting the rate of reaction. and determination Order of reaction. Energy of activation and its determination. Brief account of collision and activated complex theories.

Ionic equilibria: pH scale, buffer solutions, calculation of pH of buffer solutions, buffer capacity and buffer index, buffer mixtures.

Solutions: Concentration units, solutions of liquids in liquids, Raoult‘s law, ideal and non-ideal solutions.

Electrochemistry: Electrolytic conductance, specific, equivalent and molar conductance, ionic mobility and transference number, factors affecting the electrolytic conductance, Arrhenius theory of strong and weak electrolytes, assumptions of Debye-Huckel theory of strong electrolytes. Single electrode potential, reference electrodes, galvanic cells, emf of galvanic cells and construction of electrochemical cells.

UNIT-IV

[16 HOURS]

Basic Statistics and Data Handling: Significant figures, accuracy and precision. Types of errors: Determinate error and indeterminate error. Definitions for statistics. Quantifying random

error: Confidence limits, variance. Rejection of results.

Applications of titrimetric methods: Introduction, theory and applications of acid base titrimetry, complexometric titrations and redox titrimetry

Separation techniques: Purification-Crystallization, sublimation, fractional crystallization, distillation techniques (simple distillation, steam distillation, distillation under reduced pressure, and fractional distillation), solvent extraction.

Chromatography: Thin layer chromatography and ion-exchange chromatography and their applications in the separation of the components from the mixture.

References

1. Text Book of Physical Chem., by Samuel Glasstone, MacMillan Indian Ltd., 2nd Ed. (1974)
2. Elements of Physical Chem., by Lewis and Glasstone, 2nd Edn. Macmillan & Co Ltd.
3. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
4. Organic Chemistry, Vol-I by I. L. Finar.
5. Vogel' text book of practical organic chemistry, V edition, B. S. Furniss, A. J. Hannaford, P. W. G. Smith, A. R. Tatehell.
6. Laboratory manual of Organic Chemistry by B. B. Dey and M. V. Sitaraman.
7. Practical Organic Chemistry by Mann F. G. and Saunders.
8. Fundamentals of analytical Chem., 8th Edition, D. A. Skoog, West, Holler and Crouch.
9. Principles and Practice of Analytical Chemistry, F.W. Fifield and Kealey, 3rd edition, 2000, Blackwell Sci., Ltd. Malden, USA.
10. Modern Analytical Chemistry, David Harvey, McGraw Hill, New Delhi, 2000

THIRD SEMESTER
HARD CORE PAPERS

CHI HCT: 3.1. ADVANCED INORGANIC CHEMISTRY

Objectives:

- To understand the fundamental concepts of organometallic chemistry and general principles of homogeneous and heterogeneous catalysis.
- To learn the concepts of metal clusters, silicates and silicones.

Course outcome:

- Fundamental concepts of organometallic chemistry and synthesis, structure and bonding in different organometallics and their applications.
- Homogeneous and heterogeneous catalysts and their applications in the synthesis of organic compounds in industries.
- Chemistry of main group elements, metal clusters, silicates and silicones and their applications in day to day life.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Fundamental concepts: Introduction, Classification of organometallic compounds by bond type, nomenclature, the effective atomic number rule, complexes that disobey the EAN rule, common reactions used in complex formation.

Organometallics of transition metals: Preparation, bonding and structures of nickel, cobalt, iron and manganese carbonyls. Preparation and structures of metal nitrosyls.

Ferrocene: Preparation, structure and bonding**. Metal-carbene and metal-carbyne complexes**. **Complexes containing alkene, alkyne, arene and allyl ligands**: Preparation, structure and bonding.

UNIT-II

[16 HOURS]

General principles of Catalysis: Language of catalysis. Homogeneous and heterogeneous catalysts.

Homogeneous catalysis - Industrial Applications: Alkene hydrogenation and hydroformylation, The Wacker‘s process, Monsanto acetic acid process and L-DOPA synthesis, alkene oligomerizations, water-gas shift reactions. The Reppe reaction.

Heterogeneous catalysis –The nature of heterogeneous catalysts. Alkene polymerization: Ziegler-Natta catalysis, Fischer-Tropsch carbon chain growth.

Zeolites as catalysts for organic transformation: Uses of ZSM – 5.

Alkene metathesis, hydroboration, arylation or vinylation of olefins (Heck reaction).

Biological and Medicinal Applications: Organomercury, organoboron, organosilicon and organoarsenic compounds.

UNIT-III

[16 HOURS]

Chemistry of main group elements: Diborane and its reactions, polyhedral boranes(preparation, properties, structure and bonding). Wade's rules, carboranes and metallocarboranes. Borazines. Phosphazenes, S-N compounds.

Metal clusters: Evidences and factors favoring of M-M bonding, Wade's-Mingo's-Lauher rules, bi, tri, tetra, penta and hexa nuclear metal carbonyl clusters.

Low and high nuclearity carbonyl clusters. Electron counting schemes in carbonyl clusters. The isolobal analogy.

Silicates: Structure, classification - silicates with discrete anions, silicates containing chain anion, silicates with layer structure, silicones with three dimensional net-work and applications.

Silicones: General methods of preparation, properties. Silicone polymers - silicone fluids, silicone greases, silicone resins, silicone rubbers and their applications.

References

1. Organometallic Chemistry, 2nd edition, R.C. Mehrothra and A. Singh, New Age International Publications (2006).
2. Fundamental Transition Metal Organometallic Chemistry - Charles M. Lukehart, Brooks, Cole Publishing Company (1985).
3. The Organometallic Chemistry of the Transition Metals, 4th edition, Robert H. Crabtree, Wiley Interscience, (2005).
4. Organometallics - A Concise Introdution, 2nd edition, ChistophElschenbroich and Albert Salzer VCH, (1992).
5. Inorganic Chemistry, 2nd edition, C.E. Housecroft and A.G. Sharpe, Pearson Education Ltd., (2005).
6. Inorganic Chemistry- 3rd edition, G.L. Miessler and D.A. Tarr, Pearson Education,(2004).
7. Basic Organometallic Chemistry - B.D. Gupta and A.J. Elias, Universities Press (2010).
8. Inorganic Chemistry Principles of Structure and Reactivity: James E. Huheey, Ellen A.
9. Keiter, Richard L. Keiter, Okhil K. Medhi, Delhi University, New Delhi (2006)
10. Chemistry of the Elements – N.N. Greenwood and A. Earnshaw, Pergamon Press (1985).
11. Inorganic Chemistry, 6th edition. D.F. Shriver, M. Weller. T. Overton, J. Rourke and F. Armastrong, Oxford University Press (2014).
12. Organometallic Chemistry and Catalysis, Didier Astruc, Springer (2007).
13. Transition Metal Organometallic Chemistry, Francois Mathey, Springer (2013).

CHO HCT: 3.2. ORGANOMETALLIC AND PHOTOCHEMISTRY

Objectives:

- To understand the fundamental concepts of photochemistry and pericyclic reactions.
- To learn the synthesis and reactions of organometallic compounds.
- To learn the asymmetric synthesis of organic compounds.

Course outcome:

- Basic concepts of photochemistry and pericyclic reactions and their usefulness in the synthesis of many organic compounds.
- Synthesis of organic compounds using different organometallic compounds as catalysts.
- Asymmetric synthesis of organic compounds using chiral compounds.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation is used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Photochemistry: Light absorption and electronic transitions, Jablonski diagram, intersystem crossing, energy transfer, sensitizers, quenchers. Photochemistry of olefins, conjugated dienes, aromatic compounds, ketones-Norrish type-I and Norrish type-II reactions, enones, Paterno-Buchi reaction, di-pi methane rearrangement, photooxidation, photoreduction.

Pericyclic reactions: Electrocyclic reactions: Stereochemistry, symmetry and Woodward-Hofmann rules for electrocyclic reactions, FMO theory of electrocyclic reactions, correlation diagram for butadiene to cyclobutene and hexatriene to cyclohexadiene systems. Cycloaddition reactions: Classification, analysis by FMO and correlation diagram method. Cycloaddition reactions: [2+2] and [4+2] cycloadditions-FMO and correlation diagram method, Deil's-Alder reaction, hetero Diels-Alder reaction and their applications. Intra and intermolecular 1,3-dipolar cycloadditions: involving nitrile oxide, nitrile imine, nitrile ylide and their application in organic synthesis. Sigmatropic reactions: Classification, stereochemistry and mechanisms. suprafacial and antarafacial shifts of H and carbon moieties. [3,3] and [5,5]-sigmatropic rearrangement, Claisen, Cope and aza-Cope rearrangement.

UNIT-II

[16 HOURS]

Chemistry of organometallic compounds: Synthesis and reactions of organolithium (n-BuLi, PhLi), organocadmium, organomagnesium (Grignard reagent), organoselenium, Organozinc and organotellurium. Organoaluminium reagents: Preparation, site selective and stereoselective additions of nucleophiles mediated by organoaluminum reagents, reaction with acid chlorides, allyl vinyl ethers, 1,2-addition to imines and application in the synthesis of natural products. Organocopper reagents: Gilmann reagent, preparation, reactions with aldehydes, ketones and imines. Organosamarium reagents: Reactions promoted by samarium diiodide and dicyclopentadienyl samarium – Barbier type reaction, Reformatsky type reactions, ketyl- alkene coupling reactions, pinacolic coupling reactions, Organotin reagents: tributyltin hydride, Barton decarboxylation reaction, Barton deoxygenation reaction, Stille coupling, Stille-Kelley coupling reactions, Barton McCombie reaction, Keck stereoselective allylation and other applications.

UNIT-III

[16 HOURS]

Asymmetric synthesis: Definition, importance, mechanism, energy consideration, advantages and limitations, methods of determination of enantiomeric excess. Methods of asymmetric induction:

Topocity-Prochirality: Substrate selectivity - Diastereoselectivity and enantioselectivity- Substrate controlled methods-use of chiral substrates - examples

Auxiliary controlled methods: Use of chiral auxiliaries - Chiral enolates-alkylation of chiral imines - Asymmetric Diels - Alder reaction

Reagent controlled methods: Use of chiral reagents - Asymmetric oxidation – Sharpless epoxidation - Asymmetric reduction - Use of lithium aluminium hydride and borate reagents. Synthesis and applications of oxazaborolidines, IPC-BBN, IPC2BH, (*S*)-BINAP-DIAMINE and (*R*)-BINAL-H. Use of (*R,R*)-DIPAMP, (*S,S*)-CHIRAPHOS, (*R,R*)-DIOP, SAMP, RAMP, *S*-Proline, *S*-PBMgCl, (-)-BOAlCl2, (+) and (-)-DET.

