

Scheme and Syllabus for B.Sc. (Basic/Hons) in Biotechnology - 2021

CHOICE BASED CREDIT SYSTEM

Preamble:

In keeping with the Govt of India's NEP-2020 vision of a holistic and multidisciplinary Under-Graduate education that equips employable graduates with the required skills in domain as well as personality that are required in the 21st century, the Govt. of Karnataka constituted Subject-wise Committees to work towards the envisaging, designing and drafting a common syllabus with hallmark being multiple entry and exit points enabling horizontal and vertical mobility. This has now been adopted in Mangalore University with minor changes and shall be effective from the academic year 2021-22.

Salient features are as follows:

1. Discipline Core (DSC) or Domain-specific Core Courses in Biotechnology
 2. Discipline Electives (DSE) or Elective Courses in the Core Subject or Discipline.
 3. Open Electives (OE) are Elective Courses offered to students from non-core Subjects across disciplines.
 4. Skill Enhancement Courses (SEC) that are domain-specific
 5. 1 hour of Lecture or 2 hours of practical per week in a semester is assigned one credit.
- Core discipline theory courses are of 3/4 credits, while practicals are of 2 credits

Competencies need to be acquired by a candidate securing B.Sc. (Basic) or B.Sc. (Hons) degree in Biotechnology.

Program Outcomes:

By the end of the program the students will be able to:

- PO 1. Understand concepts of Biotechnology and demonstrate interdisciplinary skills acquired in cell biology, genetics, biochemistry, microbiology, and molecular biology.
- PO 2. Demonstrate the Laboratory skills in cell biology, basic and applied microbiology with emphasis on technological aspects
- PO 3. Be competent to apply the knowledge and skills gained in the fields of plant biotechnology, animal biotechnology and microbial technology in pharma, food, agriculture, beverages, herbal and nutraceutical industries.
- PO 4. Critically analyze environmental issues and apply the biotechnology knowledge gained for conserving the environment and resolving environmental problems.
- PO 5. Demonstrate comprehensive innovations and skills in the fields of biomolecules, cell and organelles, molecular biology, bioprocess engineering and genetic engineering of plants, microbes, and animals with respect to applications for human welfare.
- PO 6. Apply the knowledge and skills of immunology, bioinformatics, computational modelling of proteins, drug design and simulations to test models and aid in drug discovery.
- PO 7. Critically analyze, interpret data, and apply tools of bioinformatics and multiomics in various sectors of biotechnology including health and food.
- PO 8. Demonstrate communication skills, scientific writing, data collection and interpretation abilities in all the fields of biotechnology.

- PO 9. Learn and practice professional skills in handling microbes, animals and plants and demonstrate the ability to identify ethical issues related to recombinant DNA technology, genetic engineering, animals handling, intellectual property rights, biosafety, and biohazards.
- PO 10. Explore the biotechnological practices and demonstrate innovative thinking in addressing the current day and future challenges with respect to food, health, and environment.
- PO 11. Demonstrate thorough knowledge and application of good laboratory and good manufacturing practices in biotech industries
- PO 12. Understand and apply molecular biology techniques and principles in forensic and clinical biotechnology.
- PO 13. Demonstrate entrepreneurship abilities, innovative thinking, planning, and setting up of small-scale enterprises or CROs

SEMESTER - I								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 101	Cell Biology and Genetics	4	2	40	60	100	4
	BSCBTP 101	Cell Biology and Genetics Practical	3	3	25	25	50	2
Open Elective (OE) Courses	BSCBTOE 301	Biotechnology for human welfare	3	2	40	60	100	3

SEMESTER – II								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 102	Microbiological methods and techniques	4	2	40	60	100	4
	BSCBTP 102	Microbiological methods and techniques Practical	3	3	25	25	50	2
Open Elective (OE) Courses	BSCBTOE 302	Applications of Biotechnology in agriculture	3	2	40	60	100	3

SEMESTER - III								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 103	Biomolecules	4	2	40	60	100	4
	BSCBTP 103	Biomolecules Practical	3	3	25	25	50	2
Open Elective (OE) Courses	BSCBTOE 303		3	2	40	60	100	3

SEMESTER – IV								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 104	Molecular Biology	4	2	40	60	100	4
	BSCBTP 104	Molecular Biology Practical	3	3	25	25	50	2
Open Elective (OE) Courses	BSCBTOE 304		3	2	40	60	100	3

SEMESTER - V								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 105	Genetic Engineering	3	2	40	60	100	3
	BSCBTP 106	Plant Biotechnology	3	2	40	60	100	3
	BSCBTC 105	Genetic Engineering Practical	3	3	20	30	50	2
	BSCBTC 106	Plant Biotechnology Practical	3	3	20	30	50	2
Vocational			3	2	40	60	100	3

SEMESTER – VI								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 107	Immunology and Medical Biotechnology	3	2	40	60	100	3
	BSCBTP 108	Bioprocess Technology	3	2	40	60	100	3
	BSCBTC 107	Immunology and Medical Biotechnology Practical	3	3	25	25	50	2
	BSCBTC 108	Bioprocess Technology Practical	3	3	25	25	50	2
Vocational			3	2	40	60	100	3
Internship								2

SEMESTER – VII								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 109	Environmental Biotechnology	3	2	40	60	100	3
	BSCBTC 110	Enzyme Biotechnology	3	2	40	60	100	3
	BSCBTC 111	Food Biotechnology	3	2	40	60	100	3
	BSCBTC 112	Environmental Biotechnology Practical	3	3	25	25	50	2
	BSCBTC 109	Enzyme Biotechnology Practical	3	3	25	25	50	2
Discipline Elective (E) Courses			3	2	40	60	100	3
			3	2	40	60	100	3
Research Methodology			3	2	40	60	100	3

SEMESTER - VIII								
Group	Course Code	Title of Courses	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits
					IA*	Exam	Total	
Discipline Core (DSC) Courses	BSCBTC 112	Animal Biotechnology	3	2	40	60	100	3
	BSCBTC 113	Genomics and Proteomics	3	2	40	60	100	3
	BSCBTC 111	Biosafety, bioethics and IPR	3	2	40	60	100	3
Discipline Elective (E) Courses			3	2	40	60	100	3
			3	2	40	60	100	3
Research Project			3		40*	60	100	6
Credits of Major								111

Pedagogy for student engagement is predominantly lectures. However, other pedagogies that enhance better student engagement may be adopted for each course. The list includes active learning/course projects/problem or project-based learning/case studies/self-study like seminar, term paper or MOOC

Assessment: Every course needs to include assessment for higher order thinking skills (applying/analyzing/evaluating/creating). These shall necessarily be reflected also in the Question Papers, such that questions of all levels of difficulty are framed. Alternate assessment methods that help formative assessment (i.e. assessment for learning) may also be adopted.

*Based on internal test or tests

**Continuous assessment during project

MANGALORE UNIVERSITY

3rd and 4th Semester Syllabus for B.Sc. (Hons.) Biotechnology

PREAMBLE

The role of education is paramount in nation building. One of the major objectives of UGC is maintenance of standards of higher education. Over the past decades the higher education system of our country has undergone substantial structural and functional changes resulting in both quantitative and qualitative development of the beneficiaries. Such changes have gained momentum with the introduction of Choice Based Credit System (CBCS) which further expects Learning Outcome-Based curriculum to maximize the benefits of the newly designed curriculum. The Learning Outcome- Based Curriculum in Biotechnology will help the teachers of the discipline to visualize the curriculum more specifically in terms of the learning outcomes expected from the students at the end of the instructional process. The commission strives to promote the link of students with the society/industry such that majority of the students engage in socially productive activities during their period of study in the institutions and at least half of the graduate students will secure access to employment/self-employment or engage themselves in pursuit of higher education. The model curriculum envisages to cater to the developmental trends in higher education, incorporating multi- disciplinary skills, professional and soft skills such as teamwork, communication skills, leadership skills, time management skills and inculcate human values, professional ethics, and the spirit of Innovation / entrepreneurship and critical thinking among students and promote avenues for display of these talents, linking general studies with professional courses. Besides imparting disciplinary knowledge to the learners, curriculum should aim to equip the students with competencies like problem solving, analytical reasoning and moral and ethical awareness. Introduction of internship and appropriate fieldwork/case studies are embedded in the curriculum for providing wider exposure to the students and enhancing their employability.

Learning outcomes specify what exactly the graduates are expected to know after completing a program of study. The expected learning outcomes are used as reference points to help formulate graduate attributes, qualification descriptors, program learning outcomes and course learning outcomes. Keeping the above objectives of higher education in mind the Learning Outcome-Based Curriculum Framework (LOCF) for the discipline of Biotechnology has been prepared and presented here.

Curriculum for B.Sc. (Hons.) Biotechnology

Program Name	B.Sc. Discipline	Total Credits for the Program	176
Core	Biotechnology	Starting year of implementation	2021-22

Program Outcomes: At the end of the program the student should be able to:

(Refer to literature on outcome-based education (OBE) for details on Program Outcomes)

- PO1. Understanding concepts of Biotechnology and demonstrate interdisciplinary skills acquired in cell biology, genetics, biochemistry, microbiology, and molecular biology
- PO2. Demonstrating the Laboratory skills in cell biology, basic and applied microbiology with an emphasis on technological aspects
- PO3. Competent to apply the knowledge and skills gained in the fields of Plant biotechnology, animal biotechnology and microbial technology in pharma, food, agriculture, beverages, herbal and nutraceutical industries.
- PO4. Critically analyse the environmental issues and apply the biotechnology knowledge gained for conserving the environment and resolving the problems.
- PO5. Demonstrate comprehensive innovations and skills in the fields of biomolecules, cell and organelles, molecular biology, bioprocess engineering and genetic engineering of plants, microbes, and animals with respect to applications for human welfare.
- PO6. Apply knowledge and skills of immunology, bioinformatics, computational modelling of proteins, drug design and simulations to test the models and aid in drug discovery.
- PO7. Critically analyse, interpret data, and apply tools of bioinformatics and multi omics in various sectors of biotechnology including health and Food.
- PO8. Demonstrate communication skills, scientific writing, data collection and interpretation abilities in all the fields of biotechnology.
- PO9. Learning and practicing professional skills in handling microbes, animals and plants and demonstrate the ability to identify ethical issues related to recombinant DNA technology, genetic engineering, animals handling, intellectual property rights, biosafety, and biohazards.
- PO10. Exploring the biotechnological practices and demonstrating innovative thinking in addressing the current day and future challenges with respect to food, health, and environment.
- PO11. Thorough knowledge and application of good laboratory and good manufacturing practices in biotech industries.
- PO12. Understanding and application of molecular biology techniques and principles in forensic and clinical biotechnology.
- PO13. Demonstrate entrepreneurship abilities, innovative thinking, planning, and setting up small-scale enterprises or CROs.

Assessment:

Weightage for assessments (in percentage)

Type of Course	Formative Assessment / IA	Summative Assessment
Theory	40	60
Practical	25	25
Projects	-	-
Experiential Learning (Internships etc.)	-	-

Contents of Courses for B.Sc. Biotechnology as Major

Semester	Course code	Course Category	Theory/Practical	Credits	Paper Title	Marks	
						S.A	I.A
3.	BTC: 103	DSC- 7	Theory	3	Biomolecules	60	40
			Practical	2	Biomolecules	25	25
		OE- 3	Theory	3	Nutrition and Health	60	40
4.	BTC:104	DSC- 8	Theory	3	Molecular Biology	25	25
			Practical	2	Molecular Biology	60	40
		OE- 4	Theory	3	Intellectual Property Rights	25	25

Curriculum for B.Sc. (Hons.) Biotechnology

Program Name	BSc Biotechnology		Semester	Third Sem
Course Title	Biomolecules			
Course No.	BTC: 103	DCS -3T	No. of Theory Credits	4
Contact hours	56 hrs		Duration of ESA/Exam	2.30 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Pre-requisite (s):	
Course Outcomes (COs): At the end of the course the student should be able to: 1. Acquire knowledge about types of biomolecules, structure, and their functions 2. Will be able to demonstrate the skills to perform bioanalytical techniques 3. Apply comprehensive innovations and skills of biomolecules to biotechnology field	
Content	Hrs
Unit-I – a) Carbohydrates: Introduction, sources, classification of carbohydrates. Structure, function and properties of carbohydrates. Monosaccharides – Isomerism and ring structure, Sugar derivatives – amino sugars and ascorbic acid Oligosaccharides – Sucrose and Fructose Polysaccharides – Classification as homo and heteropolysaccharides, Homopolysaccharides - storage polysaccharides (starch and glycogen- structure, reaction, properties), structural polysaccharides (cellulose and chitin-structure, properties), Heteropolysaccharides - glycoproteins and proteoglycans (Brief study). Metabolism: Glycolysis and gluconeogenesis, Kreb's cycle, oxidative phosphorylation.	14
b) Amino Acids, Peptides and Proteins Introduction, classification and structure of amino acids. Concept of – Zwitterion, isoelectric point, pK values. Essential and nonessential amino acids. Peptide bond and peptide, classification of proteins based on structure and function, Structural organization of proteins [primary, secondary (α , β), tertiary and quaternary]. Fibrous and globular proteins, Denaturation and renaturation of proteins General aspects of amino acid metabolism: Transamination, deamination, decarboxylation and urea cycle.	

Unit -II a) Lipids Classification and function of lipids, properties (saponification value, acid value, iodine number, rancidity), Hydrogenation of fats and oils Saturated and unsaturated fatty acids. General structure and biological functions of - phospholipids, sphingolipids, glycolipids, lipoproteins, prostaglandins, cholesterol, ergosterol. Metabolism: Beta oxidation of fatty acids. Biosynthesis of cholesterol.	14
b) Enzymes Introduction, nomenclature and classification, enzyme kinetics, factors influencing enzyme activity, metalloenzymes, activation energy and transition state, enzyme activity, specific activity. Coenzymes and their functions (one reaction involving FMN, 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, Alkaline phosphatase and their clinical significance).	

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 a) Nucleic acids Structures of purines and pyrimidines, nucleosides, nucleotides in DNA Denovo and salvage pathway of purine and pyrimidine synthesis. b) Hormones Classification of hormones based on chemical nature and mechanism of action. Chemical structure and functions of the following hormones: Glucagon, Cortisone, Epinephrine, Testosterone and Estradiol.	14
Unit –IV - Bioanalytical tools : a) Chromatography : Principle, procedure and applications of - paper chromatography, thin layer chromatography, adsorption chromatography, ion exchange chromatography, gel filtration chromatography, affinity chromatography, gas liquid chromatography and high performance liquid chromatography. b) Electrophoresis: Principle, procedure and applications of electrophoresis (paper electrophoresis, gel electrophoresis -PAGE, SDS- PAGE & agarose electrophoresis) and isoelectric focusing. c) Spectroscopy: UV-Vis spectrophotometry; mass spectroscopy, atomic absorption spectroscopy.	14

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	2	3	4	5	6	7	8	9	10	11	12
Acquire knowledge about types of biomolecules, structure, and their functions	✓				✓							✓
Will be able to demonstrate the skills to perform bioanalytical techniques			✓								✓	✓
Apply comprehensive innovations and skills of biomolecules to biotechnology field	✓				✓							✓

Pedagogy: Lectures, Seminars, Industry Visits, Debates, Quiz and Assignments

Summative Assessment = 60 Marks	
Formative Assessment Occasion / type	Weightage in Marks
Attendance	10
Seminar	10
Debates and Quiz	10
Test	10
Total	60 marks + 40 marks = 100 marks

Course Title	Biomolecules		Practical Credits	2
Course No.	BTC:103	DSC-3P	Contact hours	
Content				
1. Introduction to basic instruments (Principle, standard operating procedure) with demonstration. 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 Bradford 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 plant pigments by circular paper chromatography 10. Separation of amino acids by thin layer chromatography 11. Native PAGE 12. Determination of iodine number of lipids				

Practical assessment

Assessment			
Formative assessment		Summative Assessment	Total Marks
Assessment Occasion / type	Weightage in Marks	Practical Exam	
Record	5	25	50
Test	10		
Attendance	5		
Performance	5		
Total	25	25	

References	
1	An Introduction to Practical Biochemistry, 3rd Edition, (2001), David Plummer; Tata McGraw Hill Edu.Pvt.Ltd. New Delhi, India
2	Biochemical Methods, 1st Edition, (1995), S. Sadashivam, A. Manickam; New Age International Publishers, India
3	Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing. House, New Delhi, ISBN 81-7319-302-9
4	Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed). I.K International Pvt. LTD, New Delhi. ISBN 81-88237-41-8
5	Standard Methods of Biochemical Analysis, S. K. Thimmaiah (ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067

Curriculum for B.Sc. (Hons.) Biotechnology

OPEN ELECTIVE

Program Name	BSc Biotechnology		Semester	Third Sem
Course Title	Nutrition and Health			
Course Code		OE-3	No. of Theory Credits	3
Contact hours	Lecture		Duration of ESA/Exam	Hours
	Practical			
Formative Assessment Marks			Summative Assessment Marks	

Course Pre-requisite(s):	
Course Outcomes (COs): 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	
Content	45 Hrs
Unit-I - Introduction	14 Hrs
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	
Unit -II - Nutrients	14 Hrs
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.	
Unit -III – Nutrition and Health	14 Hrs
Methods of cooking affecting nutritional value. Advantages and disadvantages. Boiling, steaming, pressure cooking. Oil/Fat – Shallow frying, deep frying. Baking. Nutrition through lifecycle. Nutritional requirement, dietary guidelines: Adulthood, Pregnancy, Lactation, Infancy- Complementary feeding, Pre-school, Adolescence, geriatric. Nutrition related metabolic disorders- diabetes and cardiovascular disease.	

Pedagogy: Lectures, Seminars, Industry Visits, Debates, Quiz and Assignments

Summative Assessment = 60 Marks	
Formative Assessment Occasion / type	Weightage in Marks
Attendance	10
Seminar	10
Debates and Quiz	10
Test	10
Total	60 marks + 40 marks = 100 marks

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 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

Curriculum for B.Sc. (Hons.) Biotechnology

Program Name	BSc Biotechnology		Semester		Fourth Sem
Course Title		Molecular Biology			
Course No.	BTC: 104	DCS -4T	No. of Theory Credits		4
Contact hours	56 hrs		Duration of ESA/Exam		2.30 Hours
Formative Assessment Marks			Summative Assessment Marks		

Course Pre-requisite (s):	
Course Outcomes (COs): At the end of the course the student should be able to: 1. Study the advancements in molecular biology with latest trends. 2. Will acquire the knowledge of structure, functional relationship of proteins and nucleic acids. 3. Aware about the basic cellular processes such as transcription, translation, DNA replication and repair mechanisms.	
Content	Hrs
Unit-I - Molecular basis of life and Nucleic Acids An introduction RNA and experimental proof of DNA as genetic material and types of DNA. Structure and functions of DNA and RNA, Watson and Crick model of DNA and other forms of DNA (A and Z) functions of DNA and RNA including ribozymes.	14 Hrs
Unit -II - DNA Replication and Repair Replication of DNA in prokaryotes and eukaryote– Enzymes and proteins involved in replication, Theta model, linear and rolling circle model. Polymerases and all enzyme components. The replication complex: Pre-priming proteins, primosome, replisome, unique aspects of eukaryotic chromosome replication, Fidelity of replication DNA damage and Repair mechanism: photo reactivation, excision repair, mismatch repair and SOS repair.	14 Hrs
Unit -III - Transcription and RNA processing Central dogma, RNA structure and types of RNA, Transcription in prokaryotes RNA polymerase, role of sigma factor, promoter, Initiation, elongation and termination of RNA chains. Transcription in eukaryotes: Eukaryotic RNA polymerases, transcription factors, promoters, enhancers, mechanism of transcription initiation, promoter clearance and elongation RNA splicing and processing: processing of pre-mRNA: 5' cap formation, polyadenylation, splicing, rRNA and tRNA splicing.	14 Hrs
Unit –IV - Regulation of gene expression and translation Genetic code and its characteristics, Wobble hypothesis Translation- in prokaryotes and eukaryotes- ribosome, enzymes and factors involved in translation. Mechanism of translation- activation of amino acid, aminoacyl tRNA synthesis, Mechanism- initiation, elongation and termination of polypeptide chain. Fidelity of translation, Inhibitors of translation. Protein folding and modifications, Post translational modifications of proteins.	14 Hrs

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	2	3	4	5	6	7	8	9	10	11	12
Study the advancements in molecular biology with latest trends	✓				✓							✓
Will acquire the knowledge of structure, functional relationship of proteins and nucleic acids					✓	✓						✓
Aware about the basic cellular processes such as transcription, translation, DNA replication and repair mechanisms	✓				✓				✓			✓

Pedagogy: Lectures, Seminars, Industry Visits, Debates, Quiz and Assignments

Summative Assessment = 60 Marks	
Formative Assessment Occasion / type	Weightage in Marks
Attendance	10
Seminar	10
Debates and Quiz	10
Test	10
Total	60 marks + 40 marks = 100 marks

Course Title	Molecular Biology		Practical Credits	2
Course No.	BTC: 104	DSC-4P	Contact hours	
Content				
1. Preparation of DNA model 2. Estimation of DNA by DPA method 3. Estimation of RNA by Orcinol method 4. Column chromatography – gel filtration (Demo) 5. Extraction and partial purification of protein from plant source by Ammoniumsulphate precipitation. 6. Extraction and partial purification of protein from animal source by organic solvents. 7. Protein separation by SDS-Polyacrylamide Gel Electrophoresis (PAGE) 8. Charts on- Conjugation, Transformation and Transduction, DNA replication, Types of RNA				

Practical assessment

Assessment			
Formative assessment		Summative Assessment	Total Marks
Assessment Occasion / type	Weightage in Marks	Practical Exam	
Record	5	25	50
Test	10		
Attendance	5		
Performance	5		
Total	25	25	

References	
1	Glick, B.R and Pasternak J.J (1998) Molecular biotechnology, Principles and application of recombinant DNA, Washington D.C. ASM press
2	Howe. C. (1995) Gene cloning and manipulation, Cambridge University Press, USA
3	Lewin, B., Gene VI New York, Oxford University Press
4	Rigby, P.W.J. (1987) Genetic Engineering Academic Press Inc. Florida, USA
5	Sambrook et al (2000) Molecular cloning Volumes I, II & III, Cold spring Harbor Laboratory Press New York, USA
6	Walker J. M. and Ging old, E.B. (1983) Molecular Biology & Biotechnology (Indian Edition) Royal Society of Chemistry U.K
7	Karp. G (2002) Cell & Molecular Biology, 3rdEdition, John Wiley & Sons; I

Curriculum for IV Sem B.Sc. (Hons.) Biotechnology

OPEN ELECTIVE

Program Name	BSc Biotechnology		Semester	Fourth Sem
Course Title	Intellectual Property Rights			
Course Code		OE-4	No. of Theory Credits	3
Contact hours	Lecture		Duration of ESA/Exam	2.5 Hours
	Practical			
Formative Assessment Marks			Summative Assessment Marks	

Course Pre-requisite(s): Semester I and II of composite Home Science.

Course Outcomes (COs): At the end of the course the student should be able to:

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

Content	45 Hrs
Unit-I - 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 Hrs
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, Turmeric, Neem)	14 Hrs
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 Hrs

Pedagogy

Summative assessment = 40 marks theory paper, End semester Exam duration of exam 2 hours	
Formative Assessment Occasion / type	Weightage in Marks
Assignment	10
Seminar	10
Case studies	10
Test	10
Total	40 marks

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 - http://www.wto.org
5	World Intellectual Property organization – www.wipo.int Office of the controller general of Patents, Design & Trademarks - www.ipindia.nic.in



ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಹೊಸ ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ ೨೦೨೦ರ ಅನುಸಾರ ಸಿದ್ಧಪಡಿಸಿದ
ಸ್ನಾತಕ ಅಧ್ಯಯನ ಮಂಡಳಿಯಲ್ಲಿ ಅನುಮೋದನೆಗೊಂಡಿರುವ ಸ್ನಾತಕ ಪದವಿಗಳ
ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯ, ಬಿ.ಎ. ಐಚ್ಛಿಕ ಕನ್ನಡ ಹಾಗೂ ಮುಕ್ತ ಆಯ್ಕೆ
ಪಠ್ಯಕ್ರಮ ೨೦೨೨-೨೦೨೩ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಅನ್ವಯ

ಎಸ್.ವಿ.ಪಿ. ಕನ್ನಡ ಅಧ್ಯಯನ ಸಂಸ್ಥೆ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
ಮಂಗಳಗಂಗೋತ್ರಿ - ೫೭೪ ೧೯೯

ಸ್ನಾತಕ ಕನ್ನಡ ಅಧ್ಯಯನ ಮಂಡಳಿ ಸಭೆಯ ನಡಾವಳಿ

ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ, ಮಂಗಳಗಂಗೋತ್ರಿಯ ಎಸ್.ವಿ.ಪಿ. ಕನ್ನಡ ಅಧ್ಯಯನ ಸಂಸ್ಥೆಯಲ್ಲಿ ದಿನಾಂಕ : ೧/೦೯/೨೦೨೨ರ ಬೆಳಿಗ್ಗೆ ೧೦.೩೦ ಘಂಟೆಗೆ ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ ಅನ್ವಯ ಪದವಿ ಕನ್ನಡ ಅಧ್ಯಯನ ಮಂಡಳಿ ವಿಶೇಷ ಸಭೆ ಸೇರಿ ಈ ಕೆಳಗಿನ ನಿರ್ಣಯಗಳನ್ನು ಕೈಗೊಳ್ಳಲಾಯಿತು.

ಸಭೆಯಲ್ಲಿ ಹಾಜರಿದ್ದವರು

೧.	ಪ್ರೊ. ಸೋಮಣ್ಣ	ಅಧ್ಯಕ್ಷರು	ಸಹಿ ಇದೆ
೨.	ಡಾ. ಶೈಲಜಾ	ಸದಸ್ಯರು	ಸಹಿ ಇದೆ
೩.	ಡಾ. ಡಿ.ಕೆ. ಸರಸ್ವತಿ	ಸದಸ್ಯರು	ಸಹಿ ಇದೆ
೪.	ಡಾ. ರವಿರಾಜ್ ಶೆಟ್ಟಿ	ಸದಸ್ಯರು	ಸಹಿ ಇದೆ
೫.	ಡಾ. ನಾಗವೇಣಿ ಮಂಚಿ	ಸದಸ್ಯರು	ಸಹಿ ಇದೆ
೬.	ಪ್ರೊ. ಬಿ.ಎಂ. ಕಾವೇರಿಯಪ್ಪ	ಸದಸ್ಯರು	ಸಹಿ ಇದೆ
೭.	ಎಸ್.ಆರ್. ಅರುಣಕುಮಾರ್	ವಿಶೇಷ ಆಹ್ವಾನಿತರು	ಸಹಿ ಇದೆ
೮.	ಡಾ. ಹೆಚ್.ಜಿ. ಶ್ರೀಧರ	ವಿಶೇಷ ಆಹ್ವಾನಿತರು	ಸಹಿ ಇದೆ

ನಿರ್ಣಯಗಳು :

೧. ಈ ಸಭೆಯಲ್ಲಿ ಪದವಿ ಶಿಕ್ಷಣಧಾರೆಗಳಾದ ಬಿ.ಎ., ಬಿ.ಎಸ್ಸಿ., ಬಿ.ಎಸ್ಸಿ.(ಫ್ಯಾಡ್), ಬಿ.ಕಾಂ, ಬಿ.ಬಿ.ಎ. ಮತ್ತು ಬಿ.ಸಿ.ಎ.ಗಳ ನಾಲ್ಕು ಸೆಮಿಸ್ಟರ್‌ಗಳಿಗೆ ಕಡ್ಡಾಯ ಕನ್ನಡ ಭಾಷೆಗೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯಪುಸ್ತಕಗಳನ್ನು ರಚಿಸುವ ಕುರಿತು ತೀರ್ಮಾನಿಸಲಾಯಿತು.
೨. ಅಧ್ಯಯನ ಮಂಡಳಿಯ ಸದಸ್ಯರು ಪಠ್ಯಪುಸ್ತಕಗಳನ್ನು ಸಂಪಾದಿಸುವ ಕಾರ್ಯವನ್ನು ಸ್ವಯಂ ಪ್ರೇರಣೆಯಿಂದ ಹಂಚಿಕೊಂಡರು.
೩. ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ-೨೦೨೦ಕ್ಕೆ ಅನುಗುಣವಾಗಿ ಭಾಷಾಪಠ್ಯವನ್ನು ವಿಷಯಾಧಾರಿತವಾಗಿ ರೂಪಿಸಲು ತೀರ್ಮಾನಿಸಿತು.
೪. ಕನ್ನಡ ಐಚ್ಛಿಕ ಅಥವಾ ಮೇಜರ್ ಕನ್ನಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ ೨೦೨೦ರ ಸೂಚನೆಯನ್ನು ಅನುಸರಿಸಿ ಪಠ್ಯಪುಸ್ತಕ ರೂಪಿಸಲು ನಿರ್ಧರಿಸಲಾಯಿತು.
೫. ಮುಕ್ತ ಆಯ್ಕೆ (OE) ಪತ್ರಿಕೆಗೆ ಪಠ್ಯಪುಸ್ತಕಗಳನ್ನು ಆಯ್ದುಕೊಳ್ಳಲು ನಿರ್ಧರಿಸಲಾಯಿತು.
೬. ಕಲಾ ನಿಕಾಯದ ಪಠ್ಯವನ್ನು ಬಿ.ಎ., ಬಿ.ಎಸ್.ಡಬ್ಲ್ಯು ಪದವಿ ಶಿಕ್ಷಣಗಳಿಗೆ ಅನ್ವಯಿಸುವುದೆಂದು ಸಭೆಯು ನಿರ್ಧರಿಸಿತು.
೭. ಸಂಪಾದಕರೊಂದಿಗೆ ಕಾರ್ಯನಿರ್ವಹಿಸಲು ಸಹಸಂಪಾದಕರನ್ನು ಆಯ್ಕೆ ಮಾಡಿಕೊಳ್ಳಲು ನಿರ್ಧರಿಸಲಾಯಿತು. ಕಾರ್ಯನಿರ್ವಾಹಕ ಸಂಪಾದಕರನ್ನಾಗಿ ಡಾ. ಮಾಧವ ಎಂ.ಕೆ. ಅವರನ್ನು ಸೇರಿಸಿಕೊಳ್ಳಲು ತೀರ್ಮಾನಿಸಲಾಯಿತು. ಹೀಗೆ ಆಯ್ಕೆ ಮಾಡಿಕೊಂಡಿರುವ ಸಹಸಂಪಾದಕರಿಗೆ ಹೊಸ ಪಠ್ಯಕ್ರಮ ರೂಪುರೇಷೆಯನ್ನು ವಿವರಿಸಲು ಒಂದು ದಿನದ ಕಾರ್ಯಾಗಾರವನ್ನು ನಡೆಸಲು ಸಭೆಯಲ್ಲಿ ತೀರ್ಮಾನಿಸಲಾಯಿತು. ಸಭೆಯ ಕೊನೆಯಲ್ಲಿ ಅಧ್ಯಕ್ಷರು ಎಲ್ಲರಿಗೂ ವಂದನೆಗಳನ್ನು ಸಲ್ಲಿಸಿ ಸಭೆಯನ್ನು ಮುಕ್ತಾಯಗೊಳಿಸಿದರು.

ಅಧ್ಯಕ್ಷರು
ಪ್ರೊ. ಸೋಮಣ್ಣ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಎ./ಬಿಎಸ್‌ಡಬ್ಲ್ಯು / ಬಿ.ವಿ.ಎ.
ಬಿ.ಎ.(ಹೆಚ್‌ಆರ್‌ಡಿ)/ಬಿಎ(ಎಸ್‌ಡಿಎಸ್) ಕನ್ನಡ

ಮೊದಲ ಚತುರ್ಮಾಸ

ಕಲಾ ಮಂಗಳ – ೧

(ಕನ್ನಡ ನಾಡು ನುಡಿ ಚಿಂತನೆ – ಪ್ರಕೃತಿ – ಬಾಲ್ಯ – ಸಂಕೀರ್ಣ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦ ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು
SEE- ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ : ೬೦ ಅಂಕಗಳು CIE- ನಿರಂತರ ಅಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ I - ಕನ್ನಡ ನಾಡು ನುಡಿ ಚಿಂತನೆ

೧. ಸರಳ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ	ರಂ.ಶ್ರೀ. ಮುಗಳಿ
೨. ಕನ್ನಡ ನಾಡಿನ ಹಾಡು	ಬೆಟಗೇರಿ ಕೃಷ್ಣ ಶರ್ಮ
೩. ಪಂಜೆ ಮಂಗೇಶರಾವ್	ಎಮ್. ರಾಮಚಂದ್ರ

ಘಟಕ II - ಪ್ರಕೃತಿ

೧. ಹುಲಿಕಲ್ಲುನೆತ್ತಿಯಲಿ	
ಸೂರ್ಯೋದಯ	ಕುವೆಂಪು
೨. ಧ್ಯಾನಸ್ಥ	ಸುಬ್ಬಾಯಿ ಚೊಕ್ಕಾಡಿ
೩. ನಿಸರ್ಗ	ಜನಪದ ಗೀತಾಂಜಲಿ
೪. ಬೆಳಗು	ಅಂಬಿಕಾತನಯದತ್ತ

ಘಟಕ III - ಬಾಲ್ಯ

೧. ಹೆಜ್ಜೆ ಹಾದಿ	ಸಾರಾ ಅಬೂಬಕ್ಕರ್
೨. ನೆನಪಿದೆಯೆ ನಿನಗೆ?	ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ
೩. ಊರು ಕೇರಿ	ಸಿದ್ಧಲಿಂಗಯ್ಯ

ಘಟಕ IV - ಸಂಕೀರ್ಣ

೧. ಆಟದಲ್ಲಿ ಸಂಸ್ಕೃತಿ ಸಂಕೇತವಾಗಿ	
ಹುಲಿ - ದನ	ಗಣನಾಥ ಎಕ್ಕಾರು
೨. ಭಾವುಕತೆ ಕನಸಾಗದಿರಲಿ	ವಿರೂಪಾಕ್ಷ ದೇವರಮನೆ
೩. ಮನೋವಿಜ್ಞಾನದ ಹಾಡು	ಗಂಗಾಧರ ಬೆಳ್ಳಾರೆ
೪. ಪತ್ರಿಕಾ ವರದಿ ತಯಾರಿ	ಚಿತ್ರಲೇಖನ-ಪ್ರಬಂಧ ರಚನೆಗಳ ಕುರಿತು ಮಾಹಿತಿ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಕಾಂ. ಕನ್ನಡ
ಮೊದಲ ಚತುರ್ಮಾಸ
ವಾಣಿಜ್ಯ ಮಂಗಳ - ೧

(ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ - ಸಂಸ್ಕೃತಿ-ಜಾಗತೀಕರಣ - ಸಂಕೀರ್ಣ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE- ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ : ೬೦ ಅಂಕಗಳು CIE- ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ I - ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ

೧. ನಾಡು ನುಡಿ	ಶ್ರೀವಿಜಯ
೨. ಕನ್ನಡ ತಾಯಿ ನೋಟ	ಬಿ.ಎಂ. ಶ್ರೀಕಂಠಯ್ಯ
೩. ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯ	ಸಂಗ್ರಹ
೪. ನನ್ನ ಕನ್ನಡ ಜಗತ್ತು	ಕೆ.ವಿ. ಸುಬ್ಬಣ್ಣ

ಘಟಕ II - ಸಂಸ್ಕೃತಿ

೧ ಮುತ್ತೈದಿ ಸಾವು	ಜಿ.ಪಿ. ರಾಜರತ್ನಂ
೨. ಸಂಸ್ಕೃತಿ	ದೇವುಡು
೩. ಬಿಳಿಗಿರಿ ರಂಗ	ಮಾಸ್ತಿ ವೆಂಕಟೇಶ ಅಯ್ಯಂಗಾರ್

ಘಟಕ III - ಜಾಗತೀಕರಣ

೧. ದಿಕ್ಕು	ಪ್ರತಿಭಾ ನಂದಕುಮಾರ್
೨. ನನ್ನ ಅವತಾರ	ಗೋಪಾಲಕೃಷ್ಣ ಅಡಿಗ
೩. ಹಕ್ಕಿ ಮತ್ತು ಅವಳು	ಮಿತ್ರ ವೆಂಕಟರಾಜ್

ಘಟಕ IV - ಸಂಕೀರ್ಣ

೧. ಬೆನ್ನುಬಿಡದ ಬೇತಾಳ-ಪೋಂಞ ಭೂತ	ಜಯದೇವ ಪ್ರಸಾದ್ ಮೊಳೆಯಾರ
೨. ನಾವೇಕೆ ಆಸಾಮಿಗಳಾಗಕೂಡದು?	ನಾರಾಯಣ ಶೇವಿರೆ
೩. ನ್ಯಾಯಮೂರ್ತಿ	
ಕೆ.ಎಸ್. ಹೆಗ್ಡೆ ಸಾಧನೆ	ಶ್ರೀ ಮುದ್ರಾಡಿ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿಎಸ್ಸಿ
ಮೊದಲ ಚತುರ್ಮಾಸ

ವಿಜ್ಞಾನ ಮಂಗಳ – ೧

(ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ - ಭೂಮಿ- ವೈಜ್ಞಾನಿಕ ಮನೋಧರ್ಮ-ಸಂಕೀರ್ಣ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE - ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ : ೬೦ ಅಂಕಗಳು

CIE - ನಿರಂತರ ಅಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ I ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ

೧. ಆ ನಾಡು ಸಿರಿಯನೇನಂ ಮೊಗಲ್ವೆಂ ಪಂಪ
೨. ಕಣ್ಣೆ ಕಡು ಚೆಲ್ಲುವಡೆದಿರುತಿಹುದು ನಂಜುಂಡ ಕವಿ
೩. ನಮ್ಮ ನುಡಿ ಮಾಸ್ತಿ ವೆಂಕಟೇಶ ಅಯ್ಯಂಗಾರ್

ಘಟಕ II ಭೂಮಿ

೧. ಬೆಟ್ಟದ ಜೀವ ಕೋಟ ಶಿವರಾಮ ಕಾರಂತ
೨. ಮಳೆ ಬರುವ ಹಾಗಿದೆ ಮೂ.: ಪೋಲೆ ಷೋಯಿಂಕಾ
ಅನು: ಎಚ್.ಎಸ್. ಶಿವಪ್ರಕಾಶ್
೩. ಡಕೋಟಾದಲ್ಲಿ ಲಾರಾ ಮೂ.: ಲಾರಾ ಇಂಗಲ್ಸ್ ವೈಲ್ಡರ್
ಕ: ಪ್ರೊ. ಎಸ್.ಅನಂತನಾರಾಯಣ
೪. ಯದುಗಿರಿಯ ಮೌನ ವಿಕಾಸ ಪು.ತಿ.ನ.

ಘಟಕ III ವೈಜ್ಞಾನಿಕ ಮನೋಧರ್ಮ

೧. ಡಾರ್ವಿನ್‌ನ ಜೀವನದಿಂದ ಕಲಿಯಬೇಕಾದ ಪಾಠಗಳು ಬಿ.ಪಿ. ರಾಧಾಕೃಷ್ಣ
೨. ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗ ಡಿ.ವಿ.ಜಿ
೩. ಪಂಚತಂತ್ರದ ಕತೆ ದುರ್ಗಸಿಂಹ

ಘಟಕ IV ಸಂಕೀರ್ಣ

೧. ಮಾಲ್ಗುಡಿಯ ದಿನಗಳು ಮೂ.: ಆರ್.ಕೆ. ನಾರಾಯಣ
ತಂದೆಯವರ ಸಹಾಯ ಅ: ಡಾ. ಎಚ್. ರಾಮಚಂದ್ರ ಸ್ವಾಮಿ
೨. ನೆನಪುಗಳು ನೋಯಲಿಲ್ಲ... ನೇಮಿಚಂದ್ರ
೩. ತಾಮ್ರ ವರ್ಣದ ತಾಯಿ ಪಿ. ಚಂದ್ರಿಕಾ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿಎಸ್ಸಿ/ಬಿ.ಎಸ್ಸಿ (ಎಫ್‌ಎನ್‌ಡಿ), ಬಿ.ಎಸ್ಸಿ (ಹೆಚ್.ಎಸ್), ಬಿ.ಎಸ್ಸಿ (ಸಿಎಸ್), ಬಿ.ಎಸ್ಸಿ (ಫ್ಯಾಷನ್ ಡಿಸೈನ್), ಬಿ.ಎಸ್ಸಿ (ಗಾರ್ಮೆಂಟ್ ಡಿಸೈನ್), ಬಿ.ಎಸ್ಸಿ (ಲೆದರ್ ಡಿಸೈನ್), ಬಿ.ಎಸ್ಸಿ (ಇಂಟಿರಿಯರ್ ಡಿಸೈನ್ ಆಂಡ್ ಡೆಕೋರೇಶನ್), ಬಿ.ಎಸ್ಸಿ (ಅನಿಮೇಶನ್ ಆಂಡ್ ವಿಡುವಲ್ ಇಫೆಕ್ಟ್), ಬಿ.ಎಸ್ಸಿ (ಕೌನ್ಸಿಲಿಂಗ್), ಬಿ.ಎಸ್ಸಿ (ಪುಡ್ ಟೆಕ್ನಾಲಜಿ)

ಸೌಂದರ್ಯ ಮಂಗಳ - ೧

(ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ - ಸೌಂದರ್ಯ- ಒಲುಮೆ-ಸಂಕೀರ್ಣ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE- ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ : ೬೦ ಅಂಕಗಳು CIE- ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ I - ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ

೧. ಉದಯವಾಗಲಿ	
ನಮ್ಮ ಚೆಲುವ ಕನ್ನಡನಾಡು	ಹುಯಿಲಗೋಳ ನಾರಾಯಣ ರಾವ್
೨. ನನ್ನ ಕನ್ನಡ ಜಗತ್ತು	ಕೆ.ವಿ. ಸುಬ್ಬಣ್ಣ
೩. ಬೆಂಕಿ ಬಿದ್ದಿದೆ ಮನೆಗೆ	ಕಯ್ಯಾರ ಕಿಣ್ಣಣ್ಣ ರೈ

ಘಟಕ II - ಸೌಂದರ್ಯ

೧. ಶಾನುಭೋಗರ ಮಗಳು	ಕೆ.ಎಸ್.ನ
೨. ಮಾತಿನ ಮಲ್ಲಿ	ಹಾ.ಮಾ. ನಾಯಕ
೩. ಬೆಳಗು	ದ.ರಾ. ಬೇಂದ್ರೆ

ಘಟಕ III - ಒಲುಮೆ

೧. ಪ್ರೀತಿ ಇಲ್ಲದ ಮೇಲೆ	ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ
೨. ನನ್ನ ದೇವರು	ಕುವೆಂಪು
೩. ಜ್ಞಾನ ಸಮಾಜದ ಕಡೆಗೆ	
ಎ.ಪಿ.ಜೆ. ಅಬ್ದುಲ್ ಕಲಾಂ	ಅನು: ಜಿ.ಕೆ. ಮಧ್ಯಸ್ಥ

ಘಟಕ IV ಸಂಕೀರ್ಣ

೧. ಅಕ್ಷರ ಕಲಿಕೆಗಾಗಿ ಹೋರಾಟ	ದೇ. ಜವರೇಗೌಡ
೨. ರೊಟ್ಟಿ	ಪಿ. ಲಂಕೇಶ್
೩. ಸೂರ್ಯನಿಗೆ	
ಕಂಕಣ ಕಟ್ಟಿದವರು ಯಾರು?	ಬಿ.ಎ. ವಿವೇಕ ರೈ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ

ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಸಿ.ಎ. ಕನ್ನಡ

ಮೊದಲ ಚತುರ್ಮಾಸ

ಗಣಕ ಮಂಗಳ - ೧

(ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ - ಆಕಾಶ -ತಾರುಣ್ಯ - ಸಂಕೀರ್ಣ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE - ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ : ೬೦ ಅಂಕಗಳು CIE - ನಿರಂತರ ಅಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ I - ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ

೧. ಕನ್ನಡಿಗರ ತಾಯಿ	ಎಂ. ಗೋವಿಂದ ಪೈ
೨. ಕನ್ನಡ ಪದಗೊಳ್	ಜಿ.ಪಿ. ರಾಜರತ್ನಂ
೩. ಕನ್ನಡದ ಚೆಲುವು	ಟಿ. ಕೇಶವ ಭಟ್ಟ
೪. ತಾಯಿ ಕೊಟ್ಟ ವರ	ಕು.ಶಿ. ಹರಿದಾಸ ಭಟ್ಟ

ಘಟಕ II - ಆಕಾಶ

೧. ಖಗ್ರಾಸ ಗ್ರಹಣೋಪಾಖ್ಯಾನ	ಅಮೃತ ಸೋಮೇಶ್ವರ
೨. ನವಗ್ರಹ ಪರಿಕಲ್ಪನೆ :	
ಅಂದು ಇಂದು	ಜಿ.ಟಿ. ನಾರಾಯಣ ರಾವ್
೩. ಮುಗಿಲುಗಳು	ಎಂ.ವಿ. ಸೀತಾರಾಮಯ್ಯ
೪. ದೇವರು ರುಜು ಮಾಡಿದನು	ಕುವೆಂಪು

ಘಟಕ III - ತಾರುಣ್ಯ

೧. ಹುಚ್ಚು ಕೋಡಿ ಮನಸು	ಹೆಚ್.ಎಸ್. ವೆಂಕಟೇಶಮೂರ್ತಿ
೨. ರುರು ಪ್ರಮದಾ ಪ್ರೀತಿ	ಸ. ಉಷಾ
೩. ಹದಿಹರೆಯದವರನ್ನು ಕುರಿತು	ಪಿ. ಲಂಕೇಶ್
೪. ಒಂದು ಮಾಣಿಯ ಪರಿಣಯ ಪ್ರಸಂಗ	ಹೆಚ್.ಎಸ್. ಅನುಪಮ

ಘಟಕ IV - ಸಂಕೀರ್ಣ

೧. ಅಮಾಸ	ದೇವನೂರು ಮಹಾದೇವ
೨. ಭಾಷೆಯ ಬೆಳವಣಿಗೆಯಲ್ಲಿ ನವ ಮಾಧ್ಯಮ ಮತ್ತು ಸಾಮಾಜಿಕ ಜಾಲತಾಣಗಳು	ಶ್ರೀನಿವಾಸ ಪೆಜತ್ತಾಯ
೩. ಅಂಟಾರ್ಕ್ಟಿಕಾದಲ್ಲಿ ಅಂತರಜಾಲ, ಅಂತರಿಕ್ಷದಲ್ಲೂ ಅಂತರಜಾಲ!	ಟಿ.ಜಿ. ಶ್ರೀನಿಧಿ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಬಿ.ಎ. ಕನ್ನಡ

ಮೊದಲ ಚತುರ್ಮಾಸ

ನಿರ್ವಹಣಾ ಮಂಗಳ - ೧

(ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ - ಆಧುನಿಕತೆ - ಕುಟುಂಬ - ಸಂಕೀರ್ಣ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE - ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ : ೬೦ ಅಂಕಗಳು

CIE - ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ I - ಕನ್ನಡ ನಾಡು-ನುಡಿ ಚಿಂತನೆ

೧. ನಮ್ಮ ಹೆಮ್ಮೆಯ ಕನ್ನಡ ಪರಂಪರೆ	ಕಾಳೇಗೌಡ ನಾಗವಾರ
೨. ಮಂಗಲ ಗೀತೆ	ಕಡೆಂಗೋಡ್ಲು ಶಂಕರ ಭಟ್ಟ
೩. ಬೆಂಕಿ ಬಿದ್ದಿದೆ ಮನೆಗೆ	ಕಯ್ಯಾರ ಕಿಣ್ಣಣ್ಣ ರೈ
೪. ಕನ್ನಡಮೆನಿಪ್ಪಾ ನಾಡು ಚೆಲ್ವಾಯ್ತು	ಆಂಡಯ್ಯ

ಘಟಕ II - ಆಧುನಿಕತೆ

೧. ಮನೆಯಿಂದ ಮನೆಗೆ	ಕೆ.ಎಸ್. ನರಸಿಂಹಸ್ವಾಮಿ
೨. ಕುರುಡು ಕಾಂಚಾಣ	ದ.ರಾ. ಬೇಂದ್ರೆ
೩. ಲೂಟಿಯ ಹೆದ್ದಾರಿಗಳು	ನಾಗೇಶ್ ಹೆಗಡೆ
೪. ಗೇಣಿದಾರರ ಏಣಿಯಾಟ	ನಾಗವೇಣಿ ಎಚ್.