References

1. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
2. Advance Organic Chemistry, IV edition, Jerry March.
3. Advance Organic Chemistry, III edition, Part-A and Part-B, Francis A. Carey and Rechard J. Sundberg.
4. Organic Chemistry, III edition, V. K. Ahluwalia and Rakesh Kumar Parashar.
5. Schaum's outline of theory and problems of Organic Chemistry, Harbert Meislich, Howard Nechamkin and Jocob Sharefkin.
6. Asymmetric synthesis, Garry Procter.
7. Mechanism in Organic Chemistry, VI edition, Peter Sykes.
8. Molecular reactions and photochemistry, Charles H. Depuy, Orville L. Chopman.
9. Modern methods of Organic synthesis, III edition, W. Carruthers.
10. Organometallics in Organic synthesis, J. M. Swan and D. Stc Black.
11. Organic chemistry by Clayden, Greeves, Warren and Wothers.

CHP HCT: 3.3. ADVANCED PHYSICAL CHEMISTRY

Objectives:

- To understand the concepts of enzyme kinetics, industrial catalysis and linear free energy relationship.
- To learn the electrochemical aspects of batteries and electroplating.
- To understand the mechanism of corrosion prevention of metals by different methods.
- To understand the fundamentals of X-ray crystallography.

Course outcome:

- Applications of reaction kinetics help in correlating the rates of biological and chemical reactions.
- Theory and applications of electrochemical systems helps in the field of e-waste management and protection of metals.
- Fundamentals of X-ray crystallography and structural interpretation by various X-ray diffraction techniques.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animation are used in class room teaching.
- Students will be assigned to solve the numerical problems to understand the concepts.

Course content

UNIT-I

[16 HOURS]

Homogeneous Catalysis: Electronic and structural effects on acidity and basicity. Hard and soft acids and bases. Acidity functions: Hammet acidity function, Zucker-Hammet hypothesis, Bonnett hypothesis. Industrial catalysis: Catalyst carrier, promoter, inhibitor and catalyst poison.
Enzyme kinetics: Effect of substrate concentration (Michaelis - Menton equation), Effect of pH, effect of catalysts and inhibitors (substrate, zeolite, Cr^{3+}, Fe^{2+} ZnO, U.V light), effect of temperature. A brief kinetic and mechanistic applications of glucose oxidase in the oxidation of glucose.
Linear Free Energy Relationship: Hammett equation, Taft equation, Okemoto Brown equation and its application to oxidation of amino acids and aromatic amines. Swain-Scott and Edward equation. Winstein - Grunwald relationship. Isokinetic relationship and significance of isokinetic temperature, Exner criterion.
Kinetic Isotope Effect: Theory of kinetic isotope effect - normal and inverse isotope effect, primary isotope effect, secondary isotope effect, solvent isotope effect.

UNIT-II

[16 HOURS]

Electrochemical cells and batteries: Introduction, galvanic and electrolytic cells, schematic representation of cells. Faradays's law, mass transfer in cells. Batteries: Classification, characteristics, primary, secondary and lithium batteries, fuel cells.
Electroplating: Definition, theory and mechanism of electroplating, effect of plating variables on the properties of electro deposits, comparative account of complexing and non-complexing baths (general treatment), additives on plating baths and their significance.
Metallic coating: Preparation of substrate surface, electroplating of Cu and Cr. Application of Au and Ag plating.

Corrosion: Types of corrosion, basis of electrochemical corrosion, theories and mechanism of wet corrosion. Thermodynamic aspects of corrosion. Current – potential relations (Evan diagram) in corrosion cells. Factors influencing the rate of corrosion: Metal and environmental factors. Kinetic aspects corrosion: Corrosion rate measurement by different methods – chemical and electrochemical methods. General aspects of corrosion prevention and control – designing aspects, effect of allying and surface modification. Corrosion prevention by painting, phosphating and anodic (passivation) and cathodic protection. Corrosion inhibitors: Introduction, classification, Characteristics and requirements of efficient corrosion inhibitors, Green inhibitors and their significance, Corrosion inhibition mechanism.

UNIT-III

[16 HOURS]

Fundamentals of X-ray crystallography: Law of interfacial angles, laws of symmetry, Miller indices, Bragg equation (No derivation), Experimental methods – powder and rotating crystal methods, indexing of powder and rotating crystal photographs. Atomic scattering factor, structure factor, Fourier synthesis and electron density diagrams. Electron diffraction of gases, experimental technique, Scattering-Intensity curves, Wierl equation (no derivation), Radial distribution method determination of bond lengths and bond angles.

Imperfections in atomic packing: Types of imperfections, classification of imperfections, point defects, Schottky defects, Frenkel defects, disordered crystals, line defects, dislocation types, plane defects, small-angle and large-angle boundaries, stacking faults, crystal growth and twinning, non-stoichiometry.

Imperfections and physical properties: electrical, optical, magnetic, thermal and mechanical properties.

References

1. Chemical Kinetics by K.J. Laidler, Tata McGraw-Hill Pub, Co Ltd, New Delhi.
2. Fundamentals of Chemical Kinetics, M. R. Wright, Harwood publishing, Chichesrer, 1999.
3. Kinetics and Mechanism of Chemical Transformation by J. Rajaram and J.C. Kuriacose, Macmillan, New Delhi.
4. Electrochemistry –Principles and Applications by E.G. Potter, Cleaver-Hume press Ltd, London.
5. Chemical and Electrochemical energy systems, R. Narayan and B. Viswanathan (University Press), 1998.
6. Industrial Electrochemistry, D. Pletcher and F. C. Walsh, Chapman and Hall, 2nd Edn, 1984.
7. An Introduction to Metallic Corrosion and its Prevention, Raj Narayan (Oxford –IBH, New Delhi), 1983.
8. Fundamentals of metallic corrosion, Philips A. Schweitzer, CRC press Taylor and Francis group, New York.
9. Corrosion prevention and control, Baldev Raj, U Kamachi Mudali & S. Rangarajan, Narora Publishing House, India.
10. Solid State Chemistry and its applications – A.R. West, John Wiley & Sons.
11. New Directions in Solid State Chemistry – CNR Rao and J. Gopalakrishna, Cambridge University Press.
12. Solid state chemistry, N. B. Hannay, PHI, New Delhi.
13. Principles of the Solid State – H.V. Keer, Wiley Eastern.

CHG HCT: 3.4. CHEMICAL SPECTROSCOPY

Objectives:

- To understand the basic concepts of spectroscopic techniques such as NMR, ESR, NQR, Mossbauer and photoelectron spectroscopy.
- To familiarize with the IR and mass spectroscopy.

Course Outcome:

- Understand the spectroscopic techniques such as NMR, IR, UV, and MS for recording and interpretation of spectra.
- Understand the characterization of chemical compounds.
- To learn electric and magnetic properties of radiation, molecules and bulk matter and solve the problems related to these properties.
- Understanding various fragmentation reactions of organic molecules.
- Predict the NMR, IR, UV, and MS spectra from a given molecular structure, including fragment-ions in MS.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animation are used in class room teaching.
- Students will be assigned to solve the spectroscopic problems to understand the interpretation of spectra.

Course content

UNIT-I

[16 HOURS]

NMR Spectroscopy: Magnetic properties of nuclei (magnetic moment, g factor, nuclear spin), effect of external magnetic field on spinning nuclei, Larmor precession frequency, resonance conditions, population of nuclear magnetic energy levels, relaxation processes, relaxation time, line width and other factors affecting line width. Chemical Shift: Standards employed in NMR, factors influencing chemical shift: electronegativity, shielding and deshielding, van der Walls deshielding magnetic anisotropy, H-bonding, diamagnetic and paramagnetic anisotropies, spin-spin coupling, chemical shift values and correlation for protons bonded to carbon and other nuclei, Instrumentation. Chemical shift equivalence and magnetic equivalence, effects of chiral centre, Karplus curve-variation of coupling constants with dihedral angle. Complex NMR Spectra: Simplification of complex spectra-isotopic substitution, increased magnetic field strength, double resonance and lanthanide shift reagents, Nuclear Overhauser Effect (NOE), FT-NMR Spectroscopy and advantages. ^{13}C-NMR Spectroscopy: multiplicity-Proton decoupling-Off resonance decoupling; Chemical shift, application of ^{13}C, ^{19}F, ^{31}P, ^{11}B and ^{15}N. Applications of NMR: Structural diagnosis, conformational analysis, keto-enol tautomerism, H-bonding. Solid state NMR and its applications.

Multiple resonance spectroscopy: Introduction to 2D-techniques: DEPT, COSY and NOESY.

UNIT-II

[16 HOURS]

Electron Spin Resonance Spectroscopy: Basic principles, hyperfine couplings, the 'g' values, factors affecting g values, isotropic and anisotropic hyperfine coupling constants, Zero Field splitting and Kramer's degeneracy. Measurement techniques and applications to simple inorganic and organic free radicals and to inorganic complexes.

NQR Spectroscopy: Introduction, Principles, Quadrupolar nuclei, electric field gradient, nuclear quadrupole coupling constants, energies of quadrupolar transitions, effect of magnetic field. Applications.

Mössbauer spectroscopy: The Mössbauer effect, chemical isomer shifts, quadrupole interactions, magnetic splitting, measurement techniques and spectrum display, application to the study of $Fe^{2+}$and Fe $^{3+}$compounds; iron in very high oxidation states-Fe(V) and Fe(VI) nitride complexes; $Sn^{2+}$and Sn^{4+}compounds, nature of M-L bond, coordination number and structure, detection of oxidation states and an inter halogen compound $I_2Br_2Cl_4$.

Photoelectron Spectroscopy: Introduction, principles, chemical shifts, photoelectron spectra of simple molecules. X-ray photoelectron and Auger electron spectroscopy- Principles and applications.

UNIT-III

[16 HOURS]

IR spectroscopy: Introduction, instrumentation, sample handling, Characteristic group frequencies and skeletal frequencies. Finger print region, Correlation chart. Identification of functional groups-alkanes, alkenes, alkynes, aromatics, carbonyl compounds (aldehydes, ketones, esters and lactones), halogen compounds, sulphur and phosphorous compounds, alcohols, amides, lactums, amino acids and amines, Factors affecting group frequencies and band shapes: conjugation, resonance and inductance, hydrogen bonding and ring strain. tautomerism, *Cis-trans* isomerism. Applications of IR spectroscopy.

Mass Spectrometry: Basic principles, Instrumentation-Mass spectrometer, interpretation of mass spectra, resolution, molecular ions, meta-stable ions, Nitrogen rule and isotope ions. Different methods of ionization (chemical ionization, electron impact, field ionization-FAB and MALDI). Fragmentation processes-representation of fragmentation, basic fragmentation types and rules. Factors influencing fragmentations and reaction pathways. McLafferty rearrangement. Fragmentations (fragmentation of organic compounds with respect to their structure determination) associated with functional groups-alkanes, alkenes, cycloalkanes, aromatic hydrocarbons, halides, alcohols, phenols, ethers, acetals, ketals, aldehydes, ketones, quinines, carboxylic acids, esters, amides, acid chlorides, nitro compounds, amines & nitrogen heterocycles. Fragmentation patterns of glucose, myrcene, nicotine, retro Diels-Alder fragmentation. Composite problems involving the applications of UV, IR, ^{1}H and ^{13}C-NMR and mass spectroscopic techniques for the structural elucidation of organic compounds.

References

1. Organic Spectroscopy-3rd Ed.-W. Kemp (Pagrave Publishers, New York), 1991.
2. Spectrometric Identification of Organic Compounds - Silverstein, Bassler & Monnill (Wiley) 1981.
3. Spectroscopy of Organic Compounds-3rd Ed.-P.S. Kalsi (New Age, New Delhi) 2000.
4. E.A.V. Ebsworth, D.W.H. Ranklin and S. Cradock: Structural Methods in Inorganic Chemistry, Blackwell Scientific, 1991.
5. J. A. Iggo: NMR Spectroscopy in Inorganic Chemistry, Oxford University Press, 1999.
6. C. N. R. Rao and J. R. Ferraro: Spectroscopy in Inorganic Chemistry, Vol I & II (Academic) 1970.
7. Spectroscopy, B. P. Straughan and S. Salker, John Wiley and Sons Inc., New York, Vol.2, 1976.
8. Application of Absorption Spectroscopy of Organic Compounds, John R. Dyer, Prentice/Hall of India Private Limited, New Delhi, 1974.
9. Organic Spectroscopy, V. R. Dani, Tata McGraw-Hall Publishing Company Limited, New Delhi. 1995.
10. Interpretation of Carbon-13 NMR Spectra, F.W. Wehrli and T. Wirthin, Heyden, London, 1976.
11. NMR spectroscopy-Powai

SOFT CORE PRACTICALS

CHA SCP: 3.1/4.1. ANALYTICAL CHEMISTRY PRACTICALS-II

[64 HOURS]

Objectives:

- To familiarize with the handling of instruments in the quantitative analysis of various samples.
- To understand the analysis of real samples like waste water, soil samples and biological samples and mixtures

Course Outcomes:

After studying this course, the student to:

- Get experience on analysis of various complex mixtures by following multistep reactions.
- Acquire the knowledge on handling instruments and to overcome the general problems arises during the analysis.
- Acquire industrial skills required for sampling, analytical and interpretation and presentation of results.
- Possess adequate knowledge on literature search for developed analytical methods.

Pedagogy:

- Each student performs experiments as per the protocol in practical classes.
- Computer aided applications are used for the evaluation of experimental results.

Course experiments

PART – A

1. Determination of calcium in limestone by redox, acid-base and complexation titrations.
2. Determination of vitamin C in orange juice by titration with cerium(IV) and with 2,6-dichlorophenol indophenol.
3. Determination of aluminium and magnesium in antacids by EDTA titration.
4. Analysis of a copper-nickel alloy sample for copper and nickel by EDTA titration using masking and selective demasking reactions.
5. Determination of saccharin in tablets by precipitation titration.
6. Determination of ascorbic acid in goose berry/bitter gourd by titrimetry and spectrophotometry using *N*-bromosuccinimide (NBS).
7. Analysis of a mixture of iron(II) and iron(III) by EDTA titration using *p*H control.
8. Determination of sulpha drugs by potentiometry using $NaNO_2$ and iodometric assay of penicillin.
9. Polarographic determination of copper and zinc in brass.
10. Determination of sodium, potassium and calcium in mineral waters by atomic emission spectrometry.
11. Determination of iron in mustard seeds and phosphorus in peas by spectrophotometry.
12. Determination of ethanol in wine by titrimetric and spectrophotometric dichromate methods.

PART –B

1. Analysis of waste waters for DO and COD by titrimetry.
2. Analysis of a ground water sample for sulphate by titrimetry (EDTA) and turbidimetry.
3. Potentiometric determination of formula and stability constant of a silver-ammonia complex ion.
4. Determination of aspirin, phenacetin and caffeine in mixture and APC tablets by solvent extraction and UV spectrophotometry.
5. Kinetic determination of urinary creatinine and purity of a commercial H_2O_2 sample.
6. Determination of chromium(III) and iron(III) in a mixture by kinetic masking methods.
7. Photometric and potentiometric titration of iron(III) with EDTA.
8. Photometric and potentiometric titration of copper with EDTA.
9. Analysis of brackish water for chloride content by a**)** spectrophotometry (mercuric thiocyanate method), b) conductometry (silver nitrate) and c**)** potentiometry (silver nitrate).
10. Conductometric titration of sodium acetate with HCl and NH_4Cl with NaOH.
11. Ascorbic acid determination in natural orange juice by coulometry.
12. Analysis of waste water for
    a) Phosphate by molybdenum blue method
    b) ammonia-nitrogen by Nessler's method
    c) nitrite-nitrogen by NEDA method
15. Analysis of a soil sample for
    a) Calcium carbonate and organic carbon by titrimetry.
    b) Calcium and magnesium by EDTA titration.
16. Analysis of a soil sample for
    a) Nitrogen content by Kjeldahl method
    b) Available phosphorus by spectrophotometry.
    c) Nitrate-nitrogen/nitrite nitrogen/ammonia nitrogen by spectrophotometry.
    d) Sodium and potassium by flame photometry.
17. Analysis of urine for
    a) Urea and uric acid by titrimetrysnd spectrophotometry.
    b) Sulphate by precipitation titration after ion-exchange separation.
    c) Sugar by Benedict's reagent.
18. Analysis of blood for
    a) Cholesterol by spectrophotometry
    b) Bicarbonate by acid-base titration.

References

1. Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch 8thedition, 2005, Saunders College Publishing, New York.
2. Analytical Chemistry, G.D. Christian, 5th edition, 2001 John Wiley & Sons, Inc. India.
3. Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, 1993, prentice Hall, Inc. New Delhi.
4. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D.Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, 2003 Pearson Education Pvt. Ltd., New Delhi.

5. Analytical Chemistry Principles, John H. Kennedy, 2nd edition, Saunders College Publishing, California, 1990.
6. Quantitative Analysis of Drugs in Pharmaceutical Formulations, P. D. Sethi, 3rdedition, CBS Publishers & Distributors, New Delhi, 1997.
7. Practical Clinical biochemistry methods and interpretations, R. Chawla, J.P. Bothers Medical Publishers (P) Ltd., 1995.
8. Laboratory Manual in Biochemistry, J. Jayaraman, New Age International Publishers,New Delhi, 1981.
9. Experiments on Water Pollution, D.I.Williams and D. Anglesia, Wayland Publishers Ltd., England, 1978.
10. Experiments on Land Pollution, D.I. Williams and D. Anglesia, Wayland Publishers Ltd., England, 1978.
15. Experiments in Environmental Chemistry, P.D. Vowler and D.W. Counel, Pergamon Press, Oxford 1980.
16. Manual Soil Laboratory Testing, vol.I, K.H. Head, Pentech Press, London 1980.

CHI SCP: 3.2/4.2. INORGANIC CHEMISTRY PRACTICALS -II

[64 HOURS]

Objectives:

- To familiarize with the instrumental methods of analysis for determining metals present in the different samples.
- To familiarize with the preparation and characterization of different inorganic complexes.

Course outcome:

- Determination of alloy samples and understanding the electrochemical deposition of metals.
- Preparation and characterization of coordination compounds.
- Determination of composition, stability constant and magnetic susceptibility of metal complexes.

Pedagogy:

- Each student performs experiments as per the protocol in practical classes.
- Spectroscopic tools are applied for the characterization of the synthesized complexes.

Course experiments

PART-A

1. Determination of bismuth, cadmium and lead in a mixture: Analysis of a low melting alloy (Wood‘s alloy).
2. Simultaneous spectrophotometric determination of chromium and manganese in a steel solution.
3. Determination of chromium(III) and iron(III) in a mixture: Kinetic masking method.
4. Electrogravimetric determination of:
   a) Copper in copper sulphate
   b) Nickel in nickel suphate

c) Copper and nickel in alloy solution
d) Lead in lead nitrate.

5. Flame photometric determination of the following metal ions from different samples: a) Sodium b) potassium and c) sodium and potassium in a mixture.
6. Polarographic estimation of cadmium and zinc.
7. Determination of iron as the 8-hydroxyquinolate by solvent extraction method.
8. Quantitative determination of nickel using dithizone and 1,10-phenanthroline by synergistic extraction.
9. Spectrophotometric determination of the *p*Ka value of methyl red.
10. Semimicro gravimetric determination of aluminium.