ಘಟಕ III - ಕುಟುಂಬ

೧. ಮೊಸರಿನ ಮಂಗಮ್ಮ	ಮಾಸ್ತಿ ವೆಂಕಟೇಶ್ ಅಯ್ಯಂಗಾರ್
೨. ತೊಟ್ಟಿಲು ತೂಗಿತು	ತ.ರಾ.ಸು
೩. ಪೆಣ್ಣು ಪೆತ್ತುದರಿಂದ ಪೆಸರೆನಿಸಿತು	ಸಂಚಿಯ ಹೊನ್ನಮ್ಮ
೪. ಜನಪದ ತ್ರಿಪದಿಗಳು	ಸಂಗ್ರಹ
- (ತಾಯಿ-ಮಗು, ಪತಿ-ಪತ್ನಿ, ಸಹೋದರತೆ, ತವರು)

ಘಟಕ IV - ಸಂಕೀರ್ಣ

೧. ಸೃಜನಶೀಲತೆ ಮತ್ತು ಆವಿಷ್ಕಾರ	(ಅಬ್ದುಲ್ ಕಲಾಂ) ಅನು: ಜಿ.ಕೆ. ಮಧ್ಯಸ್ಥ
೨. ಕೊಳ್ಳುಬಾಕತನ ಸಂಸ್ಕೃತಿ	ಗುರುರಾಜ ಕರ್ಜಗಿ
೩. ಇತಿಹಾಸ ಎಂಬ ಗುರು	ಸುಧಾಮೂರ್ತಿ
೪. ಇಬ್ಬರು ರೈತರು	ಸುಂ.ರಂ ಎಕ್ಕುಂಡಿ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
ಪ್ರಥಮ ಪದವಿ
ಮುಕ್ತ ಆಯ್ಕೆ ಪತ್ರಿಕೆ (OPEN ELECTIVE)
ಮೊದಲನೆ ಚತುರ್ಮಾಸ
ಮುಕ್ತ ಮಂಗಳ – ೧
(ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೬೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ : ೬೦ ಅಂಕಗಳು CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ : ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ 1 – ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ ಸ್ವರೂಪ

೩೦ ಅಂಕಗಳು

೧. ಕನ್ನಡ ಭಾಷೆಯ ಪ್ರಾಚೀನತೆ
೨. ಹಳಗನ್ನಡ ಸಾಹಿತ್ಯ
ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಕಾವ್ಯಗಳು
(ಶ್ರೀವಿಜಯ, ಪಂಪ, ರನ್ನ, ನಾಗವರ್ಮ, ನಾಗಚಂದ್ರ)
೩. ಮಧ್ಯಕಾಲೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ
ಮಧ್ಯಕಾಲೀನ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳು
(ವಚನ, ರಗಳೆ, ಷಟ್ಪದಿ, ಕೀರ್ತನೆ, ಸಾಂಗತ್ಯ, ತ್ರಿಪದಿ)
೪. ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯ
ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯ ಘಟ್ಟಗಳು
(ನವೋದಯ, ಪ್ರಗತಿಶೀಲ, ನವ್ಯ, ಬಂಡಾಯ, ದಲಿತ, ಮಹಿಳಾ)

ಘಟಕ II ಪಾತ್ರಿನಿಧಿಕ ಪಾಠಗಳು

೩೦ ಅಂಕಗಳು

೧. ನೆನಪುದೆನ್ನ ಮನ / ಪಂಪ
೨. ಬಸವಣ್ಣನ ವಚನಗಳು
೩. ಸೇನೆ ಕಡೆದುದು ನಗೆಯ ಕಡಲೊಳಗೆ / ಕುಮಾರವ್ಯಾಸ
೪. ಯಾಕೆ ನೀನಿಲ್ಲಿ ಪವಡಿಸಿದೆ ಹರಿಯೆ / ಕನಕದಾಸ
೫. ಪ್ರಾರ್ಥನೆ / ಬಿ.ಎಂ.ಶ್ರೀ.
೬. ಪ್ಯಾರಾನಿಗೆ ಸೈತಾನ ಕಾಟ / ಕೆ.ಪಿ.ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ
೭. ಇದು ಬರಿ ಮಣ್ಣಲ್ಲ / ಸಹನಾ ಕಾಂತಬೈಲು

ಮಾದರಿ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ

ಅಂಕಗಳ ವಿಂಗಡಣೆ - ಒಟ್ಟು ಅಂಕಗಳು : ೬೦

I. ೮ ಅಂಕಗಳ ಒಟ್ಟು ೩ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸುವುದು.

೩x೮=೨೪

೧. ಪ್ರಶ್ನೆ ೧. ಪದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.
೨. ಪ್ರಶ್ನೆ ೨. ಗದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೩. ಪ್ರಶ್ನೆ ೩. ಸಂಕೀರ್ಣ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.

II. ೫ ಅಂಕಗಳ ಒಟ್ಟು ೩ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸುವುದು

೩x೫=೧೫

೧. ಪ್ರಶ್ನೆ ೧. ಪದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೨. ಪ್ರಶ್ನೆ ೨. ಗದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೩. ಪ್ರಶ್ನೆ ೩. ಸಂಕೀರ್ಣ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.

III. ಪದ್ಯ : ಭಾವಾರ್ಥ-ಆಂತರಿಕ ಆಯ್ಕೆಯ ೫ ಅಂಕಗಳ ೨ ಪ್ರಶ್ನೆಗಳು

- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು

೧x೫=೫

IV. ಪದ್ಯ : ಸಂದರ್ಭ ಸ್ವಾರಸ್ಯ ೪ ಅಂಕಗಳ ೪ ಪ್ರಶ್ನೆಗಳು

- ೨ಕ್ಕೆ ಉತ್ತರಿಸುವುದು

೨x೪=೮

V. ೧ ಅಂಕದ ೮ ಪ್ರಶ್ನೆಗಳು

೮x೧=೮

ಕಾವ್ಯ - ೩ ಪ್ರಶ್ನೆಗಳು

ಗದ್ಯ - ೩ ಪ್ರಶ್ನೆಗಳು

ಸಂಕೀರ್ಣ - ೨ ಪ್ರಶ್ನೆಗಳು

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಎ./ಬಿಎಸ್‌ಡಬ್ಲ್ಯು/ ಬಿ.ವಿ.ಎ/
ಬಿ.ಎ.(ಹೆಚ್‌ಆರ್‌ಡಿ)/ಬಿಎ(ಎಸ್‌ಡಿಎಸ್) ಕನ್ನಡ
ದ್ವಿತೀಯ ಚತುರ್ಮಾಸ

ಕಲಾಮಂಗಳ – ೨

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಜಾಗತೀಕರಣ – ಕನಸು – ಪ್ರೀತಿ – ಸಂಕೀರ್ಣ ಪರಿಕಲ್ಪನೆಗಳನ್ನೊಳಗೊಂಡಂತೆ)

ಪರಿವಿಡಿ

I ಜಾಗತೀಕರಣ

1. ಪ್ರತಿ – ಸಂಸ್ಕೃತಿ	–	ಪ್ರಸನ್ನ
2. ಕೆಂಪುಗಿಣಿ	–	ವಸುಧೇಂದ್ರ
3. ಕಥೆಯಾದಳು ಹುಡುಗಿ	–	ಯಶವಂತ ಚಿತ್ತಾಲ

II ಕನಸು

1. ನಮ್ಮ ಊರಿನ ರಸಿಕರು	–	ಗೊರೂರು
2. ಅಮೃತಬಳ್ಳಿ ಕಷಾಯ	–	ಜಯಂತ ಕಾಯ್ಕಿಣಿ
3. ಸಂತೆಯಲಿ ನಿಂತ ಸಂತನ ಅಳಲು	–	ಆನಂದ ಖುಗ್ವೇದಿ

III ಪ್ರೀತಿ

1. ಪಠ್ಯ ಪುಂಡರೀಕ – ಮಹಾಶ್ವೇತೆ – ಸಂದರ್ಶನ	–	ನಾಗವರ್ಮ
2. ಮೋಕ್ಷವನ್ನು ಹುಡುಕುತ್ತಾ ಪ್ರೀತಿಯ ಬಂಧನದಲ್ಲಿ	–	ಲಂಕೇಶ ಪಿ
3. ತೊಟ್ಟಿಲಹಾಡು	–	ಕೆ.ಎಸ್.ನ

IV ಸಂಕೀರ್ಣ

1. ತೇಜಸ್ವಿ ಸಂದರ್ಶನ	–	ತೇಜಸ್ವಿ (20 ಪುಟಗಳು)
2. ಪಠ್ಯ ಪರಿಷ್ಕರಣೆ	–	ಎನ್.ಟಿ. ಭಟ್ಟ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಕಾಂ. ಕನ್ನಡ
ದ್ವಿತೀಯ ಚತುರ್ಮಾಸ

ವಾಣಿಜ್ಯ ಮಂಗಳ -೨

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಸೌಂದರ್ಯ – ಭಕ್ತಿ – ದೇಸಿಯತೆ – ಸಂಕೀರ್ಣ ಪರಿಕಲ್ಪನೆಗಳನ್ನೊಳಗೊಂಡಂತೆ)

ಪರಿವಿಡಿ

I ಸೌಂದರ್ಯ

1. ಬನವಾಸಿ ದೇಶದೊಳ್ – ಪಂಪ
2. ಜಡೆ – ಜಿ ಎಸ್ ಶಿವರುದ್ರಪ್ಪ
3. ಡಿ. ವಿ. ಜಿ.ಯವರ ಸೌಂದರ್ಯ ಮೀಮಾಂಸೆ – ಎಂ. ಎಚ್. ಕೃಷ್ಣಯ್ಯ

II ಭಕ್ತಿ

1. ಜೇಡರ ದಾಸಿಮಯ್ಯನವರ ವಚನಗಳು – ಜೇಡರ ದಾಸಿಮಯ್ಯ
2. ಹೊಟ್ಟೆಗಾಗಿ ಗೇಣು ಬಟ್ಟೆಗಾಗಿ – ಕನಕದಾಸ
3. ಅಮರನಾಥ ದರ್ಶನ – ಶಿರಂಕಲ್ಲು ಈಶ್ವರ ಭಟ್ಟ

III ದೇಸಿಯತೆ

1. ಮಂಟೇಸ್ಸಾಮಿ ಕಾವ್ಯ – ಜನಪದ ಮಹಾಕಾವ್ಯ
2. ಧರ್ಮ ವಿಜಯ (ಕನ್ನಡ ಅನುವಾದ) – ಪರಮೇಶ್ವರ ಭಟ್ ಬಾಳಿಲ
3. ಒಂದು ಖಾಲಿ ಜಾಗ – ಸ್ಮಿತಾ ಅಮೃತರಾಜ್

IV ಸಂಕೀರ್ಣ

1. ಆದೇಶ ಅಥವಾ ನಡೆವಳಿಗಳು – ವಾಣಿಜ್ಯ ಪತ್ರಗಳು
2. ಅನ್ನದಾತ (ಕಥೆ) – ಪ. ರಾಮಕೃಷ್ಣ ಶಾಸ್ತ್ರಿ
3. ಬೃಹದುದ್ದಿಮೆಗಳು ಜಾಗತೀಕರಣ – ಪ್ರೊ ರಾಜಶೇಖರ ಭೂಸನೂರಮಠ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಎಸ್ಸಿ. ಕನ್ನಡ
ದ್ವಿತೀಯ ಚತುರ್ಮಾಸ

ವಿಜ್ಞಾನ ಮಂಗಳ – ೨

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಜೀವನಕಲೆ – ಕನಸು – ಮಳೆ – ಸಂಕೀರ್ಣ ಪರಿಕಲ್ಪನೆಗಳನ್ನೊಳಗೊಂಡಂತೆ)

ಪರಿವಿಡಿ

I ಜೀವನ ಕಲೆ

1. ಭರತ ಬಾಹುಬಲಿ ಪ್ರಸಂಗ	–	ಪಂಪ
2. ಬಾನಕ್ಕಿಗೆ	–	ಗೋವಿಂದ ಪೈ
3. ಉಮರನ ಒಸಗೆ	–	ಡಿ.ವಿ.ಜಿ

II ಕನಸು

1. ರಂಗಣ್ಣನ ಕನಸಿನ ದಿನಗಳು	–	ಎಂ.ಆರ್.ಶ್ರೀ
2. ಶಾಲ್ಮಲ	–	ಚಂಪಾ
3. ಚಿಟ್ಟೆ ಮತ್ತು ಮೇಷ್ಟ್ರು	–	ಶ್ರೀ ಕೃಷ್ಣ ಆಲನಹಳ್ಳಿ

III ಮಳೆ

1. ದೋಣಿಯ ಹಾಡು	–	ಸಿದ್ಧಲಿಂಗಯ್ಯ
2. ಅಂಗಳದ ಅರಳಿ	–	ವಿ.ಸೀತಾರಾಮಯ್ಯ
3. ಮಲೆಗಳಲ್ಲಿ ಮದುಮಗಳು	–	ಕುವೆಂಪು

IV ಸಂಕೀರ್ಣ

1. ಬರಡು ಭೂಮಿಯಲ್ಲಿ ಶ್ರೀಗಂಧ ಬೆಳೆದ ಸಾಧಕಿ	–	ಕವಿತಾ ಮಿಶ್ರ
2. ಕತ್ತಲೆ ಬಂದ ಬೆಳಕು	–	ಎಂ.ಆರ್. ಕಮಲ
3. ಕಣಾದಿಂದ ಕಲಾಂನ ವರೆಗೆ (ಭಾರತೀಯ ವಿಜ್ಞಾನಿಗಳ ಪರಿಚಯ)	–	ಸರಸ್ವತಿ ರಾವ್

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಸಿ.ಎ. ಕನ್ನಡ
ದ್ವಿತೀಯ ಚತುರ್ಮಾಸ

ಗಣಕ ಮಂಗಳ-೨

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE - ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ - ೬೦ ಅಂಕಗಳು

CIE - ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ - ೪೦ ಅಂಕಗಳು

(ವಾಣಿಜ್ಯ - ತಂತ್ರಜ್ಞಾನ - ದಾಂಪತ್ಯ - ಸಂಕೀರ್ಣ ಪರಿಕಲ್ಪನೆಗಳನ್ನೊಳಗೊಂಡಂತೆ)

ಪರಿವಿಡಿ

I ವಾಣಿಜ್ಯ

1. ದುರ್ಯೋಧನನ ವಿಲಾಪ	-	ರನ್ನ
2. ರೋಕ್ಕ ಎರಡಕ್ಕೂ ದುಃಖ	-	ಪುರಂದರದಾಸ
3. ಕೊನೆಗಿರಾಕಿ	-	ನಿರಂಜನ

II ತಂತ್ರಜ್ಞಾನ

1. ಬೂದಿಯಿಂದ ಮೇಲೆದ್ದ - ಜಪಾನ್	-	ಕೆ.ಪಿ. ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ
2. ನುಡಿ ಬರಹ - ತಂತ್ರಾಂಶಗಳು	-	ಭವಾನಿ ಶಂಕರ್
3. ಕನ್ನಡ ತಂತ್ರಜ್ಞಾನ	-	ಕೆ.ಎ. ದಯಾನಂದ

III ದಾಂಪತ್ಯ

1. ಮನದನ್ನೆ	-	ದ.ರಾ.ಬೇಂದ್ರೆ
2. ಬಳೆಗಾರನ ಹಾಡು	-	ಕೆ.ಎಸ್.ನ
2. ಬದುಕು ಕಾಯುವುದಿಲ್ಲ	-	ನೇಮಿಚಂದ್ರ

IV ಸಂಕೀರ್ಣ

1. ವ್ಯಾಕ್ಸನ್ ಪೈಲ್ಡನ್	-	ರಾಜಪ್ಪ ದಳವಾಯಿ
2. ಸಾವಿನಂಚಿನ ಸಂವಾದ (ಆಯ್ದ ಭಾಗ 20)	-	ದೀಪ್ತಿ ಎಸ್. ರಾವ್
3. ಸಾಲು ಮರಗಳ ಹರೇಕಳ ಮೊಯ್ದಿನ್	-	ಇಸ್ಮತ್ ಪಜೀರ್

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿ.ಬಿ.ಎ. ಕನ್ನಡ
ದ್ವಿತೀಯ ಚತುರ್ಮಾಸ

ನಿರ್ವಹಣಾ ಮಂಗಳ - ೨

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE - ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ - ೬೦ ಅಂಕಗಳು

CIE - ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ - ೪೦ ಅಂಕಗಳು

(ಕಾಯಕ - ಸಾಮರಸ್ಯ - ಅಂತಃಕರಣ - ಸಂಕೀರ್ಣ ಪರಿಕಲ್ಪನೆಗಳನ್ನೊಳಗೊಂಡಂತೆ)

ಪರಿವಿಡಿ

I ಕಾಯಕ

1. ಲಕ್ಷ್ಮಿ - ಬಸವಣ್ಣ ವಚನ	- ಕಾಯಕ ಪ್ರಜ್ಞೆ ವಚನಗಳು
2. ನೇಗಿಲಯೋಗಿ	- ಕುವೆಂಪು
3. ಕಿತ್ತಳೆ ಹಣ್ಣಲ್ಲ	- ಕೆ. ಚಿನ್ನಪ್ಪ ಗೌಡ

II ಸಾಮರಸ್ಯ

1. ನಾವೆಲ್ಲರೂ ಒಂದೇ ಜಾತಿ	- ಅಡಿಗರು
2. ಬದುಕಲು ಕಲಿಯಿರಿ (ಆಯ್ದ ಭಾಗ)	- ಸ್ವಾಮಿ ಜಗದಾತ್ಮನಂದರು
3. ನಾನು ಬಡವಿ	- ದ. ರಾ. ಬೇಂದ್ರೆ

III ಅಂತಃಕರಣ

1. ಕಣಿವೆ ಮುದುಕ	- ಪು. ತಿ. ನ.
2. ಭಿಕ್ಷುವೂ ಪಕ್ಷಿಯೂ	- ಗೋವಿಂದ ಪೈ
3. ಹೆಸರು ಸಾಯುವುದಿಲ್ಲ	- ಮಾಸ್ತಿ

IV ಸಂಕೀರ್ಣ

1. ನಾಗಂದಿಗೆಯೊಳಗಿಂದ (ಆಯ್ದ ಭಾಗ)	-
ಬಿ.ಎಂ. ರೋಹಿಣಿ ಅವರ ಆತ್ಮಕಥೆ	-
2. ಕಾಸುಕುಡಿಕೆ	- ಜಯದೇವ ಪ್ರಸಾದ ಮೊಳೆಯಾರ

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ

ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಪ್ರಥಮ ಬಿಎಸ್ಸಿ/ಬಿ.ಎಸ್ಸಿ (ಎಫ್‌ಎನ್‌ಡಿ), ಬಿ.ಎಸ್ಸಿ (ಹೆಚ್.ಎಸ್), ಬಿ.ಎಸ್ಸಿ (ಸಿಎಸ್), ಬಿ.ಎಸ್ಸಿ (ಫ್ಯಾಷನ್ ಡಿಸೈನ್), ಬಿ.ಎಸ್ಸಿ (ಗಾರ್ಮೆಂಟ್ ಡಿಸೈನ್), ಬಿ.ಎಸ್ಸಿ (ಲೆದರ್ ಡಿಸೈನ್), ಬಿ.ಎಸ್ಸಿ (ಇಂಟಿರಿಯರ್ ಡಿಸೈನ್ ಆಂಡ್ ಡೆಕೋರೇಶನ್), ಬಿ.ಎಸ್ಸಿ (ಅನಿಮೇಶನ್ ಆಂಡ್ ವಿಜುವಲ್ ಇಫೆಕ್ಟ್), ಬಿ.ಎಸ್ಸಿ (ಕೌನ್ಸಿಲಿಂಗ್), ಬಿ.ಎಸ್ಸಿ (ಪುಡ್ ಟೆಕ್ನಾಲಜಿ)
ದ್ವಿತೀಯ ಚತುರ್ಮಾಸ

ಸೌಂದರ್ಯ ಮಂಗಳ – ೨

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಮಾರುಕಟ್ಟೆ – ಪರಿಸರ – ಅಂತಃಕರಣ – ಸಂಕೀರ್ಣ ಪರಿಕಲ್ಪನೆಗಳನ್ನೊಳಗೊಂಡಂತೆ)

ಪರಿವಿಡಿ

I ಮಾರುಕಟ್ಟೆ

1. ಸೌಂದರ್ಯ ಮತ್ತು ಮೈಬಣ್ಣ	– ಲೋಹಿಯಾ (ಕೆ.ವಿ. ಸುಬ್ಬಣ್ಣ)
2. ಕುರುಕ್ಷೇತ್ರದಂಚಿನಲ್ಲಿ	– ವಿಜಯಾ ದಬ್ಬೆ
3. ಗಿರಣಿ ವಿಸ್ತಾರ ನೋಡಮ್ಮ	– ಶರೀಫರು

II ಪರಿಸರ

1. ಚಿಗರಿಗಂಗಳ ಚೆಲುವಿ	– ದ.ರಾ. ಬೇಂದ್ರೆ
2. ನಿಸರ್ಗವೇ ಘೋಷಿಸಿದ ಲಾಕ್‌ಡೌನ್	– ನಾಗೇಶ ಹೆಗಡೆ
3. ಪರಿಸರದ ಕಥೆ	– ಕೆ.ಪಿ. ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ

III ಅಂತಃಕರಣ

1. ಪ್ರೀತಿ ಒಂದು ಕಲೆಯೇ?	– ಎರಿಕ್ ಫ್ರಾಂ. ಅನುವಾದ: ಕೆ.ವಿ. ನಾರಾಯಣ ಮತ್ತು

ರಾಘವೇಂದ್ರ ರಾವ್

2. ರೈಲು ನಿಲ್ದಾಣದಲ್ಲಿ	– ಕೆ.ಎಸ್. ನರಸಿಂಹ ಸ್ವಾಮಿ
3. ಮದಲಿಂಗನ ಕಣಿವೆ	– ಮಾಸ್ತಿ

IV ಸಂಕೀರ್ಣ

1. ಹೇಗಿದ್ದರೂ ಅವು ಚೆಲು ಹೂಗಳು	– ವೈದೇಹಿ
2. ಯಾರು ಅರಿಯದ ವೀರ	– ಕುವೆಂಪು
3. ಕನಸಿಗಾದರೂ ಬಾರೋ ಬಸವಣ್ಣ	– ಸುಬ್ಬ ಹೊಲೆಯರ್

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
ಪ್ರಥಮ ಪದವಿ
ಮುಕ್ತ ಆಯ್ಕೆ ಪತ್ರಿಕೆ (OPEN ELECTIVE)
ಎರಡನೆ ಚತುರ್ಮಾಸ

ಮುಕ್ತ ಮಂಗಳ – ೨

(ಕನ್ನಡ ವ್ಯಾಕರಣ)

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೩+೦+೦,
ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು
SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು
CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

ಪರಿವಿಡಿ

ಘಟಕ - ೧

೧. ಕನ್ನಡ ವ್ಯಾಕರಣ ಪರಂಪರೆ
೨. ಕನ್ನಡ ವ್ಯಾಕರಣ ಕಲಿಯುವಿಕೆಯ ಅಗತ್ಯತೆಗಳು
೩. ಭಾಷೆಯ ಹುಟ್ಟು, ಬೆಳವಣಿಗೆಯ ಚಿಂತನೆ

ಘಟಕ ೨

೧. ಕನ್ನಡ ವ್ಯಾಕರಣದ ಪರಿಭಾಷೆಗಳು

ಘಟಕ ೩

೧. ಸಂಧಿ
೨. ಸಮಾಸ
೩. ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ
೪. ಗುಣವಾಚಕ
೫. ಅವ್ಯಯ
೬. ಕೃದಂತ, ಲಿಂಗಗಳು
೭. ದ್ವಿರುಕ್ತಿ, ಜೋಡುನುಡಿ, ನುಡಗಟ್ಟುಗಳು, ಗಾದೆಗಳು

II Semester NEP ಪಠ್ಯಕ್ರಮ

ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ ಮಾದರಿ

ಸಮಯ: ೨ ಗಂಟೆ

ಕನ್ನಡ ಭಾಷೆ

ಅಂಕ: ೬೦

I. ಎರಡು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ (ನಾಲ್ಕು ಘಟಕಗಳಿಂದ ಒಂದೊಂದು ಪ್ರಶ್ನೆ ಆಯ್ಕೆ ಮಾಡಬೇಕು)	2x8=16
II. ಎರಡು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ (ನಾಲ್ಕು ಘಟಕಗಳಿಂದ ಒಂದೊಂದು ಪ್ರಶ್ನೆ)	2x6=12
III. ಒಂದಕ್ಕೆ ಭಾವ ಸ್ವಾರಸ	1x4=04
IV. ಮೂರಕ್ಕೆ ಸಂದರ್ಭ ಬರೆಯಿರಿ	4x3=12
V. ಎರಡಕ್ಕೆ ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ (ಎಲ್ಲ ಘಟಕಗಳಿಂದ ಒಂದೊಂದು ಆಯ್ಕೆ)	4x2=08
VI. ಒಂದು ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿ (ಎಲ್ಲ ಘಟಕಗಳಿಂದ ತಲಾ ಎರಡು ಪ್ರಶ್ನೆಗಳ ಆಯ್ಕೆ)	1x8=08

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಎ. ಕನ್ನಡ ಐಚ್ಛಿಕ - ಎ-೨
ಭಾರತೀಯ ಮತ್ತು ಪಾಶ್ಚಾತ್ಯ ಕಾವ್ಯಮೀಮಾಂಸೆ
ಮೂರನೆಯ ಚತುರ್ಮಾಸ

ಸಾಹಿತ್ಯ ಮಂಗಳ-೨

(ಕ್ರೆಡಿಟ್‌ಗಳು 3, ಪಾಠದ ಅವಧಿ- 3, ಲಿಖಿತ ಪರೀಕ್ಷೆಗೆ 60 ಅಂಕಗಳು
ಹಾಗೂ ಆಂತರಿಕ ಗುಣಾಂಕಗಳು- 40)

ಪರಿವಿಡಿ

I. ಭಾರತೀಯ ಕಾವ್ಯಮೀಮಾಂಸೆ:

1. ಪರಿಚಯ ಕಾವ್ಯಕಾರಣಗಳು: ಪ್ರತಿಭೆ ವ್ಯುತ್ಪತ್ತಿ, ಸಹೃದಯ, ಕಾವ್ಯ ಪ್ರಯೋಜನ
2. ಪ್ರಮುಖ ಅಲಂಕಾರಿಕರು :
ಭರತ, ಭಾಮಹ, ದಂಡಿ, ಆನಂದವರ್ಧನ, ವಾಮನ
3. ಪ್ರಮುಖ ಸಿದ್ಧಾಂತಗಳು : ಅಲಂಕಾರ, ರಸ, ರೀತಿ, ಧ್ವನಿ

II. ಪಾಶ್ಚಾತ್ಯ ಕಾವ್ಯಮೀಮಾಂಸೆ

1. ಕಾವ್ಯ ಕುರಿತು ಪರಿಕಲ್ಪನೆಗಳು ಮತ್ತು ವ್ಯಾಖ್ಯಾನ
2. ಅರಿಸ್ಟಾಟಲ್‌ನ ಅನುಕರಣವಾದ
3. ಅರಿಸ್ಟಾಟಲ್‌ನ ರುದ್ರನಾಟಕದ ಸ್ವರೂಪ ಮತ್ತು ರುದ್ರ ನಾಟಕದ ನಾಯಕನ ಲಕ್ಷಣಗಳು
4. ಟಿ.ಎಸ್. ಎಲಿಯಟ್‌ನ ಪರಂಪರೆ ಮತ್ತು ವ್ಯಕ್ತಿ ಪ್ರತಿಭೆ

ಪರಮಾರ್ಶನ ಗ್ರಂಥಗಳು

ಭಾರತೀಯ ಕಾವ್ಯಮೀಮಾಂಸೆ : ತೀ.ನಂ. ಶ್ರೀಕಂಠಯ್ಯ
ತೌಲನಿಕ ಕಾವ್ಯಮೀಮಾಂಸೆ : ಹೆಚ್. ತಿಪ್ಪೇ ರುದ್ರಸ್ವಾಮಿ
ಕಾವ್ಯಾರ್ಥ ಚಿಂತನ : ಜಿ. ಎಸ್. ಶಿವರುದ್ರಪ್ಪ
ಪಾಶ್ಚಾತ್ಯ ಸಾಹಿತ್ಯ ಚಿಂತನೆ : ಇನಾಂದಾರ್
ಅರಿಸ್ಟಾಟಲ್‌ನ ಕಾವ್ಯಮೀಮಾಂಸೆ - ನರಹಳ್ಳಿ ಬಾಲಸುಬ್ರಹ್ಮಣ್ಯ

ದ್ವಿತೀಯ ಬಿ.ಎ. ಕನ್ನಡ ಐಚ್ಛಿಕ (ಎ ಬಿ)
ಕನ್ನಡ ಕಾವ್ಯ ಮೀಮಾಂಸೆಯ ಆಧುನಿಕ ರೂಪಗಳು
೨ನೆಯ ಸೆಮಿಸ್ಟರ್

ಸಾಹಿತ್ಯ ಮಂಗಳ - ೨

ಮಾದರಿ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ

೨. ಗಂಟೆ

ಅಂಕಗಳು : ೬೦

ಘಟಕ 1: ಭಾರತೀಯ ಕಾವ್ಯ ಮೀಮಾಂಸೆ

ಅಂಕಗಳು: 40

I. ಅ. ಮೂರು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೊಟ್ಟು ಎರಡು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ

2 x 10 = 20

ಆ. ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೊಟ್ಟು ಮೂರು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ

3 x 5 = 15

II. ಒಂದು ಮಾರ್ಕಿನ ಐದು ಪ್ರಶ್ನೆಗಳು

5x1=05

ಘಟಕ: 2 ಪಾಶ್ಚಾತ್ಯ ಕಾವ್ಯ ಮೀಮಾಂಸೆ

ಅಂಕಗಳು: 20

III. ಅ. ಎರಡು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೊಟ್ಟು ಒಂದು ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ

1x10=10

ಆ. ಮೂರು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೊಟ್ಟು ಎರಡು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ

2x 4 =08

IV. ಒಂದು ಮಾರ್ಕಿನ ಎರಡು ಪ್ರಶ್ನೆಗಳು

2x1=02

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಎ. ಕನ್ನಡ ಐಚ್ಛಿಕ - ಎ-೬
ಕನ್ನಡ ಕಾವ್ಯ ಮೀಮಾಂಸೆಯ ಆಧುನಿಕ ರೂಪಗಳು
ಮೂರನೆಯ ಚತುರ್ಮಾಸ

ಸಾಹಿತ್ಯ ಮಂಗಳ-೨

(ಕ್ರೆಡಿಟ್‌ಗಳು 3, ಪಾಠದ ಅವಧಿ-3, ಲಿಖಿತ ಪರೀಕ್ಷೆಗೆ 60 ಅಂಕಗಳು
ಹಾಗೂ ಆಂತರಿಕ ಗುಣಾಂಕಗಳು - 40)
ಪರಿವಿಡಿ

I. ಕನ್ನಡ ಕಾವ್ಯ ಮೀಮಾಂಸೆ

1. ಕನ್ನಡ ಕಾವ್ಯ ಮೀಮಾಂಸೆಗೊಂದು ಪ್ರವೇಶಿಕೆ
ಡಾ ಎಸ್. ನಟರಾಜ ಬೂದಾಳು

II. ಜನಪದಕಾವ್ಯ ಮೀಮಾಂಸೆ

1. ಸಹೃದಯ ನೋಡುಗ ಮತ್ತು ಕೇಳುಗ - ಡಾ ವೀರಣ್ಣದಂಡೆ
2. ಹಸನಾದ ಹಾಡೀಗಿಳುಸುರಾದ ಒಡ್ಡಾಣ- ಡಾ ಎಸ್.ಎಮ್. ಹಿರೇಮಠ

III. ದಲಿತ, ಬಂಡಾಯ ಹಾಗೂ ಮಹಿಳಾ ಕಾವ್ಯ

1. ಚಿತ್ರದ ಬೆನ್ನು - ಎನ್.ಕೆ. ಹನುಮಂತಯ್ಯ
2. ಕಪ್ಪು ಜನತೆಯ ಸೂರ್ಯನಿಗೆ - ಚೆನ್ನಣ್ಣ ವಾಲೀಕಾರ
3. ಹೋರಾಟ - ಎಚ್. ಎನ್. ಆರತಿ

IV. ದಲಿತ ಹಾಗೂ ಬಂಡಾಯ - ಗದ್ಯ

1. ತೂತಿನ ದುಡ್ಡು ಮತ್ತು ನೀರು - ಅರವಿಂದ ಮಾಲಗತ್ತಿ
2. ಅಂಗಡಿ ಪೂಜೆ - ಆರ್.ವಿ. ಭಂಡಾರಿ
3. ಹುಸಿಯ ನುಡಿಯಲು ನೋಡಾ - ನಟರಾಜ ಹುಳಿಯಾರ್

V. ಆಧುನಿಕ ಕಾವ್ಯ ವಾದಗಳು

(ಅಭಿಜಾತವಾದ, ರಮ್ಯವಾದ, ವಾಸ್ತವವಾದ, ಸಂಕೇತವಾದ, ಅಸ್ತಿತ್ವವಾದ, ನವ್ಯವಾದ, ನವೋತ್ತರವಾದ)

ಪರಮಾರ್ಶನ ಗ್ರಂಥಗಳು

ವಿಮರ್ಶೆಯ ಪರಿಭಾಷೆ - ಓ.ಎಲ್. ನಾಗಭೂಷಣಸ್ವಾಮಿ
ಪಾಶ್ಚಾತ್ಯ ಸಾಹಿತ್ಯ ವಾದಗಳು - ಡಾ. ಸಿ.ಆರ್ ಯರವಿನತಲಿಮಠ

ದ್ವಿತೀಯ ಬಿ.ಎ. ಕನ್ನಡ ಐಚ್ಛಿಕ (ಎ ಓ)

ಕನ್ನಡ ಕಾವ್ಯ ಮೀಮಾಂಸೆಯ ಆಧುನಿಕ ರೂಪಗಳು

ಶಿನೆಯ ಸೆಮಿಸ್ಟರ್

ಸಾಹಿತ್ಯ ಮಂಗಳ - ೨

ನಾಲ್ಕು ಘಟಕಗಳಿಂದ

ಮಾದರಿ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ

೨. ಗಂಟೆ

ಅಂಕಗಳು : ೬೦

I.	ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳು- 3ಕ್ಕೆ ಉತ್ತರ- 30 ಅಂಕಗಳು	3x10=30
II	ಮೂರು ಪ್ರಶ್ನೆಗಳು- 2ಕ್ಕೆ ಉತ್ತರ- 12 ಅಂಕಗಳು	2x6=12
III.	ಟಿಪ್ಪಣಿಗಳು- ನಾಲ್ಕು ಪ್ರಶ್ನೆಗಳು- 3ಕ್ಕೆ ಉತ್ತರ- 12 ಅಂಕಗಳು	3x4=12
IV	ಒಂದು ಅಂಕದ 6 ಪ್ರಶ್ನೆಗಳು- ಎಲ್ಲದಕ್ಕೂ ಉತ್ತರ-6 ಅಂಕಗಳು	6x1=6

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
ದ್ವಿತೀಯ ಬಿ.ಎ./ಬಿಎಸ್‌ಡಬ್ಲ್ಯು / ಬಿ.ಎ.ಎ.
ಬಿ.ಎ.(ಹೆಚ್‌ಆರ್‌ಡಿ)/ಬಿಎ(ಎಸ್‌ಡಿಎಸ್) ಕನ್ನಡ
ಮೂರನೆಯ ಚತುರ್ಮಾಸ

ಕಲಾ ಗಂಗೋತ್ರಿ - ೩

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,
 ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು
 SEE - ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ - ೬೦ ಅಂಕಗಳು
 CIE - ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ - ೪೦ ಅಂಕಗಳು
 (ಕಾವ್ಯಭಾಗ - ಗದ್ಯ ಭಾಗ - ದೀರ್ಘ ಪಠ್ಯ)

ಪರಿವಿಡಿ

ಕಾವ್ಯಭಾಗ

೧. ನಿನ್ನಂತೆ

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೩. ಗೊಲ್ಲೊಥಾ	ಮಂಜೇಶ್ವರ ಗೋವಿಂದ ಪೈ / ೨೦
೪. ಮದಲಿಂಗನ ಕಣಿವೆ	ಮಾಸ್ತಿ / ೩೦
೫. ಗಂಡ ಹೆಂಡಿರ ಜಗಳ ಗಂಧ	
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೬. ಕತ್ತಲ ಗೂಡಿನ ದೀಪ	ನಾಗರೇಖಾ ಗಾಂವಕರ / ೪೫
೭. ಕಘ್ಯೂ	ವಿಜಯಾ ದಬ್ಬೆ / ೪೯

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೧. ಮನೆಯವರೆಗಿನ ಹಾದಿ	ವೈದೇಹಿ / ೫೨
೨. ತಾಯಿಯ ಆಸೆ	ಮೀನಗುಂಡಿ ಸುಬ್ರಹ್ಮಣ್ಯ / ೬೫
೩. ಭಾವಚಿತ್ರಗಳ ಭಾವನಾಲೋಕದಲ್ಲಿ	ಸ್ಮಿತಾ ಅಮೃತರಾಜ್ ಸಂಪಾಜೆ / ೭೫
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೧. ದಶಾನನ ಸ್ವಪ್ನಸಿದ್ಧಿ	ಕುವೆಂಪು / ೯೫

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ

ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಕಾಂ. ಕನ್ನಡ

ಮೂರನೆಯ ಚತುರ್ಮಾಸ

ವಾಣಿಜ್ಯ ಗಂಗೋತ್ರಿ-೩

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ದೀರ್ಘ ಪಠ್ಯ)

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೧. ಪರಹಿಂಸೆಯಂ ಮಾಡಿ

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೫. ನಾಗಿ

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೬. ನನ್ನ ನಾಯಿ

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೭. ತಾಯಿ ಪಾಠ

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೧. ಕುಣಿಯುವ ಕುರುಡು ಕಾಂಚಾಣ

ಪ್ರೊ. ಜಿ. ಚಂದ್ರಶೇಖರ / ೫೨

೨. ಕಲ್ಲುಮೊಟ್ಟೆ

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೩. ವಾಣಿಜ್ಯ ವ್ಯವಹಾರದಲ್ಲಿ ಭಾಷೆಯ ಬಳಕೆ

ಸಂ.: ನಾ. ದಾಮೋದರ ಶೆಟ್ಟಿ / ೭೩

೪. ಎಳೆಹರೆಯ ಮತ್ತು ಜಾಹೀರಾತು

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೨. ಪಾಂಡವರು ಪಾರಾದ ಪರ್ವ / ೯೧

೩. ಭೀಮ-ಇಡಂಬೆ ಕಲ್ಯಾಣ ಪರ್ವ / ೯೬

೪. ಕುಂಬಾರ ಗುಂಡಯ್ಯನ ಪರ್ವ / ೧೦೨

೫. ಬಕಾಸುರನನ್ನು ಕೊಂದ ಪರ್ವ / ೧೦೮

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಎಸ್ಸಿ. ಕನ್ನಡ
ಮೂರನೆಯ ಚತುರ್ಮಾಸ

ವಿಜ್ಞಾನ ಗಂಗೋತ್ರಿ-೩

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ದೀರ್ಘ ಪಠ್ಯ)

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೧. ಮಯೂರಧ್ವಜನ ದೇಹಾರ್ಥದಾನ	ಲಕ್ಷ್ಮೀಶ / ೧
೨. ಋಣವೆಂಬ ಪಾತಕವು	ಪುರಂದರದಾಸ / ೧೧
೩. ಉತ್ತರಮೇಘ	ದ.ರಾ. ಬೇಂದ್ರೆ / ೧೫
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೫. ಮಬ್ಬಿನಿಂದ ಮಬ್ಬಿಗೆ	ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ / ೨೭
೬. ಶಾಪ	ಸು.ರಂ. ಎಕ್ಕುಂಡಿ / ೩೪
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೧. ನಿಜಗಲ್ಲಿನ ರಾಣಿ	ಮಾಸ್ತಿ ವೆಂಕಟೇಶ ಅಯ್ಯಂಗಾರ್ / ೪೫
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೪. ಹೊಸ ಮಾಧ್ಯಮಗಳು	ಬಿ.ಎಸ್. ಚಂದ್ರಶೇಖರ / ೮೪

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೧. ಲವಕುಶರ ಜನನ	ಸಂ: ಡಾ.ಪಿ.ಕೆ. ರಾಜಶೇಖರ / ೧೦೮

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಬಿ.ಎ. ಕನ್ನಡ
ಮೂರನೆಯ ಚತುರ್ಮಾಸ

ನುಡಿ ವಿವೇಕ

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ಕಾದಂಬರಿ)

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ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಸಿ.ಎ. ಕನ್ನಡ
ತೃತೀಯ ಚತುರ್ಮಾಸ

ನುಡಿ ಜೇನು

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,
ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು
SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು
CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು
(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ದೀರ್ಘಪಠ್ಯ)

ಪರಿವಿಡಿ

ಕಾವ್ಯಭಾಗ

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೧. ಬಾಡಿಗೆ ಮನೆಗಳು	ಎಂ.ವಿ. ಸೀತಾರಾಮಯ್ಯ	೪೬
೨. ನಾನು ಕೊಂದ ಹುಡುಗಿ	ಆನಂದ	೫೭
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ದೀರ್ಘಪಠ್ಯ

೧. ಸುಬ್ಬಣ್ಣ	ಶ್ರೀನಿವಾಸ

ಮಾದರಿ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ

ಅಂಕಗಳ ವಿಂಗಡಣೆ - ಒಟ್ಟು ಅಂಕಗಳು : ೬೦

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೧. ಪ್ರಶ್ನೆ ೧. ಪದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.
೨. ಪ್ರಶ್ನೆ ೨. ಗದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೩. ಪ್ರಶ್ನೆ ೩. ಸಂಕೀರ್ಣ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.

II. ೫ ಅಂಕಗಳ ಒಟ್ಟು ೩ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸುವುದು ೩x೫=೧೫

೧. ಪ್ರಶ್ನೆ ೧. ಪದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೨. ಪ್ರಶ್ನೆ ೨. ಗದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೩. ಪ್ರಶ್ನೆ ೩. ಸಂಕೀರ್ಣ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.