PART-B

1. Preparation and characterization of:
   a) Chloropentammine cobalt(III) chloride
   b) Estimation of chloride in a complex by potentiometric or ion-exchange method
   c) Record the electronic absorption spectrum of a complex and verify TanabeSugano diagram.
2. Preparation of *cis*- and *trans*- dichlorobis(ethylenediammine) cobalt(III)chloride. Record the UV-Vis spectra and compare it with *cis*-form. Measure the molar conductance.
3. Preparation of hexammine cobalt(III) chloride and estimate cobalt ion.
4. Determination of magnetic susceptibility of any two compounds/complexes by Gouy method.
5. Determination of the composition of iron-phenanthroline complex by:
   (a) Job's method
   (b) mole-ratio method and
   (c) Slope-ratio method.
6. Determine the stability constant of iron-tiron/iron-phenanthroline by Turner-Anderson method.
7. Preparation of potassium tris(oxalato)ferrate(III) and estimate the metal ion.
8. Preparation of acetyl acetonatomanganese(III) complex.
9. Preparation of tris(en)nickel(II) chloride and hexamine nickel(II) chloride complexes. Record electronic spectra and evaluate spectrochemical series.
10. Using chloropentammine cobalt(III) chloride, prepare nitro and nitritopentammine cobalt(III) chloride. Record the IR spectra of the isomers and interpret.
11. Estimate the chloride ion in a given complex by silver nitrate titration after ion-exchange separation.
12. Demonstration Experiments:
    (a) Recording and interpretation of IR and NMR spectra of complexes.
    (b) Spectrochemical series- Evaluation of Dq value.
    (c) DNA interaction with metal complexes by UV-visible absorption and viscosity methods.

References

1. Advanced Physico-Chemical Experiments – J. Rose.
2. Instrumental Analysis Manual - Modern Experiments for Laboratory – G.G. Guilbault and L.G. Hargis.
3. A Text Book of Quantitative Inorganic Analysis – A.I. Vogel, 5th edition.
4. Experimental Inorganic Chemistry – G. Palmer.
5. Inorganic Synthesis – O. Glemser.
6. Experimental Inorganic/Physical Chemistry- Mounir A. Malati.
7. Quantitative Chemical Analysis – Daniel C. Harris, (2006) 7th edition.
8. Spectrophotometric Determination of Elements – Z. Marczenko.

CHO SCP: 3.3/4.3. ORGANIC CHEMISTRY PRACTICALS- II

[64 HOURS]

Objectives:

- To understand the concepts of isolation and purification of natural products.
- To familiarize with the estimation of different functional groups in organic compounds.

Course outcome:

- The isolation of caffeine, carotene, lycopene, cincole, azelaic acid and piperine from respective natural sources.
- Estimation of ketones, sugars, nitro and amino groups in natural products.
- Interpret UV, IR, NMR and MS data of different organic compounds.

Pedagogy:

- Each student performs experiments as per the protocol in practical classes.
- Spectroscopic tools are applied for the characterization of isolated natural products.

Course experiments

PART-A

1. Fractional crystallization: separation of mixture of naphthalene and biphenyl.
2. Thin layer chromatography: Separation of plant pigments.
3. Column chromatography: Separation of *o*- and *p*-nitro aniline
4. Isolation of piperine from pepper.
5. Isolation of caffeine from tea.
6. Isolation of azelaic acid from castor oil.
7. Isolation of carotene from carrot.
8. Isolation of lycopene from tomato.
9. Isolation of cincole from eucalyptus leaves.

PART-B

Isolation of natural products & estimations:

1. Estimation of ketones by haloform reaction.
2. Estimation of sugars by Bertrand's method.
3. Estimation of nitro groups.
4. Estimation of amino group.
5. Determination of enol content by Meyer's method.
6. Determination of iodine value of an oil or fat.
7. Determination of saponification value of oil.
8. Determination of equivalent weight of carboxylic acid by silver salt method

Interpretation of Spectra: Structural elucidation of some simple organic compounds by UV, IR, NMR and mass. Spectra have to be provided by the Teachers/ Examiners.

References

1. Vogel' text book of practical organic chemistry, V edition, B. S. Furniss, A. J. Hannaford, P. W. G. Smith, A. R. Tatehell.
2. Elementary practical organic chemistry, Part-III: Quantitative organic analysis, By Arthur I, Vogel.
3. Laboratory manual of Organic Chemistry by B. B. Dey and M. V. Sitaraman.
4. Practical Organic Chemistry by Mann F. G. and Saunders.
5. Natural products: A laboratory guide by Raphael Ikhan.

CHP SCP: 3.4/4.4. PHYSICAL CHEMISTRY PRACTICALS-II

Objectives: **[64 HOURS]**

- To understand the significance of various factors influencing the reaction rate in proposing the reaction mechanism.
- To understand electrochemical and spectrophotometric methods of quantification of samples, and also determination of physico-chemical parameters of some important samples.

Course outcome:

- Students can able to develop experimental skill and interpretation of plausible mechanisms of reactions.
- Gain practical knowledge on the theoretical basis of electrochemistry, thermodynamics, and spectrophotometry experiments.
- This helps in academics, research and industries.

Pedagogy:

- Each student performs experiments as per the protocol in practical classes.
- Electrochemical and spectrophotometric tools are used to conduct the experiments.

Course experiments

PART-A

1. Determination of order of reaction for the acid hydrolysis of methyl acetate and evaluation of activation parameters.
2. Evaluation of Arrhenius parameters for the reaction between $K_2S_2O_8$ and KI (First order reaction).
3. Study of kinetics of autocatalytic reaction between oxalic acid and $KMnO_4$ and determine the order of reaction with respect to $KMnO_4$.
4. Kinetics of saponification of ethyl acetate by conductivity method and study the effect of dielectric constant of the medium (using CH_3OH).
5. Study of effect of salt (ionic strength) on the kinetics of reaction between potassium persulphate and potassium iodide (second order reaction).
6. Spectrophotometric kinetics of oxidation of indigocarmine (IC) by chloramine-T (CAT) – Determination of order of reaction with respect to [CAT] and [IC].
7. To study the acid catalysed kinetics of oxidation of glycine by chloramine-T (CAT) - determination of order of reaction with respect to [CAT] and [glycine].
8. Study the phase diagram of three component system (Glacial acetic acid-Chloroform-water system / Glacial acetic acid-Acetone-Water system).
9. Study the rate of corrosion and inhibition efficiency of an inhibitor (thiourea) on mild steel/Al/Cu by weight loss method.

PART-B

1. Conductometric titration of orthophosphoric acid against NaOH.
2. Conductometric titration of a mixture of HCl, CH_3COOH and $CuSO_4$ against NaOH.
3. Conductometric titration of thorium nitrate with potassium tartarate.
4. Potentiometric titration of mixture of weak acids (acetic acid and monochloroacetic acid) against NaOH.
5. Dwtermination of pK_a values of phosphoric acid by potentiometric / pH metric method.
6. Potentiometric titration of mixture of KCl+KBr+KI against $AgNO_3$.

7. Potentiometric titration of FAS against ceric sulphate and sodium metavenadate, determine the concentration of FAS and redox potential.
8. Potentiometric titration of lead nitrate against EDTA and determine the concentration of lead nitrate solution.
9. Determination of *p*K value of an indicator (methyl orange/methyl red).
10. Spectrophotometric analysis of a mixture of (a) $KMnO_4$ and $K_2Cr_2O_7$.
11. Study of complex formation between ferric salt and salicylic acid.

References

1. Practical Physical Chemistry – A.J. Findlay.
2. Experimental Physical Chemistry – F. Daniels *et al*.
3. Selected Experiments in Physical Chemistry – Latham.
4. Experiments in Physical Chemistry – James and Prichard.
5. Experiments in Physical Chemistry – Shoemaker.
6. Advanced Physico-Chemical Experiments – J. Rose.
7. Practical Physical Chemistry – S.R. Palit.
8. Experiments in Physical Chemistry – Yadav, Geol Publishing House.
9. Experiments in Physical Chemistry – Palmer.
10. Experiments in Chemistry – D.V. Jahagirdar, Himalaya Publishing House,Bombay, (1994).
11. Experimental Physical Chemistry – R.C. Das and B. Behera, Tata Mc Graw Hill.

SOFT CORE PAPERS

CHA SCT: 3.1. ELECTROCHEMICAL METHODS OF CHEMICAL ANALYSIS

Objectives:

- To learn aspects of kinetic and radiochemical methods for analysis
- To understand the knowledge of applied aspects of recent needs by simple techniques

Course Outcome:

- To understand the reaction kinetics
- To gain the principles of radiochemical methods
- To understand the applicability of radiometric assays

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and information and communications technology are used in class room teaching.
- Students will be assigned to solve the numerical problems to understand electrochemical concepts.

Course content

UNIT-I

[16HOURS]

Introduction to electrochemical methods and types: Definitions-electrochemical, galvanic and electrolytic cells, half-cell reactions, anode and cathode, reversible cell, standard hydrogen electrode (SHE), electrode potential (E), standard electrode potential (E^0), theoretical cell potential, liquid junction potential, ohmic drop, IR, overvoltage, concentration over potential.
Activity-dependence of electrode potentials- the Nernst equation, reference electrode-calomel and Ag-AgCl electrodes.

Potentiometry: Electrode systems, metallic indicator electrodes. Membrane electrodes, Ion-selective electrodes-electrode response and selectivity of glass electrode for pH measurement, errors in the use of glass electrode. Glass electrodes for the measurement of cations other than hydrogen -Solid state electrodes, liquid membrane electrodes. Ion-selective field effect transistors(ISFETS).Gassensingelectrodes.Directpotentiometry:Chemicalandenvironmental applications. Potentiometric biosensors. Potentiometric titrations- acid-base, precipitation and redox titrations. Null-point potentiometry.

Coulometric methods of analysis: Basis, Faraday's law and current efficiency. Characterizing coulometric methods. Controlled-potential coulometry- selecting a constant potential, minimising electrolysis time. Instrumentation and applications. Characterisation applications: determining the number of electrons involved (n) in a reaction. Controlled-current coulometry-minimising current efficiency, detecting the end point.

Instrumentation: current sources and cells. Comparing conductometric and conventional titrations. Applications. Automated coulometric titrations.