III. ಪದ್ಯ : ಭಾವಾರ್ಥ-ಆಂತರಿಕ ಆಯ್ಕೆಯ ೫ ಅಂಕಗಳ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು ೧x೫=೫

IV. ಪದ್ಯ : ಸಂದರ್ಭ ಸ್ವಾರಸ್ಯ ೪ ಅಂಕಗಳ ೪ ಪ್ರಶ್ನೆಗಳು
- ೨ಕ್ಕೆ ಉತ್ತರಿಸುವುದು ೨x೪=೮

V. ೧ ಅಂಕದ ೮ ಪ್ರಶ್ನೆಗಳು ೮x೧=೮

- ಕಾವ್ಯ - ೩ ಪ್ರಶ್ನೆಗಳು
ಗದ್ಯ - ೩ ಪ್ರಶ್ನೆಗಳು
ಸಂಕೀರ್ಣ - ೨ ಪ್ರಶ್ನೆಗಳು

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
ದ್ವಿತೀಯ ಬಿ.ಎ./ಬಿಎಸ್‌ಡಬ್ಲ್ಯು / ಬಿ.ಎ.ಎ.
ಬಿ.ಎ.(ಹೆಚ್‌ಆರ್‌ಡಿ)/ಬಿಎ(ಎಸ್‌ಡಿಎಸ್) ಕನ್ನಡ
ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾಸ

ಕಲಾ ಗಂಗೋತ್ರಿ – ೪

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,
ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು
SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು
CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು
(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ದೀರ್ಘ ಪಠ್ಯ)

ಕಾವ್ಯಭಾಗ

೧. ಪತಿಗಳನ್ನನು ಮಾರಿ	
ಧರ್ಮಸ್ಥಿತಿಯ ಕೊಂಡರು	ಕುಮಾರವ್ಯಾಸ / ೧
೨. ಜಾತಿವಿಜಾತಿಯೆನಬೇಡ	ಸರ್ವಜ್ಞ / ೧೩
೩. ಮಕ್ಕಳ ಮಾರ್ಯಾರ ಮಳಿರಾಜಾ	ಜನಪದ / ೧೭
೪. ಪೆಂಟಯ್ಯನ ಅಂಗಿ	ಕೆ.ವಿ. ತಿರುಮಲೇಶ್ / ೧೯
೫. ಕತ್ತೆ ಮತ್ತು ಧರ್ಮ	ಸಿದ್ಧಲಿಂಗಯ್ಯ / ೨೩
೬. ಮೊಂಬತ್ತಿ ಉರಿಸಿ ಕಾಯುತ್ತಿದ್ದೇನೆ	ವಾಸಂತಿ ಅಂಬಲಪಾಡಿ / ೨೭
೭. ನನ್ನೊಳಗೆ ನಾನಿಳಿಯಬೇಕು	ಕೃಷ್ಣ ಪ್ರಸಾದ ಪೆರ್ಲ / ೩೧

ಗದ್ಯಭಾಗ

೧. ಹೊಸ ಆಂಡಯ್ಯ : ಪಂಡಿತ ಪರಂಪರೆಯ	
ಕೊಳಂಬೆ ಪುಟ್ಟಣ್ಣ ಗೌಡರು	ಮಾಧವ ಪೆರಾಜೆ / ೩೪
೨. ನಾವು ಮತ್ತು ನಮ್ಮ ಪ್ರಕೃತಿ	ಎಚ್.ಆರ್. ಕೃಷ್ಣಮೂರ್ತಿ / ೪೩
೩. ಗೋಣಗುವ ಚಟ	ಎ.ಎನ್. ಮೂರ್ತಿರಾಯರು / ೫೧
೪. ಜೀವದಲಿ ಜಾತ್ರೆ ಮುಗಿದಂತೆ	ಬಿ. ಜನಾರ್ದನ ಭಟ್ / ೫೯

ದೀರ್ಘಪಠ್ಯ

೧. ಮಹಾತ್ಮ ಗಾಂಧೀಜಿಯವರ ಆತ್ಮಕಥೆ	
– ನನ್ನ ಸತ್ಯಾನ್ವೇಷಣೆ (ಆಯ್ದ ಭಾಗ)	ಅನು – ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ್/೭೦

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) - ೨೦೨೦ರ ಅನ್ವಯ

ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಕಾಂ. ಕನ್ನಡ

ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾಸ

ವಾಣಿಜ್ಯ ಗಂಗೋತ್ರಿ - ೪

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE - ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ - ೬೦ ಅಂಕಗಳು

CIE - ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ - ೪೦ ಅಂಕಗಳು

(ಕಾವ್ಯಭಾಗ - ಗದ್ಯ ಭಾಗ - ದೀರ್ಘ ಪಠ್ಯ)

ಪರಿವಿಡಿ

ಕಾವ್ಯಭಾಗ

೧. ಶ್ರೀಮುಡಿಗ ಕೈಯಿಕ್ಕಿದನು	ಕುಮಾರವ್ಯಾಸ / ೧
೨. ವಚನಗಳು	ಸತ್ಯಕೃ / ೧೨
೩. ಬಂದಿದೆ ದೂರು ಬಂದಿದೆ ಪಾಂಡವರಿಗೆ	ಕನಕದಾಸ / ೧೭
೪. ತವರಿನ ಸಿರಿ	ಜನಪದ ಗೀತೆ / ೨೧
೫. ಇವನ ಹುಟ್ಟಿದ ಹಬ್ಬ	ಕೆ.ಎಸ್. ನರಸಿಂಹಸ್ವಾಮಿ / ೨೫
೬. ಕನ್ನಡಿಗರ ತಾಯಿ	ಎಂ. ಗೋವಿಂದ ಪೈ / ೩೧
೭. ಅಮ್ಮನ ಗುಡ್ಡ	ಚ. ಸರ್ವಮಂಗಳ / ೩೯

ಗದ್ಯಭಾಗ

೧. ಕತ್ತಲ ಹಾದಿಯಲ್ಲಿ ದೊಂದಿ ಹಿಡಿದು	ನೇಮಿಚಂದ್ರ / ೪೬
೨. ಶೋಕಿ ದಿನವಾದ ಶೋಕದಿನ	ರೋಹಿತ್ ಚಕ್ರತೀರ್ಥ / ೫೨
೩. ಮೌಲ್ಯಗಳಿಗೆ ಟಾಟಾ ಹೇಳದೆ ಪವಾಡ ಮಾಡಿದ ಅನಘ್ರರತ್ನ	ವಿಶ್ವೇಶ್ವರ ಭಟ್ / ೫೯
೪. ಬಯಸಿ ಬಯಸಿ ಶಿಕ್ಷಕರಾಗುವ ದಿನ ಬರಲಿ!	ನಿರಂಜನ ವಾನಳ್ಳಿ / ೬೬

ದೀರ್ಘ ಪಠ್ಯ

ಸ್ವಾಮಿ ವಿವೇಕಾನಂದ	ಚ.ನ. ಶಂಕರರಾವ್ / ೭೨

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಎಸ್ಸಿ. ಕನ್ನಡ
ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾಸ

ವಿಜ್ಞಾನ ಗಂಗೋತ್ರಿ – ೪

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ದೀರ್ಘ ಪಠ್ಯ)

ಪರಿವಿಡಿ

ಕಾವ್ಯಭಾಗ

೧. ಮಾನನಿಧಿಯನದೆಂತು ಮರೆದಪೆನು	ಕುಮಾರವ್ಯಾಸ / ೧
೨. ಧರ್ಮಯುದ್ಧ	ರತ್ನಾಕರವರ್ಣಿ / ೧೧
೩. ಏನೀ ಅದ್ಭುತವೇ	ಬಿ.ಆರ್. ಲಕ್ಷ್ಮಣರಾವ್ / ೧೬
೪. ನಿಮ್ಮೊಡನಿದ್ದು ನಿಮ್ಮಂತಾಗದೆ	ನಿಸಾರ್ ಅಹಮದ್ / ೨೧
೫. ಮನ್ವಂತರದ ಮಾನುಷಿ	ಯು. ಮಹೇಶ್ವರಿ / ೨೪
೬. ನೌಕೆ	ಸುಜಾತ ಹೆಗಡೆ / ೨೭
೭. ಸುನಾಮಿಯ ಸುಳಿಯಲ್ಲಿ	ಶ್ರೀಪತಿ ಕೆ. ಹಳಗುಂದ / ೩೦

ಗದ್ಯಭಾಗ

೧. ತಾಯ್ತನ	ಹೆಚ್. ನಾಗವೇಣಿ / ೩೩
೨. ಪಾಚಕ್ಕನ ಗಂಡಾಂತರ	ಕೆ. ಚನ್ನಪ್ಪ ಗೌಡ / ೪೭
೩. ಪ್ರಾರನಿಗೆ ಸೈತಾನ್ ಕಾಟ	ಕೆ.ಪಿ. ಪೂರ್ಣಚಂದ್ರ ತೇಜಸ್ವಿ / ೫೭
೪. ಕೃಷಿ, ಋಷಿ, ಮಿಷಿ	ಕೆ.ಎ. ದಯಾನಂದ / ೬೮

ದೀರ್ಘಪಠ್ಯ

೧. ಡಾ. ಬಿ.ಆರ್. ಅಂಬೇಡ್ಕರ್ ಜೀವನಚರಿತ್ರೆ	
ಆಯ್ದ ಭಾಗ	ದೇ.ಜ.ಗೌ. / ೮೨

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಬಿ.ಎ. ಕನ್ನಡ
ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾಸ

ನುಡಿಸಾಲು

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,
ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು
SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು
CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು
(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ದೀರ್ಘ ಪಠ್ಯ)

ಪರಿವಿಡಿ

ಕಾವ್ಯಭಾಗ

೧. ವೈಶಂಪಾಯನನೆಂಬ ಶುಕಂ	ನಾಗವರ್ಮ / ೧
೨. ವಚನಗಳು	ಅಕ್ಕಮಹಾದೇವಿ / ೧೩
೩. ದಿವ್ಯಜ್ಯೋತಿ	ಡಿ.ಎಸ್. ಕರ್ಕಿ / ೨೦
೪. ಗ್ಲಾನದ್ ದೀಪ	ಜಿ.ಪಿ. ರಾಜರತ್ನಂ / ೨೩
೫. ಜೀತ ಮಾಡುವ ಹುಡುಗ	ದೊಡ್ಡರಂಗೇಗೌಡ / ೨೭
೬. “ಭೀತಿ” ಅಥವಾ ‘ಎಚ್ಚರ’	ಕಮಲ ಹೆಮ್ಮಿಗೆ / ೩೧
೭. ಅವ್ವ	ಲಕ್ಕೂರು ಆನಂದ / ೩೪

ಗದ್ಯಭಾಗ

೧ ಓಡುವ ಗಿಡಮರಗಳೊಂದಿಗೆ	ಕಾ.ತ. ಚಿಕ್ಕಣ್ಣ / ೩೯
೨ ಶೇಷ ಪ್ರಶ್ನೆ	ತಿಲಕನಾಥ ಮಂಜೇಶ್ವರ / ೪೯
೩. ಕನ್ನಡದ ಆತಂಕಗಳು	ಕಿ.ರಂ. ನಾಗರಾಜ್ / ೫೬
೪. ಕಾಡಿನಲ್ಲಿ ಕಂಡದ್ದು	ಉಲ್ಲಾಸ ಕಾರಂತ / ೬೫

ದೀರ್ಘ ಪಠ್ಯ

೧. ಕೋಟಿ – ಚೆನ್ನಯ	ಪಂಜೆ ಮಂಗೇಶರಾಯ / ೭೬

ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ (NEP) – ೨೦೨೦ರ ಅನ್ವಯ
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ದ್ವಿತೀಯ ಬಿ.ಸಿ.ಎ ಕನ್ನಡ
ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾಸ

ನುಡಿನೋಟ

ಒಟ್ಟು ಕ್ರೆಡಿಟ್‌ಗಳು ೩, ಬೋಧನಾ ಅವಧಿ ೪+೦+೦,

ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಟ್ಟು ೧೦೦ ಅಂಕಗಳು

SEE – ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ – ೬೦ ಅಂಕಗಳು

CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ – ೪೦ ಅಂಕಗಳು

(ಕಾವ್ಯಭಾಗ – ಗದ್ಯ ಭಾಗ – ದೀರ್ಘ ಪಠ್ಯ)

ಪರಿವಿಡಿ

ಕಾವ್ಯಭಾಗ

೧. ನಿರ್ಮಲಧರ್ಮದಿಂದ ಪಾಲಿಸು ಧರೆಯಂ ಜನ್ಮ / ೧	
೨. ವಚನಗಳು	ಅಲ್ಲಮಪ್ರಭು / ೧೨
೩. ಸತ್ಯನಾಪುರದ ಸಿರಿ	ಜನಪದ / ೧೭
೪. ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗ	ಡಿವಿಜಿ / ೨೯
೫. ಹೋಗುವೆನು ನಾ	ಕುವೆಂಪು / ೩೪
೬. ವರ್ಧಮಾನ	ಎಂ. ಗೋಪಾಲಕೃಷ್ಣ ಅಡಿಗ / ೪೧
೭. ನನ್ನ ಹಣತೆ	ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ / ೪೫

ಗದ್ಯಭಾಗ

೧ ನಾಗಮ್ಮನ ಮನೆಯ ಸಣ್ಣ ಗೇಟು	ಮಿತ್ರಾ ವೆಂಕಟರಾಜ್ / ೪೯
೨ ಹೊರನಾಡಿನ ಕನ್ನಡಿಗ	ತಾಳಚೆ ವಸಂತಕುಮಾರ / ೬೫
೩. ಕನಸಿನ ಕತೆ	ಸಿ.ಆರ್. ಚಂದ್ರಶೇಖರ್ / ೭೭
೪. ರುಚಿ	ಸುನಂದಾ ಬೆಳಗಾವಕರ್ / ೮೯

ದೀರ್ಘ ಪಠ್ಯ

೧. ಚಂದ್ರಗಿರಿಯ ತೀರದಲ್ಲಿ	ಸಾರಾ ಅಬೂಬಕ್ಕರ್ / ೧೦೨

ಮಾದರಿ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ
ಅಂಕಗಳ ವಿಂಗಡಣೆ - ಒಟ್ಟು ಅಂಕಗಳು : ೬೦

I. ೮ ಅಂಕಗಳ ಒಟ್ಟು ೩ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸುವುದು. ೩x೮=೨೪

೧. ಪ್ರಶ್ನೆ ೧. ಪದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.
೨. ಪ್ರಶ್ನೆ ೨. ಗದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೩. ಪ್ರಶ್ನೆ ೩. ಸಂಕೀರ್ಣ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.

II. ೫ ಅಂಕಗಳ ಒಟ್ಟು ೩ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸುವುದು ೩x೫=೧೫

೧. ಪ್ರಶ್ನೆ ೧. ಪದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೨. ಪ್ರಶ್ನೆ ೨. ಗದ್ಯ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು
೩. ಪ್ರಶ್ನೆ ೩. ಸಂಕೀರ್ಣ : ಆಂತರಿಕ ಆಯ್ಕೆಯ ೨ ಪ್ರಶ್ನೆಗಳು
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು.

III. ಪದ್ಯ : ಭಾವಾರ್ಥ-ಆಂತರಿಕ ಆಯ್ಕೆಯ ೫ ಅಂಕಗಳ ೨ ಪ್ರಶ್ನೆಗಳು ೧x೫=೫
- ೧ಕ್ಕೆ ಉತ್ತರಿಸುವುದು

IV. ಪದ್ಯ : ಸಂದರ್ಭ ಸ್ವಾರಸ್ಯ ೪ ಅಂಕಗಳ ೪ ಪ್ರಶ್ನೆಗಳು ೨x೪=೮
- ೨ಕ್ಕೆ ಉತ್ತರಿಸುವುದು

V. ೧ ಅಂಕದ ೮ ಪ್ರಶ್ನೆಗಳು ೮x೧=೮

- ಕಾವ್ಯ - ೩ ಪ್ರಶ್ನೆಗಳು
ಗದ್ಯ - ೩ ಪ್ರಶ್ನೆಗಳು
ಸಂಕೀರ್ಣ - ೨ ಪ್ರಶ್ನೆಗಳು

Mangalore University

Mangalagangothri -574 199



SYLLABUS (Semester III and IV)

**B.A./B.Sc. (Hons) Mathematics,
B.A./B.Sc. with Mathematics as a Major/Minor Subject
(ACCORDING TO NATIONAL EDUCATION POLICY 2020)**

2022

Syllabus for B.A./B.Sc. with Mathematics as Major Subject & B.A./B.Sc. (Hons) Mathematics

SEMESTER – III

(2022-23 onwards)

MATDSCT 3.1: Ordinary Differential Equations and Real Analysis – I	
Teaching Hours: 4 Hours/Week	Credits: 4
Total Teaching Hours: 56 Hours	Max. Marks: 100 (SEE- 60 + I.A. - 40)

Course Learning Outcomes: This course will enable the students to:

- Solve first-order non-linear differential equations and linear differential equations.
- To model problems in nature using Ordinary Differential Equations.
- Formulate differential equations for various mathematical models
- Apply these techniques to solve and analyze various mathematical models.
- Understand the fundamental properties of the real numbers that lead to define sequence and series, the formal development of real analysis.
- Learn the concept of Convergence and Divergence of a sequence.
- Able to handle and understand limits and their use in sequences, series, differentiation, and integration.
- Apply the ratio, root, alternating series, and limit comparison tests for convergence and absolute convergence of an infinite series.

Ordinary Differential Equations:

Unit I: Recapitulation of Differential Equations of first order and first degree, Exact Differential equations, Necessary and sufficient condition for the equations to be exact, Reducible to the exact differential equations. Differential equations of the first order and higher degree: Equations solvable for p , x , y . Clairaut's equation and singular solution. Orthogonal trajectories of Cartesian and polar curves.

14hrs

Unit II: Linear differential equations of the n^{th} order with constant coefficients. Particular Integrals when the RHS is of the form e^{ax} , $\sin(ax+b)$, $\cos(ax+b)$, x^n , $e^{ax} V$ and xV (with proofs), where V is a function of x . Cauchy – Euler equations, Legendre differential equations, Method of variation of parameters. Simultaneous differential equations with two and more than two variables. Condition for integrability of total differential equations $P dx + Q dy + R dz = 0$.

14 hrs

Unit III: Sequences: Recapitulation of number system - Real line, bounded sets, supremum and infimum of a set, Archimedean property of R . Intervals, neighborhood of a point, open sets, closed sets, limit points.

Sequences of real numbers, Bounded sequences. Limit of a sequence. convergent, divergent, and oscillatory sequences. Monotonic sequences. Algebra of convergent sequences. Limit points of a sequence. Bolzano Weierstrass theorem for sequence. Limit superior and limit inferior of sequences. Cauchy's first and second theorem on limits of a sequence. Cauchy's general principle for convergence of a sequence. Subsequence and their properties.

14hrs

Unit IV: Infinite Series: Definition of convergent, divergent and oscillatory series. Series of non-negative terms, Cauchy's general principle of convergence. Geometric series, P-series (Harmonic series). Comparison tests for positive term series. D'Alembert's ratio test, Raabe's test. Cauchy's Root test and Cauchy's integral test. Alternating series. Leibnitz's theorem. Absolute convergence and conditional convergence of a series. Summation of series: Binomial, exponential and logarithmic. **14 hrs**

Reference Books:

1. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20th Edition- 2020. (For Unit I and Unit II)
2. S. C. Malik, and Savitha Arora, *Mathematical Analysis*, New Age International Publishers, 5th Edition- 2017. (For Unit III and Unit IV)
3. J. Sinha Roy and S. P. Adhy: *A Course of Ordinary and Partial Differential Equation*, Kalyani Publishers, New Delhi, 4th Edition - 2014.
4. D. Murray, *Introductory Course in Differential Equations*, Orient Black Swan - 2016
5. W. T. Reid, *Ordinary Differential Equations*, John Wiley, New York - 1971.
6. S. L. Ross, *Differential Equations*, John Wiley and Sons, 3rd Edition - 1984.
7. R. G. Bartle and D. R. Sherbert, *Introduction to Real Analysis*, John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 3rd Edition - 2015.
8. K. A. Ross, *Elementary Analysis: The Theory of Calculus*, Springer, 2nd Edition - 2013
9. S. K. Berberian, *A First Course in Real Analysis*, Springer Verlag, New York - 1994.
10. T. Apostol, *Mathematical Analysis*, Narosa Publishing House, 2nd Edition - 2002.
11. E. D. Rainville and P. E. Bedient, *Elementary Differential Equations*, Pearson, 8th Edition - 1996.

PRACTICAL

MATDSCP 3.1: Practical on Ordinary Differential Equations and Real Analysis – I	
Teaching Hours: 4 Hours/Week	Credits: 2
Total Teaching Hours: 56 Hours	Max. Marks: 50 (SEE - 25 + I.A. – 25)

Course Learning Outcomes: This course will enable the students to gain hands-on experience of

- Free and Open Source software (FOSS) tools or computer programming.
- Solving exact differential equations
- Plotting orthogonal trajectories
- Finding complementary function and particular integral of linear and homogeneous differential equations.
- Acquire knowledge of applications of real analysis and differential equations.
- Verification of convergence/divergence of different types of series

Practical/Lab Work to be performed in Computer Lab

Use open-source software to execute the practical problems. (Maxima/Scilab/MatLab /Mathematica/Python)

1. Fundamentals of Ordinary differential equations and Real analysis using FOSS

2. Verification of exactness of a differential equation
3. Plot orthogonal trajectories for Cartesian and polar curves
4. Solutions of differential equations that are solvable for x , y , p .
5. To find the singular solution by using Clairaut's form.
6. Finding the Complementary Function and Particular Integral of linear and homogeneous differential equations with constant coefficients and plot the solutions.
7. Finding the Particular Integral of differential equations up to second order and plot the solutions.
8. Solutions to the Total and Simultaneous differential equations and plot the solutions.
9. Test the convergence of sequences
10. Verification of exponential, logarithm and binomial series.
11. Verification of geometric series, p -series, Cauchy's Integral test, root test, and D Alembert's Test
12. Examples on a series of positive terms.
13. Examples on alternating series using Leibnitz's theorem.
14. Finding the convergence of series using Cauchy's criterion for partial sums.

Open Elective Course

(For students of Science stream who have not chosen Mathematics as one of the Core Course)

MATOET3.1(A) Ordinary Differential Equations	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max. Marks: 100 (SEE - 60 + I.A. – 40)

Course Learning Outcomes: This course will enable the students to:

- Understand the concept of the differential equation and their classification
- Know the meaning of the solution of a differential equation.
- To solve first-order ordinary differential equations.
- To solve exact differential equations and Converts to separable and homogenous equations to exact differential equations by integrating factors.
- To Solve Bernoulli differential equations.
- To find the solution to higher-order linear differential equations.

Unit I: Recapitulation of Differential Equations of first order and first degree, Exact Differential equations, Necessary and sufficient condition for the equations to be exact, Reducible to the exact differential equations. **14hrs**

Unit II: Differential equations of the first order and higher degree: Equations solvable for p , x , y . Clairaut's equation and singular solution. Orthogonal trajectories of Cartesian and polar curves. **14hrs**

Unit III: Linear differential equations of the n^{th} order with constant coefficients. Particular Integrals when the RHS is of the form e^{ax} , $\sin(ax+b)$, $\cos(ax+b)$, x^n , $e^{ax}V$ where V is a function of x . **14 hrs**

Reference Books:

1. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20th Edition – 2020. (For Unit I and Unit II)
2. J. Sinha Roy and S Padhy : *A course of Ordinary and Partial Differential Equation*, Kalyani Publishers, New Delhi, 4th Edition - 2014.
3. D. Murray, *Introductory Course in Differential Equations*, Orient BlackSwan–2016.
4. W. T. Reid, *Ordinary Differential Equations*, John Wiley, New York - 1971.
5. S. L. Ross, *Differential Equations*, John Wiley and Sons, 3rd Edition -1984.

Open Elective Course*(For students of other than Science stream)*

MATOET 3.1(B): Quantitative Mathematics	
Teaching Hours : 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max. Marks: 100 (SEE - 60 + IA - 40)

Course Outcomes: This course will enable the students to:

- Understand number system and fundamental operations
- Understand the concept of linear quadratic and simultaneous equations and their applications in real life problems
- Understand and solve the problems based on Age.
- Solve Speed and Distance related problems.

Unit-I: Algebra

Set theory and simple applications of Venn Diagram, relations, functions, indices, logarithms, permutations and combinations. Examples on commercial mathematics.

14 Hrs

Unit-II: Number System

Numbers, Operations on Numbers, Tests on Divisibility, HCF and LCM of numbers. Decimal Fractions, Simplification, Square roots and Cube roots - Problems thereon. Surds and Indices. Illustrations thereon.

14 Hrs

Unit-III: Theory of equations

Linear equations, quadratic equations, simultaneous equations in two variables, simple application problems - Problems on Ages, Problems on conditional Age calculations, Present & Past age calculations.

14 Hrs

Reference Books:

1. R.S. Aggarwal, *Quantitative Aptitude*, S. Chand and Company Limited, New Delhi -2021.
2. Abhijit Guha, *Quantitative Aptitude*, Mc.Grawhill publications, 5th Edition - 2014.
3. R. V. Praveen, *Quantitative Aptitude and Reasoning*, PHI publishers, 3rd Edition – 2016.
4. R. S. Aggarwal, *Objective Arithmetic*, S. Chand & Company Ltd, Revised Edition – 2018.
5. Qazi Zameeruddin, Vijay K. Khanna, S. K. Bhambri, *Business Mathematics*, S. Chand publications, 2nd Edition - 2009

6. S. K. Sharma and Gurmeet Kaur, *Business Mathematics*, Sultan Chand & Sons – 2019.
7. Hazarika Padmalochan, *A Text Book of Business mathematics for B.Com and BBA Course*, S. Chand Publication - 2017
8. N. G. Dasand, J. K. Das, *Business Mathematics and Statistics*, Mc.Grawhill Education - 2017.

Open Elective Course

(For Students of other than Science Stream)

MATOET 3.1(C): Vedic Mathematics	
Teaching Hours : 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max. Marks: 100(S.A.- 60 + I.A. – 40)

Course Outcomes: This course will enable the students to:

- Understand the Vedic methods of arithmetic
- Understand the Vedic methods of division with two/three digit divisor
- Understand the Vedic methods of power and root power of two digit numbers

Unit-I: Multiplication:

1. Ekadhikenpurven method (multiplication of two numbers of two digits).
2. Eknunenpurven method (multiplication of two numbers of three digits).
3. Urdhvatrishayam method (multiplication of two numbers of three digits).
4. Nikhilam Navtashchramam Dashtaha (multiplication of two numbers of three digits).
5. Combined Operations.

14 Hours

Unit-II: Division and Divisibility

Part A: Division

1. Nikhilam Navtashchramam Dashtaha (two digits divisor)
2. Paravartya Yojayet method (three digits divisor)

Part B: Divisibility

1. Ekadhikenpurven method (two digits divisor)
2. Eknunenpurven method (two digits divisor)

14 Hours

Unit-III:

Power and Root Power:

1. Square (two digit numbers)
2. Cube (two digit numbers).

Root:

1. Square root (four digit number)
2. Cube root (six digit numbers).
3. Solution of linear simultaneous equations.

14 Hours

Reference Books:

1. *Vedic Mathematics*, Motilal Banarsidass Publishers, New Delhi -1990
2. *Vedic Ganita*: Vihangama Drishti-1, Siksha Sanskriti Uthana Nyasa, New Delhi.
3. *Vedic Ganita Praneta*, Siksha Sanskriti Uthana Nyasa, New Delhi.
4. *Vedic Mathematics: Past, Present and Future*, Siksha Sanskriti Uthana Nyasa, New Delhi.
5. Leelavati, Chokhambha Vidya Bhavan, Varanasi.
6. *Bharatiya Mathematicians*, Sharda Sanskrit Sansthan, Varanasi.

SEMESTER – IV

MATDSCT 4.1: Partial Differential Equations and Integral Transforms	
Teaching Hours: 4 Hours/Week	Credits: 4
Total Teaching Hours: 56 Hours	Max. Marks: 100 (SEE - 60 + I.A. - 40)

Course Learning Outcomes: This course will enable the students to

- Solve the Partial Differential Equations of the first order and second order
- Formulate, classify and transform partial differential equations into canonical form.
- Solve linear and non-linear partial differential equations using various methods; and apply these methods to solving some physical problems.
- Able to take more courses on wave equation, heat equation, and Laplace equation.
- Solve PDE by Laplace Transforms and Fourier Transforms

Unit I: 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, The integrals of the non-linear equation by Charpit’s method.

14 Hrs

Unit II: Homogeneous linear partial differential equations with constant coefficients. Partial differential equations of the second order. Classification of second-order partial differential equations, canonical forms. Classification of second order linear equations as hyperbolic, parabolic, and elliptic. Solutions of the Heat equation, Laplace equation and Wave equation (using separation of variables).

14 Hrs

Unit III: Laplace Transforms: Definition, Basic Properties. Laplace transforms of some standard functions. Laplace transform of Periodic functions. Laplace transform of derivative and integral of a function. Heaviside function. Dirac-delta function. Convolution theorem. Inverse Laplace transforms and its properties. Solution of differential equations by using Laplace transforms.

14 Hrs

Unit IV: Fourier Series and Transforms: Periodic functions. Fourier Coefficients. Fourier series of functions with period 2 and period 2L. Fourier series of even and odd functions. Half range Cosine and Sine series. Fourier Transforms - Finite Fourier Cosine and Sine transform. Transforms of derivatives. Applications of Fourier Transforms.

14 Hrs

Reference Books:

1. D. A. Murray, *Introductory Course in Differential Equations*, Orient and Longman - 2017
2. H. T. H. Piaggio, *Elementary Treatise on Differential Equations and their Applications*, CBS Publisher & Distributors, Delhi - 1985.
3. G. F. Simmons, *Differential Equations*, Tata McGrawHill, 1st Edition – 2006.
4. S. L. Ross, *Differential Equations*, John Wiley and Sons, India, 3rd Edition -2004.
5. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20th Edition - 2020

6. K. Sankara Rao, *Introduction to Partial Differential Equations*, PHI, 3rd Edition -2015.
7. Ion N. Sneddon, *Elements of Partial differential equations*, McGraw-Hill International Editions -1986.
8. R. Murray and L. Spiegel (Schaum's Series), *Laplace Transforms*, McGraw Hill Education – 2005.
9. J. K. Goyal and K. P. Gupta, *Laplace and Fourier Transforms*, Pragathi Prakashan – 2016.
10. Sudhir Kumar, *Integral Transform Methods in Science & Engineering*, CBS Engineering Series - 2017.
11. Earl David Rainville and Philip Edward Bedient, *A short course in Differential Equations*, Prentice Hall College Div, Pearson College Div, 6th edition - 1981.
12. Sathya Prakash, *Mathematical Physics with classical Mechanics*, S Chand and Sons, New Delhi -2014

PRACTICALS

MATDSCP 4.1: Practical's on Partial Differential Equations and Integral Transforms	
Practical Hours : 4 Hours/Week	Credits: 2
Total Teaching Hours: 56 Hours	Max. Marks: 50 (S.A.-25 + I.A. – 25)

Mathematics practical with Free and open Source Software (FOSS) tools for computer programs

Course Learning Outcomes: This course will enable the students to

- Learn Free and Open Source software (FOSS) tools or computer programming.
- Solve problems on Partial Differential Equations and Integral Forms
- To find Laplace transform of various functions
- To find the Fourier Transform of periodic functions
- To solve differential equations by using Integral transforms.

Programs using Scilab/Maxima/Python:

- Elements of Partial differential equations and Integral transforms using FOSS
- 1 Solutions of Linear Partial differential equations of type 1 to type 4 and Lagrange's method
- 2 Solutions of partial differential equation using Charpit's method.
- 3 Solutions of Second order homogenous partial differential equation with constant coefficients.
- 4 Solutions to the partial differential equations using separation of variables method (Heat/ Wave/Laplace).
- 5 Finding the Laplace transforms of some standard and periodic functions.
- 6 Finding the inverse Laplace transform of simple functions
- 7 Verification of Convolution Theorem.
- 8 To solve ordinary linear differential equation using Laplace transform.
- 9 To solve Integral equation using Laplace transform.
- 10 To find full range Fourier series of some simple functions with period 2 and 2L
- 11 To find Half range sine and cosine series of some simple functions and plotting them.
- 12 To find Cosine Fourier transforms.
- 13 To find Sine Fourier transforms.

Open Elective Course

(For students of Science stream who have not chosen Mathematics as one of the Core Course)

MATOET4.1(A): Partial Differential Equations	
Teaching Hours: 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max. Marks: 100 (SEE-60 + I.A. – 40)

Course Learning Outcomes: This course will enable the students to

- Explain the concept of the differential equation.
- Classifies the differential equations concerning their order and linearity.
- Explains the meaning of the solution of a differential equation.
- Solve first-order ordinary differential equations.
- Solves exact differential equations and Converts separable and homogenous equations to exact differential equations by integrating factors.
- Solves Bernoulli differential equations.
- Will be able to find the solution to higher-order linear differential equations.

Unit I: 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 $Pp + Qq = R$. **14 Hrs**

Unit II : Standard types of first order non-linear partial differential equations, The integrals of the non-linear equation by Charpit’s method. Homogeneous Linear partial differential equations with constant coefficients. Partial differential equations of the second order. Classification of second- order partial differential equations, canonical forms. **15 Hrs**

Unit III: Classification of second order linear equations as hyperbolic, parabolic, and elliptic. Solutions of the Heat equation, Laplace equation and Wave equation (using separation of variables). **14 Hrs**

Reference Books:

1. D. A. Murray, *Introductory Course in Differential Equations*, Orient and Longman - 2017
2. H. T. H. Piaggio, *Elementary Treatise on Differential Equations and their Applications*, CBS Publisher & Distributors, Delhi - 1985.
3. G. F. Simmons, *Differential Equations*, Tata McGrawHill, 1st Edition – 2006.
4. S. L. Ross, *Differential Equations*, John Wiley and Sons, India, 3rd Edition -2004.
5. M. R. Spiegel, *Schaum’s outline of Laplace Transforms* – 2005.
6. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20th Edition - 2020
7. K. Sankara Rao, *Introduction to Partial Differential Equations*, PHI, 3rd Edition -2015.
8. Ion N. Sneddon, *Elements of Partial differential equations*, McGraw-Hill International Editions -1986.

Open Elective Course
(For students of other than science stream)

MATOET4.1(B) : Mathematical Finance	
Teaching Hours: 3Hours/week	Credits: 3
Total Teaching Hours:42Hours	Max.Marks:100 (S.A-60+I.A.-40)

Course Learning Outcomes: This course will enable the students to

- Understand how compute profit and loss, discount and Banker's discount.
- Understand the concept of Linear equations and inequalities and their use in the solving the Linear Programming Problems.
- Formulation of Transportation Problem and its application in routing problem.

Unit-I: Commercial Arithmetic

Bill of exchange, Bill of discounting procedure. Basic formula related to profit, loss, discount and brokerage, Successive discount, True discount, Banker's discount.

14 Hrs

Unit-II: Linear Programming

Linear equations and inequalities- Rectangular coordinates, straight line, parallel and intersecting lines and linear inequalities, Introduction to linear programming, Mathematical formulation of LPP, Solution of a LPP by graphical method, special cases in graphical method

14 Hrs

Unit-III: Transportation problem

Introduction, Formulation of Transportation problem, Initial basic feasible solution, Steps involving a transportation problem, optimality check, special cases in Transportation problem. The Traveling salesman Problem (Routing Problem).

14 Hrs

Reference Books:

1. R. S. Aggarwal, *Objective Arithmetic*, S. Chand & Company Ltd, Revised Edition - 2018.
2. Mizrahiand Sullivan, *Mathematics for Business and Social Sciences an Applied approach*, John Wiley & Sons – 1976.
3. Qazi Zameeruddin,Vijay K Khanna, S K Bhambri, *Business Mathematics*, Vikas Publishing House, 2nd Edition.
4. S. Kalavathy, *Operation Research*, Vikas publication house Pvt. Ltd, 4th Edition – 2013.
5. Sreenivasa Reddy M, *Operations Research*, Sanguine Technical publishers, Bangalore, 2nd edition – 2019.
6. S. D. Sharma, *Operation Research*, 20th Edition – 2014.

Open Elective Course
(For students other than science stream)

MATOET 4.1 (C): Mathematics for Social Sciences	
Teaching Hours : 3 Hours/Week	Credits: 3
Total Teaching Hours: 42 Hours	Max. Marks: 100 (S.A.- 60 + I.A. – 40)

Course Learning Outcomes: This course will enable the students to

- Understand the mathematical concept of sets and counting problems.
- Understand the concept of Probability and its applications in social sciences.
- Understand the concept of limits and continuity of functions and its applications in business and

social sciences.

Unit-I

Sets, counting, permutations, combinations, counting problems, binomial theorem and problems thereon. Probability – Introduction, sample space and assignment of probabilities, properties of the probability of an event, probability of equally likely events, conditional probability, Baye's formula and examples thereon.

14 Hours

Unit-II

Limit and continuity, Derivative- interpretation, derivative formulas, general derivatives for differentiation, composite functions, higher order derivatives and problems thereon.

14 Hours

Unit-III

Applications of the derivative – Relative maxima and Relative minima, Absolute maximum and Absolute minimum, Applied problems, Concavity, Asymptotes, Marginal analysis, Models- Maximizing tax revenue, Optimal trade-in time, and minimizing inventory cost.

14 Hours

REFERENCE BOOKS

1. Abe Mizrahi and Michael Sullivan, *Mathematics for Business and Social Sciences and Applied Approach*, John Wiley & Sons, 4th Edition - 1988.
2. Carl P. Simon and Lawrence Blume, *Mathematics for Economists*, Viva Books Private Limited, New Delhi - 2018.
3. L. Peccati, M. D'Amico and M. Cigola, *Maths for Social Sciences*, Springer – 2018.

Question Paper Pattern

Mathematics

(Major subject)

PART – A
Answer any TEN questions (10 x 2 = 20) • Total number of questions: 14 • Atleast 3 questions to be framed from each unit
PART – B
Answer any 8 questions by choosing two questions from each unit (5 marks each) 8 x 5 = 40 UNITWISE (4 questions from each unit)

(Open Elective)

PART – A
Answer any TEN questions (10 x 2 = 20) • Total number of questions: 12 • 4 questions from each unit
PART – B
Answer any 6 questions by choosing two questions from each unit (6 marks each) 6 x 5 = 36 UNITWISE (4 questions from each unit)

Detailed Syllabus of III Semester Physics

Program Outcomes:	
1.	Disciplinary knowledge
2.	Communication Skills
3.	Critical thinking, Reflective thinking, Analytical reasoning, Scientific reasoning
4.	Problem-solving
5.	Research-related skills
6.	Cooperation/ Teamwork/ Leadership readiness/Qualities
7.	Information/ Digital literacy/Modern Tool Usage
8.	Environment and Sustainability
9.	Multicultural competence
10.	Multi-Disciplinary
11.	Moral and ethical awareness/Reasoning
12.	Lifelong learning / Self Directed Learning

Course Content Semester – III	
Wave Motion and Optics	
Course Title: Wave Motion and Optics	Course Credits:4
Total Contact Hours: 52	Duration of ESA: 3 hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60
Model Syllabus Authors: Physics Expert Committee	

Prerequisites	
i.	Fundamentals of waves

Course Learning Outcomes

At the end of the course students will be able to:	
i.	Identify different types of waves by looking into their characteristics.
ii.	Formulate a wave equation and obtain the expression for different parameters associated with waves.
iii.	Explain and give a mathematical treatment of the superposition of waves under different conditions, such as, when they overlap linearly and perpendicularly with equal or different frequencies and equal or different phases.
iv.	Describe the formation of standing waves and how the energy is transferred along the standing wave in different applications, and mathematically model in the case of stretched string and vibration of a rod.
v.	Give an analytical treatment of resonance in the case of open and closed pipes in general and Helmholtz resonators in particular.
vi.	Describe the different parameters that affect the acoustics in a building, measure it and control it.
vii.	Give the different models of light propagation and phenomenon associated and measure the parameters like the wavelength of light using experiments like Michelson interferometer, interference and thin films.
viii.	Explain diffraction due to different objects like singles slit, two slits, diffraction of grating, oblique incidence, circular aperture and give the theory and experimental setup for the same.
ix.	Explain the polarization of light and obtain how the polarization occurs due to quarter wave plates, half wave plates, and through the optical activity of a medium.

Course Articulation Matrix

Mapping of Course Outcomes (CO) Program Outcomes

Course Outcomes / Program Outcomes		1	2	3	4	5	6	7	8	9	10	11	12
i.	Identify different types of waves by looking into their characteristics.	X	X	X	X	X	X					X	X
ii.	Formulate a wave equation and obtain the expression for different parameters associated with waves.	X	X	X	X	X	X					X	X
iii.	Explain and give a mathematical treatment of the superposition of waves under different conditions such as when they overlap linearly and perpendicularly	X	X	X	X	X	X					X	X

	with equal or different frequencies and equal or different phases.												
iv.	Describe the formation of standing waves and how the energy is transferred along the standing wave in different applications, and mathematically model in the case of stretched string and vibration of a rod.	X	X	X	X	X	X					X	X
v.	Give an analytical treatment of resonance in the case of open and closed pipes in general and Helmholtz resonators in particular.	X	X	X	X	X	X					X	X
vi.	Describe the different parameters that affect the acoustics in a building, measure it and control it.	X	X	X	X	X	X					X	X
vii.	Give the different models of light propagation and phenomenon associated and measure the parameters like the wavelength of light using experiments like Michelson interferometer, interference and thin films.	X	X	X	X	X	X					X	X
viii.	Explain diffraction due to different objects like single slit, two slits, diffraction grating, oblique incidence, circular aperture and give the theory and experimental setup for the same.	X	X	X	X	X	X					X	X
ix.	Explain the polarization of light and obtain how the polarization occurs due to quarter wave plates, half wave plates, and through the optical activity of a medium.	X	X	X	X	X	X					X	X

Wave Motion and Optics

Unit – 1 - Waves and Superposition of Harmonic Waves

The Portion to be Covered

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 intensity of progressive wave, Newton's Formula for Velocity of Sound. Laplace's Correction (Derivation). Brief account of Ripple and Gravity Waves. **(Text Book: 1-4) (5 Hours)**

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. Uses of Lissajous' figures. **(Text Book: 1-4) (6 Hours)**

Topic Learning Outcomes

At the end of the topic, students should be able to:

SL No	TLO's	BL	CO	PO
i.	Explain the difference between plane and spherical waves, longitudinal and transverse waves and give their characteristics.	L2	1	1-6, 11-12
ii.	Write down an equation for the progressive wave in its differential form.	L2	1	1-6, 11-12
iii.	Obtain the relation between particle and wave velocity.	L2	1	1-6, 11-12
iv.	Obtain an expression for intensity of progressive waves.	L2	1	1-6, 11-12
v.	Obtain Newton's formula for the velocity of sound and discuss the factors for which sound velocity is dependent.	L2	2	1-6, 11-12
vi.	Apply the Laplace's correction to the equation of motion of a progressive wave.	L2	2	1-6, 11-12
vii.	With examples explain ripple and gravity waves.	L1	2	1-6, 11-12
viii.	Give the theory of superposition of two linear waves having equal frequencies and different frequencies.	L2	3	1-6, 11-12
ix.	Discuss the formation of different Lissajous figures under different conditions of amplitude and frequency when they superimpose perpendicularly.	L2	3	1-6, 11-12
x.	Give some applications of Lissajous figures.	L1	3	1-6, 11-12
xi.	Higher order problems.	L3	1,2,3	1-6, 11-12

Teaching and Learning Methodology

Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.	
Assessment Techniques	
One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc.	
Suggested Activities (2 Hours)	
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 produces the sound and those parts which enhances the sound because of reverberation. 1. Identify one common element in all of these. 2. Identify equipment which creates beats and try to explain the underlying basic principles. Demonstrate the examples of beats using two tuning forks. 3. Identify what will happen when you drop a stone in a standing water, and when your drop two stones side by side. 4. Make your observations sketch them and comment on it in a report.
Activity No. 2	Draw two sine waves (Amplitude vs time) one shifted with 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, 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 on 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 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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation,

	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 group will measure the total damping time of oscillating spring. (Using mobile or scale) And plot a graph of the- 1. Varying load on the spring and amplitude at the centre. 2. Take another weight and put that in another place and measure the amplitude of vibration at the centre. 3. Vary the load in the centre of the spring and measure the amplitude at the centre.

Wave Motion and Optics				
Unit – 2 - Standing Waves and Acoustics				
The Portion to be Covered				
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). 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. (Text Book: 1-4) (8 Hours) Acoustics: 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. (Text Book: 1-4) (3 Hours)				
Topic Learning Outcomes At the end of the topic, students should be able to:				
SL No	TLO's	BL	CO	PO
i.	Discuss the Transverse waves produced in stretched string and obtain the expression for the same.	L2	3	1-6, 11-12
ii.	Give a qualitative treatment of vibration of a string when it's both ends are fixed and free.	L2	3	1-6, 11-12

iii.	Explain normal modes of a stretched string. Obtain an expression for the energy density and discuss how this energy is transported along a stretched string.	L2	3	1-6, 11-12
iv.	Quantitatively bring about the mode of vibrations created in a rod.	L2	4	1-6, 11-12
v.	Explain types of waves that are produced in gas. Obtain an expression for the same.	L2	4	1-6, 11-12
vi.	With an analytical treatment explain the concept of resonance using the normal modes of vibrations of open and closed pipes.	L2	5	1-6, 11-12
vii.	Give the theory of Helmholtz resonator and explain how it is used to calculate some parameters of the way the standing waves are set in there.	L2	5	1-6, 11-12
viii.	Define Reverberation, Reverberation time and absorption coefficient of a material.	L1	5	1-6, 11-12
ix.	Obtain Sabine's Reverberation formula and discuss what are the factors on which the Reverberation time depends on?	L2	5	1-6, 11-12
x.	List out which are different parameters within a building which effects the acoustics.	L1	6	1-6, 11-12
xi.	Explain what good acoustics of a building are and how acoustics is measured in terms of intensity and pressure inside a building.	L2	6	1-6, 11-12
xii.	Higher order problems.	L3	4,5,6	1-6, 11-12

Teaching and Learning Methodology

Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

Formative Assessment Techniques

One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc.

Suggested Activities (2 Hours)	
Activity No. 7	List different phenomenon 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 sound profile on each room. Give the reasons. Make a report. 2. Visit three very good auditoriums, 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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, 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, Potassium Permanganate (KMNO₄) solution. Place a small non oily floating material (ex: thin plastic) on the surface of the liquid. Drop a marble on the liquid at the centre of the bowl. Repeat the experiment by dropping the marble from the 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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, 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 same weight. Drop both the marbles on the surface of the liquid from some height. With the help of the mobile take the picture and measure the position of interface of two wave fronts formed in the liquid. Plot graphs for different activities by doing the following activities. 1. By dropping two marbles of same weight from different heights. 2. By dropping two marbles of different weight from the same height

Wave Motion and Optics				
Unit – 3 - Nature of light and Interference				
The Portion to be Covered				
Nature of light: To Determine wavelength of light, distances and shapes using Michelson interferometer. The corpuscular model of light-The wave model - Maxwells electromagnetic waves-Wave Particle Duality (Text Book No 5; Sections 2.1 to 2.4 and 2.8) (2 Hours) Interference of light by division of wave front: 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 double slit experiment- derivation of expression for fringe width-Fresnel Biprism-Interference with white light (Text Book No 5; Sections 12.1 to 12.2, 14.1 to 14.5, 14.7 to 14.9) (4 Hours) Interference of light by division of amplitude: Interference by division of amplitude-Interference by a plane parallel film illuminated by a plane wave-Interference by a film with two non-parallel reflecting surfaces- color of thin films—Newton’s rings-(Reflected light)-Michelson Interferometer-Determination of wavelength of light* (Text Book No 5; Sections 15.1 to 15.2, 15.8 to 15.11) (5 Hours)				
Topic Learning Outcomes				
At the end of the topic, students should be able to:				
SL No	TLO’s	BL	CO	PO
i.	Explain using Michelson interferometer how to determine the wavelength of light.	L2	7	1-6, 11-12
ii.	Give an account of the different possible shapes that are obtained in Michelson interferometer experiment and their relevance.	L2	7	1-6, 11-12
iii.	Discuss the wave model and the Corpuscular model of light.	L2	7	1-6, 11-12
iv.	Explain Maxwells electromagnetic waves.	L2	7	1-6, 11-12
v.	Give an account of the phenomenon of wave-particle duality.	L1	7	1-6, 11-12
vi.	Give the Huygen theory of wave-front.	L1	7	1-6, 11-12
vii.	Define Interference. Give some examples of Interference.	L1	7	1-6, 11-12

viii.	Give the theory of interference due to two coherent sources of light and obtain an expression for the wavelength of monochromatic source of light (Young's double slit experiment)	L2	7	1-6, 11-12
ix.	Explain how using personal biprism, a monochromatic coherent source of light are obtained. Using this experimental setup explain how the wavelength of monochromatic sources of light is determined.	L2	7	1-6, 11-12
x.	Give the theory of interference due to division of amplitude by parallel and non-parallel plates.	L1	7	1-6, 11-12
xi.	Explain how Newton's rings are obtained and discuss how the wavelength of light is determined using this experiment.	L2	7	1-6, 11-12
xii.	Higher order problems.	L3	7	1-6, 11-12
Teaching and Learning Methodology				
Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.				
Formative Assessment Techniques				
One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc.				

Suggested Activities (2 Hours)

Activity No. 11	In the table given below explore which phenomenon can be explained by what and Make a report. <table><tr><th>Sl No</th><th>Phenomenon</th><th>Particle of Light</th><th>Wave Nature</th><th>Dual Nature</th></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>Devison & Germer Experiment</td><td></td><td></td><td></td></tr></table>	Sl No	Phenomenon	Particle of Light	Wave Nature	Dual Nature		Pinhole camera				1	Formation of images on lenses				2	Formation of images on mirror				3	Interference				4	Polarization				5	Diffraction due to single slit				6	Black body radiation				7	Photoelectric effect				8	De-Broglie hypothesis				9	Devison & Germer Experiment			
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Activity No. 12	Why colour strips are seen in paddles on roads in rainy seasons try to simulate the same. Give the reasons. Make a report.																																																							
Activity No. 13	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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, 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, Potassium Permanganate (KMNO4) solution. Place a small non oily floating material (ex: thin plastic) on the surface of the liquid. Drop two marbles of same weight (mass) from the same height on to the surface of the water but at the different time intervals. Plot graph for the different observations. For teachers: Demonstrate the formation of Lissajous Figure using a CRO. Give different shapes of Lissajous Figure with varying frequency and amplitude. Ask the students to comment on the observations.																																																							

Wave Motion and Optics

Unit – 4 - Diffraction and Polarisation

The Portion to be Covered

Fraunhofer diffraction: Introduction- Fraunhofer diffraction- Single slit diffraction pattern-position of Maxima and 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. (Text Book No 5; Sections 18.1 to 18.2, 18.6,18.8 to 18.9) **(4 Hours) (few qualitative)**

Fresnel Diffraction- Fresnel half period zones-Diffraction by a circular aperture-diffraction by an opaque disc-The zone plate -comparison between zone plate and convex lens. (Text Book No 5; Sections 20.1 to 20.3) **(3 Hours) (Qualitative discussion)**

Polarisation: Introduction-Production of polarized light- The wire Grid polarizer and Polaroid-Superposition of two disturbances- Phenomenon of double refraction-Quarter wave plates and half wave plates- Analysis of polarized light-optical activity. (Text Book No 5; Sections 22.1, 22.3,22.4,22.6 to 22.8) **(4 Hours)**

Topic Learning Outcomes

At the end of the topic, students should be able to:

SL No	TLO's	BL	CO	PO
i.	Define Fraunhofer diffraction.	L2	8	1-6, 11-12
ii.	Give a qualitative treatment of single slit/diffraction double slit diffraction.	L2	8	1-6, 11-12
iii.	Explain the theory of diffraction due to grating and the normal and oblique incidence.	L2	8	1-6, 11-12
iv.	Explain how the resolving power of a grating depends of the number of slits used.	L2	8	1-6, 11-12
v.	Give the theory of Fersnel half period zones.	L2	8	1-6, 11-12
vi.	Discuss zone plates with respect to convex lenses.	L2	8	1-6, 11-12
vii.	Explain optical polarization and polaroids.	L2	9	1-6, 11-12
viii.	Give different types of polaroids.	L2	9	1-6, 11-12
ix.	Give the theory of phenomenon of double refraction and explain what are ordinary and extraordinary rays.	L2	9	1-6, 11-12
x.	Give the theory of quarter wave plates and half wave plates.	L2	9	1-6, 11-12
xi.	Explain optical activity with theory. Give an experimental method to measure the optical activity of a material.	L2	9	1-6, 11-12
xii.	Higher order problems.	L3	8,9	1-6, 11-12

Teaching and Learning Methodology

Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

Assessment Techniques

One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc

Suggested Activities (2 Hours)

Activity No. 14	Explain polarization of light through a chart. List out the surfaces that reflect polarized light. Learn how 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_USING_CDs_AND_DVDs_AS_DIFFRACTION_GRATINGS_0.pdf 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-daylife. 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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, 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				
SI 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				
SI 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	<i>Eugene Hecht</i>	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

Formative Assessment	
Assessment	Marks
Internal Assessment	10
Activity	10
REU based Group Activity (Conduct, Report, Presentation)	10
Science Communication Seminar/Poster etc.)	10
Total	40

List of Experiments to be performed in the Laboratory *(Minimum 8 (Eight) experiments must be performed)	
1.	Velocity of sound through a wire using Sonometer.
2.	Frequency of AC using Sonometer.
3.	Study of Lissajous' Figures: Phase analysis at different phases.
4.	To verify the laws of transverse vibration using Melde's apparatus.
5.	Helmholtz resonator using tuning fork.
6.	Helmholtz resonator using electrical signal generator.
7.	To determine refractive index of the Material of a prism using sodium source.
8.	To determine the dispersive power and Cauchy constants of the material of a prism using mercury source.
9.	To determine the wavelength of sodium source using Michelson's interferometer.
10.	To determine wavelength of sodium light using Fresnel Biprism.
11.	To determine wavelength of sodium light using Newton's Rings
12.	To determine the thickness of a thin paper by measuring the width of the interference fringes produced by a wedge-shaped Film.
13.	To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating. (Minimum deviation method)
14.	To determine resolving power of a plane diffraction grating.
15.	To determine dispersive power of a plane grating. (Normal incidence method)
16.	Determination of refractive index of a prism using Brewster's law.
17.	Determination of specific rotation of sugar solution using polarimeter.
18.	Diffraction at a straight wire in optic bench.

Reference Book for Laboratory Experiments				
SI 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, 11 th Edition	2011
3.	Advanced level Physics Practicals	Michael Nelson and Jon M. Ogborn	Heinemann Educational Publishers, 4 th Edition	1985
4.	A Laboratory Manual of Physics for undergraduate classes	D.P.Khandelwal	Vani Publications.	1985

Detailed Syllabus of IV Semester Physics

Program Outcomes:	
1.	Disciplinary knowledge
2.	Communication Skills
3.	Critical thinking, Reflective thinking, Analytical reasoning, Scientific reasoning
4.	Problem-solving
5.	Research-related skills
6.	Cooperation/ Teamwork/ Leadership readiness/Qualities
7.	Information/ Digital literacy/Modern Tool Usage
8.	Environment and Sustainability
9.	Multicultural competence
10.	Multi-Disciplinary
11.	Moral and ethical awareness/Reasoning
12.	Lifelong learning / Self Directed Learning

Course Content Semester – IV	
Thermal Physics and Electronics	
Course Title: Thermal Physics and Electronics	Course Credits:4
Total Contact Hours: 52	Duration of ESA: 3 hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60
Model Syllabus Authors: Physics Expert Committee	

Prerequisites	
i.	Study of Pre-University

Course Learning Outcomes

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

i.	Apply the laws of thermodynamics and analyze the thermal system.
ii.	Apply the laws of kinetic theory and radiation laws to the ideal and practical thermodynamics systems through derived thermodynamic relations.
iii.	Use the concepts of semiconductors to describe different Semiconductor devices such as diode transistors, BJT, FET etc. and explain their functioning.
iv.	Explain the functioning of OP-AMPS and use them as the building blocks of logic gates.
v.	Give the use of logic gates using different theorems of Boolean Algebra followed by logic circuits.

Course Articulation Matrix

Mapping of Course Outcomes (CO) Program Outcomes

Course Outcomes / Program Outcomes		1	2	3	4	5	6	7	8	9	10	11	12
i.	Apply the laws of thermodynamics and analyze the thermal system.	X	X	X	X	X	X					X	X
ii.	Apply the laws of kinetic theory and radiation laws to the ideal and practical thermodynamics systems through derived thermodynamic relations.	X	X	X	X	X	X					X	X
iii.	Use the concepts of semiconductors to describe different Semiconductor devices like diode transistors, BJT, FET etc. and explain their functioning.	X	X	X	X	X	X					X	X
iv.	Explain the functioning of OP-AMPS and them as the building blocks of logic gates.	X	X	X	X	X	X					X	X
v.	Give the use of logic gates using different theorems of Boolean Algebra followed by logic circuits.	X	X	X	X	X	X					X	X

Thermal Physics and Electronics

Unit – 1

The Portion to be Covered

Laws of Thermodynamics:

Review of the concepts of Heat and Temperature. **(1 Hour)**

First Law of Thermodynamics: Differential form, Internal Energy. Equation of state for an adiabatic process, Work Done during Isothermal and Adiabatic Processes. **(3 Hours)**

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 **(5 Hours)**

Third Law of Thermodynamics: Statement, Significance and Unattainability of Absolute Zero. **(2 Hours)**

Topic Learning Outcomes

At the end of the topic, students should be able to:

SL No	TLO's	BL	CO	PO
i.	Explain the first law of thermodynamics.	L1	1	1-6,11-12
ii.	Give the differential form of the first law of thermodynamics and define what the internal energy is.	L2	1	1-6,11-12
iii.	Obtain an expression for work done in isothermal and adiabatic processes.	L2	1	1-6,11-12
iv.	Give two systems of units of temperature measurement and give their equivalence.	L2	1	1-6,11-12
v.	Describe and Discuss heat engine based on Carnot cycle.	L2	1	1-6,11-12
vi.	Explain how the efficiency of refrigeration is measured?	L2	1	1-6,11-12
vii.	Detail out the application of the Carnot engine to a locomotion system.	L1	1	1-6,11-12
viii.	Define entropy and write an expression for entropy using the second law of thermodynamics.	L2	1	1-6,11-12
ix.	State the third law of thermodynamics and give its significance using the third law of thermodynamics describing why absolute zero temperature is not unattainable.	L2	1	1-6,11-12
x.	High Order Problems.	L3	1	1-6,11-12

Teaching and Learning Methodology	
Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.	
Assessment Techniques	
One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc	
Suggested Activities (2 Hours)	
Activity No. 1	I 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 a body. Discuss it in contact with 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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, 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 same metal, preferable of 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.

	All groups shall also do the following activity:
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 the 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, 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 size and immerse in water and measure the temperature change with time and repeat the experiment. Graph the observations.

Thermal Physics and Electronics				
Unit – 2				
The Portion to be Covered				
Thermodynamic Potentials: Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy. Properties and Applications. (1 Hour) 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 Joule-Thomson coefficient and Derive an equation for Vander Walls gas. Attainment of low temperature by liquefaction of gases and adiabatic demagnetization. (3 Hours) 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. Specific heats of Gases. (2 Hours) Radiation: Blackbody radiation, spectral distribution, the concept of energy density and pressure of radiation, Wien's law, Wien's displacement law, Stefan-Boltzmann law, Rayleigh-Jeans law, Ultraviolet Radiation catastrophe and Planck's law of radiation. (4 Hours)				
Topic Learning Outcomes At the end of the topic, students should be able to:				
SL No	TLO's	BL	CO	PO
i.	State Maxwell relations.	L1	2	1-6, 11-12
ii.	Give examples where Maxwells relations are used.	L1	2	1-6, 11-12

iii.	Explain the phase transition. Which is called as first order phase transition? Give Examples	L2	2	1-6, 11-12
iv.	State Clausius - Clapeyron Equation.	L1	2	1-6, 11-12
v.	Obtain an equation for difference in $C_p - C_v$.	L2	2	1-6, 11-12
vi.	State Joule-Thomson effect and Joule-Thomson coefficient.	L1	2	1-6, 11-12
vii.	Obtain an expression, giving the relation between pressure, volume and temperature for a real gas (Vander Waals gas).	L2	2	1-6, 11-12
viii.	Explain adiabatic demagnetization and how it is used to obtain low temperature by the liquification of gases?	L2	2	1-6, 11-12
ix.	State Maxwell-Boltzmann Law of Distribution of Velocities in Ideal gases.	L1	2	1-6, 11-12
x.	Explain the mean RMS and most probable speeds in ideal gases.	L1	2	1-6, 11-12
xi.	Explain degrees of freedom associated with particles in an ideal gas?	L2	2	1-6, 11-12
xii.	Define the specific heat of a gas.	L1	2	1-6, 11-12
xiii.	Explain black body radiation and its spectral distribution.	L1	2	1-6, 11-12
xiv.	Explain the different laws used to describe different parts of the curves of a spectral distribution of black body radiation.	L2	2	1-6, 11-12
xv.	Define ultraviolet radiation catastrophe? Discuss its importance in the explanation of black body radiation.	L2	2	1-6, 11-12
xvi.	Define Planck's law of radiation and discuss how it could describe the whole black body radiation curve.	L2	2	1-6, 11-12
xvii.	High Order Problems.	L3	2	1-6, 11-12

Teaching and Learning Methodology

Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

Assessment Techniques

One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc.

Suggested Activities (2 Hours)

Activity No. 4	(i) Measuring the Solar Constant Materials: Simple flat sided Jar and Thermometer. Activity: Bottle containing water is exposed to solar radiation. The rise in temperature and time taken are noted. Calculate the heat absorbed by water and relate it to the output of the Sun. (ii) Thermo emf Materials: Suitable two dissimilar metal wires, voltage measuring device. Activity: In this experiment student 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. (iv) 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 the 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, 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 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 the 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, 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 pressurised 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.

Thermal Physics and Electronics				
Unit – 3				
The Portion to be Covered				
Semiconductor devices: Review of Intrinsic and Extrinsic semiconductors, p-n junction and its Characteristics (p-n, zener, LED and tunnel diode characteristics comparison) and Parameters, Diode approximations (applications of above diodes as per the respective graphs), Half-wave rectifier, Full-wave rectifier, Zener diode voltage regulators: Regulator circuit with no load, Loaded Regulator. (5 hours)				
Junction Transistors: Basics of Bipolar Junction Transistors (BJT), BJT operation, Common Emitter mode characteristics, [Common Base and Common Collector Characteristics (qualitative)]. Field Effect Transistor (FET) and its characteristics [J-FET only]. Transistor as an Amplifier [CE mode: voltage divider bias, DC load line, Q point, CE amplifier construction and frequency response] and Oscillator [RC phase shift oscillator (CE mode)]. (6 hours)				
Topic Learning Outcomes At the end of the topic, students should be able to:				
SL No	TLO's	BL	CO	PO
i.	Define Semiconductors and Band Gap. Explain on what basis they are classified as intrinsic and extrinsic.	L2	3	1-6, 11-12
ii.	Define PN junction. Explain it's functioning in forward and reverse bias.	L1	3	1-6, 11-12
iii.	Explain the approximation used in a real diode with respect to an ideal PN Junction?	L2	3	1-6, 11-12
iv.	With a schematic diagram, explain half wave and full wave rectifiers.	L1	3	1-6, 11-12
v.	Define a Zener diode and explain how it is different from an ordinary diode using V-I curves?	L2	3	1-6, 11-12
vi.	With the schematic diagram, explain the working of voltage regulators of different types using a Zener diode.	L1	3	1-6, 11-12

vii.	Give the basic concepts used in the instruction of bipolar junction transistor and its operation.	L1	3	1-6, 11-12

viii.	Compare the V-I curve of common base common emitter and common collector BJT curves while explaining their working principles.	L2	3	1-6, 11-12
ix.	Define FET? Give its characteristics.	L1	3	1-6, 11-12
x.	Explain how a transistor can be used as an amplifier and an oscillator using a circuit diagram.	L2	3	1-6, 11-12
xi.	High Order Problems.	L3	3	1-6, 11-12

Teaching and Learning Methodology

Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.

Assessment Techniques

One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc

Suggested Activities (2 Hours)

Activity No. 7	Wire a regulated DC power supply on a bread board 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 pin 5V regulator-1 Search for circuit diagram 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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, 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 its 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. One the specific day, each group has to make a ppt presentation of the following three slides. One the day of the presentation select a member from each group randomly to make the presentation. Based on the work and presentation, 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 diode and assign one to each group. Measure its resistance when dipped in ice and heating the ice till it boils. Using this data, plot calibration curve of temperature v/s resistance and also the cooling curve of temperature V/s time for the diode by each group.

Thermal Physics and Electronics				
Unit – 4				
The Portion to be Covered				
Electronics: Integrated Circuits (Analog and Digital), Operational Amplifier, Ideal characteristics of Op-Amp, Inverting and Non-Inverting Configurations. Applications- Voltage Follower, Addition and Subtraction. (4 hours) 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. (3 hours) 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. (4 hours)				
Topic Learning Outcomes At the end of the topic, students should be able to:				
SL No	TLO's	BL	CO	PO

i.	Define op-amps and give the characteristics of an ideal op-amp.	L1	4	1-6, 11-12
ii.	Explains an inverting and non-inverting configuration of typical op-amps, with a schematic diagram.	L2	4	1-6, 11-12
iii.	Explain how op-amps can be used as a voltage follower, with a schematic diagram and with relevant expressions.	L2	4	1-6, 11-12
iv.	Explain how op-amps can be used as a voltage follower, adder and subtractor, with a schematic diagram and with relevant expressions.	L2	4	1-6, 11-12
v.	Give different digital wave forms and explain how one can visualize the switching and logic levels.	L1	5	1-6, 11-12
vi.	Write any four-digit numbers other than zero in the decimal number system and convert that into binary and hexadecimal.	L2	5	1-6, 11-12
vii.	Write any number in a Binary System of 8 digits other than zero and convert it into decimal and hexadecimal.	L2	5	1-6, 11-12
viii.	Write any number in the hexadecimal system of 4 digits other than zero and converted it into a binary and decimal number.	L2	5	1-6, 11-12
ix.	Give simplified diagram for a given Boolean circuit diagram of logic gates, and verify using the De-Morgans theorem.	L2	5	1-6, 11-12
x.	Why are X-NOR gates called Universal Gates?	L2	5	1-6, 11-12
xi.	High Order Problems.	L3	4, 5	1-6, 11-12
Teaching and Learning Methodology				
Lecture/ PPT/ Videos/ Animations/ Role Plays/ Think-Pair-Share/ Predict-Observe-Explain/ Demonstration/ Concept mapping/ Case Studies examples/ Tutorial/ Activity/ Flipped Classroom/ Jigsaw/ Field based Learning/ Project Based Learning/ Mini Projects/ Hobby Projects/ Forum Theatre/ Dance/ Problem Based Learning/ Game Based Learning/ Group Discussion/ Collaborative Learning/ Experiential Learning / Self Directed Learning etc.				
Assessment Techniques				
One minute paper/ Predict-Observe-Explain/ Think-Pair-Share/ Class Test/ Quiz/ Crosswords/ Group Assessment/ Assignment/ Peer-to-Peer Evaluation/Seminar etc				
Suggested Activities (2 Hours)				
Activity No. 10	Learn how to implement logic functions (AND, OR, NOT) using just diodes and resistors.			

	With a circuit diagram show 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 its 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 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
1.	Electronic Devices and Circuits, David A. Bell, 2004, PHI, New Delhi
2.	Integrated Electronics, Jacob Millman and CC Halkias
3.	Digital Fundamentals, Floyd, 2001, PHI, New Delhi

References Books

Sl No	Title of the Book
1.	Heat and Thermodynamics, M.W. Zemansky, Richard Dittman, 1981, McGraw-Hill.
2.	Thermal Physics, S. Garg, R. Bansal and Ghosh, 2nd Edition, 1993, Tata McGraw-Hill
3.	A Treatise on Heat, Meghnad Saha, and B.N.Srivastava, 1958, Indian Press
4.	Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009, Springer.
5.	Thermodynamics, Kinetic Theory & Statistical Thermodynamics, Sears & Salinger. 1988, Narosa.

6.	An Introduction to Thermal Physics, Daniel V Schroeder, 2020, Oxford University Press

Formative Assessment	
Assessment	Marks
Internal Assessment	10
Activity	10
REU based Group Activity (Conduction, Report, Presentation)	10
Science Communication (Seminar/Poster etc)	10
Total	40

List of Experiments to be performed in the Laboratory *(Minimum 8 (Eight) experiments must be performed)	
1.	Mechanical Equivalent of Heat by Callender and Barne's method.
2.	Coefficient of thermal conductivity of Copper by Searle's apparatus.
3.	Coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method.
4.	Determination of Stefan's constant/ Verification of Stefan's law.
5.	Variation of thermo-emf across two junctions of a thermocouple with temperature.
6.	Verification of Clausius –Clapeyron equation and determination of specific enthalpy.
7.	V-I Characteristics of Silicon / Germanium p-n Junction diodes (FB & RB of p-n diode, FB of LED).
8.	Characteristics of BJT in Common Emitter Configuration(Input and Output characteristics).
9.	Half wave rectifier without & with filter (no filter C- filter, LC- filter and π - filter).
10.	Applications of Operational Amplifier [(Non-inverting, inverting and differential amplifier (DC))]
11.	Transfer characteristics of a TTL gate using CRO.
12.	V-I Characteristics of zener diode and zener voltage regulator (line & load regulation)
13.	Construction of CE amplifier and study the frequency response.
14.	Construction of CC amplifier and study the frequency response.
15.	Full wave rectifier without & with filter (no filter C- filter, LC- filter and π - filter).
16.	OPAMP applications: Adder, subtractor and voltage follower/differentiator/integrator
17.	Construction and verification of truth tables of OR, AND, NOT, NOR & NAND gates using discrete components.
18.	Construction and verification of truth tables of OR, AND, NOT, NOR & NAND gates using IC 7400.
19.	Verification of truth tables of De Morgan's theorems (for two input variables).

Reference Book for Laboratory Experiments	
SI No	Title of the Book
1.	Basic Electronics Lab (P242) Manual 2015-16, National Institute of Science Education and Research, Bhubaneswar, 2015.
2.	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.

PHYSICS IN DIALY LIFE

Programme Outcomes

PO - 1 Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO - 2 Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO - 3 Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO - 4 Ethics: Apply the professional ethics and norms in respective discipline.

PO - 5 Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO - 6 Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Outcomes (COs)	1	2	3	4	5	6
CO - 1: To understand the phenomenon taking place in nature and use physical reasoning to explain astronomical phenomena						
CO - 2: understand Newton's laws of motion and the role they play in predicting motion.						
CO - 3: To understand the concept and significance of physical phenomena in accoustics,optics ,heat and thermodynamics						
CO - 4: Will acquire the knowledge of regulator, chokes and electrical appliances						
CO - 5: Will understand the working principle of lightning arrestor,mixer,grinder						
CO - 6 Students shall be able to understand principles and applications associated with general physics as applied to a broad range of aspects of everyday life.						
CO - 7: To understand the concept of laser principles and applications						
CO - 8: Students shall be able to understand biological effects of radiations						

Unit I

PHYSICS IN NATURE

Introduction to environmental Physics-Our Environment, Constituents of Environment-Planetary motion atmospheric pressure, eclipses, 2 hours
Light-propagation-reflection-refraction-mirages-total internal reflection-optical fibres 2 hours
Newton's laws of motion : Illustrations for three laws, Inertia, gravity and conservation of angular momentum (Recoiling of gun, launching rockets),friction, working of lubricants, weightlessness, frame of reference: Relative motion 5 hours
Surface tension, viscosity, consequences capillarity: Applications
Energy: Kinetic and potential energy, conservation of energy examples
Sound: production and propagation, Resonance, Echo, ultrasonic, applications, basics of acoustics 4 hours

UNIT-II

PHYSICS IN APPLIANCES

Working of switches (1-way 2-way), Principle and working of regulator, principle and working of starter and chokes, Domestic wiring -Application of Fuses, ELCB (Earth Leakage Circuit Breaker) 4 hours
Principle and working of lightning arrester-precautions during lightning-, Principle and working of Iron box, induction coil- Principle and working of filament bulb, tube light, fluorescent bulb and LED bulbs, 5 hours
Working of ceiling & table fan, working of Mixer and Grinder, Working of Fridge/ AC/- washing machine. Smart electrical devices. Electricity saving techniques 4 hours

UNIT-III

RECENT TRENDS IN PHYSICS

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Types of Radiations: Ionising and Non ionising radiations, Thermal radiations, Usage and impact. Radiation Hazards, Radiation Safety measures, Applications of radioactive elements Nuclear Reactors, applications 5 hours
Heat and thermodynamics: conduction, convection, working principle of pressure cooker, microwave ovens, effects of heat absorption-examples 4 hours
Superconductivity, Applications, Laser Principles and Applications, Nanotechnology: Medical and Military applications of Physics 4 hours

Activity

- Hands on training of electrical Equipments by experts
- Opening some electrical devices and understanding the construction and working
- Visiting nearby workshops / laboratories

Reference Books

1. Fundamentals of Environmental Physics by N K Mahapathra
2. Fundamental concepts in environmental studies by DD Mishra
3. Astronomy- the Evolving Universe III Edition (Harper and Row) by Felik M
4. Heat and thermodynamics: Brijlal N Subramanyam,P S Hemne
5. A text book of optics: N Subramanyam, Brijlal
4. Dawn of Universe by BimaNath
5. Sky watching by David H. Levy
6. Modern Physics by R. Murugesan
7. Nuclear Physics by S. N. Ghoshal

ELECTRICAL /ELECTRONIC DEVICES

Programme Outcomes

PO - 1 Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO - 2 Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO - 3 Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO - 4 Ethics: Apply the professional ethics and norms in respective discipline.

PO - 5 Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO - 6 Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Course Outcomes (COs)	1	2	3	4	5	6
CO - 1: Will be able to understand working principle of electronic devices	x	x				
CO - 2: Will be able to understand working principle of electrical devices	x	x				
CO - 3: will understand mobile communication process	x	x	x			
CO - 4: Will acquire the knowledge of digital cameras and digital storage techniques	x		x			x
CO - 5: Will understand the working principle of lightning arrestor	x	x	x			
CO - 6: Will acquire the knowledge on measuring instruments	x		x	x	x	x
CO - 7: Will be able to explain the working principle of CRO	x	x		x		x
CO - 8: Will be able to understand the use of CRO for measuring	x					x

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

Unit 1

Working Principle of Electronic devices

Electric current, Ohms law, emf, Electric Power, KWh, generator, reactance, impedance, capacitor, inductor, choke & transformer. Introduction to Current and voltage measuring instruments: AC & DC Ammeter, AC & DC Voltmeter, watt hour meter, Potentiometer, Multi meter, Basic working principle of Radio/TV /-Mobile phones-Chargers-remote controllers-Blue tooth-2G/3G/5G Concepts-GPRS-Digital devices –digital measuring instruments-digital display-Digital camera-Resolution–Pixels-advantages and limitations-Digital Zoom-Optical Zoom. Digital storage devices-CD/DVD/Pen drive.

13hrs

Unit 2

Working Principle of Electrical devices:

Working of switches (1-way 2-way), Principle and working of regulator, principle and working of starter and chokes, Domestic wiring -Application of Fuses, ELCB (Earth Leakage Circuit Breaker) Principle and working of lightning arrester-precautions during lightning-, Principle and working of Iron box, Mixer grinder-induction coil- Principle and working of filament bulb, tube light, fluorescent bulb and LED bulbs, Working of ceiling & table fan, working of Mixer and Grinder, Working of Fridge/ AC/-washing machine. Smart electrical devices

13 Hrs

Unit 3

Basics of Measurements: Instrument accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects. Multimeter: Principles of measurement of dc voltage and dc current, ac voltage, ac current and resistance. Specifications of a multimeter and their significance. Electronic Voltmeter: Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity

Cathode Ray Oscilloscope: Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only no mathematical treatment), Specifications of a CRO and their significance. Use of CRO for the measurement of voltage (dc and ac frequency, time period)

13hrs

Activity

- Opening some electronic devices and understanding the construction and working
- Opening electrical devices and understanding the construction and working
- Studying all functions of multimeter
- Using multimeter for measurement of different electrical parameters
- Opening an old CRO and studying its construction
- Visiting nearby work shops /laboratories
- List out the least counts of different instruments
- Design a voltage regulator with out put 5 V

- List out different sensors used in electronic appliances

Reference Books:

1. A text book in Electrical Technology - B L Theraja - S Chand and Co.
2. Performance and design of AC machines - M G Say ELBS Edn.
3. Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
4. Logic circuit design, Shimon P. Vingron, 2012, Springer.
5. Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
6. Electronic Devices and circuits, S. Salivahanan& N. S.Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill.
7. Electronic circuits: Handbook of design and applications, U.Tietze, Ch.Schenk, 2008, Springer
8. Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson
8. Electrical Engineering, MV Rao, Subhas Stores Books Corner, 2013
9. Electrical Wiring, SL Uppal, GC Gang, Khanna, 1986
- 10.. Electrical Engineering, NL Anwani, Dhanpat Rai& Sons, 1978

Open Elective Syllabus (IV semester): For Science stream

Physics Open Elective-IV

Climate Science

Programme Outcomes

PO - 1 Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO - 2 Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO - 3 Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO - 4 Ethics: Apply the professional ethics and norms in respective discipline.

PO - 5 Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO - 6 Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes

(POs) Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Course Outcomes (COs)	1	2	3	4	5	6
CO-1: Will be able to provide a general framework for understanding climate change by addressing major components of Earth's climate system	✓	✓				
CO-2: Will come to know about the climate change differ from day-to-day weather, factors drive changes in Earth's climate	✓	✓				
CO-3: Will allows students to visualize the emission spectra associated with particular temperatures, to understand how Planck's Law can be used to plot blackbody curves of objects with different temperatures, and to learn the relationship between temperature and peak wavelengths in the electromagnetic spectrum.	✓	✓			✓	
CO-4: Will understand the effects of Hadley Circulation on global precipitation patterns, the geographical distribution of deserts, and trade winds.	✓	✓		✓		

CO-5: Will able to understand the Coriolis Force, and the effect of the Coriolis Force on weather and climate and able to apply the law of conservation of angular momentum and understand the concept of a thermally direct cell.	✓	✓			✓	
CO-6: Will understand the stability of different phases of matter (solid, liquid, and gas) under changing temperature and pressure.	✓				✓	✓
CO-7: Will able to explain the physical parts of the climate system temperature, precipitation, winds, and pressure, interaction with its organic parts (Earth's biosphere)	✓	✓			✓	✓
CO-8: Will be able to understand the effect of bio-sphere on the climate system and cause of recent warming and Green House Gases.	✓			✓	✓	✓

Unit.	Topics.	No. of Lectures.
Unit I	Chapter-1 Introduction: Climate, weather, Climate change.	
	<i>Component of climate system:</i> Internal interaction: Atmosphere, Vegetation, Ocean, Ice, Land surface. <i>Climate forcing and response:</i> External Forcing (CAUSES): Changes in plate tectonics, Changes in Earth's orbit, Changes in sun Strength. Anthropogenic Forcing.	3
	Chapter-II Climate Variation, Response.	
	<i>Climate variations:</i> Internal Response: Changes in atmosphere, changes in land surface, changes in ocean, changes in vegetation, and changes in ice. <i>Climate response Time:</i> Time scale of forcing verses response, Slow Response and Fast Response. <i>Feed back in climate system:</i> Positive and negative feedback.	3
	Chapter-III Heating Earth: Incoming solar Radiation	
	<i>Planck's Law and Blackbody Radiation through Climate:</i> Planck's Law, Wien's Law, Blackbody Radiation, Stefan-Boltzmann Law, Relationship between Temperature and Peak Wavelength of the Electromagnetic Spectrum, Planetary Temperatures as a function of solar energy received, Greenhouse Effect of Earth's Atmosphere, Planetary Climates, Planetary Energy Balance, The Greenhouse Effect.	7

Unit II	Heat Transfer in Atmosphere: Coriolis Effect, and the Impact of Coriolis Effect on Climate.	
	Chapter-I Heat Transfer in Earth's atmosphere.	2
	<i>Water in the climate system:</i> Heat capacity, specific heat, Latent Heat, Heat transformation. <i>Water Vapours:</i> Thermal inertia, sensible heat, convection, latent heat of melting/vaporisation,	
	Chapter-II <i>Heat Transport in the Atmosphere</i> , Hadley Circulation and Climate, Reason for geographical distribution of deserts on Earth (Global Precipitation Patterns and Distribution of Deserts) <i>Heat transfer in Earth's Ocean:</i> The Surface Ocean: Gyres. Deep ocean circulation: Thermo-haline Flow. Inter-tropical convergence zone (ITCZ), Monsoons (Summer and Winter monsoons).	6
	Chapter-III Coriolis Force, Coriolis Effect	
	Coriolis Force, Coriolis Effect, and the Impact of Coriolis Effect on Climate, Trade Winds, Upwelling, Climate and the Atmosphere, Climate and the Hydrosphere	5
Unit III	Phase Diagrams and Phase Equilibria. Earths Bio-sphere	
	Chapter-I Phase Diagram Of Water.	5
	<i>Phase Equilibria, Phase Diagrams of Water</i> , Triple and Critical Points in a Phase Diagram, Degrees of Freedom, Feedback Mechanisms, Vapour Pressure, Runaway Greenhouse Effect.	
	Chapter-II Response of bio-sphere to climate system	4
	Effect of Bio-sphere on the climate system. Anthropogenic Cause of Recent Warming. Green House Gases	
	Chapter-III Effect of Green House Gas on Climate system	4
	Effect of carbon dioxide, methane, chlorofluorocarbons, sulphate aerosols, land clearance on global warming.	
	Reference Books/Materials:	
	1997. Climate Change: State of Knowledge. Washington, DC: Office of Science and Technology Policy. Imbrie, J. 1985. "A Theoretical Framework for the Ice Ages." Journal of the Geological Society 142:417–32. Barry, R. G., and Chorley, R. J. 2009. Atmosphere, Weather, and Climate. New York: Routledge. Thurman, H. V. 1997. Introductory Oceanography. New Jersey: Prentice Hall. Levitus, S., et al. 2000. "Warming of the World Ocean," Science 287:	

	285–93. Huang, S. H., N. Pollack, and P.-Y. Shen. 2000. “Temperature Trends over the Past Five Centuries Reconstructed from Borehole Temperatures.” <i>Nature</i> 403: 756–8. World Climate Research Program (WCRP) Web site. http://www.wcrp-climate.org/. Last accessed March 17, 2013. National Climatic Data Center Web site. “Global Warming FAQs.” http://www.ncdc.noaa.gov/oa/climate/globalwarming.html. Last accessed March 17, 2013. Henson, R. 2006. “The Rough Guide to Climate Change.” London, Rough Guides, Ltd World Climate Research Program (WCRP) Web site. http://www.wcrp-climate.org/. Last accessed March 17, 2013 Archer, D. 2011. <i>Global Warming: Understanding the Forecast</i>. Wiley. Introduction to Climate Science - 1st Edition Andreas Schmittner, Oregon State University. Understanding Climate Science - Stephen Schneider by R Wolfson Introduction to Weather and Climate Science, by <u>Jonathan E. Martin</u>	
	✓ Additional Resources/Activities:	
	1. A micro-lecture (video), “The Coriolis effect”, from Khan Academy: https://www.khanacademy.org/partner-content/nova/clouds/v/hurricanes 2. A reading, “Coriolis effect”, from National Geographic: https://www.nationalgeographic.org/encyclopedia/coriolis-effect/ 3. A reading, “Hadley Cells”, from Harvard University: https://www.seas.harvard.edu/climate/eli/research/equable/hadley2.html 4. A reading and embedded videos, “Global circulation patterns”, from the Met Office, UK: https://www.metoffice.gov.uk/learning/atmosphere/global-circulation-patterns 5. A reading, “Energy Balance and Planetary Temperatures”, from the American Chemical Society (ACS): https://www.acs.org/content/acs/en/climatescience/energybalance.html 6. A visualization tool, “Planetary Energy Balance”, from UCAR Center for Science Education: https://scied.ucar.edu/planetary-energy-balance 7. Classroom/Laboratory Activity (15 min) An interactive simulation from PhET, University of Colorado, to explore the phase transformations of water under changing temperature and pressure conditions. https://phet.colorado.edu/sims/html/states-of-matter-basics/latest/states-of-matter-basics_en.html 8. Video (~18 min) A video micro-lecture from Coursera that describes the current and past climatic conditions on Mars https://www.coursera.org/lecture/solar-system/lecture-1-15-was-early-mars-warmer-and-wetter-kNENP	

Open Elective Syllabus (IV semester): For Non-Science stream

Physics Open Elective-IV

Physics of Sports

Programme Outcomes

PO - 1 Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO - 2 Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO - 3 Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO - 4 Ethics: Apply the professional ethics and norms in respective discipline.

PO - 5 Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO - 6 Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes

(POs) Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Course Outcomes (COs)	1	2	3	4	5	6
CO-1: Will be able to know the basic physics behind sports and games.	✓	✓				
CO-2: Will come to know about the laws that applicable in events.	✓	✓				
CO-3: Will allows students to apply the laws in sports equipment's.	✓	✓			✓	
CO-4: Will understand the effects of change in parameters.	✓	✓		✓		
CO-5: Will able to understand the principle behind the sports materials.	✓	✓			✓	
CO-6: Will understand the importance of the theory behind the preparation of equipment.	✓				✓	✓
CO-7: Will able to explain the fitness for particular event	✓	✓			✓	✓
CO-8: Will be able to understand balance of theory and application.	✓			✓	✓	✓

Syllabus- OEC: Physics of Sports

**Total Hrs:
39**

Unit-I	13hrs.
Concepts of Physics: Concept of Velocity, Momentum, Force, Action and Reaction, Damping, Friction. Rotation circular motion, gravitation, projectile -, Catch and Throws, thrust and pressure, Range conservation of angular momentum and torque, laws of floatation, Archimedes principle. Shooting.	
Unit-II	13hrs.
Physics of Instruments - Bats, Inflated Balls - Tennis, Table Tennis, Basketball, Football. Hard Balls - Cricket Ball, Bowling Ball, Soft (Woollen Ball), Javelin, discus, Carom and shot foot Physics of Instrument Sports: Impact sports - Cricket & Baseball Batting, Golf putting, Kicking Football, Badminton & Tennis Athletics - Paul Vault, Bowling, Curling-spinning, volley ball, throw ball Ice sports - Skating, Ice Hockey.	
Unit-III	13hrs.
Physics of Non-Instruments Sports: Throwing, Pulling Pushing and Sliding sports - Cricket Bowling, Baseball throw, Shot put throw. Discus throw and Javelin Throw, carrom game and Ice Skating, Kabaddi. Board games - Carrom, Billiards & Snooker Athletics - Physics of Running, Long jump, high jump, ballet dancer, gymnastics, diving and swimming, cycling track and Boating race, rowing, sailing, water polo, sport climbing and surfing	

Suggested Activities:

1. Assignment on size of courts used in volley ball, kabaddi and tennis and also nets.
2. Assignment on size of carom board and size carom pans
3. Assignment on size of cricket boundary and distance between wickets
4. Assignment size of Tracks, long and high jumps
5. Watching Videos on www.youtube.com

Reference:

- 1.The Physics of Sports A Textbook By David R. Heskett
- 2.Concepts in physics by H C Verma
3. https://en.wikipedia.org/wiki/Fundamentals_of_Physics
- 4.https://www.academia.edu/36062426/fundamentals_of_physics_textbook_pdf

OPEN ELECTIVE: PHYSICS

OPEN ELECTIVES TOPICS:

Semester	Topic	
	Science stream	Non- Science stream
First Semester	Energy Sources	Physics in time line
Second Semester	Astronomy	Space Mission
Third Semester	Electrical and Electronic Instruments	Physics in Daily life
Fourth Semester	Climate Science	Physics of Sports

Semester	Instruction hour per week	Total No. of Lectures	Duration of Examination	I A marks	Semester Exam. Marks
I, II, III & IV	03	39	02 hours	40	60

OPEN ELECTIVE (I semester): For Science stream

Physics Open elective - I

ENERGY SOURCES

Syllabus- OEC: Energy Sources	Total Hrs: 39
Unit-I	13 hrs
Introduction to Energy Sources: Energy concepts, sources in general, its significance and necessity. Classification of energy sources: primary and secondary sources. Energy consumption as a measure of prosperity. Need of renewable energy sources. Conventional (commercial) energy sources, non-conventional energy sources (Renewable energy). Advantages of renewable energy. Obstacles to the implementation of renewable energy systems. Prospects of renewable energy sources. Fossil fuels & Nuclear energy- production & extraction, usage rate and limitations. Impact on environment and their issues& challenges.	
Unit-II	13 hr
Solar-Energy and its Applications: Potential of solar energy, solar radiation and measurements, different types of solar energy collectors, advantages and disadvantages of different collectors, solar energy storage. Solar hot water supply systems. Solar air heating and cooling systems. Solar thermal electric power	

generation. Solar pumping, distillation, furnace and green houses. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems	
Unit-III	13 hr
Wind energy harvesting and Ocean Energy and energy from Biomass: Fundamental of wind energy, wind turbines and different electrical machines in wind turbines, power electronic interfaces and grid interconnection topologies. Ocean Energy: Ocean energy potential against wind and solar, wave characteristics and statics wave energy devices. Tide characteristics and statistics, tide energy technologies ocean thermal energy, osmotic power, ocean bio-mass Energy from Biomass: Biomass conversion technologies: wet process, dry process, photosynthesis. Biogas generation: Factors affecting bio-digestion. Classification of biogas plants: Floating drum plant, fixed dome plant, advantages and disadvantages of these plants.	

Suggested Activities:

1. Demonstration of on 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
9. Field trip to solar energy parks
10. Videos on solar energy, hydro energy and wind energy.

Books recommended.

1. Non-conventional energy sources by G. D. Rai Khanna Publishers New Delhi.
2. Solar energy by M. P. Agarwal S. Chand and Co. Ltd.
3. Solar energy by Suhas P. Sukhative Tata McGraw-Hill publishing Company Ltd.
4. Dr. P. Jayakumar, solar Energy: Resources Assessment Handbook, 2009.

OPEN ELECTIVE (I semester): For Non-Science stream

Physics Open elective - I

PHYSICS IN TIME LINE

Syllabus- OEC: Physics in time line	Total Hrs: 39
Unit-I	13hrs.
EARLY MODERN WORLD: The ancient India describes the origin of the universe, Aristotle-geocentric Universe, Ptolemy - Geocentric model, Aryabhata ,Nicolaus Copernicus, Kepler Laws of Planetary Motion, Galileo Galilei Principle of Relativity, , Freely falling bodies, Isaac Newton Laws of motion , laws of gravitation John Dalton develops his atomic theory, Michael Faraday electromagnetism James Clerk Maxwell demonstrates that electric and magnetic field Henri Becquerel radioactivity Thomson discovers the electron.	
Unit-II	13hrs.
MODERN WORLD: Quantum theory, photoelectric effect $E=mc^2$ mass-energy relation, Special Theory of Relativity ,General Theory of Relativity, discovery of the proton, Pauli exclusion principle, Uncertainty principle, Schrödinger Equation, - Hubble's Law, discovers the neutron, "Chandrasekhar limit" nuclear fission, Integrated Circuit" Higgs Bosons, nuclear reactor, atom bomb, Blue LED, Laser, Optical fibre, MRI, CT scan, Ultrasound Super conductivity, Magnetic levitation-trains	
Unit-III	13 hrs.
Discoveries and Inventions- (mention only): X-rays ,Zeeman effect Radioactivity Work of Marie Curie, Rayleigh Scattering, Lenard - work on cathode rays, Thomson -conduction of electricity by gases" Michelson instruments and the spectroscopic, Colours photography, Wireless telegraphy, Equation of state for gases and liquids, Superconductivity Diffraction of X-rays by crystals Stark effect, Structure of atoms, Andrews_Millikan- elementary charge ,Compton effect, Thermionic emission, - The wave nature of electrons, Raman - Effect, Diffraction of electrons by Crystals, Discovery of nuclear reactions ,Cyclotron, Transistor, Quantum electro dynamics.	

Suggested Activities:

1. Uses of LED, Transistor, diodes, and IC
2. Uses of LASER in Medicine, bar code reader, laser printer.

3. Uses of MRI, CT SCAN and X-RAYS.
- 4 uses and applications of physics in daily life

References:

1. Concepts in physics by H C Verma
2. <https://www.pdfdrive.com/halliday-resnick-fundamentals-of-physics-e175337758.html>
3. <https://openstax.org/details/books/college-physics>
4. <https://www.nobelprize.org/prizes/lists/all-nobel-prizes-in-physics/>
5. <https://www.britannica.com>

Open elective (II semester): For science stream

Physics Open elective-II

ASTRONOMY

Syllabus- OEC: ASTRONOMY	Total Hrs: 39
Unit-I	13 hrs
Ancient Astronomy Vedic Astronomy, Ancient Astronomy – Aryabhata, Varahamihira, Bhaskara Greek, Sumerian, Mayan, Egyptian, Arabic and Chinese Observations Medieval Astronomy: Geocentric Model, Heliocentric Model Observations by Tycho Brahe, Kepler, Galileo, Herschel and others. 3 Tools for Astronomy: Invention of Telescopes Pin Hole, Binoculars, Telescopes & Imaging. Modern Astronomy Hubble's discovery, Stellar Evolution (Brief), Microwave, Radio Telescopes, Observational Terminologies Cardinal Directions, Azimuth, Altitude, Measurements using Compass and Hand. Equatorial Co-ordinates, Light years, Magnitude, Colors.	
Unit-II	13hrs
The Sun Ecliptic and the Orientation of the Earth, Seasons - Solstices and Equinox, Observations of the Sun from Earth during seasons. Zero-shadow day Sunspots. 2 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: Mars, Jupiter & Saturn	
Unit-III	13hrs
Observational History, Observational Windows, Appearance, Frequency of Oppositions, Oppositions, Conjunctions, Galilean Moons, Saturn's Rings Distant or Minute Objects: Uranus, Neptune & Asteroids Observational History, Observational Windows, Asteroid Belt, Prominent Asteroids. 5 Comets & Meteors Origin, Orbital Nature, Historical Observations, Prominent Comets and Asteroids., Meteors, Origins and Showers 2 Occultations, Transits and Eclipses Definitions, Prominent Occultations and Transits, Eclipses – Types and prominent occurrences. Famous Eclipses in the past.	

Suggested Activities:

1. Assignments on Planets and Sun.
2. Project work on Comets.
3. Assignments of Bing Bang Theory.

4. Assignments of Types of Galaxies.
5. Assignments of Eclipses -Solar and Lunar.
6. Use of telescope to view sun spots.
7. Visiting Regional Science Centre.

Reference:

- 1 The Amateur Astronomer Sir Patrick Moore Springer 2006.
- 2 Handbook of Practical Astronomy Gunter D. Routh Springer 2009.
- 3 Fundamental Astronomy Hannu Karttunen Springer 2007.
- 4 Guide to Night Sky P. Shankar KRVP 2007.
- 5 The Complete Idiot's Guide to Astronomy Christopher De Pree and Alan Axelrod Pearson 2001.
- 6 The story of Astronomy In India Chander mohan Research Gate 2015
- 7 Trigonometry - Inc. Bar Charts.
8. Stargazing for Dummies Steve Owens John Wiley & Sons 2013.
9. A Sky watcher's Year Jeff Kanipe Cambridge University Press 1999.
10. The Casual Sky Observer's Guide Rony De Laet Springer 2012.

Open elective (II semester): For non-science stream

Physics Open elective-II

SPACE MISSION

Syllabus- OEC: SPACE MISSION	Total Hrs: 39
Unit-I	13 hrs
Introduction to Space Missions: Rockets, types and their applications, Different types of orbits, Artificial satellites – basic idea and their applications, Introduction to Space Missions, Beginning of Space Missions - World and India, Applications of Space Research, international space station, space telescopes -Hubble, Chandra and James web Telescopes	
Unit-II	13 hrs
Space crafts, Launching Vehicles. Topics for Self-study: Major Space Centres in the World (at least 10) – brief idea about their location, establishment, capabilities and achievements. People behind space programs – at least 2 from India. Successful Missions (Any Five). 6 Indian Space Research Organisation (ISRO): About ISRO and its Goals, History of Creation. General Satellite	

Unit-III	13 hrs
Programmes: The IRS series, The INSAT series. Gagan Satellite Navigation System, Navigation with Indian Constellation (NavIC), Other satellites. Launch vehicles: Satellite Launch Vehicle (SLV), Augmented Satellite Launch Vehicle (ASLV), Polar Satellite Launch Vehicle (PSLV), Geosynchronous Satellite Launch Vehicle (GSLV). Experimental Satellites: Details and applications (Any Five) Earth Observation Satellites: Details and applications (Any Five) Communication satellites: Details and applications	

Suggested Activities:

1. Assignments on rockets.
2. Project work Indian space programme.
3. Brief report ISRO AND NASA.
4. Telescopes and space station.
5. SLV.PSLV and GSLV.
6. Launching pad in India, master control facility and ISRO headquarters.
7. Father of Indian space program.

References:

1. India in Space Paper back by HarperCollins Publishers India.
2. international space station by Michel D Cole.
3. Developing space by John K.
4. Deep space craft's by Dave Doode.
5. Mission exploration space encyclopaedia.

First Semester B.Sc. Degree Examination, April/May 2022

(NEP-2020)

(2021-22 Batch Onwards)

PHYSICS (DSCC)

Mechanics and Properties of Matter

Time: 2 Hours

Max. Marks : 60

Instructions: 1) Answer questions from *all* parts.

2) Scientific Calculators are *allowed*.

PART- A

Answer **any 4** questions.

(4×2=8)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

PART-B

Answer the following.

(4×10=40)

UNIT-I

7. a)	4
b)	6

OR

8. a)	4
b)	6

UNIT-II

9. a)	4
b)	6

OR

10. a)	4
b)	6

UNIT-III

11. a)	4
b)	6

OR

12. a)	4
b)	6

UNIT-IV

13. a)	4
b)	6

OR

14. a)	4
b)	6

PART-C

15. Answer **any three** of the following. (3×4=12)

- 1.
- 2.
- 3.
- 4.

First Semester Open Elective Examination, April/May 2022

(NEP-2020) (2021-22 Batch Onwards)

PHYSICS

OPEN ELECTIVE TOPIC

Time: 2 Hours

Max. Marks: 60

Instructions: 1) Answer questions from **all** Units.

2) Scientific Calculators are **allowed**.

UNIT-1

1. a)	5
b)	7
c)	8

OR

2. a)	5
b)	7
c)	8

UNIT-2

3. a)	5
b)	7
c)	8

OR

4. a)	5
b)	7
c)	8

P.T.O.

UNIT-3

5. a)	5
b)	7
c)	8

OR

6. a)	5
b)	7
c)	8

MANGALORE UNIVERSITY
MANGALAGANGOTHRI
KONAJE

Curriculum Framework Under NEP 2020.



3rd and 4th Semester Syllabus for
Bachelor of Arts - Journalism
2021-22 Batch onwards

Curriculum

Program Title	BA (Journalism and Mass Communication)			Semester	Third Semester
Course Code	DSC 3			Type of Course	Discipline core
Course Name	News Reporting and Analysis			Contact hours	4 hours/ week Theory
					4 hours/ week Practical
Course Credits	06 {Theory: 4 credits and Practical: 2 credits}			Academic Year	2021-22 Batch
CIE Marks	40	SE Exam Marks	60	Practical Marks	50 (25 CIE + 25 SE)

Course Outcomes: On completion of the course, the student teacher will be able to:

- ❖ Organize and articulate new stories understanding the concepts, structure, and types of news.
- ❖ Evaluate and analyse the importance of sources and types of information that provide the basis for news stories.
- ❖ Formulate skills for news selection, processing, prioritizing and finally, designing the end-product, identify the basic ethical issues confronting editors and can practice fair play.

Course Content:

Unit-1

News: Definitions, nature, concepts, elements, and values, inverted pyramid; Leads and types of leads in news story.

Unit-II

Reporting and Reporters: Organization of reporting section, principles of reporting; **Reporter:** Functions, qualities, and responsibilities of a Reporter.

Unit-III

News Sources: Speeches, Press Conferences, Press Note, Demonstrations, Rallies and agitations, Public and Private. **Interviewing:** Principles, importance, techniques and types of news interviews.

Unit- IV

Types and Trends in Reporting: Political, Sports, Crime, Investigation, Court, Education, Agriculture, Film, City, Cultural Events. **Trends** - Political beats, viral news fact checking.

Practical Paper for DSC 3 - News Reporting and Analysis (Two Credits- 50 Marks)

1. **Event reporting** - Students have to identify 2 major events and provide a detailed news report on it.
2. **Press conference** - Have to attend the press conferences of a day, and prepare a report based on it.
3. **Press Notes**– Get the 05 Press Notes from your local news media and prepare the news item.
4. **Interview news story** – Conduct at least two in-person interviews to write a news story on a timely topic in consultation with your professor from primary sources (400- 500 words).
5. **Write the following news items already published in the different newspapers.**

Press notes- 1, Speech Reporting- 1, Protest- 1, accidents- 1, Obituary-1, disaster-1, Communal riots-1, Political reporting-1, election-1, legislature-1, judiciary-1, weather-1, seminars/ workshops-1, science & technology-1, environmental issues-1, Suicide-1, Women Issues-1, Health-1, Agriculture-1, investigative-1, defence-1, human rights-1, tourism-1, education-1, cultural events-1, Govt news-1.