UNIT-II

[16HOURS]

Electrogravimetricanalysis: Theory, applications, cellprocesses, deposition and separation, electrolytic separation of metals, applications

Voltammetry and polarography: Introduction. Electrodes. Polarographic principles- polarographic current, polarographic potential, polarographic maxima, oxygen removal. Qualitative and quantitative analyses. AC polarography. Pulse polarography. Differential pulse polarography and square wave polarography. Trace analysis by pulse polarography. Inorganic, organic, clinical and environmental applications. Characterisation applications- electrochemical reversibility and determination of _n'. Determination of equilibrium constants for coupled chemical reactions. Voltammetric principles- Voltammetry at solid electrodes- hydrodynamic voltammetry,triangularvoltammetryorcyclicvoltammetry.Modifiedelectrodes.Amperometry, amperometric titration. Biamperometry.

Stripping methods-anodic and cathodic stripping methods. Electrodeposition step and voltammetric deposition step. Applications of stripping methods. Voltammetry with micro electrodes.

Chemical sensors and biosensors: Sensors, electrochemical sensors, optical sensors, thermal and mass-sensitive sensors, sensor arrays.

References

1 Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch 8th edition, 2005, Saunders College Publishing, New York.
2 Analytical Chemistry, G.D.Christian, 5th edition, 2001JohnWiley & Sons, Inc.India.
3 Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, 1993 Prentice Hall,Inc. New Delhi.
4 Vogel‘s Text book of Quantitative Chemical Analysis, J.Mendham, R.C.Denney,J.D.
5 Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, 2003 Pearson Education Pvt. Ltd., New Delhi.
6 Analytical Chemistry Principles, John H.Kennedy, 2nd edition, Saunders College Publishing, California, 1990.
7 Instrumental Methods of Analysis by H.H.Willard, L.L.Merrittand J.A.Dean, 7th Edition, CBS Publishers, New Delhi, 1988.
8 Principles and Practice of Analytical Chemistry, F.W. Fifield and Kealey, 3rd edition, 2000, Blackwell Sci., Ltd. Malden, USA.
9 Modern Analytical Chemistry, David Harvey, McGraw Hill, NewDelhi, 2000.
10 Introduction to Instrumental Analysis, Braun, Pharm. Med.Press. India.
11 Instant Notes of Analytical Chemistry, Kealey and Haines, Viva Books Pvt. Ltd., NewDelhi, 2002.

CHI SCT: 3.2. FRONTIERS IN INORGANIC CHEMISTRY

Objectives:

- To understand the basic concepts, synthesis and applications of materials.
- To learn the properties, fabrication and characterization of nanomaterials.

Course Outcome:

- Gain knowledge on design and synthesis of new inorganic materials.
- Fabrication and characterization of nanomaterials.
- Applications of ceramics, pigments, silicates and biomaterials.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Materials chemistry: Historical Perspectives. Design of new materials through a Critical Thinking Approach. Materials sustainability.
Synthesis of materials: The formation of bulk material by different methods.
Defects and ion transport: Extended defects. Atom and ion diffusion. Solid electrolytes.
Metal oxides, nitrides and fluorides: Monoxides of the 3d metals, higher oxides and complex oxides, oxide glasses, nitrides and fluorides.
Sulfides, intercalation compounds and metal rich phases: Layered MS2 compounds and intercalation, Chevrel phases.
Ceramic materials: Sol-gel process and applications of biomaterials of ceramics.
Inorganic pigments: Coloured pigments, white and black inorganic materials.
Molecular materials and fullerides: Fullerides, Molecular material chemistry.
Silicates: Structure, classification - silicates with discrete anions, silicates containing chain anion, silicates with layer structure, silicones with three dimensional net work and applications.

UNIT-II

[16 HOURS]

Nanomaterials- Introduction.
Fundamentals-Terminology and history.
Characterization and fabrication: Top-down and bottom-up fabrication. Solution based synthesis of nanoparticles. Vapour-phase synthesis of nanoparticles. Templated synthesis of nanomaterials using frameworks, supports and substrates. Sonochemical microwave methods for the synthesis of nanoparticles.
Structural study of nanocomposites by different methods.
Nanostructures and properties
One-dimensional control: carbon nanotubes and inorganic nanowires.
Two-dimensional control: grapheme, quantum wells and solid-state super lattices.
Three-dimensional control: mesoporous materials and composites.
Some applications of inorganic/organic/polymeric materials: Optical, electrical, magnetic, and chemical and biosensors.

References

1. Inorganic Chemistry, 4th edition. P. Atkins, T. Overton, J. Rourke, M. Weller and F. Armstrong, Oxford University Press (2006).
2. Inorganic Chemistry Principles of Structure and Reactivity: James E. Huheey, Ellen A. Keiter, Richard L. Keiter, Okhil K. Medhi, Delhi University, New Delhi (2006).
3. Chemistry of the Elements – N.N. Greenwood and A. Earnshaw, Pergamon Press (1985).
4. Industrial Inorganic Chemistry – 2nd edition. K.H. Buchel, H.H. Moretto and P. Woditsh, Wiley - VCH (2000).
5. Basic Inorganic Chemistry – 3rd edition. F.A. Cotton, G. Wilkinson and P.L. Gaus, John Wiley and Sons (2002).
6. Inorganic Chemistry, 3rd edition. James E. Huheey, Harper and Row Publishers (1983).
7. Inorganic Chemistry, 3rd edition. G.L. Miessler and D.A. Tarr, Pearson Education (2004).
8. Inorganic Chemistry, 2nd edition. C.E. Housecroft and A.G. Sharpe, Pearson Education.

CHO SCT: 3.3. CHEMISTRY OF NATURAL PRODUCTS-II

Objectives:

- To familiarize with the chemical concepts of alkaloids and steroids.
- To learn the structural elucidation and biological importance of alkaloids and steroids.

Course outcome:

- Chemistry of alkaloids and their biological significances.
- Synthesis and characterization of several alkaloids and steroids.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Alkaloids: Introduction, classification, isolation and general methods of structural elucidation of alkaloids. Classification of alkaloids. Biological importance of alkaloids. Structural elucidation of nicotin, papavarine, quinine, reserpine and morphine. Biosynthesis of alkaloids (nicotin, conine and cocaine).

UNIT-II

[16 HOURS]

Steroids: Introduction, Structural elucidation of cholesterol, bile acids, Ergosterol and its irradiation products. Sex hormones and corticosteroids: Synthesis of estrone, progesterone, androsterone, testosterone. Barton reaction for the synthesis of aldosterone. Brief discussion of homosteroids, norsteroids and oral contraceptives. Biological significance of anabolic steroids.

References

1. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
2. Organic Chemistry, Vol-II by I. L. Finar.
3. Schaum's outline of theory and problems of Organic Chemistry, Harbert Meislich, Howard Nechamkin and Jocob Sharefkin.
4. Natural products: Their chemistry and biological significance, J. Mann, R. S. Davidson, J. B. Banthorpe and J. B. Harborne.

CHP SCT: 3.4. MATERIALS CHEMISTRY

Objectives:

- To familiarize with the preparation and characterization of different types of nanomaterials.
- To learn the properties and applications of semiconductors and superconductors.

Course outcome:

- Understand the fundamentals and importance of different types of nanomaterials, their methods of preparation and characterization by different techniques.
- Basic aspects of semiconductors and superconductors, their properties and applications.

Pedagogy

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Chemistry of nanomaterials: Fundamentals and importance, metal nanoclusters, magic numbers, theoretical modelling of nanoparticles, geometric structure, electronic structure, reactivity, fluctuations, magnetic clusters, bulk to nano transitions. Semiconducting nanoparticles: optical properties, photo fragmentation, Coulombic explosion.

Carbon nanoparticles: Introduction, carbon molecules, nature of carbon bond, new carbon structure. Carbon clusters: Small carbon clusters, C_{60}: Discovery, structure, alkali doping, super conductivity. Fullerenes and other bulky balls. Carbon nano-tubes: Fabrication structure, electrical properties, vibrational properties, mechanical properties. Quantum dots, Graphene, and applications of nanomaterials.

Methods of preparation: Plasma arc, Chemical vapour deposition (CVD), sol-gel, silica-gel, hydrolysis, condensation, polymerization of monomers to form nanoparticles, solvothermal, and hydrothermal methods, electrochemical, ball milling and pulsed laser methods. Characterization of nanomaterials (X- ray, IR, UV and SEM).

UNIT-II

[16 HOURS]

Semiconductors: Metals, insulators and semiconductors. Band theory, energy bands, intrinsic and extrinsic semiconductors. Conductivity: electrons and holes, temperature dependence on conductivity, Optical properties: absorption spectrum, photoconductivity, photovoltaic effect and luminescence. Junction properties: metal-metal junctions, metal-semiconductor junctions, p-n junctions, transistors, industrial applications of semiconductors: Mixed oxides, spinels and other magnetic materials.

Superconductors: Introduction, critical temperature and zero resistivity, Meissner effect, critical magnetic field and its variation with temperature. Type - I and II super conductors, specific heat, isotope effect, basic concepts of BCS theory. High temperature (Tc) superconductors and its applications.

References

1. Introduction to Nanotechnology, Charles P. Poole. Jr. and Frank J. Owens, Wiley-Interscience, Joh Wiley and Sons Inc, 2006.
2. Nanotechnology, Richard Booker and Earl Boysen, Wiley.
3. Nanometerials, A.K. Bandopadhyay, New Age International, 2nd edition.
4. Nanotechnology - Importance and Applications, M. H. Fulekar, Ink International publishing.
5. Solid State Chemistry – N.B. Hannay.
6. Introduction to Solids – Azaroff.
7. Solid State Chemistry and its applications – A.R. West.
8. Principles of the Solid State – H.V. Keer.
9. Basic Solid State Chemistry, 2nd edition, Anthony R. West.
10. Solid State Chemistry: An Introduction, 3rd edition, Lesley E. Smart and Elaine A. Moore.
11. Introduction to Solid state Physics-C. Kittel, 5th edition, Wiley Eastern, Limited.
12. C.N.R. Rao and J. Gopalakrishna –New Directions in solid state chemistry| Cambridge University Press, Cambridge (1999).

FOURTH SEMESTER
HARD CORE PAPERS
CHI HCT: 4.1. BIOINORGANIC CHEMISTRY

Objectives:

- To understand the structural parameters of metallo-proteins and their biological role.
- To learn the biological properties of metal complexes in chemo and radio therapeutics.

Course outcome:

- Structural building blocks of proteins, nucleic acids and their metal ion interactions. Biological role of Na/K channel, Ca, Vit B12, and coenzymes.
- Biochemical reactions of several metallo-enzymes and oxygen transport proteins.
- Medicinal applications of metals and metal complexes, and also treatment of toxicity due to heavy metal ions.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Structural and molecular biology: Introduction, The structural building blocks of proteins, the structural building block of nucleic acids. Metal ion interactions with nucleosides and nucleotides. General features of DNA - metal complex interaction.

Bioenergetics: Introduction, Redox reactions in metabolism, the central role of ATP in metabolism. Kinetic stability of ATP, Mitochondrial flow of electrons from NADH to O_2. Phosphorylation and respiratory chain. Oxidative phosphorylation.

Sodium and potassium-channels and pumps: Introduction, transport across membranes. Potassium and sodium channels, The sodium-potassium ATPase, Macrocyclic crown ether compounds, cryptands and ionophores.

Biochemistry of calcium: Introduction - comparison of Ca^{2+} and Mg^{2+}. Biological roles of calcium, binding sites of calcium and proteins, storage of calcium, calcium in muscle contraction, calcium in blood clotting process.

Vitamin B12 and Coenzymes: Structural feature, names of different forms, chemistry of cobalamin, biochemical functions of cobalamins, model compounds. Special characteristics of B12 co-enzyme. Photosystems.

UNIT-II

[16 HOURS]

Metal ion transport and storage: Iron storage and transport: Transferrin, ferritin, phosvitin and gastroferrin. Iron transport in microbes: siderophores, *in vivo* microbial transport of iron.

Oxygen transport and oxygen uptake proteins: Properties of dioxygen (O2): thermodynamic and kinetic aspects of dioxygen as an oxidant, activation of dioxygen through complexation with metal ions. Haemoglobin (Hb) and Myoglobin (Mb) in oxygen transport mechanism: Introduction to porphyrin system, substituent effects on porphyrin rings, functions of Hb and Mb. Characteristics of O_2^--binding interaction with Hb and Mb. Model compounds for oxygen

carriers (Vaska's complex and cobalt(III) – Schiff base complexes). Hemerythrin and hemocyanin.

Electron transport proteins and redox enzymes: Iron – sulfur proteins (rubredoxins and ferredoxins) and cytochromes including cytochrome P450. Catalase and peroxidase: Structure and reactivity. **Superoxide dismutase**: Structure and reactivity.

Molybdenum containing enzymes: Aspects of molybdenum chemistry, Xanthine oxidase, aldehyde oxidase, sulfite oxidase, nitrogenase and nitrite reductase.

Non-redox metalloenzymes - Structure and reactivity: Carboxypeptidase-A, alcohol dehydrogenase, leucineaminopeptidase and carbonic anhydrase.

UNIT-III

[16 HOURS]

Medicinal Inorganic Chemistry: State of the Art, New Trends, and a Vision of the Future: Introduction, metals and human biochemistry, general requirements.

Disease due to metal deficiency and treatment: Iron, zinc, copper, sodium, potassium, magnesium, calcium and selenium.

Metal complexes as drugs and therapeutic agents: Introduction, Antibacterial agents, Antiviral agents, **Cancer Therapy**: Current Status and Mechanism of Action of Platinum-Based Anticancer Drugs. Non-platinum anticancer agents.

Gold-Based Therapeutic Agents: **A New Perspective**: Uses for the treatment of rheumatoid arthritis, **Diabetes**: Vanadium and diabetes,

Metal-Based Radiopharmaceuticals: Metal complexes as radio diagnostic agents.

Treatment of toxicity due to inorganics: General aspects of mechanism of metal ion toxicity,

(i) Mechanism of antidote complex with poison, rendering it inert: arsenic, lead, mercury, iron and copper.

(ii) Antidote accelerated metabolic conversion of poison to non-toxic product: cyanide and carbon monoxide.

References

1. The Inorganic Chemistry of Biological Process- 2nd edition, M. N. Hughes, John Wiley and Sons, (1988).
2. Bioinorganic Chemistry - R.W. Hay, Ellis Horwood Ltd., (1984).
3. Biological Inorganic Chemistry – An Introduction, R.R. Crichton, Elsevier, (2008).
4. Bioinorganic Chemistry - A.K. Das, Books and Allied (P) Ltd, (2007).
5. Bioinorganic Chemistry - K. Hussain Reddy, New Age International Ltd. (2003).
6. Bioinorganic Chemistry: A Survey - EiichiroOchiai, Academic Press, (2008).
7. Bioinorganic Chemistry: A Short Course - 2nd edition, R.M. Roat-Malone, Wiley Interscience, (2007).
8. Medicinal Applications of Coodination Chemistry - Chris Jones and John Thornback, RSC Publishing, (2007).
9. Transition Metal Complexes as Drugs and Chemotherapeutic Agents - N. Farrell, Kluwer Academic Publishers (1989).
10. The Biological Chemistry of the Elements: The Inorganic Chemistry of Life - 2nd edition, J.J.R. Frausto da Silva and R.J.P. Williams, Oxford University Press, (2001).
11. Essentials of Inorganic Chemistry, K. A. Strohfeldt, John Wiley and Sons Ltd.,(2015).
12. Bioinorganic Medicinal Chemistry (Ed) EnzoAlessio, Wiley-VCH Verlag and Co., (2011).

CHO HCT: 4.2. HETEROCYCLIC AND BIOORGANIC CHEMISTRY

Objectives:

- To familiarize with the chemistry of heterocyclic compounds.
- To learn the synthesis and biological importance of carbohydrates, proteins and nucleic acid.

Course Outcome:

- Structure, reactivity and synthesis of several heterocyclic compounds.
- Synthesis, industrial and biological importance of carbohydrates.
- General synthesis of amino acids, peptides, nucleic acids and their biological significance.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Heterocyclic compounds: Nomenclature; Structure, reactivity, synthesis and reactions of furan, pyrrole, thiophene, indole, pyridine, quinoline, isoquinoline, pyrazole, imidazole, pyrone, coumarin, chromones, pyrimidines, purines. Synthesis and synthetic applications of azirines & aziridines, oxazolines, , isoxazole, triazole and azepines.

UNIT-II

[16 HOURS]

Carbohydrates: Introduction, Ring size determination of monosaccharides, configuration and conformations of monosaccharides, anomeric effect, Hudson‘s rules, epimerization and mutarotation. Synthesis, industrial and biological importance of glycosides, amino sugars, sucrose, maltose and lactose. Polysaccharides: General methods of structure elucidation. Industrial importance and biological importance of cellulose, starch, glycogen, dextran, hemicellulose, pectin, agar- agar. Photosynthesis and biosynthesis of carbohydrates.

UNIT-III

[16 HOURS]

Amino Acids: General structure, physiological properties, protection of functional groups. **Peptides**: Structure and conformation of peptide bond, peptide synthesis: Solution phase and Merrifield’s solid phase synthesis, Racemization and use of HOBt, Synthesis of oxytocin and vasopressin, biological importance of insulin, selective cleavage of polypeptide bonds (chemical and enzymatic). Proteins: Structure determination: *C* and *N* terminal residue determination, primary, secondary, tertiary and quaternary structure determination, denaturing and renaturing of proteins.

Nucleic acids: Introduction, structure and synthesis of nucleosides and nucleotides, protecting groups for hydroxy group in sugar, amino group in the base and phosphate functions. Methods of formation of internucleotide bonds: DCC, phosphodiester approach and phosphoramide methods. Solid phase synthesis of oligonucleotides. Structure of RNA and DNA, Crick-Watson model, role of nucleic acids in the biosynthesis of proteins.

Protecting groups: Protection of hydroxyl, carboxyl, carbonyl, thiol and amino groups. Illustration of protection and deprotection in synthesis.

References

1. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
2. Organic Chemistry, Vol-II by I. L. Finar.
3. Schaum's outline of theory and problems of Organic Chemistry, Harbert Meislich, Howard Nechamkin and Jocob Sharefkin.
4. Natural products: Their chemistry and biological significance, J. Mann, R. S. Davidson, J. B. Banthorpe and J. B. Harborne.
5. A text book of synthetic drugs, O. D. Tyagi and M. Yadav.
6. Synthetic drugs, Gurdeep R. Chatwal.
7. Carbohydrate Chemistry and applications of carbohydrates, K. M. Lokanatha Rai.
8. Heterocyclic chemistry by Achison.
9. Heterocyclic chemistry by Smith and Joule.
10. Heterocyclic chemistry by Pacquete.

CHP HCT: 4.3. NUCLEAR, RADIATION AND PHOTOCHEMISTRY

Objectives:

- To understand the theory and applications of photochemistry.
- To learn the fundamentals and physico-chemical applications of radiation chemistry.
- To familiarize with the concepts of nuclear chemistry including radiochemical separation techniques and nuclear power reactors.

Course outcome:

- Understand the principles of photochemistry, its experimental techniques and applications.
- Fundamentals of radiation chemistry, experimental methods of detection of radiation and applications of radioisotopes.
- General aspects of nuclear chemistry, different types of nuclear reactions, production and separation of radioisotopes and also basic features of different types of nuclear reactors.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Nuclear chemistry: Nuclear stability – nuclear forces, packing fraction, binding energy, liquid drop, shell and collective models. Radioactive decay – General characteristics, decay kinetics, parent –daughter decay growth relationships, determination of half-lives. Brief survey of alpha, beta and gamma decays. Nuclear reactions – Bethe‘s notation, types of nuclear reactions – specific nuclear reactions, photonuclear reactions, Oppenheimer – Phillips process, spallation reactions, Szilard-Chalmers process. Definition of Curie and related calculations. Production of radioisotopes and labelled compounds by bombardment.