Note: Each student shall compulsorily maintain assignments and record book, submit the same at the end of the semester in the form of Project Report.

Reference Textbooks	
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.
11	Kumar, J Keval. (2003). Mass communication in India. Delhi: Jaico Publishing House.
12	Parthasarathy, Rangaswami. (2001). Journalism in India (4th Ed). New Delhi: Sterling Publishers.

Curriculum

Program Title	BA (Journalism and Mass Communication)		Semester	Third Semester
Course Code	OE-3		Type of Course	Core Elective
Course Name	Feature Writing and Freelancing		Contact hours	3 hours Theory
Course Credits	03		Academic Year	2021-22 Batch
CIE	40	SE Exam Marks 60	Practical	-----

Course Outcomes: On completion of the course, the student teacher will be able to:

- ❖ Organize and articulate competent feature stories understanding the concepts, structure, and types of features.
- ❖ Write different types of feature stories and get published.
- ❖ The students should turn into serious freelancers understanding ups and downs in the freelancing.

Course Content:

Unit-1

Features: Definition and characteristics, process and techniques of feature writing, language and structure of a feature, difference between news and features. Types of feature stories: News features, profiles, human interest and travel.

Unit-II

Freelancing – Meaning, definition, qualities of a freelancer, trends in freelancing. Legal and ethical aspects of freelancing.

Unit-III

Scope for freelancing- in print and electronic media, freelancing for social media, tools and resources for freelance writers, freelancing as a profession in India and elsewhere. Career in feature writing.

Practical Exercises for OE- 3 - Feature Writing and Freelancing

1. Write different types of features at least two each.
2. Write different headlines for 5 features.
3. Re-write any 2 published features.

Reference books

1	Alexander, L. (1982) Beyond the Facts: A Guide to the Art of Feature Writing (2nd ed.). Houston, Texas: Gulf Publishing Company.
2	Boynton, R.S. (2005) The New New Journalism: Conversations on Craft With America's Best Nonfiction Writers. New York: Vintage Books.
3	Blundell, W.E. (1988) The Art and Craft of Feature Writing. New York: Plume.
4	Garrison, B. (2004) Professional Feature Writing (4th ed.) Mahwah, NJ: Lawrence Erlbaum Assoc Inc
5	Harrington, H.F. (1912) Essentials in Journalism. A Manual in Newspaper Making for College Classes. Boston: Ginn and Company. Retrieved from http://openlibrary.org/details/essentialsinjour00harrich
6	Harrington, H.F. (1925) Chats on Feature Writing. New York and London: Harper & Brothers.
7	Harrington, W. (1997) Intimate Journalism: The Art and Craft of Reporting Everyday Life. Thousand Oaks: Sage.
8	Pape, S., & Featherstone, S. (2006) Feature Writing a Practical Introduction. London: Sage Publications.
9	Stephen John Tanner, Molly Kasinger, Nick Richardson (2009) Feature Writing: Telling the Story. Oxford University Press
10	Williamson, D.R. (1977) Feature Writing for Newspapers (2nd ed.). New York: Hastings House

Curriculum

Program Title	BA (Journalism and Mass Communication)			Semester	Fourth Semester
Course Code	DSC 4			Type of Course	Discipline core
Course Name	News Processing and Editing			Contact hours	4 hours/ week Theory 4 hours/ week Practical
Course Credits	06 {Theory: 4 credits and Practical: 2 credits}			Academic Year	2021-22 Batch
CIE Marks	40	SE Exam Marks	60	Practical Marks	50 (25 CIE + 25 SE)

Course Outcomes: On completion of the course, the student teacher will be able to:

- ❖ Understand the role of editors. Edit copy precisely and consistently, using correct grammar and eliminating libelous passages and items in poor taste.
- ❖ Be able to write clear and accurate headlines, decks, and captions.
- ❖ Be able to design basic news pages. Understand the basic ethical issues confronting editors.

Course Content:

Unit-1

Introduction: Editing- definitions, importance, principles, functions, and techniques of editing. Editing in the age of convergence. Style sheet.

Unit-II

Newsroom Setup: Structure and functions of a typical newsroom. editor/executive editor, roles of editor, news editor, sub-editor, sections in News Desk- Mofussil, Translation, Sports, Editorial, Magazine/Supplements, State and City.

Unit-III

Headline and Designing terminologies: Writing headlines, different types of headlines; Mast head, deadline, going to bed, panels, lead, brief, bastardisation, tint, hamper, flyer, dummy, power jacket, kerning, template, by-line, blurb, date-line, credit-line, attribution, quotation, Imprint line, photo caption.

Unit-IV

Skills required: News judgment, mastery over language, interpretation in the context, giving perspective, creative headlines, preparing the layout of the page, rewriting news stories.

Practical Paper for DSC-4 - News Processing and Editing (Two Credits – 50 Marks)

1. Written exercise on similar sounding words with different meanings.
2. Editing copies with spelling mistakes and redundancies.
3. Giving headlines for news stories.
4. Selecting stories for a campus newspaper.
5. Designing a dummy newspaper.
6. Designing special pages.
7. Photo selection and cropping.
8. Writing Captions for photos.
9. Writing editorials.

Note: Each student shall compulsorily maintain assignments and record book, submit the same at the end of the semester in the form of Project Report.

Reference books

1	Bodian, Nat G. (1984). Copywriter's Handbook. ISI Press,
2	Brooks, B. S., & Pinson, J. L. (2015). The art of editing in the age of convergence. BocaRaton, FL: CRC Press.
3	Brooks, B., George, K., Moen, D. & Ranly, D. (2010). News reporting and writing. Publisher: Bedford/St. Martin's.
4	Ellis, B. (2001). The copyediting and headline handbook. Berkeley: University of California Press.
5	Emenanjo, N.E. (2010). Editing and writing. Aba: E-Front Publishers.
6	Idemili, S. (2002). News editing. In Wilson D. (ed.) Introduction to the print media, Ibadan: Sterling-Horden Publishers
7	K.M. Srivastava (2003) News Reporting and Editing; Sterling Publishers Pvt Ltd.
8	Kovach, B., & Rosenstiel, T. (2014). The elements of journalism: What news people should know and the public should expect. New York, NY: Three Rivers Press.
9	Michael O. Ukonu. (2013) News Editing and Design. Grand Heritage Global Communications, Nsukka.
10	Strunk, William, Jr. and E. B. White. (1978) Elements of Style, 3rd edition. Macmillan Publishing Company.

Curriculum

Program Title	BA (Journalism and Mass Communication)			Semester	Fourth Semester
Course Code	OE-4			Type of Course	Core Elective
Course Name	Translation for Media			Contact hours	3 hours Theory
Course Credits	03			Academic Year	2021-22 Batch
CIE	40	SE Exam Marks	60	Practical	-----

Course Outcomes: On completion of the course, the student teacher will be able to:

- ❖ Translate the given stories keeping in mind the requirements of the client.
- ❖ Understand the difference between translations for different media and practice it.
- ❖ Gain a mastery over the techniques of translation.

Course Content:

Unit-1

Translation: Meaning, definition, nature, scope, and significance of translation, difference between literary translation and translation for media. Types of Translation: Word to word, literal, summarized, free.

Unit-II

Process and Techniques of Translation: Source language, target language, co-ordination.

Unit-III

Challenges of Translation from English to regional languages and vice versa, modern opportunities in media translations, difference between print and electronic media translations.

Practical Exercises for OE-4 - Translation for Media

1. News translations at least 5 exercises
2. Article translations at least 2 exercises
3. Giving headlines to translated stories- 3

Reference books

1	Bassnett, S. & Bielsa, E. (2009) Translation in Global News. London: Routledge.
2	Bassnett, S. (2004) 'Trusting the Reporters: Translation and the News' The Linguist.
3	Cronin, M (2013). Translation in the Digital Age. Oxton and New York: Routledge.
4	Delabastita, D. (1989) 'Translation and Mass Communication: Film and Tv Translation as Evidence of Cultural Dynamics' Babel.
5	Diaz Cinta, J. (2007) Audiovisual Translation: Subtitling. Manchester: St.Jerome.
6	Esser, A., Bernal-Merino, M. and Smith, I (2015). Media across borders: localizing TV, film, and video games. New York: Routledge.
7	Friedrich, H. (1992).On the Art of Translation.
8	Gadamer, H. G. (1989). Introduction. In J. Biguenet and R. Schulte (Eds.), The Craft of Translation. Chicago: U of Chicago Press
9	Jain R. (1995). Machine vision. London: McGraw Hill Books Company Ltd.
10	R. L. Trask and Bill Mayblin: Introducing Linguistics: A Graphic Guideb

Note: The Question Paper pattern will continue to be the same, as for I & II Semesters.

B.Sc. BOTANY: Semester III
Theory: Discipline Specific Core Course (DSCC)
Title of the Course and Code:

BOT-A-3.1: PLANT ANATOMY AND DEVELOPMENT BIOLOGY

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/ Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A-3.1	DSCC	Theory	04	04	56 hrs	2hrs	40	60	100

Course Outcome:

On completion of this course, the students will develop the following skills:

1. Observation of variations that exist in internal structure of various parts of a plant and among different plant groups in support of the evolutionary concept.
2. Skill development for the proper description of internal structure using botanical terms, their identification and further classification.
3. Induction of the enthusiasm on internal structure of locally available plants.
4. Understanding various levels of organization in a plant body with an outlook in the relationship between the structure and function through comparative studies.
5. Observation and classification of the floral variations from the premises of college and house.
6. Understanding the various reproductive methods sub-stages in the life cycle of plants
7. Observation and classification of the embryological variations in angiosperms.
8. Enthusiasm to understand evolution based on the variations in reproduction among plants

PLANT ANATOMY

Unit 1: Plant Cells, Tissues and Tissue systems

14 Hrs

Introduction, objectives and scope of Plant Anatomy; General structure of plant cells - structure of plant cell wall.

Tissue and tissue systems - Definitions, structure and functions of Meristematic tissues and permanent tissues (Simple and Complex). A brief account of plant secretory tissues/cells. Concept of tissue systems - Ground tissues, Dermal tissues and Vascular tissues.

Classification of meristems: Based on location (apical, intercalary and lateral), Origin (promeristem, primary and secondary meristem) and function (protoderm, procambium and ground meristem).

Apical meristems: Generalised structure of shoot apex, theories on organization of Shoot Apical Meristem (SAM) - Apical cell theory, Tunica-Corpus theory and Histogen theory. Generalised structure of root apex, theories on organisation of Root Apical Meristem (RAM) – Apical Cell Theory, Histogen theory, Quiescent centre theory and Korper – Kappe theory.

Unit II: Primary and Secondary anatomy of Angiosperms

14 Hrs

Primary anatomy of root: Dicot (Tridax/Sunflower), monocot (Maize).

Primary anatomy of stem: Dicot (Tridax/Sunflower), Monocot (Maize), Nodal anatomy.

Anatomy of leaf: Dicot (Tridax/Sunflower), Monocot (Maize). Types of trichomes and stomata.

Secondary Growth: Normal Secondary growth in stem and root (Tridax/Sunflower). Anomalous secondary growth in *Aristolochia* and *Boerhaavia* (dicot stem), *Dracaena* (monocot stem).

Applications of anatomy in Plant systematics, forensics and Pharmacognosy.

DEVELOPMENT BIOLOGY

Unit III: Differentiation and Morphogenesis in Plants

14 Hrs.

Introduction to the concepts of differentiation and morphogenesis (definitions and significance in plant growth and development process). Concept of totipotency and de-differentiation.

Differentiation and cell polarity in acellular (*Dictyostelium*), Unicellular (*Acetabularia*) and multicellular plant system (*Arabidopsis*).

Shoot Apical meristem (SAM): Origin, structure and function, Cytohistological zonation and Ultrastructure of meristems.

Organogenesis: Differentiation of root, stem, leaf and axillary buds; bud dormancy

Leaf development: Mechanism of leaf primordium initiation, development and Phyllotaxis, Diversity in size, shape and arrangement of leaves

Structure and function of root apical meristem (RAM): Root cap, quiescent centre and origin of lateral roots.

Flower development: Overview of flower initiation and development, Genetic control of flower development - ABC model of flower development. Senescence in plants – a general account.

Unit IV: Reproductive Biology

14 Hrs.

Introduction, Scope and contributions of Indian embryologists: P. Maheshwari, B G L Swamy

Microsporangium: Development and structure of mature anther; Anther wall layers; Tapetum -types, structure and functions; sporogenous tissue.

Microsporogenesis - Microspore mother cells, microspore tetrads and its types; Pollinia.

Microgametogenesis – Formation of vegetative and generative cells, structure of male gametophyte. Pollen embryo sac (Nemec phenomenon).

Megasporangium – Structure of typical Angiosperm ovule. Types of ovules- Anatropous, Orthotropous, Amphitropous, Campylotropous, Circinotropous. **Megagametogenesis** –Female gametophyte embryo sac- monosporic - *Polygonum* type, bisporic – *Allium* type, tetrasporic - *Fritillaria* type. Structure of mature embryo sac.

Pollination and fertilization: Structural and functional aspects of pollen, stigma and style. Post pollination events; Current aspects of fertilization; Significance of double fertilization, Post fertilization changes.

Endosperm – Types and its biological importance. Free nuclear (*Cocos nucifera*), cellular (*Cucumis*), helobial types. Ruminant endosperm.

Embryogenesis : Structure Dicot and Monocot seed, Dicot (*Capsella bursa-pastoris*) and Monocot (*Najas*) embryo development.

B.Sc. BOTANY: Semester III
Practical: Discipline Specific Core Course (DSCC)
Title of the Course and Code:
BOT-A-3.2: PLANT ANATOMY AND DEVELOPMENT BIOLOGY

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/ Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A-3.2	DSCC	Practical	02	04	56 hrs	3hrs	25	25	50

LIST OF EXPERIMENTS

LIST OF EXPERIMENT TO BE CONDUCTED

Practical No.1

- i) Study of meristem (Permanent slides/ Photographs).
- ii) Study of Simple Tissues: Parenchyma, Collenchyma and Sclerenchyma

Practical No.2

Complex Tissues - xylem and phloem; Maceration technique to study elements of xylem and phloem

Practical No.3

Study of primary structure of dicot and monocot stem

Practical No.4

Study of primary structure of dicot and monocot root and leaf

Practical No. 5

Study of Normal secondary growth structure in dicot stem and root (Sunflower) and Anomalous secondary growth: *Aristolochia*, *Boerhaavia* (dicot stem) *Dracaena* (monocot stem)

Practical No. 6

Study of trichomes (any three types) and stomata (any three types) with the help of locally available plant materials

Practical No. 7

Permanent slides of Microsporogenesis and male gametophyte Mounting of Pollen grains of Grass and *Hibiscus* and Pollinia of *Calotropis*

Practical No. 8

Pollen germination (hanging drop method) and Effect of Boron and Calcium on pollen germination

Practical No. 9

Permanent slides of types of ovules, Megasporogenesis and embryosac development.

Practical No. 10

Types of placentation: Axile, Marginal and Parietal types. Sectioning of ovary, for the studied types of placentation

Practical No. 11

Mounting of embryo: Any locally available seeds. Tridax and Cyamopsis, Mounting of endosperm: *Cucumis*

Practical No. 12

Histochemical localization of proteins/ carbohydrates

Practical No. 13 and 14

Mini project work in groups of 3-5 students, from the following list. This is to be recorded in the practical record book.

- a) Study of pollen morphology of different flowers with respect to shape, colour, aperture etc.
- b) Pollen germination of different pollen grains and calculating percentage of germination.
- c) Calculating percentage of germination of one particular type of pollen grain collected from different localities/ under different conditions.
- d) Study of placentation of different flowers.
- e) Any other relevant study related to Anatomy / Embryology.

Text Books for Reference:

1. Bhojwani and Bhatnagar, Introduction to Embryology of Angiosperms –Oxford & IBH, Delhi
2. Bhojwani Sant Saran, 2014. Current Trends in the Embryology of Angiosperms, Woong-Young Soh, Springer Netherlands,
3. Coutler E. G. , 1969. Plant Anatomy – Part I Cells and Tissues – Edward Arnold, London.
4. Dickison, W.C. (2000). Integrative Plant Anatomy, Harcourt Academic Press, USA
5. Eames A. J. - Morphology of Angiosperms - Mc Graw Hill, New York.
6. Esau, K. 1990. Plant Anatomy, Wiley Eastern Pvt Ltd New Delhi
7. Evert, R.F. (2006) Esau's Plant Anatomy: Meristem, Cells, and Tissues of the Plant Body: Their Structure, Function and Development. John Wiley and Sons, Inc
8. Fahn, A. 1992. Plant Anatomy, Pergamon Press, USA
9. Johri, B.M. I., 1984. Embryology of Angiosperms, Springer-Verlag, Netherlands.
10. Karp G., 1985. Cell Biology; Mc.Graw Hill Company
11. Maheshwari, P. 1950. An introduction to the embryology of angiosperms. New York: McGraw-Hill
12. Mauseth, J.D. (1988). Plant Anatomy, the Benjamin/Cummings Publisher, USA.
13. Nair P .K .K - Pollen Morphology of Angiosperms - Scholar Publishing House, Lucknow
14. Pandey S.N. 1997, Plant Anatomy and Embryology .A. Chadha, Vikas Publication House Pvt Ltd;
15. Pandey, B. P., 1997. Plant Anatomy, S.Chand and Co. New Delhi
16. Raghavan, V., 2000. Developmental Biology of Flowering plants, Springer, Netherlands.
17. Saxena M. R. – Palynology – A treatise - Oxford & I. B .H., New Delhi.

18. Shivanna, K.R., 2003. Pollen Biology and Biotechnology. Oxford and IBH Publishing Co. Pvt.Ltd. Delhi.
19. Vashishta .P.C .,1984. Plant Anatomy – Pradeep Publications – Jalandhar
20. Vashishta, P.C. 1997. Plant Anatomy, Pradeep Publications
21. T Pullaiah, K C Naidu and K Lakhminarayana, 2017. Plant Development. Daya Publishing House, New Delhi.

Online Resources : https://onlinecourses.nptel.ac.in/noc19_bt17/preview

B.Sc. BOTANY –Semester III
Open Elective Course (OEC - 3)
(OEC for other students)
Paper: Community Forestry
Code: OEC-3.1

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures / Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC-3.1	OEC	Theory	03	03	42 hrs	2 hrs	40	60	100

Learning outcomes:

After completion of the course, the students will be able to;

- Understand community forestry and its conservation
- Examine the use of trees and community forestry
- Interpret the role of indigenous / tribal people in conservation of forest
- Examine the role of various community forestry conservation programs
- Measure the different properties of trees such as wood volume, age, height etc.

Unit I

14 lectures

Community forestry - Definition, Indigenous community based forestry systems, Case studies of indigenous forest management systems in India, History of commercial forestry in India, Diseases of commercial forestry, maintenance of forests, Protection from fire, illicit felling, Measurement of Trees- Height, girth, wood density, wood quality, clear and selective felling.

Unit II

14 lectures

Role of community forestry in Environmental conservation, Water shed management, soil management and poverty reduction, Trees as a forest management tool, managing vegetation to modify climate, soil conditions & ecological processes. Social considerations on land-uses.

Unit III

14 lectures

State-sponsored community forestry and conservation programs, Changing paradigms in forestry and environmental conservation, Community-managed commercial timber harvesting. Community based forestry and collaborative conservation in India. Factors contributing to the rise of community forestry, Role of tribes in forest management.

Suggested Reading

1. Agrawal, A and C.C. Gibson. (2001). Introduction: The Role of Community in Natural Resource Conservation. In: Agrawal, A and C. C. Gibson (eds).Communities and the Environment. NJ: Rutgers University Press

2. Mosse, D.(2001).‘People's knowledge’, participation and patronage: operations and representations in rural development. In: Cook, B & Kothari, U (eds), Participation the newtyranny? Zed Press
3. Ong, C.K. & Huxley, P.K. (1996). Tree Crop Interactions—A Physiological Approach. ICRAF.
4. Robinson, D. (2018). The Economic Theory of Community Forestry (Routledge Explorations in Environmental Economics) Routledge.
5. Sagreiya, K.P. (1979). Forests and Forestry. National Book Trust, India, New Delhi, P1-307.

B.Sc. BOTANY –Semester III
Open Elective Course (OEC - 3)
(OEC for other students)
Paper: Algal Cultivation and Applications
Code: OEC-3.2

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures / Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC-3.2	OEC	Theory	03	03	42 hrs	2 hrs	40	60	100

Learning outcomes:

On completion of this course, the students will be able to;

- Understand core concepts and fundamentals of various levels of algal growth
- Translate various algal technologies for benefit of ecosystem
- Demonstrate algal growth in different types of natural water.
- Analyze emerging areas of Algal Biotechnology for identifying commercial potentials of algal products & their uses.

Unit I

14 lectures

A brief account of culture techniques and media for algal research. Measurement of algal growth: lag phase, log phase, stationary phase and death phase using biomass, chlorophyll content. Limits to algal growth in natural waters. Dynamics and consequences of marine & freshwater algal blooms; Causative factors for eutrophication and its impact on algal blooms.

Unit II

14 lectures

Algal immobilization: methods and applications, Algal technologies for the restoration/maintenance of soil fertility; reclamation of usar soils. Restoration of degraded aquatic systems through algae; High rate algal ponds for the treatment of wastewaters for the production of useful biomass & fuels.

Unit III

14 lectures

Emerging areas of Algal Biotechnology: Single cell proteins, bio-fertilizers, Algae as food, medicine, feed, Biofuel, industrial products such as phyco-colloid Agar-agar, Algin, Carrageenan, Diatomite); A brief account of commercial potentials of algal products & their uses. Algae as indicators of pollution. Biofouling, Sewage disposal. Waste-land reclamation. Use of Algae in experimental studies. Algae in space. Algal toxins.

Suggested Readings

1. Hoek, C. and Van D. (2009) *Algae: An Introduction to Phycology*. Cambridge University Press
2. Bast, F. (2014). An Illustrated Review on Cultivation and Life History of Agronomically Important Seaplants. In *Seaweed: Mineral Composition, Nutritional and Antioxidant Benefits and Agricultural Uses*, Eds. Vitor Hugo Pomin, 39-70. Nova Publishers, New York ISBN:978-1-63117-571-8
3. Kumar, H.D.(1999). *Introductory Phycology*. Affiliated East-West Press, Delhi
4. Sahoo, D. (2000). *Farming the ocean: seaweeds cultivation and utilization*. Aravali International, New Delhi.
5. Bast, F. (2014). Seaweeds: Ancestors of land plants with rich diversity. *Resonance*, 19 (2) 1032-1043/ISSN:0971-8044

B.Sc. BOTANY – Semester III
Open Elective Course (OEC - 3)
(OEC for other students)
Paper: Landscaping and Gardening
Code: OEC-3.3

Cour se No.	Type of Cour se	Theory / Practical	Credi ts	Instructio n hour per week	Total No. of Lectures / Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC -3.3	OEC	Theory	03	03	42 hrs	2 hrs	40	60	100

Learning outcomes:

After the completion of this course the learner will be able to:

- Apply the basic principles and components of gardening
- Conceptualize flower arrangement and bio-aesthetic planning
- Design various types of gardens according to the culture and art of bonsai
- Distinguish between formal, informal and free style gardens
- Establish and maintain special types of gardens for outdoor and indoor land scaping

Unit I

14 lectures

Principles of gardening, garden components, adornments, lawn making, methods of designing rockery, water garden. Special types of gardens, their walk-paths, bridges, constructed features; their design, values in land scaping. planting trees, shrubs and herbaceous perennials. climbers and creepers, palms, ferns, grasses and succulents. Green house.

Unit II

14 lectures

Flower gardens: importance, production details and cultural operations, constraints, post-harvest practices. Bio-aesthetic planning, definition, need, round country planning, urban planning and planting avenues in schools, villages, railway stations, dam sites, hydroelectric stations, colonies, river banks, play grounds.

Unit III

14 lectures

Land scape designs, Urban land scaping, Land scaping for specific situations - institutions, industries, residents, hospitals, road sides, traffic islands, dam sites, IT parks, corporate; establishment and maintenance. Styles of garden - formal, informal and freestyle gardens. Types of gardens - vertical gardens, roof gardens, parks and public gardens, indoor gardening, therapeutic gardening. Culture of bonsai, art of making bonsai, non-plant components, water-scaping, xeri-scaping, hardscaping; Computer Aided Designing (CAD) for outdoor and indoor scaping, exposure to CAD (Computer Aided Designing). Eco-tourism.

Suggested Readings

1. Berry, F. and Kress, J. (1991). *Heliconia: An Identification Guide*. Smithsonian Books
2. Butts, E. and Stensson, K. (2012). *Sheridan Nurseries: One hundred years of People, Plans, and Plants*. Dundurn Group Ltd.
3. Russell, T.(2012). *Nature Guide: Trees: The world in your hands* (Nature Guides).

B.Sc. BOTANY: Semester IV
Theory: Discipline Specific Core Course (DSCC)
Title of the Course and Code:
BOT-A-4.1: Ecology and Conservation Biology

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/ Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A-4.1	DSCC	Theory	04	04	56 hrs	2hrs	40	60	100

Course outcome:

1. A basic course to understand ecosystem functioning
2. Chapters on autecology, community ecology and population ecology can be of use in higher studies
3. Chapters on global warming and pollution of various kinds are very relevant and helps to appreciate these problems
4. It gives an exhaustive idea about biodiversity at different levels and groups of plants
5. A detailed account on endemism and the various uses of biodiversity further emphasises the importance of biodiversity
6. Also, there is a detailed study on the use of remote sensing in monitoring various aspects of diversity
7. With the tremendous human impact on biodiversity the course becomes very relevant

Contents of Theory Course		
Unit 1	Topics	Teaching Hours
I	Introduction to Ecology and Conservation Biology: Definitions, Principles of Ecology, Brief History, Major Indian Contributions, Scope and importance. Ecological levels of organisation. Ecological factors: Climatic factors: light, temperature, precipitation and humidity. Edaphic factors: Soil and its types, soil texture, soil profile, soil formation; physico-chemical properties of soil - mineral particle, soil pH, soil aeration, organic matter, soil humus and soil microorganisms. Topographic Factors: Altitude Ecological groups of plants and their adaptations: Morphological and anatomical adaptations of hydrophytes, xerophytes, epiphytes and halophytes.	15 hrs
II	Ecosystem Ecology: Introduction, types of ecosystems with examples -terrestrial and aquatic, natural and artificial. Structure of ecosystem: Biotic and Abiotic components, detailed structure of a pond ecosystem. Ecosystem functions and processes: Food chain-grazing and detritus; Food web. Ecological pyramids -Pyramids of energy, biomass and number. Principles of Energy flow in ecosystem. Bio-geo chemical cycles: Gaseous cycles -carbon and nitrogen, Sedimentary cycle- Phosphorus.	15 hrs

	Ecological succession: Definition, types- primary and secondary. General stages of succession. Hydrosere and xerosere. Community Ecology: Community and its characteristics – frequency, density, Abundance, cover and basal area, phenology, stratifications, life-forms. Concept of Ecotone and Ecotypes. Intra-specific and Inter-specific interactions with examples. Ecological methods and techniques: Methods of sampling plant communities – transects and quadrates. Remote sensing as a tool for vegetation analysis, land use – land cover mapping. Population Ecology: Population and its characteristics – Population density, natality, mortality, age distribution, population growth curves and dispersal.	
III	Phytogeography and Environmental issues: Theory of land bridge, theory of continental drift, polar oscillations and glaciations. Centre of origin of plant – Vavilov's concept, types. Phytogeographical regions – concept, phytogeographical regions of India. Vegetation types of Karnataka – Composition and distribution of evergreen, semi-evergreen, deciduous, scrub, mangroves, shoal forests and grasslands. An account of the vegetation of the Western Ghats. Pollution: Water pollution: Causes, effect, types; water quality indicators, water quality standards in India, control of water pollution (Waste water treatment). Water pollution disasters – National mission on clean Ganga ,Minimata, Pacific gyre garbage patch, Exxon valdez oil spill. Air pollution: Causes, effect, air quality standards, acid rain, control. Soil pollution: Causes, effect, solid waste management, control measures of soil pollution.	11hrs
IV	Biodiversity and its conservation: Biodiversity: Definition, types of biodiversity - habitat diversity, species diversity and genetic diversity, Global and Indian species diversity. SDG's in biodiversity conservation. Values of Biodiversity – Economic and aesthetic value, Medicinal and timber yielding plants. NTFP. Threats to biodiversity. Concept of Biodiversity Hotspots, Biodiversity hot spots of India. Concept of endemism and endemic species. ICUN plant categories with special reference to Karnataka/ Western Ghats. Biodiversity Conservation-Indian Forest conservation act, Biodiversity bill (2002). Conservation methods – <i>In-situ</i> and <i>ex-situ</i> methods <i>In-situ</i> methods –Biosphere reserves, National parks, Sanctuaries, Sacred grooves. <i>Ex-situ</i> methods-Botanical gardens, Seed bank, Gene banks, Pollen banks, Culture collections, Cryopreservation.	15 hrs
Total		56 Hours

SUGGESTED REFERENCE BOOKS:

1. Sharma, P.D. 2018. Fundamentals of Ecology. Rastogi Publications.
2. Odum E.P. (1975): Ecology By Holt, Rinert& Winston.
3. Oosting, H.G. (1978): Plants and Ecosystem Wadworth Belmont.
4. Kochhar, P.L. (1975): Plant Ecology. (9th Edn.,) New Delhi, Bombay, Calcutta-226pp.,
5. Kumar, H.D. (1992): Modern Concepts of Ecology (7th Edn.,) Vikas Publishing Co., New Delhi.
6. Kumar H.D. (2000): Biodiversity & Sustainable Conservation. Oxford & IBH Publishing Co Ltd. New Delhi.
7. Newman, E.I. (2000): Applied Ecology, Blackwell Scientific Publisher, U.K.
8. Chapman, J.L&M.J. Reiss (1992): Ecology (Principles & Applications). Cambridge University Press, U.K.
9. Malcolm L. Hunter Jr., James P. Gibbs, Viorel D. Popescu, 2020. Fundamentals of Conservation Biology, 4th Edition. Wiley-Blackwel.
10. Saha T. K., 2017. Ecology and Environmental Biology. Books and Allied Publishers.

B.Sc. BOTANY: Semester IV
Practical: Discipline Specific Core Course (DSCC)
Title of the Course and Code:
BOT-A-4.2: Ecology and Conservation Biology

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/ Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A-4.2	DSCC	Practical	02	04	56 hrs	3hrs	25	25	50

List of Practicals

Practical No.	Experiments
1	Determination of pH of different types of Soils, Estimation of salinity of soil/water samples.
2	Study of Ecological instruments – Wet and Dry thermometer, Altimeter, Hygrometer, Soil thermometer, Rain Gauge, Barometer, etc
3	Determination of water holding capacity of soil samples
4	Determination of Biological oxygen demand (BOD)
5	Determination of Chemical oxygen demand (COD)
6	Determination of soil texture of different soil samples.
7	Hydrophytes: Morphological adaptations in <i>Pistia</i> , <i>Eichhornia</i> , <i>Hydrilla</i> , <i>Nymphaea</i> . Anatomical adaptations in <i>Hydrilla</i> (stem) and <i>Nymphaea</i> (petiole).
8	Xerophytes: Morphological adaptations in <i>Asparagus</i> , <i>Casuarina</i> , <i>Acacia</i> , <i>Aloe vera</i> , <i>Euphorbia tirucalli</i> . Anatomical adaptations in phylloclade of <i>Casuarina</i> .
9	Epiphytes: Morphological adaptations in <i>Acampe</i> , <i>Bulbophyllum</i> , <i>Drynaria</i> . Anatomical adaptations in epiphytic root of <i>Acampe</i> / <i>Vanda</i> . Halophytes: study of Vivipary in mangroves; Morphology and anatomy of Pneumatophores.
10	Study of a pond/forest ecosystem and recording the different biotic and abiotic components
11	Demonstration of different types of vegetation sampling methods – transects and quadrats. Determination of Density and frequency.
12	Application of remote sensing to vegetation analysis using satellite imageries
13 and 14	Field visits to study different types of local vegetations/ecosystems and the report to be written in practical record book.

B.Sc. BOTANY –Semester IV
Open Elective Course (OEC - 4)
(OEC for other students)
Paper: Plant Diversity and Human Welfare
Code: OEC-4.1

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures / Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC - 4.1	OEC	Theory	03	03	42 hrs	2 hrs	40	60	100

Learning outcomes:

After the completion of this course, the learner will be able to:

- Develop understanding of the concept and scope of plant biodiversity
- Identify the causes and implications of loss of biodiversity
- Apply skills to manage plant biodiversity
- Utilize various strategies for the conservation of biodiversity
- Conceptualize the role of plants in human welfare with special reference to India

Unit I: Plant Diversity and its Scope

14 lectures

Levels of biodiversity: Genetic, Species and Ecosystem; Agro-biodiversity and cultivated plant taxa and related wild taxa. Values and uses of Biodiversity, Methodologies for valuation, Ethical and aesthetic values, Uses of plants; Ecosystem services.

Unit II: Loss of Biodiversity and Management of Plant Biodiversity

14 lectures

Loss of biodiversity-causes and implications, Hotspots of biodiversity, extinction of species, projected scenario for biodiversity loss. Organizations associated with biodiversity management, IUCN, UNEP, WWF, UNESCO, NBPGR; Biodiversity legislation; Information management and communication.

Unit III: Conservation of Biodiversity, Role of Plants in Relation to Human Welfare

14 lectures

Conservation of genetic, species and ecosystem diversity, *In situ* and *ex situ* conservation strategies, India's biodiversity and its conservation Social approaches to conservation, Biodiversity awareness programmes, Sustainable development. Importance of forestry their utilization and commercial aspects; Avenue trees; Ornamental plants of India; Alcoholic beverages; Fruits and nuts; Wood and its uses; their commercial importance, NTFP,

Suggested Readings

1. Krishnamurthy, K.V. (2004). An Advanced Text Book of Biodiversity-Principles and Practices. Oxford and IBH Publications Co. Pvt. Ltd. New Delhi.
2. Singh, J. S., Singh, S.P. and Gupta, S.(2006). Ecology Environment and Resource Conservation. Anamaya Publications, New Delhi, India.
3. Reddy, K.V. and Veeraiah, S. (2010). Biodiversity and Plant Resources. Aavishkar publication, New Delhi.
4. Heywood, V.H. and Watson, R.T.(1995). Global biodiversity and Assessment. Cambridge University Press.

B.Sc. BOTANY –Semester IV
Open Elective Course (OEC - 4)
(OEC for other students)
Paper: Medicinal Plants in Health Care
Code: OEC-4.2

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures / Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC - 4.2	OEC	Theory	03	03	42 hrs	2 hrs	40	60	100

Learning outcomes:

On completion of this course, the students will be able to:

- Recognize the basic medicinal plants
- Apply techniques of conservation and propagation of medicinal plants.
- Setup process of harvesting, drying and storage of medicinal herbs
- Propose new strategies to enhance growth of medicinal herbs considering the practical issues pertinent to India

Unit I: History and Traditional System of Medicine

14 lectures

History, Scope and Importance of Medicinal Plants; Traditional systems of medicine; Definition and Scope.

Ayurveda: History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedic treatments,

Siddha: Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine.

Unani: History, concept: Umoor-e-tabiya, tumors treatments / therapy, polyherbal formulations.

Unit II: Conservation, Augmentation and Ethnobotany and Folk Medicine

14 lectures

Conservation of Endemic and endangered medicinal plants, Red list criteria; *In situ* conservation: Biosphere reserves, sacred groves, National Parks; *Ex situ* conservation: Botanic Gardens, Seed bank pollenbank cryopreservation.

Propagation of Medicinal Plants: Objectives of the nursery, its classification, important components of a nursery, sowing, pricking, use of greenhouse for nursery production, propagation through cuttings, layering, grafting and budding.

Ethnobotany and Folk medicines. Definition; Ethnobotany in India: Methods to study ethnobotany; Applications of Ethnobotany: Folk medicines of ethnobotany, ethnomedicine, ethnoecology, ethnic communities of India.

Unit III Medicinal Plants

14 lectures

Brief description of selected plants and derived drugs, namely Guggul (*Commiphora*) for hypercholesterolemia, *Boswellia* for inflammatory disorders, Arjuna (*Terminalia arjuna*) for cardioprotection, turmeric (*Curcuma longa*) for wound healing, antioxidant and anticancer properties, Kutaki (*Picrorhiza kurroa*) for hepatoprotection, Opium Poppy for analgesic and antitussive, Cinchona and Artemisia for Malaria, Rauwolfia as tranquilizer, Podophyllum as antitumor. Vinearosea as anticancerous, Morinda citrifolia, Acorus calamus, ocinunsanchem. Tinospora cordifolia, *Coleus amboinicu*, *Piper nigrum*

Suggested Readings:

1. Akerele, O., Heywood, V. and Synge, H. (1991). The Conservation of Medicinal Plants. Cambridge University Press.
2. AYUSH (www.indianmedicine.nic.in). About the systems—An overview of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy. New Delhi: Department of Ayurveda, Yogaand Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry and Family Welfare, Government of India.
3. CSIR- Central Institute of Medicinal and Aromatic Plants, Lucknow (2016). *Aush Gyanya*: Handbook of Medicinal and Aromatic Plant Cultivation.
4. Dev, S. (1997). Ethno-therapeutics and modern drug development: The potential of Ayurveda. *Current Science* 73:909–928.
5. Evans, W.C. (2009). Trease and Evans Pharmacognosy, 16thedn. Philadelphia, PA: Elsevier Saunders Ltd.
6. Jain, S.K. and Jain, Vartika. (eds.) (2017). Methods and Approaches in Ethnobotany: Concepts, Practices and Prospects. Deep Publications, Delhi
7. Kapoor, L.D. (2001). Handbook of Ayurvedic medicinal plants. Boca Raton, FL: CRC Press.
8. Saroya, A.S. (2017). Ethnobotany. ICAR publication.
9. Sharma, R.(2003). Medicinal Plants of India-An Encyclopaedia. Delhi: Daya Publishing House.
10. Sharma, R. (2013) Agro Techniques of Medicinal Plants. Daya Publishing House, Delhi.
11. Thakur, R.S., H.S. Puri, and Husain, A.(1989). Major medicinal plants of India. Central Institute of Medicinal and Aromatic Plants, Lucknow, India.

B.Sc. BOTANY –Semester IV
Open Elective Course (OEC - 4)
(OEC for other students)
Paper: Floriculture
Code: OEC-4.3

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures / Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC - 4.3	OEC	Theory	03	03	42 hrs	2 hrs	40	60	100

Learning outcomes:

After completing this course the learner will be able to;

- Develop conceptual understanding of gardening from historical perspective
- Analyze various nursery management practices with routine garden operations.
- Distinguish among the various Ornamental Plants and their cultivation
- Evaluate garden designs of different countries
- Appraise the landscaping of public and commercial places for floriculture.
- Diagnose the various diseases and pests of ornamental plants.

Unit I

14 lectures

Introduction: Importance and scope of floriculture and landscape gardening. Nursery Management and Routine Garden Operations: Sexual and vegetative methods of propagation; Soil sterilization; Seed sowing; Pricking; Planting and transplanting; Shading; Stopping or pinching; Defoliation; Wintering; Mulching; Topiary; Role of plant growth regulators.

Unit II

14 lectures

Ornamental Plants: Flowering annuals; perennials; Divine vines; Shade and ornamental trees; Ornamental bulbous and foliage plants; Cacti and succulents; Palms and Cycads; Ferns and fern allies; Cultivation of plants in pots; Indoor gardening; Bonsai. Principles of Garden Designs: English, Italian, French, Persian, Mughal and Japanese gardens; Features of a garden (Garden wall, Fencing, Steps, Hedge, Edging, Lawn, Flowerbeds, Shrubbery, Borders, Water-garden. Some Famous gardens of India.

Floriculture and green house technology. Commercial aspects and exporting of flowers and ornamental plants. Quarantine and testing requirements.

Unit III

14 lectures

Landscaping Places of Public Importance: Landscaping highways And Educational institutions. Commercial Floriculture: Factors affecting flower production; Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life; Cultivation of Important cut flowers (Carnation, Aster, Chrysanthemum, Dahlia, Gerbera, Gladiolus, Marigold, Rose, Lilium, Orchids). Diseases and Pests of Ornamental Plants.

Suggested Readings

1. Randhawa, G.S. and Mukhopadhyay, A. (1986).Floriculture in India. Allied Publishers.
2. Adams, C., M. Early and J. Brrok (2011). Principles of Horticulture. Routledge, U.K

B.Sc. BOTANY: Semester III
Practical: Discipline Specific Core Course (DSCC)
PLANT ANATOMY AND DEVELOPMENT BIOLOGY

Question Paper Pattern and Scheme of evaluation

Time: 2 hrs.

Max. Marks: 25

1. Prepare a temporary stained section of the material A . Sketch, label and identify. Leave the preparation for inspection.	05
2. Calculate the percentage of pollen germination/mounting of embryo or pollinia B .	04
3. Sketch, label and identify with reasons C, D and E .	09
4. Practical Record	07

Sl. No.	Question	Experiment	Marks allotment	
1	A		Prepn 02 Labelled Sk 02 Id 01 05	Reg. No. of Candidates Assigned Reg. No. of absentees: Total examined: Examiners: 1.External 2.Internal
2	B		Prepn 01 Procedure 01 Calculation/diagram 02 04	
3	C D E		Labelled Sk 01 Identification 01 Reasons 01 03each	
4		Practical Record	07	

Note:

A: Dicot/Monocot stem or root

B: Pollen of Vinca/ Impatiens/ Calotropis/ embryo of mustard or any locally available seed

C, D and **E:** Permanent slide on tissue types/ placentation/ovule types/anther/ leaf anatomy

B.Sc. BOTANY SEMESTER IV
Ecology and Conservation Biology

Question Paper Pattern and Scheme of evaluation

Time: 2 hrs.

Max. Marks: 25

1. Prepare a stained temporary mount of the T.S. of material **A**. Draw a neat labelled diagram.
Leave the slide for inspection. 05
2. Determine the water holding capacity/ BOD/ COD/ pH/ texture/ salinity of soil/ water sample 05
3. Identify the ecological instrument **C**, Describe its working mechanism. Mention any one uses 04
4. Identify the ecological group of **D** and **E**. Comment on their ecological features/ adaptation 06
5. Practical Record with field visit report 05

Sl. No.	Question	Experiment	Marks allotment	
1	A		Prepn 02 Labelled diagram 02 Id 01 <u>05</u>	Reg. No. of Candidates Assigned
2	B		Requirements 01 Procedure 02 Setting 01 Result 01 <u>05</u>	<u>Reg. No. of absentees:</u>
3	C		Identification 01 Working principle 02 Use 01 <u>04</u>	<u>Total examined:</u>
	D E		Ecological group 01 Features 02 <u>03each</u>	<u>Examiners:</u> 1.External
4		Practical Record } Filed visit report }	05	2.Internal

Note:

A: Plant material from ecological group must be selected

Bachelor of Science (Basic/Hons.)

**With Statistics as one of the majors with practicals with other subject as another major in 3rd year
(III and IV semesters)**

Program Structures for the Under-Graduate Programs in Universities and Colleges

Bachelor of Science (Basic/Hons.) /Bachelor of Arts (Basic/Hons.) With Statistics as one of the majors with practicals with other subject as another major

Sem.	Discipline Core (DSC)(Credits) (L+T+P)	Discipline Elective(DSE) / Open Elective (OE) (Credits) (L+T+P)	Ability Enhancement Compulsory Courses (AECC), Languages (Credits)(L+T+P)		Skill Enhancement Courses (SEC)		Total Credits
					Skill based (Credits) (L+T+P)	Value based (Credits) (L+T+P)	
I	Descriptive Statistics (4+2) Discipline B1(4+2)	OE-1 (3)	L1-1 (3), L2-1 (3)(3+1+0 each)		SEC-1: Digital Fluency (2) (1+0+2)		25
II	Probability and Distributions (4+2)Discipline B2(4+2)	OE-2 (3)	L1-2(3), L2-2 (3) (3+1+0 each)	Environmental Studies (2)		Health & Wellness/ Social & Emotional Learning (2) (1+0+2)	25
Exit option with Certificate (48 credits)							
III	Calculus and Probability Distributions (4+2) Discipline B3(4+2)	OE-3 (3)	L1-3 (3), L2- 3(3) (3+1+0 each)		SEC-2: Artificial Inte- elligence (2)(1+0+2)		23
IV	Statistical Inference-I (4+2) Discipline B4(4+2)	OE-4 (3)	L1-4 (3), L2- 4(3) (3+1+0 each)	Constitution of India (2)		Sports/NCC/NSS etc. (2) (1+0+2)	25
Exit option with Diploma (96 credits)							
V	Matrix Algebra and Regression Analysis (3+2) Analysis of variance and design of experiments (3+2) Discipline B5(3+2)	DS-B Elective 1 (3)			SEC-3: Cyber Security (2) (1+0+2)	Ethics & Self Aware- ness (2) (1+0+2)?	20
VI	Statistical Inference-II (3+2) Discipline B6(3+2) Discipline B7(3+2)	DS-A Elective 1 (3)			SEC-4: Professional/ Societal Communication (2)		20
Exit option with Bachelor of Arts, B.A. / Bachelor of Science, B. Sc. Basic Degree (136 credits)							
Choose any one Discipline as Major							

VII	Sample Surveys and Statistics for National Development (3+2) Real Analysis (3+2) Probability Theory (4)	DS-A/B Elective 2(3) Res. Methodology(3)					20
VIII	Linear Algebra (4) Linear models and Design of Experiments (4)	DS-A/B Elective 3(3) DS-A/B Elective 4(3) Research Project (6)*					20
Award of Bachelor of Arts Honours, B.A. (Hons.)/ Bachelor of Science Honours, B.Sc. (Hons) degree in a discipline etc. (176 credits)							
IX	Multivariate Analysis (3+2) Decision Theory and Bayesian Inference (3+2) Distribution Theory (4)	DS-A/B Elective 2(3) Res. Methodology(3)					20
X	Stochastic Processes (4) Time Series Analysis (4)	DS-A/B Elective 3(3) DS-A/B Elective 4(3) Research Project (6)*					20
Award of Master of Science Degree in Statistics							

Summary of Discipline Specific Courses (DSC)			
Semester	Course Code	Title of the Paper	Credits
I	DSC A1	Descriptive Statistics	4
		Practicals based on DSC A1	2
II	DSC A2	Probability and Distributions	4
		Practicals based on DSC A2	2
III	DSC A3	Calculus and Probability Distributions	4
		Practicals based on DSC A3	2
IV	DSC A4	Statistical Inference-I	4
		Practicals based on DSC A4	2
V	DSC A5	Matrix Algebra and Regression Analysis	3
		Practicals based on DSC A5	2
	DSC A6	Analysis of variance and design of experiments	3
		Practicals based on DSC A6	2
VI	DSC A7	Statistical Inference-II	3
		Practicals based on DSC A7	2
VII	DSC A8	Sample Surveys and Statistics for National Development	3
		Practicals based on DSC A8	2
	DSC A9	Real Analysis	3
		Practicals based on DSC A9	2
	DSC A10	Probability Theory	4
VIII	DSC A11	Linear Algebra	4
	DSC A12	Linear models and Design of Experiments	4
IX	DSC A13	Multivariate Analysis	3
		Practicals based on DSC A13	2
	DSC A14	Distribution Theory	3
		Practicals based on DSC A14	2
	DSC A15	Decision Theory and Bayesian Inference	4
X	DSC A16	Stochastic Processes	4
	DSC A17	Time Series Analysis	4

Syllabus for III and IV Semester B.Sc. with Statistics as Major

Assessment for Discipline Specific Core(DSC)

Weightage for assessments (in percentage)

Type of Course	Formative Assessment / IA	Summative Assessment
Theory	40	60
Practical	25	25(20+5(Practical record))

III Semester B.Sc.,

Course Title: Calculus and Probability Distributions	
Total Contact Hours: 56	Course Credits:04
Formative Assessment Marks: 40	Duration of ESA/Exam: 2 hours
Summative Assessment Marks: 60	

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/semester
4	56	2	52

Course Objectives

To enable the students to

1. Know the concept of continuity, differentiability, integration of one and more variables.
2. Define and describe properties of Joint, Marginal and conditional distributions of variables and some key concepts of probability theory.
3. Understand different discrete, continuous and sampling distributions, properties and their applications.
4. Generate random variables from various distributions using R-code.