Radiochemical separation techniques: carriers, solvent extraction and ion ion-exchange methods.

Nuclear power reactors: Types of nuclear power reactors, basic features and components of nuclear power reactors. An introduction to breeder reactors.

UNIT-II

[16 HOURS]

Radiation chemistry: Introduction, units, interaction of electromagnetic radiation with matter, G-value, LET of radiation. Chemical dosimetry - Fricke and ceric sulphate dosimeters. Radiolysis - cysteine, water and biphenyl. Radioisotopes as tracers, use of isotopic tracers in the elucidation of reaction mechanism, structure determination and solubility of sparingly soluble substances. ^{14}C dating, medical applications of isotopic tracers. Physico-chemical applications – isotope dilution method, activation analysis and radiometric titrations. Hazards in radiochemical work and radiation protection.

Radiation detection and measurement: Experimental techniques in the assay of radioisotopes. Radiation detectors – ionization chambers, proportional and Geiger-Muller counters – G.M. Plateau, dead time, coincidence loss, determination of dead time. Scintillation and semiconductor radiation detectors.

UNIT-III

[16 HOURS]

Photochemistry: Introduction to photochemistry, laws of photochemistry, laws of light absorption, quantum yield and its determination, factors affecting quantum yield, Actinometry - Uranyloxalate and potassium ferrioxalate actinometers, acetone and diethylketone actinometers. Term symbols for atoms and its significance. Photochemical properties of electronically excited molecules, nature of changes on electronic excitation, shapes of absorption band and Frank Condon principle. Experimental techniques to determine the intermediates in photochemical reactions. Photosensitization: by mercury, dissociation of H_2. Photochemical kinetics of: Decomposition of CH_3CHO, dissociation of HI and formation of HCl. Fluorescence and phosphorescence – theory and applications. Resonance fluorescence and quenching of fluorescence, Kinetics of colliosional quenching (Stern-Volmer equation).

Photocatalyst – Principle, application of ZnO/TiO_2 photocatalysts in the photo cleavage of dyes, environmentally hazardous waste and industrial effluents. Effect of photo degradation on COD value.

References

1. Photochemistry, Calvert and Pitts, Wiley, New York (1996).
2. Fundamentals of Photochemistry, Gohatgi-Mukherjee, New Age International Ltd., 1986.
3. Principles and Applications of Photochemistry, R. P. Wayne, Elsevier, New York (1970).
4. Photochemistry, Paul Suppan, RSC, London (1994).
5. Introduction to Semiconductor Materials and devices, M. S. Tyagi, John Wiley & Sons, 1991.
6. Nuclear Chemistry by Friedlander and Kennedy, John Wiley and Sons (1987).
7. Essentials of Nuclear Chemistry by H.J. Arnikar, Eastern Wiley (1990).
8. Nuclear Chemistry by U.N. Dash, Sultan Chand and Sons (1991).
9. Fundamentals of Radiochemistry by D.D. Sood, A.V.R. Reddy and N. Ramamoorthy.
10. Nuclear Radiation Detectors by S.S. Kapoor and Ramamoorthy, Wiley Eastern (1986).

CHA HCT: 4.4. OPTICAL, THERMAL AND KINETIC METHODS OF ANALYSIS

Objectives:

- To understand the theory, instrumentation and applications of atomic emission spectroscopy.
- To learn the principles, instrumentation and applications of thermal methods of analysis.
- To familiarize with the concepts of kinetic methods of analysis.

Course outcome:

- Learnt the theory, instrumentation and applications of different types of atomic emission spectroscopy.
- To study the stages of thermal degradation patterns of materials using TGA and DTA techniques.
- To describe the general form of a (differential) rate law and describe how the rate of a chemical reaction depends on the concentrations of species that appear in the rate law.
- To describe the relationship between the order of a reactant and the stoichiometric coefficient for the reactant in the overall balanced chemical equation.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.
- Students will be assigned numerical problems to understand the concepts.

Course content

UNIT-I

[16 HOURS]

Atomic and molecular spectrometry-Electromagnetic radiation, atomic energy levels, molecular energy levels, transitions, quantitative spectrometry, Beer-Lambert's law.

Atomic spectrometry-Atomic structure and spectra, intensity of spectral lines.

Arc/spark atomic (optical) emission spectrometry- Principles, instrumentation, sample preparation, qualitative and quantitative analysis, applications

Glow discharge atomic emission spectrometry-principles, instrumentation, applications.

Plasma emission spectrometry- Principles, instrumentation, sample introduction, analytical measurements and applications.

Inductively coupled plasma-mass spectrometry (ICP-MS)-Principles, instrumentation and applications.

Flame emission spectrometry-principles, instrumentation, flame characteristics, flame processes, emission spectra. Quantitative measurements and interferences. Applications of flame photometry and flame atomic emission spectrometry.

Atomic absorption spectrometry- Principles, absorption of characteristic radiation. Instrumentation-sharp line sources- hallow cathode lamps, electrodeless discharge tubes. Sample vaporization- flame vaporization, flameless vaporization, vaporization by reduction and hydride generation. Quantitative measurements and interferences. Applications of AAS.

Atomic fluorescence spectrometry -Principles, instrumentation and applications.

X- ray emission spectrometry- Principles, instrumentation and applications.

Molecular fluorescence spectrometry- Theory- relaxation processes, excitation and fluorescence spectra, fluorescent species, factors affecting fluorescence, effect of concentration

on intensity, fluorescence instruments, applications of fluorescence methods. Molecular phosphorescence- phosphorometry, chemiluminescence methods.

UNIT-II

[16 HOURS]

Thermal methods of analysis: Introduction, **Thermogravimetric analysis (TGA):** Introduction, types of thermogravimetric analysis, principles. Factors affecting the results - heating rate, furnace, instrument control/data handling. Applications - purity and thermal stability, evaluation of correct drying temperature, analysis of complex mixture and determination of kinetic parameters of thermal degradation.

Differential thermal analysis (DTA): Theory - variables affecting the DTA curves. Differences between TGA and DTA. General principles. Instrumentation. Applications - analysis of the physical mixtures and thermal behaviour study. Determination of melting point, boiling point and decomposition point.

Differential scanning calorimetry (DSC): Basic principle. Differences between DTA and DSC. Instrumentation - power compensated DSC, Heat flux DSC. Applications - studies of thermal transitions and isothermal crystallization. Pharmaceutical industry for testing the purity of the samples.

Microcalorimetry: Micro-DSC instrumentation, Applications of Micro-DSC, Isothermal titration calorimetry, Microliter-flow calorimetry.

UNIT – III

[16 HOURS]

Kinetic methods of analysis: Analytical uses of reaction rates relative, basis of reaction rate methods, rate laws-first and second order reactions relative rates of reactions, analytical utility of first or pseudo first order reactions, determination of reaction rates, types of kinetic methods– differential methods, integral methods, multicomponent analysis-neglect of reaction of slow-reacting component, logarithmic extrapolation method, reaction rate method, applications-catalyzed reactions, measurement methods for catalyzed reactions, micro determination of inorganic species like iodide, selenium, cobalt & mercury in complex materials, determination of organic species, non-catalytic reactions. Applications of enzyme-catalysed reactions for the analysis of substrates stoichiometric and rate methods, determination of urea, uric acid, blood glucose, galactose and blood alcohol, determination of enzymes-LDH, GOT and GPT. A brief outline of IR, UV, NMR, Mass spectroscopy as tools for kinetic study.

References

1. Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch 8th edition, 2005, Saunders College Publishing, New York.
2. Analytical Chemistry, G.D. Christian, 5th edition, 2001 John Wiley & Sons, Inc. India.
3. Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, 1993 Prentice Hall, Inc. New Delhi.
4. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, 2003 Pearson Education Pvt. Ltd., New Delhi.
5. Analytical Chemistry Principles, John H. Kennedy, 2nd edition, Saunders CollegePublishing, California, 1990.
6. Instrumental Methods of Analysis by H.H. Willard, L.L. Merritt and J.A. Dean,7th Edition, CBS Publishers, New Delhi, 1988.
7. Principles and Practice of Analytical Chemistry, F.W. Fifield and Kealey, 3rd edition, 2000, Blackwell Sci., Ltd. Malden, USA.
8. Modern Analytical Chemistry, David Harvey, McGraw Hill, New Delhi, 2000.

9. Introduction to Instrumental Analysis, Braun, Pharm. Med. Press. India.
10. Instant Notes of Analytical Chemistry, Kealey and Haines, Viva Books Pvt. Ltd., New Delhi, 2002.
11. Analytical Transmission Electron Microscopy, An Introduction for OperatorsThomas, Jürgen, Gemming, Thomas, Springer, 2014.
12. Scanning Transmission Electron Microscopy, Imaging and Analysis.Pennycook, Stephen J., Nellist, Peter D. (Eds.), Springer, 2011.

SOFT CORE PAPERS

CHA SCT: 4.1. AUTOMATED AND METHODS OF CHEMICAL ANALYSIS

Objectives:

- To understand the instrumentation and applications of automated methods of analysis.
- To familiarize with analysis of real samples and clinical analysis.

Course outcome:

- Understand various types of automated methods of analysis.
- Identify activities that can be fully or partially automated.
- Automated chemical analysis will be very helpful in the clinical as well as pharmaceutical field to perform the purity analysis of the sample, although the sample size is very small, expensive and fast analysis.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.
- Students will be assigned numerical problems to understand the concepts.

Course content

UNIT-I

[16 HOURS]

Automated methods of analysis: An overview, definition, distinction between automatic and automated systems, advantages and disadvantages by automation, types of automated techniques. Nondiscrete techniques, segmented flow methods and basic equipment, special techniques and devices, theoretical considerations and problems, applications. Single channel and multi channel auto analysers, BUN analyzers, automatic glucose analyzers and ammonia in water analyzers, COD analyzers, CFA in industry. Non-segmented flow methods: Flow injection analysis. Principles, types of dispersion, factors affecting dispersion, applications of small, medium and large dispersions. Stopped flow methods, flow injection titrations. Discrete methods: Centrifugal fast scan analyzer, automatic multipurpose analyzers, Automatic elemental analyzer, automated analyzer based on multilayer film-principles, film structure, instrumentation applications. Comparison of discrete and non-discrete methods. Advantages of flow injection measurements over continuous flow measurements.