Course Outcomes

After completion of this course the students will be able to

1. Judge continuity of a function, find integrations and solve problems of differentiability.
2. Solve problems of various analytical environments using different distributions and their properties.
3. Find sampling distributions of functions of random variables and explore their applications.

Theory Paper 3 ‘Calculus and Probability Distributions’

Content of Theory Paper 3	56 Hrs
UNIT 1: Calculus of one and more variables	15 Hrs
Review of calculus of one variable: continuity, differentiability, mean value theorem and Taylor series expansion. Functions of several variables: Continuity, directional derivatives, differentials of functions of several variables, the gradient vector. The mean value theorem, a sufficient condition for the existence of the differential, partial derivatives of higher order and Taylor's formula. Applications of partial differentiation, Jacobian. Riemann integrals, integration by parts, mean value theorem. Multiple integrals and evaluation of multiple integrals by repeated integration, Mean-value theorem for multiple integrals. Sequences and Series of real numbers. convergence of sequences and series, tests for convergence of series. (Only results and applications)	
UNIT 2: Distribution of Random Variables (Two-dimensional)	12 Hrs
Two dimensional random variables: Joint distribution, Marginal distribution and Conditional distributions of random variables, conditional expectation, covariance, correlation and moments. Distribution of functions of random variables using m.g.f. and distribution function. Transformation of variable technique (one and two variables). Chebyshev's inequality- proof and its use in approximating probabilities; Convergence in law and convergence in probability. Statements of Weak Law of Large Numbers; and Central Limit theorems – De-Moivre. (Some simple examples)	
UNIT 3: Probability Distributions-II	16 Hrs

Discrete distributions: Rectangular, Geometric, Negative Binomial, Hypergeometric, Multinomial- definition through probability mass function, mean, variance, moments, p.g.f., m.g.f., other properties and applications. Continuous distributions: Uniform, Gamma, Normal, Exponential, Beta (type 1 and type 2), Cauchy, Weibull– definition through probability density function, mean, variance, moments, m.g.f., other properties and applications. Bivariate normal distribution- definition through probability density function, marginal and conditional distribution.	
UNIT 4: Sampling Distributions and Simulation	13 Hrs
Definitions of random sample, parameter and statistic, sampling distribution of sample mean, standard error of sample mean, sampling distribution of sample variance, standard error of sample variance. Definition and derivation of Student t, Chi-square and F-Distribution-their properties, mean and variance. Limiting form of t distribution. Exact sampling distributions: Distribution of sample mean $\bar{x}$ and sample variance S^2 under normality assumption. when sampling from normal population. Assuming the independence of sample mean $\bar{x}$ and sample variance S^2 when sampling from normal population derive the distribution of $\frac{\bar{x}}{\sqrt{\frac{S^2}{n}}}$. Distribution of 1/F. Relationship between t, F and χ^2 distributions. Introduction to simulation. Generation of random observations from Uniform, Exponential, Normal, Binomial, Poisson distributions using R-codes.	

Text Books:

1. Gupta S.C. and V.K. Kapoor (2020), Fundamental of Mathematical Statistics, Sultan Chand and Co. 12th Edition.
2. Shanthi Narayana (2000), Integral Calculus, S. Chand & Co. Ltd.

References

1. Andre I Khuri (2003). Advanced Calculus with Applications in Statistics, Second Edition, John Wiley & Sons.
2. Ghorpade, S. R. and Limaye, B. V. (2006). A Course in Calculus and Real Analysis, Springer
3. Hogg, R. V. McKean J. W. and Craig, A. T. (2012), Introduction to Mathematical Statistics, Pearson 7th Edition.
4. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009), Probability and Statistical Inference, 10th Edition, Pearson Education, New Delhi.
5. Jay Kerns, G. (2010). Introduction to Probability and Statistics using R. 1st Edition,

Springer.

6. Rohatgi, V.K. and A.K. Md. Ehsanes Saleh. (2002). An Introduction to Probability Theory and Mathematical Statistics, New York, John Wiley.
7. Ross, S. M. (2014). Introduction to Probability Models. 11th Edition, Elsevier science.
8. Ross, S. M. (2012). Simulation. Academic Press.
9. Shanti Narayana (2000). Differential Calculus, S. Chand & Co. Ltd.
10. Verzani, J. (2002). Simple R - Using R for Introductory Statistics.

Pedagogy

1. The course is taught using traditional chalk and talk method using problem solving through examples and exercises.
2. Students are encouraged to use resources available on open sources.

Formative Assessment: Total 40 marks	
Assessment Occasion/ type	Weightage in Marks
Internal Test 1	15
Internal Test 2	15
Assignment/Seminar (7 marks)+Attendance(3marks)	10
Total	40

Summative Assessment : Total Marks :60			
	Questions to be answered	Marks	Total marks
Part A	Three questions out of Five questions	3x2	06
Part B	Four questions out of Eight questions	4x6	24
Part C	Three questions out of Five questions	3x10	30
Total			60

Contents of Practical 3

Note: The first practical assignment is on R-programming. Practical assignments 2 to 10 have to be first solved manually (using scientific calculators) and executed using R-programming.

1. Demonstration of R functions for calculus, distribution of random variables, probability distributions, sampling distribution simulation.
2. Numerical differentiation and integration.
3. Bivariate Probability Distributions - Marginal and Conditional distributions,
4. Bivariate Probability Distributions - Conditional Mean, Conditional Variance, Correlation.
5. Applications of Chebyshev's inequality (For standard distributions such as Normal, Exponential, Gamma).
6. Applications of discrete probability distributions - Negative – Binomial, Geometric, Hyper geometric and discrete uniform, multinomial distributions.
7. Applications of continuous probability distributions - Exponential, Gamma, Cauchy, Weibull distributions.
8. Fitting of discrete and continuous distributions.
9. Generating random sample from discrete distributions.
10. Generating random sample from continuous distributions.

Formative Assessment: Total 25 marks	
Assessment Occasion/ type	Weightage in Marks
Internal Test 1	10
Internal Test 2	10
Attendance	5
Total	25

Summative Assessment : Total Marks 25		
Total Number of Five marks questions	Questions to be answered	Total Marks
8	4	4x5= 20
Class Record		05
Total Marks		25

IV Semester B.Sc.

Course Title: Statistical Inference-I	
Total Contact Hours: 56	Course Credits:04
Formative Assessment Marks: 40	Duration of ESA/Exam: 2 hours
Summative Assessment Marks: 60	

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/semester
4	56	2	52

Course Objectives

To enable the students to understand the concepts of

1. Families of distributions, order statistics and their distributions.
2. Estimation, criteria for estimators, methods of estimation, confidence interval.
3. Testing of Hypotheses and its theoretical aspects, large and small sample tests.

Course Outcomes

After completion of the course, the students will be able to

1. Carryout statistical analysis by identifying families of distributions and the use of order statistics.
2. To find estimators using different methods of estimation and compare estimators.
3. To carryout statistical inference using different tests of hypotheses under different scenarios.
4. Generate random variables and use these generated random variable for illustration of concepts studied in this course.

Theory Paper 4 'Statistical Inference-I'

Content of Theory Paper 4	56 Hrs
UNIT 1: Point Estimation-I	16 Hrs
Families of distributions- location and scale families. Single parameter exponential family. Concept of order statistics, Distribution of maximum and minimum order statistics (with proof) and r^{th} order statistic (without proof). Concepts of estimator and estimate. Criteria for estimators: Unbiasedness, Consistency. Invariance property of consistent estimators. Efficiency and relative efficiency. Mean squared error as a criterion for comparing estimators. Sufficient statistics. Statement of Neyman-Factorization theorem.	
UNIT 2: Point Estimation-II	12 Hrs
Fisher information function. Statement of Cramer-Rao inequality and its applications. Minimum Variance Unbiased Estimator and Minimum Variance Bound Estimator. Maximum likelihood and method of moment estimation; Properties of MLE and moment estimators and examples. Method of Scoring	
UNIT 4: Interval Estimation	10 Hrs
Confidence interval, confidence coefficient, shortest confidence interval. Methods of constructing confidence intervals using pivotal quantities. Construction of confidence intervals for mean, difference of two means, variance and ratio of variances, proportions, difference of two proportions and correlation coefficient.	
UNIT 3: Testing of Hypotheses	18 Hrs
Statistical hypotheses - null and alternative, Simple and composite hypotheses. Type-I and Type-II errors, test functions. Randomized and non-randomized tests. Size, level of significance, Power function, power of tests. Critical region, p- value and its interpretation. Most Powerful (MP) and UMP test. Statement of Neyman-Pearson Lemma and its applications. Likelihood ratio tests. Large and small samples tests of significance. Tests for single mean, equality of two means, single variance and equality of two variances for normal populations. Tests for proportions.	

Text Books:

1. Gupta S.C. and V.K. Kapoor (2020), Fundamental of Mathematical Statistics, SultanChand and Co. 12th Edition.
2. Rohatgi, V.K. and A.K. Md. Ehsanes Saleh. (2002). An Introduction to Probability Theory and Mathematical Statistics, New York, John Wiley.
- 3.

References

4. Chihara, L. and Hesterberg, T. (2011) Mathematical Statistics with Resampling and R. Wiley.

5. Hogg, R. V. McKean J. W. and Craig, A. T. (2012), Introduction to Mathematical Statistics, Pearson 7th Edition.
6. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009), Probability and Statistical Inference, 10th Edition, Pearson Education, New Delhi.
7. Johnson, R.A. and Bhattacharyya, G.K. (2006), Statistics: Principles and methods. 5th Edition, John Wiley & Sons, New York.
8. Kale, B.K. (1999). A First Course on Parametric Inference, New Delhi, Narosa Publishing House.
9. Kendall, M.G., et. al., (1996). An Introduction to the Theory of Statistics, Universal Book Stall.
10. Ross, S.M. (2014), Introduction to Probability and Statistics for Engineers and Scientists, 5th Edition, Academic Press.

Pedagogy

1. The course is taught using traditional chalk and talk method using problem solving through examples and exercises.
2. Students are encouraged to use resources available on open sources.

Formative Assessment: Total 40 marks	
Assessment Occasion/ type	Weightage in Marks
Internal Test 1	15
Internal Test 2	15
Assignment/Seminar (7 marks)+Attendance(3marks)	10
Total	40

Summative Assessment : Total Marks :60			
	Questions to be answered	Marks	Total marks
Part A	Three questions out of Five questions	3x2	06
Part B	Four questions out of Eight questions	4x6	24
Part C	Three questions out of Five questions	3x10	30
Total			60

Contents of Practical 4

Note: The first practical assignment is on R-programming and R packages. Practical assignments 2 to 10 have to be first solved manually (using scientific calculators) and executed using R-programming.

1. Demonstration of R-functions for estimation and testing of hypotheses.
2. Point estimation of parameters and obtaining estimate of standard errors and mean square error.
3. Computing maximum likelihood estimates.
4. Computing moment estimates.
5. Interval estimation: Construction of confidence interval (large and small samples)
6. uation of Probabilities of Type – I and Type – II errors and power of tests.
7. Small sample tests: Tests for mean, equality of means under normality when variance is (i) known (ii) unknown, P-values.
8. Small sample tests: single proportion and equality of two proportions, variance and equality of two variances under normality. P-values for the above tests.
9. Large sample tests: Tests for mean, equality of means when variance is (i) known (ii) unknown, under normality, variance and equality of two variances under normality. P-values for the above tests.
10. MP and UMP tests for parameters of binomial, Poisson distributions, normal and Exponential (scale parameter only) distributions and power curve.

Formative Assessment: Total 25 marks	
Assessment Occasion/ type	Weightage in Marks
Internal Test 1	10
Internal Test 2	10
Attendance	5
Total	25

Summative Assessment : Total Marks 25		
Total Number of Five marks questions	Questions to be answered	Total Marks
8	4	4x5= 20
Class Record		05
Total Marks		25

OPEN ELECTIVE PAPERS:

OE-3: Applied Statistics

OE-4: Biostatistics

OE-3.Applied Statistics

CourseTitle: Applied Statistics	Course Credits:3
Total Contact Hours:42	Duration of ESA:2 hours
Formative Assessment Marks:40	Summative Assessment Marks:60

CourseObjectives

To enable the students to use statistical tools in finance, industries, population studies and health sciences.

To acquire knowledge about sampling methods for surveys.

CourseOutcomes (COs)

Upon successful completion of this course, the student will be able to:

CO1.Understand the Price and Quantity Index numbers and their different measures,understand the applicability of cost of living Index number.

CO2.Know the components and Need for Time series, understand the different methods of studying trend and Seasonal Index.

CO3.Studytheconceptofvitalstatistics,sourcesofdata,differentmeasuresofFertilityandMortality, Understand the Growth rates-GRR and NRR and their interpretations.

CO4.Know the concept of Population, Sample, Samplingunit, samplingdesign, sampling frame, sampling scheme, need for sampling , apply the different sampling methods for designing and selecting a sample from a population, explain sampling and non-sampling errors.

CO5.Describe the philosophy of statistical quality control tools as well as their usefulness in industry and hence develop quality control tools in a given situation.

Pedagogy

The course is taught using traditional chalk and talk method using problem solving through examples and exercises.

Students are encouraged to use resources available on open sources.

Course Contents

Unit1:EconomicStatistics

12Hour

Index numbers: Definition, Criteria for a good index number, different types of index numbers. Construction of index numbers of prices and quantities, consumer price index number. Uses and limitations of index numbers. Consumer price index number: construction of consumer price index

numbers. Applications of consumer price index numbers

Time Series Analysis: Components of time series, Decomposition of time series- Additive and multiplicative model with their merits and demerits, Illustrations of time series.

Measurement of trend by method of free-hand curve, method of semi-averages and method of least squares (linear). Measurement of seasonal variations by method of ratio to trend.

Unit2: Vital Statistics

12Hours

Sources of demographic data, errors in data. Measurement of mortality: crude death rate, specific death rates, and standardized death rates, infant mortality rate, maternal mortality

rate, neonatal mortality rates, merits and demerits and comparison of various mortality rates.

Measurement of Fertility and Reproduction: Fecundity, fertility, measurement of fertility, crude birth rate,

general fertility rate, age specific fertility rate and total fertility rates, merits and demerits of each measure

fertility, comparative study of these measures of fertility, Growth rates: Gross reproduction rate and Net reproduction rates.

Unit3: Sampling Methods

10Hours

Population and Sample. Need for sampling, Complete Enumeration versus Sample Surveys, Merits and Demerits, Non-Probability and Probability Sampling, Need and illustrations. Use of random numbers, principal steps in sample survey. Requisites of a good questionnaire. Pilot

surveys, Sampling and non – sampling errors, Description of simple random sampling with and without replacement procedures, Merits and demerits of simple random sampling.

Need for stratification, stratifying factors, Merits and demerits of stratified random sampling.

Systematic random sampling procedure of obtaining sample, Merits and demerits of systematic random sampling.

Unit4: Statistical Quality Control

08Hours

Concept of quality and its management Causes of variations in quality: chance and assignable.

General theory of control charts, Control charts for variables: X- bar and R-charts.

Control charts for attributes: p and c-charts.

References

1. J. Medhi (1992) Statistical Methods. New Age International (P) Ltd. New Delhi.
2. M. N. Das (1993) Statistical Methods and Concepts. Wiley Eastern Ltd.
3. Irwin Miller, John E. Freund and Richard A. Johnson (1992) Probability and Statistics for Engineers. Prentice Hall of India New Delhi.
4. D. C. Montgomery (1996) Introduction to Statistical Quality Control.
5. Cochran, W. G. (1984) Sampling Techniques, Wiley Eastern, New Delhi.
6. Mukhopadhyay P. (1998) Theory and Methods of Survey Sampling. Prentice Hall of India.
7. Mukhopadhyay P. (2011): Applied Statistics, 2nd ed. Revised reprint, Books and Allied.
8. Kendall M. G. (1976): Time Series, Charles Griffin.
9. Chatfield C. (1980): The Analysis of Time Series – An Introduction, Chapman & Hall.

OE-4. Biostatistics

Course Title: Biostatistics	Course Credits: 3
Total Contact Hours: 42	Duration of ESA: 2 hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Objectives To understand the data types, types of variables and scales of measurement.

1. To understand different descriptive statistics in data analysis. Present data summary in tabular form and graphs.
2. To understand importance of random sampling and sampling technique.
3. To understand the concept of uncertainty in biological sciences and basics of probability and probability distributions.
4. To understand the concept of testing of hypothesis and errors in decision making
5. To know about bivariate and multivariate data, Measures of relationship: correlation and regression.

Course Learning Outcomes

After studying the course, the student will be able to apply statistical tools and techniques in data analysis of biological sciences.

Pedagogy

- The course is taught using traditional chalk and talk method using problems solving through examples and exercises.
- Students are encouraged to use resources available on open sources.

Course Contents

Unit1: Introduction to Bio-Statistics

10 hours

Statistics and Health Science, Role of Biostatistics in Life Sciences. Definition and scope of Statistics. Scales of Measurement: nominal, ordinal, interval and ratio. Collection, classification and tabulation of data, construction of frequency table for grouped and ungrouped data, graphical representation of data by histogram, polygon, ogive curves and Pie diagram.

Unit2: Descriptive Statistics

12 hours

Measures of Central Tendency: Arithmetic mean, Median and Mode-definition, properties, merits and limitations.

Measures of Dispersion: Range, Standard deviation and Coefficient of Variation. Correlation and Regression Analysis: Bivariate Data, Scatter Diagram, definition of correlation, types of correlation, Karl-Pearson's coefficient of correlation and its properties, Spearman's Rank Correlation coefficient. Regression-Simple linear regression, fitting of regression equations by method of Least Squares, regression coefficients and their properties and interpretation.

Unit3: Probability and Probability Distributions

10 Hours

Probability: Random experiment, sample space, events-mutually exclusive and exhaustive events. Classical, statistical and axiomatic definitions of probability, addition and multiplication theorems, Bayes' theorem (only statements) and its application. Sensitivity, Specificity, positive predictive value, negative predictive value, odds ratio.

Discrete and continuous random variables, probability mass and density functions, distribution functions, expectation of a random variable. Standard univariate distributions: Bernoulli, Binomial, Poisson and Normal distributions (Elementary properties and applications only).

Unit4: Sampling Distributions and Statistical Inference

10 hours

Concepts of random sample and statistic, distribution of sample mean from a normal population, Chi-square, t and F distributions (Derivations) and their applications. Estimation of population mean, population standard deviation and population proportion from the sample counterparts. Statistical hypothesis: null and alternative hypothesis, simple and composite hypothesis. Type I and Type II errors, size, level of significance, power test, critical region, P-value and its interpretation. Test for single mean, equality of two means, single variance, equality of two variances for normal Populations, Test for proportions. ANOVA and Nonparametric Tests.

References

1. Dutta, N.K. (2004), Fundamentals of Biostatistics, Kanishka Publishers.

2. Gurumani N. (2005), An Introduction to Biostatistics, MJ Publishers.
3. Daniel, W. W. (2007), Biostatistics - A Foundation for Analysis in the Health Sciences, Wiley
4. Rao, K. V. (2007), Biostatistics - A Manual of Statistical Methods for use in Health Nutrition and Anthropology
5. Pagano, M. and Gauvreau, K. (2007), Principles of Biostatistics.
6. Rosner Bernard (2010), Fundamentals of Biostatistics, 6th Edition, Duxbury.

Detailed Syllabus for Semesters

I Semester & II Semester B.Sc., Minor Statistics

Course Content of Semester-I ; STATISTICS -I

Course Title: Statistics I	Course Credits: 3
Total Contact Hours: 42	Duration of ESA: 2 hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Title: Statistics I

Theory Content of Statistics I	42 hrs
Unit-1: Introduction to Statistics	13 hrs
Statistics: Definition and scope. Data: quantitative and qualitative, cross-sectional and time-series, discrete and continuous. Scales of measurement: nominal, ordinal, interval and ratio. Presentation of data: tabular and graphical. Frequency distributions, cumulative frequency distributions and their graphical representations. Stem and leaf displays. Concepts of population and sample. Methods of sampling - SRS, Stratified, Systematic and Cluster sampling methods: definition only.	
Unit-2: Univariate Data Analysis	17 hrs
Concept of measures of central tendency and measures of dispersion. Mean, weighted mean, trimmed mean, Median, Mode, Geometric and harmonic means, properties, merits and limitations, relation between these measures. Range, Quartile deviation, Mean deviation, Standard deviation and their relative measures. Gini's Coefficient, Lorenz Curve. Moments, Skewness and Kurtosis. Portion Values and measures based on them. Box Plot. Outliers, normal datasets.	
Unit-3: Bivariate Data Analysis	12 hrs
Bivariate Data, Scatter plot, Correlation, Karl Pearson's correlation coefficient, Rank correlation: Spearman's and Kendall's measures. Functional relation between the variables, concept of errors, principle of least squares, Simple linear regression and its properties. Fitting of linear regression line and coefficient of determination their interpretation. Fitting of polynomial and exponential curves.	

References

1. Anderson T. W. and Jeremy D. Finn (1996). The New Statistical Analysis of Data, Springer
2. Freedman, D., Pisani, R. and Purves, R. (2014). Statistics, 4th Edition, W. W. Norton & Company.
3. Gupta, S. C. (2018). Fundamental of Statistics, Himalaya Publishing House, 7th Edition.
4. Gupta S. C. and V. K. Kapoor (2020). Fundamental of Mathematical Statistics, Sultan Chand and Co. 12th Edition.
5. Hogg, R. V. McKean J. W. and Craig, A. T (2012). Introduction to Mathematical Statistics, Pearson 7th Edition.
6. Joao Mendes Moreira, Andre CPL F de Carvalho, Tomas Horvath (2018). General Introduction to Data Analytics, Wiley.
7. Johnson, R. A. and Bhattacharyya, G. K. (2006). Statistics: Principles and methods. 5th Edition, John Wiley & Sons, New York.
8. Medhi, J. (2005). Statistical Methods, New Age International.
9. Ross, S. M. (2014). Introduction to Probability and Statistics for Engineers and Scientists, 5th Edition, Academic Press.
10. Tukey, J. W. (1977). Exploratory Data Analysis, Addison-Wesley Publishing Co.

Pedagogy

- The course is taught using traditional chalk and talk method using problem solving through examples and exercises.
- Students are encouraged to use resources available on open sources.

Formative Assessment: Total 40 marks	
Assessment Occasion/type	Marks
Internal Test 1	15
Internal Test 2	15
Assignment/Seminar/ Data Analysis (07 marks) + Attendance (3 marks)	10
Total	40

II Semester B.Sc., Minor Statistics

Course Content of Semester–II : STATISTICS -II

Course Title: Statistics II	Course Credits: 3
Total Contact Hours: 42	Duration of ESA: 3 hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Theory Content of Statistics II		42 hrs
Unit-1: Probability		14hrs
Probability: Introduction, random experiments, sample space, events and algebra of events. Definitions of Probability – classical, statistical, and axiomatic. Conditional Probability, laws of addition and multiplication, independent events, theorem of total probability, Bayes' theorem and its applications.		
Unit-2: Random variables, Mathematical Expectation and Generating Functions		14hrs
Random variables: discrete and continuous random variables, p.m.f., p.d.f. and c.d.f.,		

Unit -2: Illustrations and properties of random variables, univariate transformations with illustrations. Mathematical Expectation and Generating Functions: Expectation of single random variables and its properties. Moments and cumulants, moment generating function, cumulant generating function, probability generating functions (p.g.f.). Probability inequalities (Markov's and Chebychev's).		
Unit-3: Standard Discrete and Continuous distributions		14hrs
Standard discrete probability distributions: Bernolli, Poisson, geometric, discrete uniform, negative binomial, hypergeometric. Standard continuous probability distributions: uniform, Beta Type-I and Type-II, Gamma, normal, exponential and applications of discrete and continuous distributions.		

References

1. Dudewitz, E.J. and Mishra, S.N. (1998). Modern Mathematical Statistics. John Wiley.
2. Goon A.M., Gupta M.K., Das Gupta, B. (1991), Fundamentals of Statistics, Vol. I, World Press, Calcutta.
3. Hogg R, V., McKean J. W., and Craig, A. T. (2019). Introduction to mathematical Statistics, 8th Edition, Pearson Education, New Delhi.
4. Hogg, R. V., Tanis, E. A. and Rao J. M. (2009). Probability and Statistical Inference, Seventh Edition, Pearson Education, New Delhi.
5. Mood, A.M., Graybill, F.A. and Boes, D.C. (2007). Introduction to the Theory of Statistics, 3rd Edition. (Reprint), Tata McGraw-Hill Pub. Co. Ltd.
6. Ross, S. (2002), A First Course in Probability, Prentice Hall.

Pedagogy

- The course is taught using traditional chalk and talk method using problems solving through examples and exercises.
- Students are encouraged to use resources available on open sources.

Formative Assessment: Total 40 marks	
Assessment Occasion/type	Marks
Internal Test 1	15
Internal Test 2	15
Assignment/Seminar/ Data Analysis (7 marks) + Attendance (3 marks)	10
Total	40

Syllabus for III and IV Semester B.Sc. with Statistics as Minor

III Semester B.Sc.

Course Title: Statistics III	
Total Contact Hours:42	Course Credits:03
Formative Assessment Marks:40	Duration of ESA/Exam:2hours
Summative Assessment Marks:60	

Course Objectives

To enable the student to

1. Define and describe properties of Joint, Marginal and conditional distributions of variables and some key concepts of probability theory.
2. Understand different discrete, continuous and sampling distributions, properties and their applications.

Course outcomes

After completion of this course the students will be able to

1. Solve problems of various analytical environments using different distributions and their properties.
2. Find sampling distributions of functions of random variables and explore their applications

Content of ; Statistics III	42Hrs
UNIT1:Distribution of Random Variables(Two-dimensional)	12 Hrs
Two dimensional random variables: Joint distribution, Marginal distribution and Conditional distributions of random variables, conditional expectation, covariance, correlation and moments. Distribution of functions of random variables using m.g.f. and distribution function. Transformation of variable technique (one and two variables). Chebyshev's inequality-proof and its use in approximating probabilities; Convergence in Law and convergence in probability. Statements of Weak Law of Large Numbers; Central Limit theorems – De-Moivre. (Some simple examples)	

UNIT2:ProbabilityDistributions-II	16 Hrs
Discretedistributions:Rectangular,Geometric,NegativeBinomial,Hypergeometric,Multinomial-definitionthroughprobabilitymassfunction,mean,variance,moments,p.g.f.,m.g.f.,otherpropertiesand applications. Continuous distributions:Uniform, Gamma, Exponential, Beta (type 1 and type 2), Cauchy,Weibull– definition through probability density function, mean, variance, moments, m.g.f., other properties and applications. Bivariate normal distribution-definitionthroughprobabilitydensityfunction,marginalandconditional distribution.	
UNIT3:Sampling Distributions and Simulation	14Hrs
Definitions of random sample, parameter and statistic, sampling distribution of sample mean, standard error of sample mean, sampling distribution of sample variance, standard error of sample variance. Definition and derivation of Student t, Chi-square and F-Distribution-their properties, mean and variance. Limiting form of t distribution. Exact sampling distributions: Distribution of sample mean $\bar{x}$ and sample variance S^2 under normality assumption. when sampling from normal population. Assuming the independence of sample mean $\bar{x}$ and sample variance S^2 when sampling from normal population derive the distribution of $\frac{\bar{x}}{\sqrt{\frac{S^2}{n}}}$. Distribution of 1/F. Relationshipbetween t, F and χ^2 distributions. Introduction to simulation. Generation of random observations from Uniform, Exponential, Normal, Binomial, Poisson distributions using R-codes. .	

References

1. GuptaS.C.andV.K.Kapoor(2020),FundamentalofMathematicalStatistics,SultanChandand Co. 12thEdition.
2. Hogg,R.V.McKeanJ.W.andCraig,A.T.(2012),IntroductiontoMathematicalStatistics,Pears on 7thEdition.
3. Hogg,R.V.,Tanis,E.A.andRaoJ.M.(2009),ProbabilityandStatisticalInference,10thEdition, Pearson Education, New Delhi.
4. JayKerns,G.(2010).IntroductiontoProbabilityandStatisticsusingR.1stEdition,Springer.
5. Rohatgi,V.K.andA.K.Md.EhsanesSaleh.(2002).AnIntroductiontoProbabilityTheoryandM athematical Statistics, New York, JohnWiley.
6. Ross,S. M. (2014).Introduction toProbabilityModels. 11thEdition,Elsevierscience.

Pedagogy

1. The course is taught using traditional chalk and talk method using problem solving through examples and exercises.
2. Students are encouraged to use resources available on open sources.

IV Semester B.Sc.

Course Title: Statistics IV	
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of ESA/Exam: 3 hours
Summative Assessment Marks: 60	

Course Objectives

To enable the students to understand the concepts of

4. Families of distributions, order statistics and their distributions.
5. Estimation, criteria for estimators, methods of estimation, confidence interval.
6. Testing of Hypotheses and its theoretical aspects, large and small sample tests.

Course Outcomes

After completion of the course, the students will be able to

1. Carry out statistical analysis by identifying families of distributions and the use of order statistics.
2. To find estimators using different methods of estimation and compare estimators.
3. To carry out statistical inference using different tests of hypotheses under different scenarios.
4. Generate random variables and use these generated random variable for illustration of concepts studied in this course.

Theory Paper: Statistics IV

Content of Theory Paper : Statistics IV	42 Hrs
UNIT 1: Point Estimation-I	14 Hrs
Families of distributions- location and scale families. Single parameter exponential family. Concept of order statistics, Distribution of maximum and minimum order statistics (with proof) and r^{th} order statistic (without proof). Concepts of estimator and estimate. Criteria for estimators: Unbiasedness, Consistency. Invariance property of consistent estimators. Efficiency and relative efficiency. Mean squared error as a criterion for comparing estimators. Sufficient statistics. Statement of Neyman-Factorization theorem.	
UNIT 2: Point Estimation-II	12 Hrs
Fisher information function. Statement of Cramer–Rao inequality and its applications. Minimum Variance Unbiased Estimator and Minimum Variance Bound Estimator. Maximum likelihood and method of moment estimation; Properties of MLE and moment estimators and examples. Method of Scoring	
UNIT 3: Testing of Hypotheses	16 Hrs
Statistical hypotheses - null and alternative, Simple and composite hypotheses. Type-I and Type-II errors, test functions. Randomized and non-randomized tests. Size, level of significance, Power function, power of tests. Critical region, p- value and its interpretation. Most Powerful (MP) and UMP test. Statement of Neyman-Pearson Lemma and its applications. Likelihood ratio tests. Large and small samples tests of significance. Tests for single mean, equality of two means, single variance and equality of two variances for normal populations. Tests for proportions.	

Text Books:

11. 1. Gupta S.C. and V.K. Kapoor (2020), Fundamental of Mathematical Statistics, SultanChand and Co. 12th Edition.
12. Rohatgi, V.K. and A.K. Md. Ehsanes Saleh. (2002). An Introduction to Probability Theory and Mathematical Statistics, New York, John Wiley.
- 13.

References

14. Chihara, L. and Hesterberg, T. (2011) Mathematical Statistics with Resampling and R.Wiley.
15. Hogg, R. V. McKean J. W. and Craig, A. T. (2012), Introduction to Mathematical Statistics, Pearson 7th Edition.
16. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009), Probability and Statistical

Inference, 10th Edition, Pearson Education, New Delhi.

17. Johnson, R.A. and Bhattacharyya, G.K. (2006), Statistics: Principles and methods. 5th Edition, John Wiley & Sons, New York.
18. Kale, B.K. (1999). A First Course on Parametric Inference, New Delhi, Narosa Publishing House.
19. Kendall, M.G., et. al., (1996). An Introduction to the Theory of Statistics, Universal Book Stall.
20. Ross, S.M. (2014), Introduction to Probability and Statistics for Engineers and Scientists, 5th Edition, Academic Press.

Pedagogy

3. The course is taught using traditional chalk and talk method using problem solving through examples and exercises.
4. Students are encouraged to use resources available on open sources.

Formative Assessment: Total 40 marks	
Assessment Occasion/ type	Weightage in Marks
Internal Test 1	15
Internal Test 2	15
Assignment/Seminar (7 marks)+Attendance(3marks)	10
Total	40

Summative Assessment : Total Marks :60			
	Questions to be answered	Marks	Total marks
Part A	Three questions out of Five questions	3x2	06
Part B	Four questions out of Eight questions	4x6	24
Part C	Three questions out of Five questions	3x10	30
Total			60

THIRD SEMESTER BSc CHEMISTRY

DSC-3:Analytical and Organic Chemistry-II

Contact Hours: 56

Work load: 4 Hours/Week.

Credit Points :4

Evaluation: Continuous Internal Assessment-40 Marks

Semester End Examination -60 Marks

Course Objectives:

- 1) Interrelationship among frequency, wavelength and wave number and importance of validation parameters of an instrumental method will be taught
- 2) Principle, instrumentation and applications of spectrophotometry, nephelometry and turbidometry will be taught
- 3) Fundamentals of separation methods and principles of paper, thin layer and column chromatography will be taught
- 4) Principle, types and applications of solvent extraction will be taught
- 5) Principle and mechanism of ion-exchange, types of resins and domestic and industrial applications of ion-exchange chromatography will be taught
- 6) The concept of mechanism and its importance will be taught to the student
- 7) Concept and importance of intermediates in organic chemistry will be taught taking proper examples
- 8) The various techniques for identification of reaction mechanism will be taught to the student taking proper examples
- 9) Concept of stereochemistry and its importance will be taught.
- 10) The various projection formulae and the techniques of designating the molecules into R, S, D, L will be taught taking proper examples
- 11) The theory and concept of Cis-, Trans- isomerism and its importance and the techniques to differentiate between them will be taught taking examples

Course Specific Outcomes

After the completion of this course, the student would be able to

- 1) Understand the importance of fundamental law and validation parameters in chemical analysis
- 2) Know how different analytes in different matrices (water and real samples) can be determined by spectrophotometric, nephelometric and turbidometric methods.
- 3) Understand the requirement for chemical analysis by paper, thin layer and column chromatography.

- 4) Apply solvent extraction method for quantitative determination of metal ions in different samples
- 5) Utilize the ion-exchange chromatography for domestic and industrial applications
- 6) Explain mechanism for a given reaction.
- 7) Predict the probable mechanism for an reaction
Explain the importance of reaction intermediates, its role and techniques of generating such intermediates
- 8) Explain the importance of Stereochemistry in predicting the structure and property of organic molecules.
- 9) Predict the configuration of an organic molecule and able to designate it.
- 10) Identify the chiral molecules and predict its actual configuration

Unit-I

Quantitative analysis-Instrumental methods

Electromagnetic spectrum, absorption of electromagnetic radiation, Definition and units of frequency, wavelength, wave number, Beer's law, Beer-Lambert law derivation, deviations from Beer's law, limitations, construction of calibration graph (Plot of absorbance versus concentration), Evaluation Procedures- standard addition, Internal standard addition, validation parameters-detection limits, sensitivity, dynamic/linearity range, Instrumentation, spectrophotometers, quantitative applications of colorimetry (determination of Fe and Cu) and numerical problems on application of Beer's law.

10 hrs

Nephelometry and Turbidimetry: Introduction, principle, instrumentations of nephelometry and turbidimetry; effects of concentration, particle size and wavelength on scattering; applications of nephelometry and turbidimetry (determination of SO_4^{2-} and PO_4^{3-})

4 hrs

Unit-II

Separation methods

Fundamentals of chromatography: General description, definition, terms and parameters used in chromatography, classification of chromatographic methods, criteria for selection of stationary and mobile phase and nature of adsorbents. Principles of paper, thin layer, column chromatography. Column efficiency, factors affecting the column efficiency, van Deemter's equation and its modern version.

3hrs

Paper chromatography: Theory and applications

Thin layer chromatography (TLC): Mechanism, R_f value, efficiency of TLC plates, methodology—selection of stationary and mobile phases, development, spray reagents, identification and detection, qualitative applications. **4 hrs**

Solvent Extraction: Types- batch, continuous, efficiency, selectivity, distribution coefficient, Nernst distribution law, derivation, factors affecting the partition, relationship between % extraction and volume fraction, Numerical problems on solvent extraction. Solvent extraction of iron and copper. **4hrs**

Ion-exchange chromatography: resins, types with examples- cation exchange and anion exchange resins, mechanism of cation and anion exchange process and applications of ion-exchange chromatography (softening of hard water, separation of lanthanides, industrial applications). **03Hrs**

Unit-III

Reaction Intermediates: Generation, Stability and Reactions of,

- i) Carbocations: Dienone-phenol; and Pinacol-Pinacolone Rearrangement.
- ii) Carbanions :Perkin Reaction,Aldolcondensation,Claisen-Schmitt condensation.
- iii) Free Radicals : Sandmeyer Reaction
- iv) Carbenes and Nitrenes: Singlet and Triplet states, their relative stability and reactions
- v) Arynes: Formation, detection **8 hrs**

Methods for Identifying Reaction Mechanism:

Product analysis, Isolation and Identification of Intermediates, Stereochemical Evidences,Effect of Catalyst,crossover Experiments,Isotopic studies,Kinetic Studies.

6 hrs

Unit-IV

Stereochemistry of Organic Compounds:

Fischer projection,Newmann and Sawhorse projection formulae and their interconversions.

Geometrical isomerism : Cis-trans and syn-anti isomerism, E/Z notations with C.I.P rules.

Optical Isomerism :Optical activity, Specific rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral centres, Diastereoisomers, meso structures, Racemic mixtures and Resolution, Relative and absolute configuration, D/L and R/S designations

14 hrs

References :

- 1) Fundamental of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch, 8th edition, Saunders College Publishing, New York (2005).
- 2) Analytical Chemistry, G.D. Christian, 6th edition, Wiley-India (2007).

- 3) Quantitative Analysis, R.A. Day and A.L. Underwood, 6th edition, PHI Learning Pvt Ltd. New Delhi (2009).
- 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, Pearson Education Pvt. Ltd. (2007).
- 5) Organic Reaction Mechanism by V.K. Ahluwalia and R.K. Parashar (Narosa Publishers)
- 6) Organic Chemistry by S.M. Mukherji, S.P. Singh and R.K. Kapoor (Narosa Publishers)
- 7) Morrison R.N and Boyd R.N, Organic Chemistry, Darling Kindersley (India) Pvt. Ltd. (Pearson Education)
- 8) Finar I.L, Organic Chemistry (Volume I); Finar I.L (Volume II) Stereochemistry and the Chemistry of Natural Products., Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
- 9) Kalsi P.S. Stereochemistry, conformation and Mechanism, New age International
- 10) Eliel E.L and Wilen S.H, Stereochemistry of Organic Compounds, Wiley, (London)

PRACTICALS

Credit Points: 2

Teaching Hours: 4 hrs

Evaluation : Continuous Internal Assessment-25 marks

Semester End Examination : 25 marks

Course Objectives

- 1) To impart skills related to preparation of stock and working solutions and handling of instrumental methods
- 2) To know the principle of colorimetric analysis and construction of calibration plot
- 3) To understand the chemistry involved in colorimetric determination of metal ions and anions
- 4) To determine R_f values of different metal ions present in a mixture
- 5) To impart knowledge on the importance of functional groups in organic compounds.
- 6) Techniques to identify the functional groups in a compound by performing physical and chemical tests
- 7) To record its melting point/boiling point.
- 8) To prepare suitable derivative for that compound and to characterize it.

Course Specific outcomes

After the completion of this course, the student would be able to

- 1) Understand the importance of instrumental methods for quantitative applications

- 2) Apply colorimetric methods for accurate determination of metal ions and anions in water or real samples
- 3) Understand how functional groups in a compound is responsible for its characteristic property
- 4) Learn the importance of qualitative tests in identifying functional groups.
- 5) Learn how to prepare a derivative for particular functional groups and how to purify it'

PART-A (Analytical Chemistry)

- 1) Colorimetric determination of copper using ammonia solution
- 2) Colorimetric determination of iron using thiocyanate solution
- 3) Colorimetric determination of nickel using DMG solution
- 4) Colorimetric determination of nitrite in a water sample (diazo coupling Reaction/Griess reagent)
- 5) Determination of R_f values of two or three component systems by TLC
- 6) Separation of different metal ions by paper chromatography/ Solvent extraction of iron using oxine solution (**demonstration**)

PART-B(Organic Chemistry)

Qualitative analysis of bifunctional Organic compounds such as 1)Salicylic acid ,p-Chloro benzoic acid 2) o-Cresol,p-Cresol,Resorcinol,o- Nitrophenol,p-nitophenol 3)o-Nitro aniline,p-Nitroaniline,p-Toluidine, 4)Ethyl Salicylate, Salicylaldehyde, Acetophenone, p-Nitrotoluene,,Benzamide etc.(Atleast 6-8 compounds to be analysed in a semester)

References

- 1)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, Pearson Education Pvt.Ltd.(2007)
- 2) Vogels Text Book of Qualitative Chemical Analysis,ELBS

Title of the Course: Open Elective-3: ATOMIC STRUCTURE, BONDING AND CONCEPTS IN ORGANIC CHEMISTRY**Contact Hours: 42****Workload: 3 hours per week****Credit Points: 3****Evaluation: Continuous Internal Assessment - 40 marks****Semester End Examination****- 60 marks****Course Objectives:**

- To develop an understanding of principles of Atomic structure
- To know the importance of quantum numbers, writing of electronic configurations and representation of orbitals
- To develop an understanding of the periodic trends
- To understand the nature of bonding and to predict the shapes of molecules
- To construct MO energy level diagrams and predict the properties of molecules
- To understand the formation of sigma and pi bonds and the bond strength.
- To study the classification of organic reactions
- To learn nomenclature preparation and reactions of alkanes, alkenes, alkynes and stability of alicyclic compounds

COURSE CONTENT**Unit I: Atomic Structure and Periodic Properties**

History of an atom. Idea of de Broglie matter waves. Heisenberg uncertainty principle. Schrödinger wave equation, significance of wave functions, Bohr's model of hydrogen atom and its limitations. Quantum numbers and their importance, atomic orbitals and shapes of s, p, d orbitals, Multi-electron atoms, Aufbau and Pauli exclusion principle and Hund's multiplicity rule- Electronic configurations of the elements (atomic no. up to 30), effective nuclear charge and shielding.

(8 hours)**Periodic Properties**

Atomic radius, Covalent, ionic and van der Waal radii-explanation with examples. Definition and periodicity of the following properties - ionic radii, ionisation potential, electron affinity and electronegativity, methods of determination of electronegativity. Factors affecting the values of ionisation energy. **(6 hours)**

Unit II: Chemical Bonding

Ionic Solids— Ionic structures (NaCl, CsCl, TiO₂, ZnS), radius ratio rule and coordination number, limitation of radius ratio rule, lattice energy and Born-Haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule and their consequences.

(4 hours)

Covalent Bond – Valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridization with examples and shapes of simple inorganic molecules and ions. Shapes of NH₃, I₃⁺, I₃⁻, SF₄, ClF₃, IF₅, ICl₂⁻ and H₂O using valence shell electron pair repulsion (VSEPR) theory, linear combination of atomic orbitals (LCAO), bonding, nonbonding and antibonding molecular orbitals, physical picture of bonding and antibonding wave

functions. Applications of MO theory to explain the stability of homo dinuclear (He_2 , N_2 , O_2 , F_2 , C_2) and hetero dinuclear (NO and CO) molecules. Comparison of M.O. and V.B. Models.
(7 hours)

Metallic bond-free electron, Band theory-electrical properties of metals, semiconductors and insulators.

Weak interactions – Hydrogen bonding and its consequences, van der Waals forces.
(3 hours)

Unit III: Bonding and molecular structure and hydrocarbons

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. Classification and reactions of organic compounds (with examples).
7 Hours

Alkanes, Alkenes and Alkynes

Definition, Nomenclature, preparations (any two methods)

Reactions: Electrophilic, nucleophilic and free radical addition reactions

Alicyclic compounds:

Nomenclature, preparation and stability of cyclopropane, cyclobutane, cyclopentane and cyclohexane.

7 Hours

Reference Books:

1. Concise Inorganic Chemistry, J. D. Lee, ELBS, 1996.
2. Inorganic Chemistry, A. K. Das
3. Inorganic Chemistry: Principles of Structure and Reactivity, Huheey, J. E., Keiter, E.A., Keiter, R.L. & Medhi, O. K. Pearson Education India, 2006.
4. Inorganic Chemistry, Shriver, D.F. & Atkins, P.W. Oxford University Press.
5. Schaum's Outline Series Theory and Problems of Organic Chemistry. SI (metric) edition Herbert Meislich, Howard Nechamkin and Jacob Sharefkin.
6. Organic chemistry. Robert T. Morrison Robert N. Boyd, 6th Edition
7. Organic Chemistry Volume-1, I.L. Finar

COURSE OUTCOME:

On completion of the course the student will learn and be able to understand/explain

- the concept of atomic structure, significance of quantum numbers, filling of electrons of atoms/ions in various orbitals as per rules
- the trends in periodic properties
- the structures of ionic solids, applications of B-H cycle, solubility of compounds and consequences of polarization of ions
- the shapes of molecules/ions based on VSEPR theory
- the construction of MO energy level diagrams and prediction of properties of molecules/ions like bond order, bond energies, bond lengths and magnetic properties.
- the formation of sigma and pi bonds and the bond strength
- the classification of organic reactions
- nomenclature preparation, and reactions of alkanes, alkenes, alkynes and stability of alicyclic compounds.

CHEMISTRY

DSC-4: Inorganic and Physical Chemistry-II

Contact Hours: 56

Work load: 4 Hours/Week.

Credit Points :4

Evaluation: Continuous Internal Assessment-40 Marks

Semester End Examination -60 Marks

Course Objectives:

Students learn about

1. Different types of bonding in molecules/compounds/ions
2. The structures of molecules/compounds/ions based on different models/theories
3. Properties of compounds based on bonding and structure
4. The fundamentals of thermodynamics including the laws, the concept of entropy and free energy functions and their applications.
5. The concepts of surface chemistry, catalysis and their applications.
6. The theoretical and experimental aspects of chemical kinetics including basic theories of reaction rates and methods of determining order.
7. Electrochemistry dealing with electrolytes in solution. Conductance measurements and applications. Concept of ionic mobility and their determination.

Course outcomes: After the completion of this course, the student would be able to

1. Predict the nature of the bond formed between different elements
2. Identify the possible type of arrangements of ions in ionic compounds
3. Write Born - Haber cycle for different ionic compounds
4. Relate different energy parameters like, lattice energy, entropy, enthalpy and solvation energy in the dissolution of ionic solids
5. Explain covalent nature in ionic compounds
6. Write the M.O. energy diagrams for simple molecules
7. Differentiate bonding in metals from their compounds
8. Learn important laws of thermodynamics and their applications to various thermodynamic systems
9. Understand adsorption processes and their mechanisms and the function and purpose of a catalyst

10. Apply adsorption as a versatile method for waste water purification.
11. Understand the concept of rate of a chemical reaction, integrated rate equations, energy of activation and determination of order of a reaction based on experimental data
12. Know different types of electrolytes, usefulness of conductance and ionic mobility measurements
13. Determine the transport numbers

Unit - I

Structure and Bonding -I

The ionic bond :Structures of ionic solids

Radius ratio rules, Calculation of some limiting radius ratio values, Coordination number 3 (planar triangle), Coordination number 4 (tetrahedral and square planar), Coordination number 6 (octahedral), Close packing. **3hrs**

Classification of ionic structures:

Ionic compounds of the type AX (ZnS, NaCl, CsCl)

Ionic compounds of the type AX₂ (Calcium fluoride (fluorite) and Rutile structure

Limitations of radius ratio concept **2 hrs**

Lattice energy and Born-Haber cycle, Born-Landé equation and its drawbacks, Kapustinskii equation (**No derivation**), solvation energy and solubility of ionic solids, polarizing power and polarizability, Fajan's rules with applications.

Numerical problems **5 hrs**

Covalent bond: Valence bond theory, The Lewis theory, The octet rule, Exceptions to the octet rule, Sidgwick- Powell theory. Valence shell electron pair repulsion (VSEPR) theory, Effect of lone pairs, electronegativity, isoelectronic principle, Examples using VSEPR theory: BF₃ and BF₄⁻, NH₃ and NH₄⁺, H₂O, PCl₅, ClF₃, SF₄, SF₆, and IF₇.

Limitations of VSEPR. **4 hrs**

Unit - II

Structure and Bonding -II

Concept of resonance, resonance energy, hybridisation, types of hybridization, sp, sp², sp³ dsp² dsp³, d²sp³, sp³d² with one example each, and energetics of hybridization. Bent's rule, Limitations of Valence Bond Theory.

3 hrs

Molecular Orbital theory:

LCAO concept: s-s, s-p and p-p combinations of orbitals, bonding, nonbonding and antibonding molecular orbitals, non-bonding combinations of orbitals, Rules for linear combination of atomic orbitals

Examples of molecular orbital treatment for homonuclear diatomic molecules
 H_2 molecule, H_2^+ , He_2 molecule, He_2^+ molecule ion, Li_2 molecule, Be_2 molecule
 B_2 molecule, C_2 molecule, N_2 molecule, N_2^+ , O_2 molecule, O_2^- and O_2^{2-} .
M.O. energy diagrams of heteronuclear diatomic molecules with examples (NO , NO^+
 CO and HCl). Calculation of bond order, relationship between bond order, bond
energy and bond length, magnetic properties based on MOT. **7 hrs**

Metallic Bonding:

General properties of metals : Conductivity, Lustre, Malleability and ductility. Crystal
structures of metals and Bond lengths

Theories of bonding in metals:

Free electron theory, Valence bond theory, Molecular orbital or band theory of solids
Prediction of conducting properties of conductors. insulators and semiconductors,
extrinsic and intrinsic semiconductors using M.O. theory. **4 hrs**

UNIT III

First Law of Thermodynamics

Thermodynamic Processes, Reversible and Irreversible Processes, Nature of Heat and
Work, Internal Energy, First Law of Thermodynamics, Enthalpy of a System, Work done in
isothermal and adiabatic expansion of an ideal gas, Numerical problems, Joule -Thomson
Expansion, Relation between Joule-Thomson coefficient and other thermodynamic
parameters.

Second law of Thermodynamics

Concept of entropy, thermodynamic scale of temperature, Statements of the Second Law of
Thermodynamics, molecular and statistical interpretation of entropy, Calculation of entropy
change for reversible and irreversible processes, Free Energy Functions: Gibbs and
Helmholtz energy, Variation of S , G , A with T , V and P , Numerical problems, Free energy
change and spontaneity, Gibbs-Helmholtz equation.

Third Law of Thermodynamics

Statement of third law, concept of residual entropy, calculation of absolute entropy of
molecules. **10 Hrs**

Surface Chemistry

Adsorption

Types of adsorption isotherms. Freundlich adsorption isotherm (only equation), its
limitations. Langmuir adsorption isotherm (derivation to be done) and BET equation
(derivation not included).

Catalysis

Types of Catalysis and theories with examples (intermediate compound theory and adsorption theory), Theory of acid base catalysis, Michaelis-Menten equation. Heterogeneous catalysis: surface reactions, unimolecular, bimolecular surface reactions. Autocatalysis with examples. Applications: Design process to removal of toxic compounds from industrial wastewater and treatment of portable water requirements.

4Hrs

UNIT IV

Chemical Kinetics

Differential and integrated form of rate expressions up to second order reactions, Derivation of expression of rate constant of second order reaction ($a=b$), Problems on rate constant ($a=b$), Methods of determination of order of a reaction, temperature dependence of reaction rates; Arrhenius equation, activation energy, Numerical problems on Arrhenius equation in calculating energy of activation and rate constants. Collision theory of reaction rates, Lindemann's mechanism, qualitative treatment of the theory of absolute reaction rates. Experimental determination of kinetics of (i) inversion of cane sugar by polarimetric method (ii) spectrophotometric method for the reaction between potassium persulphate and potassium iodide. **7 Hrs**

Electrochemistry – I

Arrhenius theory of electrolytic dissociation. Merits and Demerits, Conductance, Specific conductance, equivalent and molar conductivity and their variation with dilution. Molar conductivity at infinite dilution. Numerical problems.

Kohlrausch's law of independent migration of ions and its applications, Debye-Hückel-Onsager equation. Ionic mobilities and their determinations, transference numbers and their relation to ionic mobility's, determination of transference numbers using Hittorf (non attachable electrode) and Moving Boundary methods.

Applications of conductance measurement: (i) degree of dissociation of weak electrolytes (ii) ionic product of water (iii) solubility and solubility product of sparingly soluble salts (iv) conductometric titrations (acid base titrations only) and (v) Hydrolysis constants of salts. Numerical problems. **7 Hrs**

Reference Books

1. Peter Atkins & Julio De Paula, Physical Chemistry, 9th Ed., Oxford University Press (2010)
2. G W Castellan, Physical Chemistry, 4th Ed., Narosa (2004)
3. R G Mortimer, Physical Chemistry 3rd Ed., Elsevier: Noida, UP (2009)
4. B R Puri, L R Sharma and M S Pathania, Principal of Physical Chemistry, Vishal Publishing Co.
5. B S Bahl, G D Tuli and Arun Bahl, Essentials of Physical chemistry, S Chand & Company Ltd.
6. A S Negi and S C Anand, A textbook of Physical Chemistry, New Age International Publishers.
7. B N Bajpai, Advanced Physical chemistry, S Chand and Company Ltd.
8. R L Madan, Chemistry for Degree Students, Semester I, II, III and IV, S Chand and Company Ltd.
9. P L Soni, O P Dharmarha and U N Dash, Textbook of Physical Chemistry, Sultan Chand and Sons.

PRACTICALS

Credit Points: 2

Teaching Hours:4Hrs

Evaluation : Continuous Internal Assessment : 25 marks

Semester End Examination : 25 marks

Course objective:

To attain practical knowledge about:

1. Analytical skills in detecting the constituents present in unknown samples by systematically carrying out the qualitative analysis.
2. The methods of determining rates of chemical reactions.
3. Designing electrochemical cells and making measurements related to it.
4. Determination of physical characteristics of electrolytes using conductivity measurements in solution.
5. Adsorption phenomenon, mechanism and basic models to explain adsorption.
6. Simple techniques like conductometry to obtain physicochemical parameters of electrolytes.

Course outcomes: At the end of the course student would be able to

1. Understand the chemical reactions involved in the detection of cations and anions.
2. Explain basic principles involved in classification of ions into groups in semi-micro qualitative analysis of salt mixture
3. Carryout the separation of cations into groups and understand the concept of common ion effect.

4. Understand the choice of group reagents used in the analysis.
5. Analyse a simple inorganic salt mixture containing two anions and cations
6. Use instruments like conductivity meter to obtain various physicochemical parameters.
7. Apply the theory about chemical kinetics and determine the velocity constants of various reactions.
8. Learn about the reaction mechanisms.
9. Interpret the behaviour of interfaces, the phenomena of physisorption and chemisorptions and their applications in chemical and industrial processes.
10. Learn to fit experimental data with theoretical models and interpret the data

Part A- Inorganic Chemistry Practicals

Qualitative semi-micro analysis of mixtures containing 2 anions and 2 cations.

Emphasis should be given to the understanding of different reactions.

The following cations and anions are suggested.

Cations: NH_4^+ , Pb^{2+} , Bi^{3+} , Cu^{2+} , Al^{3+} , Fe^{3+} , Co^{2+} , Cr^{3+} , Ni^{2+} , Zn^{2+} , Mn^{2+} , Ba^{2+} , Ca^{2+} , Sr^{2+} , Mg^{2+} , Na^+ , K^+ and Li^+ .

Anions: CO_3^{2-} , CH_3COO^- , Cl^- , Br^- , I^- , NO_3^- , BO_3^{3-} , SO_4^{2-} , $\text{C}_2\text{O}_4^{2-}$ and PO_4^{3-}

Spot tests and flame tests to be carried out wherever possible.

Part B- Physical Chemistry Practicals

1. Determination of the enthalpy of neutralization of a strong acid with strong base.
2. Verification of Freundlich and Langmuir isotherms for adsorption of acetic acid on activated charcoal.
3. The study of kinetics of potassium persulphate and potassium iodide volumetrically.
4. Determination of velocity constant for acid catalyzed hydrolysis of methyl acetate.
5. Determination of velocity constant for the saponification of ethyl acetate ($a = b$) volumetrically.
6. Determination of equivalent conductivity of strong electrolyte and verification of DHO equation.
7. Determination of dissociation constant of weak acid by conductivity method.
8. Conductometric titration of strong acid and strong base.
9. Conductometric titration of weak acid and strong base.
10. Determination of solubility product of sparingly soluble salt conductometrically.

References

1. Vogel's Qualitative analysis, Revised by G. Svehla, Pearson education, 2002
2. J B Yadav, Advanced Physical Chemistry, Krishna Prakashan Media (P) Ltd, Meerut.
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
4. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
5. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).

Semester 4

B Sc / B Sc (Honors)

Title of the Course: **Open Elective: Electrochemistry, Corrosion and Metallurgy**

Number of Theory Credits	Number of lecture hours/semester
3	42

Evaluation Scheme for Theory:

Continuous Internal Assessment (CIA) – 40 Marks

Semester End Examination (SEE) – 60 marks

This course provides a broad introduction to the fundamental principles of Electrochemistry, Corrosion and Metallurgy. The student will gain an understanding of basic and practical applications in various fields of Electrochemistry, Corrosion and Metals and Alloy behaviour and manufacturing processes. This course is a valuable prerequisite for taking more technically challenging courses that will be required for career development.

Course Objectives

This course will deal with

1. Types of conductance, concept of electrolytes, electrolysis, redox reactions and EMF
2. Concept of different types of electrochemical cells, Types of electrodes and electrode potential. Application of electrochemical series.
3. Basic principles and applications of conductometric, potentiometric and pH titrations.
4. Different types of Batteries their principle construction and working - lead-acid storage and lithium ion battery. Study of Fuels cells.
5. Concept of corrosion, types of corrosion and its prevention by different methods. Introduction to electroplating.
6. Introduction to ores and minerals, extraction of metals from their ores, and purification. Eg., Manganese, Titanium and Uranium.
7. Study of alloys, classification, production and uses of alloys.

Expected Course Outcomes

Upon completion of the course students will be able to

1. Understand the concept of conductance in electrolytic solutions, electrolysis and redox reactions involved in electrode reactions.

2. Learn the different types of electrochemical cells, their symbolical representation and application of electrochemical series.
3. Apply conductometric, potentiometric and pH titrations
4. Know the principle, construction and working of batteries
5. Understand different types of corrosion and its prevention by different methods
6. Learn the methods of extraction of metals from their ores and purification

UNIT I

Electrochemistry

Conductance, specific and molar conductance Types of Electrolytes, Conductivity in electrolytic solution, Electrolysis, Kohlrausch's law and its application, Equivalent Conductance of Weak electrolyte at Infinite dilution.

Oxidation -reduction reactions, electrode potential, EMF of an electrochemical cell, cell reaction, Daniel cell, dry Cells - electrolytic and Galvanic cell, Representation of a cell. Standard electrode potential, Nernst equation (No derivation) and its application to chemical cell, Electrochemical series and its importance. Types of Electrodes.

Basic Principles of (i) Conductometric titrations- HCl Vs NaOH, CH₃COOH Vs NaOH
(ii) Potentiometric titrations: Acid-base titration HCl Vs NaOH, Redox titration (FAS Vs K₂Cr₂O₇)

Determination of P^H using glass electrode. **12 hrs**

Batteries- Primary and Secondary batteries, Battery components and their role. Working of the following Batteries- Lead acid, Lithium Storage, Batteries, Fuel cells. **2 hrs**

UNIT II

Corrosion: Introduction, definition, Types of Corrosion, Corrosion rate, Factors affecting corrosion rate, Metallic factor-purity, electrode potential of metal, hydrogen over voltage, nature of corrosion product. Environmental Factors-Temperature, pH of the medium, humidity, presence of impurities, electrical conductivity of the medium, velocity of the medium, concentration of the medium.

Prevention of Corrosion: Material selection - Metals and alloys, metal purification, non-metallic, Alteration of environment - Changing media, inhibitors, Design-wall thickness, design rules, Coating-Metallic and other inorganic coatings, organic coating.

Electroplating: Introduction, Electroplating of chromium (hard and decorative). Electroless plating: Introduction, distinction between electroplating and electroless plating processes. Electroless plating of copper. **14 hrs**

UNIT III

Metallurgy

Introduction: Ore, minerals, important ores of some common elements in India, General Principles of pyrometallurgy, roasting, Calcination, Gangue, Smelting, Flux, Gravity separation, Froth flotation process, leaching. Techniques employed for Purification of metal (Distillation process, Bessemerization, Electro-refining, Van Arkel and De Boer's Filament.

6 hrs

Extraction of metals: Extraction of Manganese (Pyrolusite), Titanium (Ilmanite) and Uranium.

4 hrs

Alloys: Introduction, Classification of alloys, commercially important alloys, gold karats, Production of Ferro alloys; Ferrochrome, Ferro Manganese, Uses of alloys.

4

hrs

Reference Books

1. Barrow. G.M, Physical Chemistry, Tata McGraw-Hill, (2007)
2. An introduction to electrochemistry, Samuel Glasstone, East-West edition New Delhi, (1942)
3. Text book of physical chemistry, Samuel Glasstone, 2nd Edition, Mac Millan India Ltd, (1991)
4. Principles and applications of Electrochemistry, D. R. Crow, 3rd edition, Chapmanhall London, (1988)
5. Fundamentals of electrochemical deposition, Milan Paunovic and Mordechai Schlesinger, Wiley Interscience Publications, New York, (1998)
6. Engineering Chemistry, V R Kulkarni and K Ramakrishna Reddy, New Age International, (2015)
7. Electrochemistry and Corrosion Science, Nestor Perez, Springer (india) Pvt. Ltd., (2004)
8. Principles and Prevention of Corrosion, D. A. Jones, Macmillan Publ. Co., (1996)
9. Essential of Materials Science and Engineering, Donald R. Askeland, Thomson Learning, 5th Edition, (2006)
10. Introduction to Engineering Materials, B. K. Agarwal, Tata McGraw Hill, 1st Edition
11. Material Science and Engineering, V. Raghavan, PHI Learning, 5th Edition
12. Engineering Materials and Metallurgy, R. K. Rajput, S. Chand - 1st Edition, (2011)

OPEN ELECTIVES

I SEM Non-Science Students

Environmental Chemistry

Unit I

Environmental Chemistry

Vertical temperature and vertical structure of atmosphere, Heat/ radiation budget of the earth: Energy balance of earth, Bio Geo Chemical Cycles in environment: Oxygen, Carbon, Nitrogen, Phosphorous, Sulphur Cycle, Bio distribution of elements

Ozone layer

Ozone layer- Earth's protective umbrella: Formation & depletion, Ozone hole over Antarctica, harmful effects of Chlorofluoro Carbons (CFC),

Acid rain: Introduction, Theories of acid rain, adverse effects of acid rain, control of acid rain

21 Hours

Unit II

Environmental Pollution

Air pollution dealing with Particles, ions and radicals. Important photochemical reactions in atmosphere, Major sources of Air pollution, Aerosols and their effects, Effects of particulate matter, indoor and occupational pollutants, Air Quality standards

Vehicular pollution

Automobile emissions, Fuels: Diesel vs CNG, biofuels, prevention and control of vehicular pollution, global efforts in reducing vehicular pollution

Smog: Definition, mechanism of smog formation, examples of London Smog, Los Angeles Smog

21 Hours

References

1. Environmental Chemistry, Dr H Kaur, Pragathi Prakashan, 2016
2. Environmental Chemistry by Colin Baird and Michael Cann | 2012
3. A Textbook Of Environmental Chemistry 2020 by V. Subramanian

II SEM Non-Science Students
Green Chemistry and clean energy sources

Unit I

Principles and goals of Green Chemistry, Green chemicals, Green reagents, Green catalysts, Green solvents.

Emerging Green technologies, Microwave chemistry, Sono chemistry, Photo chemistry and Electro chemistry

Use of pesticides synthesized by Green chemistry route

21 Hours

Unit II

Growing energy demands, Resources of energy, Conventional sources of energy with example of hydroelectric power/ thermal power plants, nonconventional sources of energy: solar, wind, geothermal energy, ocean energy and tidal power

Fossil fuel based energy: coal, methanol, petroleum, natural gas, biomass energy, biogas

Hydrogen as an alternate source of energy. Energy consumption and conservation

Environmental impact assessment and environmental laws in India

21 Hours

References:

- 1.Green Chemistry for Beginners, , Anju Srivastava, Rakesh K Sharma, Tayler and Francis 2022.
- 2.Green Chemistry, Fundamentals and Applications, *Suresh C. Ameta, Rakshit Ameta*, Tayler and Francis 2022.2021

III SEM Non-Science Students

Effects of Radioactivity

Unit I

Introduction, Radiation, Natural and manmade sources of radioactive pollution, effects of radioactive pollution, biological effects of radiation, radiation effects on plants

Precautions to be taken in the event of nuclear war, preventive measures and control of radiation from nuclear power plants, atom bomb disaster in Hiroshima, three mile island disaster, Chernobyl : world's worst nuclear disaster

21 Hours

Unit II

Disposal of hazardous radioactive waste

Radioactive waste, environmental problems and management of nuclear waste, disposal methods of radioactive waste, recent methods to dispose critically dangerous radioactive waste

Classification of hazardous waste, management of hazardous waste, treatment and disposal of hazardous chemicals

21 Hours

References:

4. Environmental Chemistry, Dr H Kaur, Pragathi Prakashan, 2016
5. Environmental Chemistry by Colin Baird and Michael Cann | 2012
6. A Textbook Of Environmental Chemistry 2020 by V. Subramanian

IV SEM Non-Science Students

Water

Unit I

Introduction: Water quality parameters, standards and laws, Hard and Soft water, softening of water, demineralisation of waste water, purification of water for municipal purposes, chlorination and dechlorination, fluoridation and defluoridation, potability of water

Control of water pollution-minimisation, functions of central and state pollution control boards, recycling of waste water

21 Hours

Unit II

Analysis of water pollutants, objectives of water analysis, chemical substances affecting water quality: colour, odour, turbidity, conductivity, pH, acidity, alkalinity, etc, chemicals substances in water affecting health.

Definitions of following terms: Dissolved oxygen, COD(Chemical Oxygen Demand), BOD(Biological Oxygen Demand), and Total organic carbon content.

21 Hours

References:

1. Monitoring Water Quality Pollution Assessment, Analysis, and Remediation, Satinder Ahuja, Elsevier 2013.
2. Environmental Chemistry, Dr H Kaur, Pragathi Prakashan, 2016

Mangalore University

Scheme of Practical Examinations for B.Sc Chemistry Practicals

(As per the New Education Policy)

III Semester Chemistry Practical III

Duration: 4 hrs

Max.marks:25

PART A

Q.1 Any one of the following experiments may be set for the actual experimental work. The distribution of experiments is to be done such that more than four students do not get the same experiment.
10Marks

- 1.Colorimetric determination of Copper using ammonia solution.
- 2.Colorimetric determination of Iron using Thiocyanate solution.
- 3.Colorimetric determination of Nickel using DMG solution.
- 4.Colorimetric determination of Titanium using hydrogen peroxide.
- 5.Colorimetric determination of Phosphate as Ammonium phosphomolybdate.
- 6.Colorimetric determination of Nitrite in a water sample (diazo coupling reaction/Griess reagent).
- 7.Determination of R_f values of two or three component systems by TLC.

VALUATION SCHEME

The practical class records certified by the teacher in charge and head of the chemistry department should be produced at the time of examination.

EXPERIMENT

I Colorimetric Determinations:

i)_Graph (good plot) with four points - 4 marks

Other plots -1 mark

ii) Error in concentration:

$\pm 0.2\text{mM}$ 6 Marks

$\pm 0.3\text{mM}$ 5 Marks

$\pm 0.4\text{mM}$ 2 Marks

Any other value 1 Mark

II Chromatography:

i) Error in R_f value

Error upto $\pm 5\%$	8Marks
$\pm 6\%$ to 10%	6Marks
$\pm 11\%$ to 15%	4Marks
Any other value	2Marks
ii Calculation	2Marks

PART B

Organic Analysis 15 marks

I Any one of the following organic compounds may be given for an analysis

1) Salicylic acid, p-Nitro benzoic acid, Antranilic acid, p-Chloro benzoic acid 2) o-Cresol, p-Cresol, Resorcinol, o-Nitrophenol, p-nitrophenol 3) o-Nitro aniline, p-Nitroaniline, p-Toluidine, p-Chloroaniline, p-Bromoaniline, 4) Ethyl Salicylate, Salicylaldehyde, Acetophenone, p-Dichlorobenzene, p-Nitro toluene, Benzamide.

II) Compounds should be distributed among students such that, more than three students do not get same compound.

Valuation Scheme

Preliminary tests	1 mark
Physical Constant	1 mark
Detection of elements (Nitrogen & Halogen)	4 marks
Determination of Solubility	3 marks
Reactions of functional group (any two)	4 marks
Name and Structure	2 marks

XXXXXXXXXX

Allotment of Marks for Formative assessment:

Maximum marks: 25

i) Laboratory Record and Attendance 10Marks

ii) Internal Practical Examination 15Marks.

Internal Practical Examination should be conducted as per the university examination scheme and maximum marks is to be reduced from 25 to 15.

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**Scheme of Practical Examinations and Valuation Procedures for
B.Sc. Chemistry Practical as per the New Education Policy**

IV Semester BSc Chemistry Practical – IV

Duration: 4Hrs

Max. Marks: 25

Part –A Inorganic chemistry Practical

Exercise set for inorganic qualitative analysis (12 marks)

1. Inorganic systematic qualitative analysis of the mixture of two simple salts containing two anions and two cations using semi micro technique.

i) A simple powdered mixture of inorganic salts containing two anions and two cations is to be prepared on the spot by examiners from simple salts having the following anions and cations.

Anions: CO_3^{2-} , CH_3COO^- , Cl^- , Br^- , I^- , NO_3^- , BO_3^{3-} , SO_4^{2-} , $\text{C}_2\text{O}_4^{2-}$ and PO_4^{3-} ,

Cations: NH_4^+ , Pb^{2+} , Bi^{3+} , Cu^{2+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Zn^{2+} , Ba^{2+} , Ca^{2+} , Sr^{2+} , Mg^{2+} , Na^+ , K^+ and Li^+

Note:

1. Mixture requiring elimination of phosphate and borate radicals must be avoided (avoid cations such as Ba^{2+} , Ca^{2+} , Sr^{2+} , Mg^{2+} when borate or phosphate radicals are given).
2. Mixtures of salts which on double decomposition form precipitates insoluble in dilute HCl (like BaSO_4 , SrSO_4 , PbSO_4) should not be given.
3. Combination like NO_3^- and Br^- , NO_3^- and I^- , Cl^- and Br^- , Cl^- and I^- , Cl^- and NO_3^- , Br^- and I^- must be avoided.
4. The cations should belong to different groups. For example a combination of Ca^{2+} , and Sr^{2+} , Ba^{2+} and Ca^{2+} , Ba^{2+} and Sr^{2+} , Mg^{2+} and Na^+ , Na^+ and K^+ , Mg^{2+} and Na^+ , Na^+ and K^+ , Mg^{2+} and K^+ , Al^{3+} and Mn^{2+} , Mn^{2+} and Zn^{2+} , Bi^{3+} and Cd^{2+} must be avoided.
5. AR and GR grade chemicals are used for preparing mixtures.
6. Different mixtures should be prepared and distributed to the candidates (by lots) so that not more than three candidates in a batch get the same mixture.
7. In case of cations, recording of tests are to be done until two cations are detected and confirmed.

Inorganic qualitative analysis.

Four radicals reported correctly	12marks
Three radicals reported correctly	09 marks
Two radicals reported correctly	06 marks
One radical reported correctly	03marks

Note:

1. For detecting only the group to which the cations belong, one mark for each correct group should be given.
2. If more than four radicals are reported, reduce three marks for each extra radical reported.
3. In case of anions, confirmatory test is expected.
4. In case of cations confirmatory test is expected only in case of NH_4^+ .
5. Flame test may be considered as one of the preliminary test only and not as a conclusive test for cation.
6. In case of anions, positive tests should be recorded in detail while the essential negative tests may be recorded in brief.

Part B- Physical Chemistry Practical (13 marks)

Any one of the following experiments may be given.

- Determination of the enthalpy of neutralization of a strong acid with a strong base.
7. Verification of Freundlich isotherm for adsorption of acetic acid adsorbed on activated charcoal.
 8. The study of kinetics of potassium persulphate and potassium iodide volumetrically.
 9. Determination of velocity constant for acid catalyzed hydrolysis of methyl acetate.
 10. Determination of velocity constant for the saponification of ethyl acetate ($a = b$) volumetrically.
 11. Determination of equivalent conductivity of sodium chloride and verification of DHO equation.
 12. Determination of dissociation constant of weak acid by conductivity method.
 13. Conductometric titration of strong acid and strong base.
 14. Conductometric titration of weak acid and strong base.

10. Determination of solubility product of sparingly soluble salt conductometrically

Valuation Scheme

1. Determination of the enthalpy of neutralization of a strong acid with strong base. 13 Marks

i) Error in enthalpy value

Error upto $\pm 10\%$	10 Marks
$\pm 11\%$ to 15%	08 Marks
$\pm 16\%$ to 20%	06 Marks
$\pm 21\%$ to 25%	04 Marks
Any Other value	02 Marks
Calculation	03 Marks

2. Verification of Freundlich isotherm for adsorption of acetic acid on activated charcoal

a) Tabulation and calculation 03 Marks

b) Graph (good plot) 06 Marks

Deduct marks proportionally for variation

c) Calculation of k and n values
Calculation 04 marks

Experiments 3 to 5 (Velocity constant determination Experiments)

i) Error in velocity constant value

Error upto $\pm 10\%$	10 Marks
$\pm 11\%$ to 15%	08 Marks
$\pm 16\%$ to 20%	06 Marks
$\pm 21\%$ to 25%	04 Marks
Any Other value	02 Marks

ii) Calculation 03 Marks

- 6.. Determination of equivalent conductivity of strong electrolyte(sodium chloride) and verification of DHO equation

a) Graph (good plot) 04Marks
Other plots 02Marks

b) Error in values
 ± 0.2 ml 06Marks
 ± 0.3 ml 05Marks
 ± 0.4 ml 04Marks
 ± 0.5 ml 03Marks
Other values 02Marks

c) Calculation of equivalent conductance 03Marks

7. Determination of dissociation constant of weak acid by conductivity method

a) Graph (good plot)	04 Marks
Other plots	02 Marks
b) Error in values	
± 0.2 ml	06 Marks
± 0.3 ml	05 Marks
± 0.4 ml	04 Marks
± 0.5 ml	03 Marks
Any Other value	02 Marks
c) Calculation dissociation constant	03 Marks

8. Conductometric titration of a strong acid with a strong base

a) Graph (good plot)	05 Marks
Other plots	02 Marks
b) Error in values	
± 0.2 ml	06 Marks
± 0.3 ml	05 Marks
± 0.4 ml	04 Marks
± 0.5 ml	03 Marks
Any Other value	02 Marks
c) Calculation	02 Marks

9. Conductometric titration of weak acid and strong base.

a) +Graph (good plot)	05 Marks
Other plots	02 Marks
b) Error in values	
± 0.2 ml	06 Marks
± 0.3 ml	05 Marks
± 0.4 ml	04 Marks
± 0.5 ml	03 Marks
Any Other value	02 Marks
Calculation	02 Marks

10. Determination of solubility product of sparingly soluble salt conductometrically

i) Error in solubility product value

Error upto $\pm 8\%$	10 Marks
$\pm 9\%$ to 13%	08 Marks
$\pm 14\%$ to 16%	06 Marks
$\pm 16\%$ to 20%	04 Marks

Any Other value

02 Marks

ii) Calculation

03 Marks

**Allotment of Marks or Formative Assessment:
Maximum Marks: 25**

i) Laboratory Record and Attendance 10Marks

ii) Internal Practical Examination 15Marks.

Internal Practical Examination should be conducted as per the university examination scheme and maximum marks is to be reduced from 25 to 15.

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B.Com (Tax Procedure)(Basic/Hons)(Vocational)

Programme Objectives:

1. To provide the knowledge of Taxation system in India and to enhance employability skills of the Commerce students
2. To motivate the learners towards higher education and The course helps the students to prepare for competitive and professional examination
3. The introduction of updated and the need of the hour concepts and contents will make a student employable and at the same time confident in his/her day to day transactions.
4. The programme cultivates the habit of entrepreneur and thereby motivates student to start entrepreneurship.
5. To provide inter-disciplinary knowledge through non-major elective courses and develop research culture by incorporating projects both practical and technical skills in the curriculum.
6. To provide practical exposure by providing opportunities for industrial visit, CA office visit, Visit to Tax Offices, Meeting Tax Officials and so on.

Programme Outcome:

1. The students can get the knowledge, skills and attitudes during the end of the B.com degree course.
2. Students will be able to do their higher education and can make research in the field of finance and commerce
3. The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.
4. Students will prove themselves in different professional exams like C.A., C S, CPA, CMA, MPSC, UPSC. as well as other courses.
5. Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication, computer and also get the practical skills to work as accountant, audit assistant, tax consultant, and computer operator as well as other financial supporting services.
6. By goodness of the preparation they can turn into a Manager, Accountant, Management Accountant, cost Accountant, Bank Manager, Auditor, Company Secretary, Teacher, Professor, Stock Agents, Government employments and so on.,

B.COM.PROGRAM
Proposed Scheme of Teaching & Evaluation for B.Com
(Tax Procedure) (Basic/Hons) with Commerce as Core
subject

Semester I								
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
1	Lang.1.1	Language-I	AECC	3+1+0	60	40	100	3
2	Lang.1.2	Language-II	AECC	3+1+0	60	40	100	3
3	B.Com.1.1	Financial Accounting	DSC	3+0+2	60	40	100	4
4	B.Com.1.2	Income Tax Law and Practice-I	DSC	3+0+2	60	40	100	4
5	B.Com.1.3	Goods and Service Tax Law and Practice-I	DSC	3+0+2	60	40	100	4
6	B.Com.1.4	Digital Fluency	SEC-SB	1+0+2	30	20	50	2
7	B.com.1.5	Yoga	SEC-VB	0+0+2	-	25	25	1
8	B.com.1.6	Health and Wellness	SEC-VB	0+0+2	-	25	25	1
9	B.Com.1.7	Accounting for Everyone/Financial Literacy/Managerial Economics	OEC	3+0+0	60	40	100	3
Sub-Total(A)					390	310	700	25

Semester II								
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
10	Lang.2.1	Language-I	AECC	3+1+0	60	40	100	3
11	Lang.2.2	Language-II	AECC	3+1+0	60	40	100	3
12	B.Com.2.1	Advanced Financial Accounting	DSC	3+0+2	60	40	100	4
13	B.Com.2.2	Income Tax Law and Practice-II	DSC	3+0+2	60	40	100	4
14	B.Com.2.3	Goods and Service Tax Law and Practice-II	DSC	3+0+2	60	40	100	4
15	B.Com.2.4	Sports	SEC-VB	0+0+2	-	25	25	1
16	B.Com.2.5	NCC/NSS/R&R(S&G)/Cultural	SEC-VB	0+0+2	-	25	25	1
17	B.Com.2.6	Environmental Studies	AECC	2+0+0	30	20	50	2
18	B.Com.2.7	Financial Environment/Investments In Stock Markets	OEC	3+0+0	60	40	100	3
Sub-Total(B)					390	310	700	25

EXIT OPTION WITH CERTIFICATION - with ability to solve well defined problems

Semester III								
Sl. No.	CourseCode	TitleoftheCourse	Category ofCourse s	Teaching Hours perWeek (L+T+P)	SEE	CIE	Total Marks	Credits
19	Lang.1.1	Language-I	AECC	3+1+0	60	40	100	3
20	Lang.1.2	Language-II	AECC	3+1+0	60	40	100	3
21	B.Com.3.1	Corporate Accounting	DSC	3+0+2	60	40	100	4
22	B.Com.3.2	Income Tax Law and Practice-III	DSC	3+0+2	60	40	100	4
23	B.Com.3.3	Goods and Service Tax Law and Practice-III	DSC	3+0+2	60	40	100	4
24	B.Com.3.4	Artificial Intelligence	SEC	1+0+2	30	20	50	2
25	B.Com.3.5	Sports	SEC-VB	0+0+2	-	25	25	1
26	B.Com.3.6	NCC/NSS/R&R(S&G)/Cultural	SEC-VB	0+0+2	-	25	25	1
27	B.Com.3.7	AdvertisingSkills/Entrepreneurial Skills	OEC	3+0+0	60	40	100	3
Sub-Total(C)					390	310	700	25

Semester IV								
Sl. No.	CourseCode	TitleoftheCourse	Category ofCourse s	Teaching Hours perWeek (L+T+P)	SEE	CIE	Total Marks	Credits
28	Lang.1.1	Language-I	AECC	3+1+0	60	40	100	3
29	Lang.1.2	Language-II	AECC	3+1+0	60	40	100	3
40	B.Com.4.1	Advanced Corporate Accounting	DSC	3+0+2	60	40	100	4
31	B.Com.4.2	Income Tax Law and Practice-IV	DSC	3+0+2	60	40	100	4
32	B.Com.4.3	Goods and Service Tax Law and Practice-IV	DSC	3+0+2	60	40	100	4
33	B.Com.4.4	Constitution of India	AECC	2+0+0	30	20	50	2
34	B.Com.4.5	Sports	SEC-VB	0+0+2	-	25	25	1
35	B.Com.4.6	NCC/NSS/R&R(S&G)/Cultural	SEC-VB	0+0+2	-	25	25	1
36	B.Com.4.7	Business Ethics/Corporate Governance	OEC	3+0+0	60	40	100	3
Sub-Total(D)					390	310	700	25

EXIT OPTION WITH DIPLOMA – **Ability to solve broadly defined problems.**

Semester V								
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
37	B.Com.5.1	Financial Management	DSC	3+0+2	60	40	100	4
38	B.Com.5.2	Advance Income Tax Law and Practice	DSC	3+0+2	60	40	100	4
39	B.Com.5.3	Auditing and Assurance	DSC	4+0+0	60	40	100	4
40	B.Com.5.4 Elective	One Course from the Selected Elective Group	DSE-1	3+1+0	60	40	100	3
41	B.Com.5.5 Elective	GST-Law & Practice	Vocational-1	2+0+2	60	40	100	3
42	B.Com.5.6 Elective	Internship	Internship - 1	0+0+4	-	50	50	2
43	B.Com.5.7	Sports	SEC-VB	0+0+2	-	50	50	1
44	B.Com.5.8	NCC/NSS/R&R(S&G)/Cultural	SEC-VB	0+0+2	-	50	50	1
45	B.Com.5.9	Cyber Security/Ethics & Self Awareness	SEC-VB	1+0+2	60	40	100	2
Sub-Total(E)					360	390	750	24

Semester VI								
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L+T+P)	SEE	CIE	Total Marks	Credits
46	B.Com.6.1	Management Accounting	DSC	3+0+2	60	40	100	4
47	B.Com.6.2	Customs Duty Law and Practice	DSC	3+0+2	60	40	100	4
48	B.Com.6.3	Financial Derivatives	DSC	3+0+2	60	40	100	4
49	B.Com.6.4 Elective	One courses from the Selected Elective Group	DSE-2	3+1+0	60	40	100	3
50	B.Com.6.5	GST-Assessment Procedure	Vocational-2	2+0+2	60	40	100	3
51	B.Com.6.6 Elective	Internship	Internship - 2	0+0+4	-	50	50	2
52	B.Com.6.7	Sports	SEC-VB	0+0+2	-	50	50	1
53	B.Com.6.8	NCC/NSS/R&R(S&G)/Cultural	SEC-VB	0+0+2	-	50	50	1
54	B.Com.6.9	Professional Communication	SEC-SB	2+0+0	60	40	100	2
Sub-Total(F)					360	390	750	24
Grand Total-Degree					2400	2300	4700	148

EXIT OPTION WITH BACHELOR DEGREE - Ability to solve complex problems that are ill-structured requiring multi-disciplinary skills to solve them.

SemesterVII								
Sl. No.	CourseCode	TitleoftheCourse	Category ofCourses	Teaching Hours perWeek (L+T+P)	SEE	CIE	Total Marks	Credits
55	B.Com.7.1	InternationalBusiness	DSC	4+1+0	60	40	100	4
56	B.Com.7.2	BusinessAnalytics	DSC	4+1+0	60	40	100	4
57	B.Com.7.3	Advanced FinancialManagem ent	DSC	4+1+0	60	40	100	4
58	B.Com.7.4	One Course from theSelectedElectiveGro up	DSE-5	3+1+0	60	40	100	3
59	B.Com.7.5	ERPApplications	Vocational-3	2+0+2	60	40	100	3
60	B.Com.7.6	ResearchMethodology	-	2+0+2	60	40	100	3
Sub–Total(G)					360	240	600	21

SemesterVIII								
Sl. No.	Course Code	TitleoftheCourse	Category ofCourse s	Teaching Hoursper Week(L +T+P)	SEE	CIE	Total Marks	Credits
61	B.Com.8.1	FinancialReporting-IND.AS	DSC	3+1+0	60	40	100	3
62	B.Com.8.2	Strategic FinancialManage ment	DSC	3+1+0	60	40	100	3
63	B.Com.8.3	Advanced BusinessStatisticsORData Analysis &DecisionSciences	DSC	3+1+0	60	40	100	3
64	B.Com.8.4	OneCoursefromtheSele ctedElectiveGroup	DSE-5	3+1+0	60	40	100	3
65	B.Com.8.5	ManagingDigitalPlatforms	Vocational-4	2+0+2	60	40	100	3
66	B.Com.8.6	ResearchProjects/Internship withViva–voce	-	0+0+12	120	80	200	6
		OR TwoCoursesfromtheSel ectedElectiveGroup8.5(A) &8.5(B)	DSE-6	3+1+0	60*	40*	100*	3*
		DSE-7	3+1+0	60*	40*	100*	3*	
Sub–Total(H)					420/ 420*	280/ 280*	700/ 700*	21/ 21*
GrandTotal-Honors					3180/ 3180*	2820/ 2820*	6000/ 6000*	190

* Students who do not opt Research Project/Internships he will take two elective courses such as 8.5(A) &8.5(B).SubTotal(H)andGrandTotalHonorsvariesaccordingly.

BACHELORDEGREEWITHHONORS- Experienceofworkplaceproblemsolving inthe formofinternship or research experience preparing for higher education or entrepreneurship experience.Notes:

- OneHourofLecture isequalto1Credit.

- **OneHourofTutorial isequal to1Credit(ExceptLanguages).**
- **TwoHoursofPracticalisequalto1Credit**

Acronyms Expanded

- AECC : Ability Enhancement Compulsory Course
- DSC© : Discipline Specific Core (Course)
- SEC-SB/VB : Skill Enhancement Course-Skill Based/Value Based
- OEC : Open Elective Course
- DSE : Discipline Specific Elective
- SEE : Semester End Examination
- CIE : Continuous Internal Evaluation
- L+T+P : Lecture+Tutorial+Practical(s)

Note: Practical Classes may be conducted in the Business Lab or in Computer Lab or in Class room depending on the requirement. One batch of students should not exceed half (i.e., 50 or less than 50 students) of the number of students in each class/section. 2 Hours of Practical Class is equal to 1 Hour of Teaching, however, whenever it is conducted for the entire class (i.e., more than 50 students) 2 Hours of Practical Class is equal to 2 Hours of Teaching.

ELECTIVE GROUPS AND COURSES:

Discipline Specific Electives-V Semester						
Sl. No	Accounting	Finance	Banking & Insurance	Marketing	Human Resources	IT
1	Ind. AS and IFRS	Financial Markets & Intermediaries	Indian Banking System	Retail Management	Human Resources Development	Financial Analytics

Discipline Specific Electives-VI Semester						
1	e-Business & Accounting	Investment Management	Banking Innovations & Technology	Customer Relationship Marketing	Cultural Diversity at Workplace	HR Analytics
2	Accounting for Services Sector	Strategic Financial Management	Principles & Practice of Insurance	Digital Marketing	New Age Leadership Skills	Marketing Analytics
3	Accounting for Government and Local Bodies	Risk Management	Insurance Law and Regulations	Consumer Behavior & Marketing Research	Labour Laws & Practice	ICT Application in Business

Discipline Specific Electives-VII Semester						
1	Forensic Accounting	Security Analysis & Portfolio Management	Banking Products & Services	Logistics & Supply Chain Management	Strategic HRM	DBMS & SQL

Discipline Specific Electives-VIII Semester						
1	Innovations in Accounting	Corporate Valuation	e-Banking	E-Commerce	International HRM	Web & Social Intelligence
2	Accounting Information System	Analysis of Financial Statements	Insurance Planning & Management	Services Marketing	Employee Welfare & Social Security	Artificial Intelligence & Machine Learning in Business

NOTE: Student shall continue with the same elective group in V and VI semesters, however, he/she

may change the elective group in VII semester, but shall continue in the same group in VIII semester

B.com-Question Paper Pattern
End Semester Exams Bachelor of Commerce- B.Com

Course Code:

Duration: 2 Hour

Name of the Course:

Total Marks: 60

SECTION-A

I. Answer any five of the following questions. Questions are asked on Remembering

(5x2=10)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

SECTION-B

II. Answer any four of the following questions. Questions are asked on Understanding & Applying (4x5=20)

- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

SECTION-C

III. Answer any two of the following questions. Questions are asked on analyzing & evaluating (2x15=30)

- 15.
- 16.
- 17.
- 18.

Note: Breakup of 40 marks for Continuous Internal Evaluation (CIE) is as follows:

- 20 marks for 2 internal exams per course per semester.
- 10 marks for Seminar/Presentation/Activity/Project/Fieldwork/Assignment.
- 10 marks for Case study/Excel/Zoho books.

Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com.3.2 Name of the Course: <u>Income Tax Law and Practice- III</u>		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	48 Hrs
Pedagogy: Classrooms lecture, tutorials, Maintaining Record Book for practical class, Group discussion, Seminar, Case studies & field work etc.,		
a) After studying this subject students will get to know the amendments made to Direct Tax Laws of India by Finance Acts passed in the Parliament from time to time. b) Understand the theoretical framework of Direct Tax. c) After studying this subject students are able to compute Total Income. d) This subject gives the theoretical as well as practical knowledge of Tax deducted and collected at source. e) And also students get the knowledge of Advance tax payment and tax authorities.		
Syllabus:		Hours
Module No. 1: Computation of tax on total income		12
Normal Rate and Special Rate of tax as applicable to Resident Assesses i.e individuals, Hindu Undivided families, partnership firms. Aggregation of Agricultural Income for the rate purposes Rebates and Reliefs (excluding double taxation relief in the case of share of income from Association of persons). Computation of tax under Old Regime and New Regime in relation to individuals and HUFs. Applicability of Form 10-IE.		
Module No.2: Tax Deduction at source		14
Deduction of Income Tax at source from the amount payable to Residents, Persons responsible to deduct tax at source. When to deduct, rates of tax, exemptions, deduction at lower rate applying to Assessing officer, filling of self-declaration Form, Remittance of Tax, Issue of certificate of deduction of tax at source, filing of Quarterly Forms 24Q, 26Q and 27Q, application for tax deduction account number, consequences of non- deduction or short deduction or non / short remittance of tax, interest and penalty thereof.		
Module No.3: Tax collection at source		06
Collections of Income Tax at source, as applicable to residents, persons responsible to collect tax at source, when to collect, rates of tax, exemptions, collection at lower rate by applying to assessing officer, filling self-declaration forms for non-collection. Remittance of Tax, Issue of certificate for collection of tax at source, Filling of Quarterly Form 27EQ, Application of Tax Collection Account Number, Consequences of non-collection or short collection or non/ short remittance of tax interest and penalty thereof.		
Module No.4: Payment of Advance Tax		06
Computation of Estimated Income, Exemption, Due dates to remit, Quantum of advance tax payable, Payment of advance tax on receipt of notice by assessing offices and procedure thereof.		
Module No.5: Income tax authorities		10
Appointment of Income-tax authorities; Control of Income-tax authorities; Instructions to subordinate authorities; Taxpayer's Charter u/s. 119A; Faceless jurisdiction; Discovery, production of evidence etc.; Search and Seizure; Powers to requisition books of account etc; Power to call for information; Power of Survey; Faceless collection of information.		

Skill Developments Activities:

1. Visit to CA office for asking about Practical application.
2. Collect the Income details of individual and calculate Total Income.
3. Case study discussion.
4. Any other activities, which are relevant to the course.

Books for Reference:

1. Direct Tax Law and Practice- - Taxman's Publication
2. Income Tax law and practice- taxman's Publication
3. Income Tax law and practice- V.P. Gaur, D.B. Narang, Puja Gaur, Rajeev Puri
4. ICAI Study Materials

Name of the Program: Bachelor of Commerce (Tax Procedure) Course Code: <u>B.Com.3.3: GST Law and Practice-III</u>		
4 Credits	4 Hrs	48 Hrs
Pedagogy: Classroom lecture, tutorials, Maintaining Record Book for practical class, Group discussion, Seminar, Case studies & Visit to Income tax office / CA offices etc.,		
Course Outcomes: On successful completion of the course, the students will be able to - The study familiarizes the students with the provisions of Indirect Taxation Laws in India. - This subject is to be taught with reference to the relevant amendments made to GST by GSTC and by Finance Acts passed in the Parliament from time to time so that students are updated with the learning and it enhances learning objective - After studying this subject students will get in depth knowledge of concept of GST.		
Syllabus:		Hours
Module No.1: Input Tax Credit I		10
Eligibility and conditions for taking input tax credit – Apportionment of credit and blocked credits – Availability of credit under special circumstances under Section 18 of the CGST Act – Documentary requirements and conditions for claiming input tax credit – Reversal of input tax credit in the case of non-payment of consideration – Discrepancies in claim of Input tax credit and reversal of such claim. Simple problems on Identification of Blocked Credit and Credit under Special Circumstances. Simple problems on computation of Reversal of Credit..		
Module No.2: Input Tax Credit II		10
Taking input tax credit in respect of inputs and capital goods sent for job work – Manner of distribution of credit by Input service distributor – Manner of claiming credit under special circumstances under Rule 40 -Anti profiteering measure under Section 171. Simple problem on Identification of Input service Distributor, Simple problem on allocation of credit by an Input Service Distributor. Problems on computation of Input Tax, Output tax and Net tax and Advanced problems on Computation of GST payable.		
Module No.3: Accounts and records in GST		10
Maintenance of accounts by registered persons – Generation and maintenance of electronic records – Records to be maintained by owner or operator of godown or warehouse or transporters - Issue of tax invoice under Section 31 of the CGST Act – Components of a Tax invoice – Time Limit for issuing tax invoice – Manner of issuing invoice – Bill of supply – Receipt voucher – Refund voucher – Revised tax invoice - Transportation of goods without issue of invoice - Credit notes and debit notes – Accounts and records to be maintained under Section 35 – Period of retention of accounts. Collect the E forms applicable, E Invoice, Bill of Supply discuss the practical applicability.		
Module No.4: Returns under GST		10
Time limits – Form and manner of furnishing details of outward supplies – Form and manner of furnishing details of Inward Supplies – Concept of Form GSTR-1A and GSTR-2A - Furnishing of returns under Section 39 of the CGST Act – Claim of input tax credit and provisional acceptance thereof – matching, reversal and reclaim of input tax credit – Annual return – Final return – Levy of late fee – Goods and Service tax practitioners Discuss the E Forms available for Filling of Returns under GST.		
Module No.5: Casual Taxable Person and Non-resident taxable person		08
Special provisions in relation to casual taxable person and non-resident taxable person – meaning – registration – filing of returns.		

Skill Developments Activities:

1. Visit to CA office for asking about Practical application.
2. Visit the GST portal Download the forms available for E filling discuss the provisions related to filling of returns.