UNIT-II

[16 HOURS]

Analysis of real samples-real sample, choice of analytical method-defining the problem, investigating the literature, choosing or devising a method, testing the procedure, analysis of standard samples, using other methods, standard addition to the sample. Accuracy in the analysis of complex materials.

Decomposing and dissolving the sample- sources of error in decomposing and dissolution. Decomposing samples with inorganic acids. Microwave decomposition. Combustion methods for decomposing organic samples. Decomposition of inorganic materials with fluxes.

Clinical Analysis- Introduction, features of clinical analysis. Composition of blood, collection and preservation of samples. Common determinations - serum electrolytes, blood glucose and blood urea nitrogen, uric acid, albumin and globulins, acid and alkaline phosphates, barbiturates, chloride, sodium and potassium, bicarbonate, serum creatinine and cholesterol. Urine analysis- Principle components. Sample collection and preservation. Determination of creatinine, chloride, uric acid, ammonia, ascorbic acid, bilirubin and calcium.

References

1. Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch 8th edition, 2005, Saunders College Publishing, NewYork.
2. Analytical Chemistry, G.D. Christian, 5th ed., 2001 John Wiley & Sons, Inc,India.
3. Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition,1993 prentice Hall, Inc. NewDelhi.
4. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney,J.D. Barnes and M.J.K. Thomas, 6th edition, Third Inidan Reprint.2003 PearsonEducation Pvt. Ltd., NewDelhi.
5. Analytical Chemistry Principles, John H. Kennedy, 2nd edition, Saunders College Publishing, California,1990.
6. Principles and practice of analytical chemistry. Fifield andKealey.
7. Instant Notes of Analytical Chemistry, Kealey and Haines, Viva Books Pvt.Ltd.,2002.

CHI SCT: 4.2. BIOINORGANIC PHOTOCHEMISTRY

Objectives:

- To understand the photochemistry of inorganic compounds.
- To familiarize with the applications of fluorescents and chromogenic sensing and labeling.
- To learn photodynamic inactivation of microorganisms.

Course outcome:

- Basic concepts of photochemistry and photochemical reactions.
- Understand many organometallic compounds as fluorescent agents in the detection of cations, anions and toxic ions in the living system.
- Theory of photodynamics, and photocatalysis.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16HOURS]

Introduction, Philosophy of bioinorganic photochemistry

Fundamentals: Light and matter. Nature of light, Accessible light sources and Interaction between light and matter.

Formation and properties of electronic excited states: Wave mechanics and quantum numbers and Electronic excitation.

Photophysical deactivation of electronic excited states: Spontaneous deactivation, Quenching and Coordination and organometallic compounds.

Photochemical reactions: Photochemical reaction channels, Intramolecular photoreactions, Photodissociation and photoionization, Photoisomerization, Intermolecular photoreactions, the coordination compound specificity. Ligand field photochemistry, Photochemistry from LC or LLCT states, Inner-sphere charge transfer photochemistry, Outer-sphere charge transfer photochemistry, Photosensitized reactions, Homogeneous photocatalysis.

Natural photo-processes involving inorganic compounds

From interstellar space to planetary atmospheres: Homogeneous systems: from interstellar spacetoplanetaryatmospheresandprimitivesoupmodels.Heterogeneousphotochemistryinice phases.

UNIT-II

[16HOURS]

Applications: Fluorescent and chromogenic sensing and labeling: Cations as targets in biochemical sensing Cations common in biological systems, Fluorescent detection of toxic cations, Fluorescent and chromogenic sensing of anions, Common anions and Toxic anions. Optical detection of neutral molecules. Nanoparticles in biochemical sensing and labeling.

Therapeutic strategies; Photobio-stimulation, Photo-activation of drugs, Photodynamic therapy, Mechanisms of PDT and PTT. Photosensitizers, Inorganic photosensitizers, Supporting role of metal ions in photodynamic therapy, and Combination of polypyrrolic photosensitizers and metallo-pharmaceuticals, Recent PDT development and Nanomedical methods.

Photodynamic inactivation of microorganisms: Bacteria, Viruses, Fungi and Parasites.

Phototoxicity and photoprotection: Chemical and physical photoprotection. Inorganic sunscreens.

Photocatalysis in environmental protection: Development of homo- and heterogeneous methods. Homogeneous photocatalysis and heterogeneous photocatalysis. Water and air detoxification. Other applications of photocatalysis.

References

1. Bioinorganic Photochemistry- Grazyna Stochel, Malgorzata Brindell, Wojciech Macyk, Zofia Stasicka, Konrad Szacilowski. Wiley Publishers (2009).
2. Photochemistry and Photophysics of Coordination Compounds I-Volume Editors: Balzani, V., Campagna, Springer Publications.Vol.280, 2007.
3. Photochemistry and Photophysics of Coordination Compounds II - Volume Editors: Balzani, V., Campagna, Springer Publications.Vol.281, 2007.

CHO SCT: 4.3. MEDICINAL CHEMISTRY

Objectives:

- To familiarize with the methods of isolation, structural elucidation and synthesis of carotenoids and vitamins.
- To learn the basics of medicinal chemistry.
- To understand the synthesis and applications of synthetic drugs.

Course outcome:

- To acquire the knowledge of biological significances of Carotenoids and vitamins.
- Understand the pharmacodynamics, pharmacokinetics and chemotherapy of several drugs.

- Synthesis and mechanism of drug actions of antimalarial, anticancer agents and cardiovascular drugs.

Pedagogy:

- Conventional method such as black board and chalk is used.
- Modern methods like power point presentation and animations are used in class room teaching.

Course content

UNIT-I

[16 HOURS]

Carotenoids: Methods of isolation. Structure elucidation and synthesis of β-carotene. Structural relationship of α-, β- and γ-carotenes.

Vitamins: Introduction, constitution, synthesis and biological significance of thiamine, riboflavin, pyridoxine, biotin, ascorbic acid, vitamin A1 & A2, E1 and E2 , B12 and K groups.

UNIT-II

[16 HOURS]

Medicinal chemistry: Introduction, pharmacodynamics, pharmacokinetics, chemotherapy, metabolites antimetabolites, agonists and antagonists. Classification of drugs on the basis of therapeutic action. Concept of pro drug and soft drug. Theories of drug activity: Occupancy theory, rate theory, induced fit theory, concept of drug receptors. Evaluation methods: Free-Wilson analysis, Hansch-analysis, ID_{50} and IC_{50} (mathematical derivation of equation excluded).

Antipyretics: Aspirin, paracetamol, phenacetin, novalgin and their mechanism of action.

Antimalarials: Structure, synthesis and mechanism of action of quinine and chloroquine.

Hypnotics: Analgesics and sedatives: phenoborbitol, chlordiazepoxide, meprobamate.

Stimulants: Structure, action and synthesis of caffeine.

Antineoplastics: Structure, pharmacological action and synthesis of 5-flurouracil, chlorambucil, cyclophosphaminde and podophyllotoxin.

Cardiovascular drugs: Introduction, synthesis of dithiazem, verapamil, methyldopa, atenolol and oxprenolol.

References

1. Organic Chemistry, VI edition, Robert T. Morrison, Robert N. Boyd.
2. Organic Chemistry, Vol-II by I. L. Finar.
3. A text book of synthetic drugs, O. D. Tyagi and M. Yadav.
4. Synthetic drugs, Gurdeep R. Chatwal.
5. Medicinal chemistry by Graham Patrick.

CHP SCT: 4.4. QUANTUM CHEMISTRY AND BIOSENSORS

Objectives:

- To understand the applications of quantum mechanics to HMO theory.
- To learn the basics of biosensors and their applications.

Course outcome:

- Applications of quantum chemical methods in the theoretical evaluation of energies of molecules and reactions.
- Development of chemical and biochemical sensors and their applications in the determination of biomolecules.

Pedagogy:

- Conventional method such as black board and chalk is used.

- Modern methods like power point presentation and animations are also used in class room teaching.
- Students will be assigned to solve the numerical problems.

Course content

UNIT-I

16 HOURS]

Applications of quantum mechanics: Variation theorem: Statement and proof, application of variation theorem to a particle in one dimensional box, linear oscillator, H and He-atoms. Molecular orbital theory, LCAO-MO approximation, application to hydrogen molecule ion (H^{2+}), energy levels of H^{2+}, bonding and antibonding molecular orbitals, energy distribution, potential energy diagrams. Valence bond theory (VB), theory of H_2 molecule, Heitler-London method, energy levels, various modifications of Heitler-London wave function. Comparison of MO and VB theories. SCF method for many electron atom. Slater Orbitals –Effective nuclear charge (ENC), expressions for slater orbitals for 1s, 2s, 3s, 2p and 3d electrons (no derivation), Slater's rules for calculation of ENC. Theories of valence – Introduction, linear and non-linear variation functions, secular equations, coulombic, exchange, normalization and overlap integrals, secular determinants.

Huckel molecular orbital theory: Outline of method, assumptions. Application to ethylene, allyl radical, cyclopropenyl radical, butadiene, cyclobutadine, bicyclobutadine and benzene. Calculation of delocalization energy, charge density, π-mobile bond order and free valence.

UNIT-II

[16 HOURS]

Biosensors: Introduction, electrochemical biosensors: Amperometric, potentiometric and conductometric biosensors. Optical based biosensors: Surface plasma resonance, chemiluminesence, fibre optic biosensors, piozoelectronic sensors, mass selective and thermal sensors. Bio-recognition elements in biosensors, immobilization methods, principles of biorecognition, natural, semi-synthetic and synthetic biorecognition elements. Metabolism sensors: Glucose sensors, galactose sensors. Determination alcohol, ascorbic acid, D-isocitrate, oxalate, oxaloacetate, nitrite, nitrate, carbon monoxide, glycerol, triglycerides and sucrose. Biosensors using coupled enzyme reactions.

Applications of biosensors: Determination of glucose in blood, survey of biosensor methods for the determination of glucose. Determination of copper (I) in water using anodic stripping voltammetry.

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