Text Books:

1. Indirect Tax Laws-Bangar's Publication-Dr.Yogendra Bangar,Dr.Vandana Bangar

Name of the Course: Goods and Service Tax Law and Practice-III

Course Credits	No. of Hours per Week	Total No. of Teaching Hours

2. Students guide to Income Tax (including GST- Taxman's publication- Dr. Vinod Singhania and Dr. Monica Singhania
3. Business Taxation-Dr.Ravi MN,Mr.Bhanu Praksh B.E,Dr.Suman Shetty N
4. ICAI study materials related to Indirect tax.

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Commerce(B.Com.) Course Code: B.Com.4.2 Name of the Course: Income Tax Law and Practice- IV		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	48 Hours
Pedagogy: Classroom lecture, tutorials, Maintaining Record Book for practical class, Group		
After studying this subject students will get to know the amendments made to Direct Tax Laws of India by Finance Acts passed in the Parliament from time to time. g) Understand the theoretical framework of Direct Tax. h) This will provide practical knowledge of filling of return under GST. i) After studying this students are able to do Self Assessment of Income tax return and can file the return.		
Syllabus:		Hours
Module No. 1: Filing of Return of Income		10
Mandatory filing of returns under Section 139; Revised Return, Belated return, Invalid Return, Rectified Return; Permanent Account number; Quoting of Aadhar number; Due dates for filing of return; Verification of income-tax returns; Filing of returns in Electronic form; Concept of updated returns, Tax updated returns; Concept of late filing fee under Section 234F; Different types of ITR and their applicability		
Module No.2: Assessment procedure		10
Assessment Procedure, Payment of Self-Assessment Tax, Inquiry before Assessment, Intimation, Regular Assessment, Best Judgement Assessment, Income Escaping Assessment, Rectification of mistake, Time limit to issue limitation period to complete assessment/ rectification, issue of demand notice remittance amount demanded, assessee in default, consequences of non-remittance of tax demanded. (Excluding the provisions regarding recovery of tax).		
Module No.3: Assessment of Firms and Companies		10
Meaning of firm, partner conditions interest and remuneration payable to partners, computation of income and Tax; Applicability of AMT; Meaning of company; Indian company, domestic company, foreign company in which the public are substantially interested, closely held company, minimum alternative tax; computation of income tax on distributed profits; Options under Section 115BA, 115BAA and 115BAB.		
Module No.4: Calculation of interest		08
Calculation of interest, interest payable to government, for late filing of return default in payment of advance tax, determent of advance tax, excess refund, delay in remittance of tax on distributed profits, interest payable to Assessee		
Module No.5: Computation of self-Assessment Tax		10
Computation of amount to be demanded, claiming Refund of Tax. Compulsory maintenance of books and accounts, compulsory audit. Appeals under Income Tax Act- Applicable orders- procedures- power of revision by Commissioner (excluding provisions regarding settlement commission, repetitive appeals and advance ruling and authorized representatives).		
Skill Development Activities: 5. Visit to CA office for asking about Practical application. 6. Case study discussion. 7. Any other activities, which are relevant to the course. 8. File the Income Tax return of your own/the family members.		
Books for Reference: 1. Direct Tax Law and Practice- - Taxman's Publication 2. Income Tax law and practice- taxman's Publication 3. Income Tax law and practice- V.P. Gaur, D.B. Narang, Puja Gaur, Rajeev Puri 4. ICAI Study Materials		

discussion, Seminar, Casestudies & fieldwork etc.,

Name of the Program: Bachelor of Commerce (Tax Procedure) Course Code: B.Com.4.3 Name of the Course: Goods and Service Tax Law and Practice-IV		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs	48 Hrs
Pedagogy: Classrooms lecture, tutorials, Maintaining Record Book for practical class, Group		

discussion, Seminar, Case studies & Visit to Income tax office / CA offices etc.,	
Course Outcomes: On successful completion of the course, the students will be able to	
d) The study familiarizes the students with the provisions of Indirect Taxation Laws in India. e) This subject is to be taught with reference to the relevant amendments made to GST by GSTC and by Finance Acts passed in the Parliament from time to time so that students are updated with the learning and it enhances learning objective f) After studying this subject students will get in depth knowledge of concept of GST.	
Syllabus:	Hours
Module No.1: Payment of tax	10
Payment of tax, interest, penalty and other amounts – Electronic Liability Register – Electronic Credit Ledger – Electronic Cash ledger - Interest on delayed payment of tax – Tax deduction at source under Section 51 of the CGST Act – Collection of tax at source under Section 52 – Transfer of input tax credit – Refund of tax – Refund of integrated tax to international tourist - Consumer Welfare Fund – Letter of Undertaking for export without payment of tax.	
Module No.2: Assessment	10
Self-assessment – Provisional assessment – Scrutiny of returns – Assessment of non-filers of returns – Assessment of unregistered persons – Summary assessment in certain special cases – Audit by tax authorities – Special audit under Section 66 of the CGST Act.	
Module No.3: Inspection, search, seizure and arrest	10
Inspection, search, seizure and arrest - Inspection of goods in movement – Access to business premises.	
Module No.4: Appeals and revision	10
Appeals to Appellate Authority – Application for appeal – Appeal fees – Proceedings before the Appellate authority – Constitution of appellate tribunal and benches thereof – Appeals to Appellate Tribunal – Procedure before the Appellate Tribunal – Orders of the Appellate Tribunal – Appearance by Authorized Representative – Appeal to High Court – Appeal to Supreme Court.	
Module No.5: Comprehensive Problems on GST	08
Problems to cover valuation, computation of tax and availing of input tax credit. (Incorporation of Delay in payment of tax to these problems, reversal of credit and refund of credit may be followed)	
Skill Developments Activities:	
3. Visit to CA office for asking about Practical application. 4. View the GST Portal and study the Forms related to Filling of GST return 5. Refer the GST portal to study the Forms related to Filling of Appeal 6. Prepare students to present and act in front of class related to procedure of Inspection	

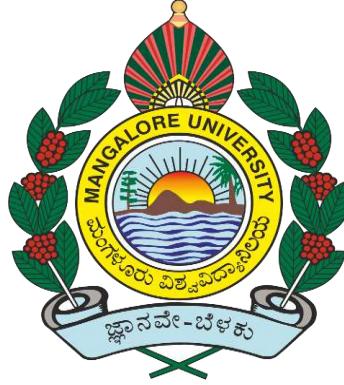
Search Seizure and arrest.

TextBooks:

5. IndirectTaxLaws-Bangar'sPublication-Dr.YogendraBangar,Dr.VandanaBangar
6. Students guide to Income Tax (including GST- Taxman's publication- Dr. VinodSinghaniaandDr. Monica Singhania
7. BusinessTaxation-Dr.RaviMN,Mr.BhanuPrakshB.E,Dr.SumanShettyN
8. ICAIstudymaterialsrelatedtoIndirecttax.

Note:Latesteditionoftext booksmaybeused.

MANGALORE UNIVERSITY



National Education Policy – 2020 INEP-2020

Curriculum Structure:
**B.Sc. Basic and Honors Degree Syllabus for III and IV
semesters
And
Open Elective Courses in Computer Science**

CURRICULUM STRUCTURE

Program: BSc (Basic and Honors)

Subject: Computer Science

1. Computer Science as MAJOR with another Subject as MINOR (Table IIA of Model Curriculum)
2. Computer Science as MAJOR with another Subject also as MAJOR (Table IIIA of Model Curriculum)
3. Computer Science as MINOR with another Subject as MAJOR (As per Table IIA of Model Curriculum)

Sem.	Discipline Specific Core Courses (DSC)	Hour / Week		DS Elective Courses	Hours/ Week
		Theory	Lab		
III	DSC-3: Object Oriented Programming Concepts and Programming in JAVA	4			
	DSC-3 Lab: JAVA Lab		4		
IV	DSC-4: Database Management Systems	4			
	DSC-4 Lab: DBMS Lab		4		

Syllabus for BSc (Basic and Honors), Semesters III and IV

Semester: III

Course Title: Object Oriented Programming Concepts and Programming in Java	Course code: DSC3
Total Contact Hours: 52	Course Credits: 04+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Understand the object-oriented concepts and JAVA Technology.
- Java technology enabled solutions for various applications
- Understand the Java features to implement concurrency, parallelism etc.
- Demonstrate the basic principles of creating Java applications with GUI.

SYLLABUS

DSC3: Object Oriented Programming Concepts and Programming in Java

Contents	Hours
Unit-1	
Introduction to Java: Basics features of Java programming, Java program structure, Java Virtual Machine, Constants, Variables, Data Types, Operators, Control structures: if , if ...else , else if ladder, switch statements Looping Structures: for, while, do...while, for-each	13
Unit-2	
Objects and Classes: Basics of objects and classes, Methods and objects, Constructors, Method Overloading, Finalizer, Visibility modifiers, Arrays in Java, built-in classes: Math, String, Character, String Buffer and their methods. this reference. Inheritance and Polymorphism: Inheritance, Super and Sub class, Overriding, Polymorphism, Dynamic binding, Casting objects, Abstract methods and Classes, Interfaces, Packages, Built-in packages: io, util, lang, awt.	13
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: Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Menus, Dialog Box. Applet and its life cycle, Introduction to Swing, Exceptional Handling Methods	13
Unit-4	
I/O programming: Text and Binary I/O, Binary I/O classes, Object I/O, Random Access Files. Multithreading in Java: Thread life cycle and methods, Runnable interface, Thread synchronization. Introduction to Network Programming : Network Basics and Remote Method Invocation (RMI) Java Database Connectivity: JDBC Driver Types, JDBC Packages, Overview of the JDBC process, Database Connection.	13

Text Books:

1. Programming with Java, By E Balagurusamy – A Primer, 4th Edition, McGraw Hill Publication.

Reference Books:

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, 1st Edition, PHI Learning 2017.
4. Java 2 - The Complete Reference, Herbert Schildt, 5th Edition, McGraw Hill Publication, 2017.
5. Java - The Complete Reference, Herbert Schildt, 7th Edition, McGraw Hill Publication, 2017.

Semester: IV

Course Title: Database Management System	Course code: DSC4
Total Contact Hours: 52	Course Credits: 04+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Understand the various database concepts and the need for database systems.
- Identify and define database objects, enforce integrity constraints on a database using different modeling techniques
- Design a data model and Schemas in RDBMS.
- Identify entities and relationships and draw ER diagram for a given real-world applications.
- Realization of ER models through Relational Model using SQL
- Formulate queries in Relational Algebra, Structured Query Language (SQL) for database manipulation.
- Understand the transaction processing and concurrency control techniques.

DSC7: Database Management System (DBMS)

Contents	Hours
Unit-1	
Database Architecture: Introduction to Database systems, Applications, Characteristics, Database users, Data models, Database schema, Database architecture, Data independence, Database languages, Classification of DBMS. E-R Model: Entity-Relationship modeling: E-R Model Concepts, Entity, Entity types, Entity sets, Attributes, Types of attributes, Relationships between the entities. Relationship types, Roles and structural constraints, degree and cardinality ratio of a relationship. Weak entity, E-R diagram	13
Unit-2	
Relational Data Model: Relational model concepts, Characteristics of relations. Relational model constraints: Domain constraints, Key Constraints, Primary & Foreign Key Constraints, Integrity Constraints, and Null Values. Data Normalization: Functional dependencies, Normalization, First normal form, Second normal form, Third normal form, Boyce-Codd normal form. Transaction Management: Introduction to Transaction Processing, Single user & multiuser systems, Transaction states, Transaction Properties, Transactions: read & write operations, Need of concurrency control, The lost update problem, Dirty read problem, Types of failures.	13
Unit-3	
INTERACTIVE SQL: Table fundamentals, Oracle data types, Create Table command, Inserting data into table, Viewing Data in the table, sorting data in a table, Creating a table from a table, Inserting data into a table from another table, Delete operations, Updating the contents of a table, Modifying the structure of tables, Renaming tables, destroying tables, displaying table structure. DATA CONSTRAINTS: Types of data constraints, IO constraints-The PRIMARY KEY constraint, The FOREIGN KEY constraint, The UNIQUE KEY constraint, Business Rule Constraints, NULL value concepts, NOT NULL constraints, CHECK constraint, DEFAULT VALUE concepts. OPERATIONS ON TABLE DATA: Arithmetic Operators, Logical Operators, Range Searching, Pattern Matching, Oracle Table – DUAL, Oracle Function-Types, Aggregate Function, Date Conversion Function. GROUPING DATA FROM TABLES IN SQL, Group By Clause, Having Cause, Subqueries, JOINS, UNION, INTERSECTION, MINUS Clauses	13
Unit-4	
INTRODUCTION TO PL/SQL: The Generic PL/SQL Block, PL/SQL:The character set, Literals, PL/SQL data types, Variables, Logical comparisons, Displaying User Messages on The VDU Screen, Comments. Control Structures - Conditional Control, Iterative Control PL/SQL Transactions: Cursors-Types of Cursors, Cursor Attributes. Explicit cursor- Explicit cursor Management, Cursor for loop PL/SQL Database Objects: Procedures and Functions, Oracle Packages, Error Handling in PL/SQL.	13

Text Books:

1. Fundamentals of Database Systems, Ramez Elamassri, Shankant B. Navathe, 7th Edition, Pearson, 2015

Reference Books:

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 Johannes Gehrke, 3rd Edition, McGraw Hill, 2002

Skill Enhancement Course: SEC for other Programmes

Semester: III

Course Title: Artificial Intelligence	Course Credits: 2
Total Contact Hours: 13 hours of theory and 26 hours of practical	Duration of SEE: 01 Hour
Formative Assessment Marks: 20 marks	Summative Assessment Marks: 30 marks

Course Outcomes (COs):

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

- Appraise the theory of Artificial intelligence and list the significance of AI.
- Discuss the various components that are involved in solving an AI problem.
- Illustrate the working of AI Algorithms in the given contrast.
- Analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.
- Apply the AI concepts to build an expert system to solve the real-world problems.

Course Contents:

Contents	Hours
Unit-1	
Overview of AI: Definition of Artificial Intelligence, Philosophy of AI, Goals of AI, Elements of AI system, Programming a computer without and with AI, AI Techniques, History of AI. Intelligent Systems: Definition and understanding of Intelligence, Types of Intelligence, Human Intelligence vs Machine Intelligence.	05
Unit-2	
AI Applications: Virtual assistance, Travel and Navigation, Education and Healthcare, Optical Character Recognition, E-commerce and Mobile Payment Systems, Image based Search and Photo Editing. AI Examples in daily life: Installation of AI apps and instructions to use AI apps.	05
Unit-3	
Robotics: Introduction to Robotics, Difference in Robot System and Other AI Program, Components of a Robot.	03

Laboratory Activities: • Amazon Alexa: https://play.google.com/store/apps/details?id=com.amazon.dee.app&hl=en&am p:gl=US • Google Lens: https://play.google.com/store/search?q=google+lens&c=apps&hl=en&gl=US • Image to Text to Speech ML OCR: https://play.google.com/store/apps/details?id=com.mlscanner.image.text.sp eech& hl=en_IN&gl=US • Google Pay: https://play.google.com/store/apps/details?id=com.google.android.apps.nbu .paisa .user&hl=en_IN&gl=US • Grammarly: https://play.google.com/store/search?q=grammarly&c=apps&hl=en_IN&gl=US • Google Map: https://play.google.com/store/search?q=google+maps&c=apps&hl=en&gl=U S • FaceApp: https://play.google.com/store/apps/details?id=io.faceapp&hl=en_IN&gl=US • Socratic: https://play.google.com/store/apps/details?id=com.google.socratic&hl=en_I N&gl=US • Google Fit: Activity Tracking: https://play.google.com/store/apps/details?id=com.google.android.apps.fitne ss&hl=en_IN&gl=US • SwiftKey Keyboard: https://swiftkey-keyboard.en.uptodown.com/android • E-commerce App: https://play.google.com/store/apps/details?id=com.jpl.jiomart&hl=en_IN&gl= US	26

Text Books:

1. Wolfgang Ertel, "Introduction to Artificial Intelligence", 2nd Edition, Springer International Publishing 2017.
2. Michael Negnevitsky, "Artificial Intelligence A Guide to Intelligent Systems", 2nd Edition, Pearson Education Limited 2005.

Reference Books:

1. https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_tutorial.pdf
2. Kevin Knight, Elaine Rich, Shivashankar B. Nair, "Artificial Intelligence", 3rd Edition, July 2017.

Reference Links:

1. Voice Assistant: <https://alan.app/blog/voiceassistant-2/>
2. Browse with image: <https://www.pocket-lint.com/apps/news/google/141075-what-is-google-lens-and-how-does-it-work-and-which-devices-have-it>
3. OCR: <https://aws.amazon.com/what-is/ocr/>
4. Mobile Payment system: <https://gocardless.com/en-us/guides/posts/how-do-mobilepayment-systems-work/>
5. Grammarly: <https://techjury.net/blog/how-to-use-grammarly/#gref>
6. Travel & Navigation: <https://blog.google/products/maps/google-maps-101-ai-powernew-features-io-2021/>
7. AI in photo editing: <https://digital-photography-school.com/artificial-intelligencechanged-photo-editing/>
8. AI in education: <https://www.makeuseof.com/what-is-google-socratic-how-does-itwork/>
9. AI in health and fitness: <https://cubettech.com/resources/blog/implementing-machinelearning-and-ai-in-health-and-fitness/>
10. E-commerce and online shopping: <https://medium.com/@nyxonedigital/importanceof-e-commerce-and-online-shopping-and-why-to-sell-online-5a3fd8e6f416>

Question Paper Pattern for Skill Enhancement Course

Artificial Intelligence

Duration: 1 Hour

Max. Marks: 30

Part-A

(This section shall contain four questions from each unit. Each question carries one mark)

Unit-1:

- 1.
- 2.
- 3.
- 4.

Unit-2:

- 5.
- 6.
- 7.
- 8.

Unit-3:

- 9.
- 10.
- 11.
- 12.

Part-B

(This section shall contain two full questions from each unit having an internal choice. Each full question carries six marks)

Unit-1:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

Unit-2:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

Unit-3:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

Open Elective for III Semester: Programming in C

Course Title: Programming in C Concepts	Course Credits: 3 (3L+0T+0P)
Semester: III	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays
- Understand functions and file concepts of C language

Course Contents:

Contents	Hours
Unit-1	
Overview of C: Importance of C Program, Basic structure of a C-program, Execution of a C Program. C Programming Basic Concepts: Character set, Tokens, Keywords, Constants, Symbolic constants, Variables, Data types, Input and output with C: Formatted I/O functions – <i>printf</i> and <i>scanf</i> , control strings and escape sequences, output specifications with <i>printf</i> functions; Unformatted I/O functions to read and display single character and a string – <i>getchar</i> , <i>putchar</i> , <i>gets</i> and <i>puts</i> functions.	11
Unit-2	
Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Operator Precedence and Associativity; Evaluation of arithmetic expressions; Control Structures: Decision Making and Branching - Decision making with if statement, simple if statement, the if else statement, nesting of if...else statements, the else if ladder, the switch statement, ?: operator, the goto statement.	11

Unit-3	
Looping Structures: Decision making and looping - The while statement, the do statement, for statement, nested loops, exit, break, Jumps in loops. Derived data types in C: Arrays-declaration, initialization and access of one-dimensional and two-dimensional arrays.	10
Unit -4	
Handling of Strings: Declaring and initializing string variables, reading strings from terminal, writing strings to screen, String handling functions - <i>strlen, strcmp, strcpy, strstr and strcat</i> ; Character handling functions - <i>toascii, toupper, tolower, isalpha, isnumeric</i> . Functions: Basics of functions, Parameter Passing, Simple functions File handling: Basics of file programming concepts- <i>fprintf</i> and <i>fscanf</i> , and example programs	10

Text Book:

1. E.Balagurusamy, Programming in ANSI C ,7th Edition, Tata McGraw Hill

Reference Books:

2. Herbert Scheldt, C: The Complete Reference, 4th Edition.
3. Brian W. Kernighan and Dennis Ritchie, The C Programming Language, Second Edition.

Open Elective for III Semester: R Programming

Course Title: R PROGRAMMING	Course Credits: 3 (3L+0T+0P)
Semester: III	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

- Understand the basics of Fundamentals of R.
- Understands the loading, retrieval techniques of data.
- Understand how data is analyzed and visualized using statistic functions.

Course Contents:

Contents	Hours
Unit-1	
Introduction to R: Basics, Advantages of R over Other Programming Languages - R Studio: R command Prompt, R script file, Comments – Handling Packages in R: Installing R Package, Commands: installed.packages(), package Description(), help(), find. Package (), library () - Input and Output – Entering Data from keyboard – Printing fewer digits or more digits – Special Values functions: NA, Inf and –inf. R Data Types: Vectors, Lists, Matrices, Arrays, Factors, Data Frame R - Variables: Variable assignment, Data types of Variable, Finding Variable Is(), Deleting Variables.	11
Unit-2	
R Operators: Arithmetic Operators, Relational Operators, Logical Operator, Assignment Operators, Miscellaneous Operators R Decision Making: if statement, if – else statement, if – else if statement, switch statement R Loops: repeat loop, while loop, for loop - Loop control statement: break statement, next statement. R-Functions : function definition, Built in functions: mean(), paste(), sum(), min(), max(), seq(), user-defined function, calling a function, calling a function without an argument, calling a function with argument values R-Strings – Manipulating Text in Data: substr(), strsplit(), paste(), grep(), toupper(), tolower() R Vectors – Sequence vector, rep function, vector access, vector names, vector math, vector recycling, vector element sorting R List - Creating a List, List Tags and Values, Add/Delete Element to or from a List, Size of List, Merging Lists, Converting List to Vector R Matrices – Accessing Elements of a Matrix, Matrix Computations: Addition, subtraction, Multiplication and Division	11

Unit-3	
R Arrays: Naming Columns and Rows, Accessing Array Elements, Manipulating Array Elements, Calculation Across Array Elements R Factors –creating factors, generating factor levels gl(). Data Frames –Create Data Frame, Data Frame Access, Understanding Data in Data Frames: dim(), nrow(), ncol(), str(), Summary(), names(), head(), tail(), edit() functions - Extract Data from Data Frame Expand Data Frame: Add Column, Add Row - Joining columns and rows in a Data frame rbind() and cbind() – Merging Data frames merge() – Melting and Casting data melt(), cast().	10
Unit-4	
Loading and handling Data in R: Getting and Setting the Working Directory – getwd(), setwd(), dir() R-CSV Files - Input as a CSV file, Reading a CSV File, Analyzing the CSV File: summary(), min(), max(), range(), mean(), median(), apply() - Writing into a CSV File R-Excel File – Reading the Excel file.	10

Text Book:

1. Sandip Rakshit, R Programming for Beginners, McGraw Hill Education (India), 2017, ISBN : 978-93-5260-455-5.

Reference Books:

2. Seema Acharya, Data Analytics using R, McGrawHill Education (India), 2018, ISBN: 978-93-5260-524-8.
3. Tutorials Point (I) simply easy learning, Online Tutorial Library (2018), R Programming, Retrieved from https://www.tutorialspoint.com/r/r_tutorial.pdf.
4. Andrie de Vries, JorisMeys, R for Dummies A Wiley Brand, 2nd Edition, John Wiley and Sons, Inc, 2015, ISBN: 978-1-119-05580-8.

Open Elective for IV Semester: Python Programming Concepts

Course Title: Python Programming Concepts	Course Credits: 3 (3L+0T+0P)
Semester: IV	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

- Explain the basic concepts of Python Programming.
- Demonstrate proficiency in handling of loops and the creation of functions.
- Identify the methods to create and manipulate string data types.
- Understand the notion of arrays, lists, tuples and their applications

Course contents:

Contents	Hours
Unit-1	
Introduction to Features and Applications of Python; Python Versions; Installation of Python; Python Command Line mode and Python IDEs; Simple Python Program. Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments;	10
Unit-2	
Built-in Functions- Console Input and Console Output, Type Conversions; Python Libraries; Importing Libraries with Examples; Illustrative programs; Libraries for graphics and image handling. 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; Illustrative programs.	10
Unit-3	
Strings: Creating and Storing Strings; Accessing Sting Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifiers; Escape Sequences; Raw and Unicode Strings; Python String Methods; Illustrative programs. Other data types: Basics of arrays, lists, tuples and related functions	11
Unit-4	
Python Functions: Types of Functions; Function Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Default Parameters; Command line Arguments; Key Word Arguments; Illustrative programs	11

Text Book:

1. Python Programming: Using Problem Solving Approach, Reema Thareja, June 2017.

Reference Books:

1. Learning with Python, Allen Downey, Jeffrey Elkner, Chris Meyers, 2015
(Freely available online 2015).
@<https://www.greenteapress.com/thinkpython/thinkCSpy.pdf>
2. Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.
3. <http://www.ibiblio.org/g2swap/byteofpython/read/>
4. http://scipy-lectures.org/intro/language/python_language.html
5. <https://docs.python.org/3/tutorial/index.html>

Open Elective for IV Semester: E-COMMERCE

Course Title: E-Commerce	Course Credits: 3 (3L+0T+0P)
Semester: IV	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

- Compare how internet and other information technologies support business processes.
- Demonstrate an overall perspective of the importance of application of internet technologies in business administration
- Explain the basic business management concepts.
- Demonstrate the basic technical concepts relating to E-Commerce.
- Identify the security issues, threats and challenges of E-Commerce.

Course Contents:

Contents	Hours
Unit-1	
Introduction to E-Commerce and Technology Infrastructure Working of Web - HTML Markup for Structure - Creating simple page - Marking up text - Adding Links - Adding Images - Table Markup - Forms - HTML5, Building an E-Commerce Website, Mobile Site and Apps Systematic approach to build an E-Commerce: Planning, System Analysis, System Design, Building the system, Testing the system, Implementation and Maintenance, Optimize Web Performance – Choosing hardware and software – Other E-Commerce Site tools – Developing a Mobile Website and Mobile App	11
Unit-2	
E-Commerce Security and Payment Systems E-Commerce Security Environment – Security threats in E-Commerce – Technology Solutions: Encryption, Securing Channels of Communication, Protecting Networks, Protecting Servers and Clients – Management Policies, Business Procedure and Public Laws - Payment Systems	11
Unit-3	
Business Concepts in E-Commerce Digital Commerce Marketing and Advertising strategies and tools – Internet Marketing Technologies – Social Marketing – Mobile Marketing – Location based Marketing – Ethical, Social, Political Issues in E-Commerce	10
Unit-4	
Project Case Study Case Study: Identify Key components, strategy, B2B, B2C Models of E-commerce Business model of any e-commerce website - Mini Project : Develop E-Commerce project in any one of Platforms like Woo-Commerce, Magento or Opencart	10

Text Book:

1. Kenneth C. Laudon, Carol Guercio Traver - E-Commerce, Pearson, 10th Edition, 2016

Reference Books:

1. <http://docs.opencart.com/>
2. <http://devdocs.magento.com/>
3. <http://doc.prestashop.com/display/PS15/Developer+tutorials>
4. Robbert Ravensbergen, —Building E-Commerce Solutions with WooCommerce, PACKT, 2nd Edition.

Syllabus of
U.G. Economics
3rd & 4th Semester

**Prepared and approved by U.G. BOS in Economics,
Mangalore University on 08-09-2022**

Program Name	BA in Economics		Semester	Third Semester
Course Title	Microeconomics			
Course Code:	DSC-3.1	No. of Credits		3
Contact hours	42 Hours	Duration of SEA/Exam		2 hours
Formative Assessment Marks	40	Summative Assessment Marks		60

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Understand introductory economic concepts.

CO2. Recognize basic supply and demand analysis.

CO3. Recognize the structure and the role of costs in the economy.

CO4. Describe, using graphs, the various market models: perfect competition, monopoly, monopolistic competition, and oligopoly.

CO5. Explain how equilibrium is achieved in the various market models.

CO6. Identify problem areas in the economy, and possible solutions, using the analytical tools developed in the course.

Contents			42 Hrs
Unit-1: Basics of Microeconomics			
Chapter:1 Exploring Microeconomics: Nature and scope of economics – opportunity cost, scarcity, production possibility frontier - Market system as a way to organise economic activities, welfare state			3
Chapter:2 Supply and Demand: Determinants of demand and supply; demand and supply schedules and; individual and market demand and supply; shifts in the demand and supply curves; Interaction of demand and supply; Equilibrium price and quantity			3

Practicum: ➤ Reading and working with graphs ➤ Estimation of elasticity and discussing its applications; solving problems to estimate the equilibrium price and quantity	
Unit -2: Consumption Decisions	
Chapter 3 The Households: Diminishing Marginal Utility; Indifference curves – Meaning and Properties; budget constraint; Satisfaction Maximization; income and substitution effects; choice between leisure and consumption.	5
Practicum: Conducting a consumer survey to understand their tastes and preferences	
Unit -3: Production and Costs	
Chapter 4: The Firms: Concept of firm and Industry; Production Function; Law of Variable Proportions; isoquant and isocost lines, cost minimizing equilibrium condition; Returns to Scale; Features of Cobb-Douglas Production Function	5
Chapter 5: Cost of Production: Short run and long run costs; Returns to Scale.	3
Practicum: ➤ Analysing reasons for diminishing marginal returns ➤ Examining the relationship between cost and output/ Deriving cost functions from output functions	
Unit -4: Pricing	
Chapter 6: The Markets: Meaning of Market Structure and Types; Pricing under perfect competition; Monopoly pricing and price discrimination; Monopolistic Competition – Features and Pricing; Oligopoly – Interdependence, Collusive and non-collusive oligopoly; Elements of Game theory	7
Chapter 7: The Inputs (Factors): Functional and Personal Income; Demand for and supply of factors; Marginal Productivity Theory of Distribution; Meaning and determinants of Rent, Wages, Interest and Profits	6
Practicum: ➤ Conducting Market Survey to identify the nature and features of markets for different goods/services ➤ Understanding distribution of national income as factor incomes	

Unit -5: Welfare Economics	
Chapter 8: Welfare Economics: Meaning of Welfare; Pigou's Welfare Economics; Compensation principle; Impediments to attain Maximum Social Welfare; Externalities, Market Failure	6
Practicum: Examining day to day externalities and proposing solutions to them	
Unit -6: Economics in Action	
Chapter 9: Economic Theory and Policy: Pricing Practices; Basics of Monetary and Fiscal Policies; Controls and Regulations; Incentives and Penalties; Labour policies	4
Practicum: Analysis of latest budget of the Central Government; Review of terminology used in the latest Monetary Policy of the RBI	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparaa report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

References	
1	Ahuja, H.L. (2008): <i>Principles of Microeconomics</i> , S. Chand and Co., New Delhi
2	Mankiw, N. Gregory (2020). <i>Principles of Economics</i> (Ninth ed.). Boston, MA.
3	Jhingan, M.L. (2016): <i>Microeconomics</i> , Vrinda Publications, New Delhi
4	Koutsoyianis, A (1979): <i>Modern Microeconomics</i> , London, Macmillan
5	Omkarnath, G. (2012): <i>Economics: A Primer for India</i> , Orient Blackswan, Hyderabad
6	Samuelson, Paul (2004): <i>Economics</i> , McGraw-Hill, New Delhi

7	Krishnaiahgouda H.R. (2020): ಸಂಸ್ಥಾಮ ಅರಣ್ಯಶಾಸ್ತ್ರ ಸಪ್ನಾ ಬುಕ್ ಹೌಸ್, ಬೆಂಗಳೂರು
8	https://www.core-econ.org/the-economy/book/text/0-3-contents.html
9	Somashekhar Ne. Thi., ಸಂಸ್ಥಾಮ ಅರಣ್ಯಶಾಸ್ತ್ರ ಸಿದ್ಧಲಿಂಗೇಶ್ವರಾ ಪ್ರಕಾಶನಾ, ಕಾಲ್ಬುರ್ಗಿ.

Program Name	BA in Economics	Semester	Third Semester
Course Title	Mathematics for Economics		
Course Code:	DSC-3.2	No. of Credits	3
Contact hours	42 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Perform basic operations in Sets and functions and Matrix algebra. CO2. Calculate limits, derivatives of Economic functions and identify the nature of relationship. CO3. Calculate maxima and minima of function	
Contents	42 Hrs
Unit-1: Preliminaries	12 Hrs
Chapter:1 - Introduction to Mathematical Economics: Nature and scope of mathematicaleconomics- Role of mathematics in economic theory	4
Chapter:2 - Number system and Set theory: Types of Numbers: Natural Number, Real number,integers, Irrational Number, Complex Number. Concepts of sets- meaning – types- union of sets – interaction of sets.	4
Chapter:3 - Functions: Meaning of function- Types of functions: Linear and Non-linear Functions; Quadratic, Polynomial, Logarithmic and Exponential functions-	4
Unit -2: Economic Functions, their Application and Matrices	14 Hrs
Chapter 4 Economic Functions: Demand Function, Supply function, Production function, Cost, Revenue and Profit function, Consumption function	4
Chapter-5: Applications of Functions: Graph of Economic Functions, Market equilibrium;Equilibrium price and Quantity, Impact of specific tax and subsidy on market equilibrium	5

Chapter-6: Matrices: Definition and Types of Matrices- Matrix Operations: Addition, Subtraction and Multiplication, Transpose of a Matrix, Determinants of Matrix- Cramer's Rule	5
Unit -3: Differential Calculus and Its Applications	16 Hrs
Chapter 7- Limits: Limits of functions, differentiation, rules of differentiation.	4
Chapter 8 Derivatives of Economic functions: Derivation of Marginal functions from totalfunction-Marginal Production, Marginal cost, Marginal Revenue, Marginal Profit.	6
Chapter 9 - Applications of Derivatives and Higher order derivatives: Elasticity of Demand-Second order derivatives- Maxima and Minima of Economic function.	6

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

References	
1	Chiang, A. C. and Wainwright, K., "Fundamental Methods of Mathematical Economics", McGraw-Hill/Irwin, 4th Edition, 2005.
2	Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4thEdition, 2002.
3	Allen R.G.D., (2015) Mathematical Analysis for Economists, Macmillan.
4	Bose D., (2003) An Introduction of Mathematical Economics, Himalaya Publishing House, Mumbai.

5	Dowling, E. T., "Introduction to Mathematical Economics", McGraw-Hill, 2001.
6	Hoy, M., Livernois, J. McKenna, C, Rees, R. and Stengos, T., "Mathematics for Economics", MITPress, 3rd Edition, 2011
7	Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4thEdition, 2002.
References	
8	Veerachamy R (2005) Quantitative Methods for Economics, New Age International PublishersPrivate Ltd. New Delhi.
9	Yamane Taro, (2002) Mathematics for Economists -An Implementer Analysis, Phi Learning Publishers.
10	S. N. Yogish, Mathematical methods for Economists- Mangaldeep publications, Jaipur.

Program Name	BA in Economics	Semester	Third Semester
Course Title	Rural Economics		
Course Code:	OE-3.1	No. of Credits	3
Contact hours	42 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1. To Understand the basics of rural development,

CO2. To study the characteristics, problems, and programmes of rural redevelopment

CO3. To study the trends and patterns of economic activities in rural areas

CO4. To study the role of infrastructural facilities and governance in rural development

CO5. To enable the students to know about significance of rural enterprises and agricultural allied activities.

Contents	42 Hrs
Unit-1:	12 Hrs
Chapter:1 - Introduction to Rural Economy Meaning and Objectives of Rural economy Characteristics of Rural Economy Indicators of Rural Development Concepts of inclusive and sustainable development	5
Chapter:2 - Approaches to Rural Development Gandhian Model Community Development Approach, Minimum Needs	4

Approach, Integrated Rural Development and Inclusive Growth Approach.	
Chapter:3 - Poverty and Unemployment in Rural India Meaning and Measurement of PovertyCauses of Poverty Farm and Non-farm employment Measurement and Types employment Review of Poverty Alleviation and Employment Generation Programmes in India.	5
Practicum: • Field visit to nearby village and study the poverty situation • Field visit to village and study the employment pattern • Undertake evaluation study on employment generation programmes and prepare an assignment.	
Unit -2:	14 Hrs
Chapter 4- Rural Enterprises Meaning and Importance, Classification of MSMEProgress and Problems of MSME Khadi and Village Industries	5
Chapter-5: Rural Banking and Finance Credit Co-operative SocietiesRegional Rural Banks Role of NABARD Microfinance Institutions	4

Chapter-6: Rural Infrastructure Educational and Health InfrastructureHousing and Sanitation Drinking Water Supply Rural Transport and CommunicationRural Electrification	5
Practicum: • Write an assignment on Rural infrastructure • Write a small report on Rural Industry	
Unit -3:	14 Hrs
Chapter 7- Rural Development Programmes Wage Employment Programmes Self-employment and Entrepreneurship Development ProgrammesRural Housing Programmes Rural Sanitation Programmes	4
Chapter 8 - Rural Markets Meaning and Types of Rural Markets Defects and Government Measures for Removal of Defects in rural marketsCo-operative Marketing Societies Meaning and Importance of Regulated Markets Digital Marketing(e-NAM)	5
Chapter 9 - Rural Governance Legislations powers, Functions, and sources of revenue of Panchayat Raj InstitutionsRole of NGOs in rural development People's participation in rural development	5

Practicum:

- Group Discussion on Rural Governance
- Interview Gram Panchayat members and prepare brief note on their participation in rural development.
- Undertake evaluation study on rural development programmes and prepare an assignment.

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

References	
1	Chambers, R. (1983): Rural Development: Putting the Last First, Longman, Harlow.
2	Dandekar, V.M. and N. Rath (1971): Poverty in India, GIPE, Pune.
3	Dantwala, M. L. (1973): Poverty in India: Then and Now, 1870-1970, Macmillan, Bombay.
4	Gupta. K .R. (Ed) (2003): Rural Development in India, Atlantic Publishers and Distributors, NewDelhi.
5	Jain, Gopal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur,
6	Singh, Katar (1986): Rural Development: Principles, Policies and Management, Sage Publications, New Delhi, (Second Edition).
7	Karalay, G. N. (2005): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi.
8	Maheshwari, S. R. (1985): Rural Development in India, Sage, Publications New Delhi.
9	Satya Sundaram, I. (1997): Rural Development, Himalaya Publishing House, Delhi.
10	Mehta, Shiv R. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi.
11	Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Math and Co., Meerut.
12	Somashekar Ne. Thi. (2022) ಗ್ರಾಮ ಮೇಲಿನ ಅಭಿವೃದ್ಧಿ , Siddalingeshwara publication, Kalburgi.
13	H. R. Krishnaiah Gowda (2022) ಗ್ರಾಮ ಮೇಲಿನ ಅಭಿವೃದ್ಧಿ , Mysore book house publication, Mysore.



Program Name	BA in Economics		Semester	Third Semester
Course Title	Economics of Insurance			
Course Code:	OE-3.2	No. of Credits		3
Contact hours	42 Hours	Duration of SEA/Exam		2 Hours
Formative Assessment Marks	40	Summative Assessment Marks		60

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Gain knowledge relating to the importance of the insurance in the life of human beings.	
Contents	42 Hrs
Unit-1: Introduction to Economics of Insurance	
Chapter:1 - Fundamentals of Economics of insurance	
➤ Definition of insurance ➤ Scope of economic of insurance ➤ Importance of insurance	
Chapter:2 - The conceptual framework	
➤ Brief history of insurance ➤ Perils and risks in insurance, Classification of risks hazards ➤ How insurance works ➤ Classes of insurance and assumptions	
Chapter:3 - Type of Insurance	
➤ Risk pooling and risk transfer in insurance ➤ Social vs private insurance ➤ Life vs non-life insurance	
Unit -2: Insurance Planning	

Chapter 4- Types of Insurance Planning ➤ Wealth accumulation plan lifecycle planning ➤ Planning for wealth accumulation ➤ Tax advantage and tax non-advantage
Chapter-5: Retirement Planning ➤ Essential of individual retirement planning ➤ Investing pension plan, basic principles of pension plans ➤ Pension plans in India
Chapter-6: General Insurance Structure ➤ General Insurance, concept of General Insurance ➤ Types of General Insurance, Marine Insurance, Motors Insurance, Agricultural Insurance ➤ Fire Insurance, Personal Accident Insurance
Unit -3: personal insurance / Health Insurance
Chapter 7- Essential of Life and Health Insurance ➤ Fundamentals of Life and Health Insurance, functions of Life and Health Insurance ➤ Health Insurance and Economic Development, Insurance and Farmer Security
Chapter 8 - Insurance Documentation ➤ Health Insurance products, Health Insurance underwriting ➤ Health Insurance claims
Chapter 9 - Insurance Legislation ➤ The insurance act, 1938- Registration- Accounts and Returns ➤ Investments -Limitation on expense of Management ➤ Regulation of Insurance, Insurance regulation in India, role and need of regulation, history of insurance regulation in India ➤ Insurance Reforms Development Authority (IRDA), performance of IRDA ➤ Indian Insurance in global platform, future potential in Indian Insurance Business

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10

Assignment/Seminar		05	
Quiz		05	
Case study / Field work / Project work/ Industrial Visit and Prepare report		-	10
Total		40 Marks	
Formative Assessment as per NEP guidelines are compulsory			
References			
1	Chambers, R. (1983): Rural Development: Putting the Last First, Longman, Harlow.		
2	Dandekar, V.M. and N. Rath (1971): Poverty in India, GIPE, Pune.		
3	Dantwala, M. L. (1973): Poverty in India: Then and Now, 1870-1970, Macmillan, Bombay.		
4	Gupta. K .R. (Ed) (2003): Rural Development in India, Atlantic Publishers and Distributors, NewDelhi.		
5	Jain, Gopal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur,		
6	Singh, Katar (1986): Rural Development: Principles, Policies and Management, Sage Publications,New Delhi, (Second Edition).		
7	Karalay, G. N. (2005): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi.		
8	Maheshwari, S. R. (1985): Rural Development in India, Sage, Publications New Delhi.		
9	Satya Sundaram, I. (1997): Rural Development, Himalaya Publishing House, Delhi.		
10	Mehta, Shiv R. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi.		
11	Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Math and Co.,Meerut.		

Program Name	BA in Economics	Semester	Third Semester
Course Title	Economics of Human Development		
Course Code:	OE-3.3	No. of Credits	3
Contact hours	42 Hours	Duration of SEA/Exam	2 hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Differentiate between Human Resource Development (HRD), Human Development (HD) and HRM CO2. Understand the concepts of Human security, describe dimensions of human development, and appreciate various practices and policies of human development, HDI and India.	
Contents	42 Hrs
Unit-1: Introduction to Human Development	12 Hrs
Chapter 1: Human Growth and Human Development - Basic Needs Approach - Quality of Life Approach - Capability Approach Chapter 2: Human Resource Development (HRD), Human Resource Management (HRM). Chapter 3: Human Development: meaning and definition, importance, and objectives.	
Unit -2: Human Security, SDGs and Approaches to Human Development.	12Hrs
Chapter 4: Human Security: Economic security - Food security - Health security - Environmental security - Personal security - Community security - Political security. Chapter 5: Sustainable Development Goals (SDGs): Understanding the SDGs - Linkages between humandevelopment and the SDGs. Chapter 6: Indian Perspectives and Experience with Human Development: Approach to humandevelopment in national plans	

Unit -3: Dimensions and Measurement of Human Development	18 Hrs
Chapter 7: Dimensions of Human Development: Empowerment - meaning and usage, Cooperation - definition and brief introduction, Equity - concept and usage, Sustainability – meaning and importance, Participation - concept, different forms of participation, Human development & Productivity - factors determining productivity.	
Chapter 8: Measuring Human Development: Need for indices - limitations of per capita GDP as an indicator. Earlier indices (meaning): - Physical Quality of Life Index (PQLI), - Disability Adjusted Life Years (DALYs), - Social Capability Index. Human Development Index - HDI as compared to per capita GDP - Method of computing HDI - Critique of HDI. Other indices (meaning): Human Poverty Index (HPI)-Gender-related Development Index (GDI) - Gender Empowerment Measure (GEM).	
Chapter 9: Selected Issues in Human Development: Impact of Globalisation on Human Development - Trade and Human Development. - Technology and Human Development	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

References	
1	Chelliah, Raja J. and R. Sudarshan (eds.), 1999, Income Poverty and Beyond: Human Development in India, UNDP, Social Science Press, New Delhi
2	Dev, S. Mahendra, Piush Antony, V. Gayathri, and R.P. Mamgain, 2001, Social and Economic Security in India, Institute for Human Development, New Delhi

3	Government of India, National Human Development Report 2002, Planning Commission, New Delhi
4	Jaya Gopaki, R: Human Resource Development: Conceptual analysis and Strategies, Sterling Publishing Pvt. Ltd., New Delhi
5	Naresh Gupta (2019), Human Development in India Emerald Publishers.
6	Nadler, Leonard (2004). Corporate Human Resource Development, Van Nostrand Reinhold, ASTD, New York
7	Padmanabhan Nair(2007) Human Development Index: An Introduction (Economy Series), ICFAI UNIVERSITY PRESS

References

8	Papalia, D.E. , Olds, S.W. and Feldman, R.D. (2006). Human development.9th Ed. New Delhi: TataMcGraw- Hill.
9	Rao, T.V and Pareek, Udai (2005) Designing and Managing Human Resource Systems, Oxford IBHPub. Pvt.Ltd., New Delhi.
10	Rao, T.V: Readings in HRD, Oxford IBH Pub. Pvt. Ltd., New Delhi,
11	Viramani, B.R and Seth, Parmila: Evaluating Management Development, Vision Books, New Delhi.
12	Rao, T.V. (et.al)(2003) HRD in the New Economic Environment, Tata McGraw-Hill Pub.Pvt, Ltd.,New Delhi ,.
13	Rao, T.V: Human Resource Development, Sage Publications, New Delhi.
14	Viramani, B.R and Rao, Kala: Economic Restructuring, Technology Transfer and Human ResourceDevelopment, Response Books, New Delhi
15	United Nations Development Programme (2005); 'Course Curriculum on Human Development-AnOutline', New Delhi

Websites:

1	https://www.undp.org/sustainable-development-goals?c_src=CENTRAL&c_src2=GSR
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

Journals	
1	Indian Journal of Training and Development
2	HRD Newsletter (NHRD Network)
3	American Journal of Training and Development
4	Personnel Today

INTERNATIONAL ECONOMICS
Open Elective Paper under NEP

Program Name: BA in Economics	Semester: Third Semester
Course Title: International Economics	
Course Code: OE-3.4	No. of Credits 3
Contact hours 42 Hours	Duration of SEA/Exam 2 hours
Formative Assessment Marks 40	Summative Assessment Marks 60
Course Outcomes (COs): CO1. Familiarise the students with international economics. CO2. To develop conceptual understanding of the key concepts and practical applications of international trade CO3. Knowledge on trade theories helps to know its practical relevance in international trade CO4. Awareness on trade policies provides an insight on conflicting interests within an economy regarding trade liberalization. CO5. Knowledge on MNCs and international capital movements CO6. To provide insights on the role of WTO and BRICS in liberalising trade and increasing the volume of global trade	
Contents	42 Hrs
Unit 1 Introduction to International Economics	
Chapter 1 International Trade 3hrs Meaning & Definition Features of International Trade Difference between internal and international trade	

Chapter 2 Theories of International Trade	6hrs
Comparative cost theory	
H-O theory	
Porter's Theory	
Chapter 3 Trade Policies	4hrs
Free trade policy- Meaning & Merits	
Policy of protection - Meaning & Merits	
Practicum: Identify different trade barriers and their effects	
Unit 2 Balance of Payments and Capital Movements	
Chapter 4 Balance of Payments	5hrs
Meaning & Definitions	
Composition or Structure	
Disequilibrium- types	
Measures to correct Disequilibrium in Balance of Payments	
Chapter 5 International Capital movements	5hrs
Meaning & Types	
Factors affecting International Capital Movements	
Advantages and Disadvantages	
Chapter 6 Multinational Corporations	4hrs
Meaning, origin & Definition	
Features of MNCs	
Advantages and Disadvantages	
Practicum: Project work on MNCs operating in India and Indian MNCs abroad	
Unit 3 Foreign Exchange Mechanism	
Chapter 7 Foreign Exchange Market	5hrs
Meaning & Features	
Functions & Participants	

FEDAI- Functions	
Chapter 8 Exchange Rate Determination	5hrs
Meaning	
Types of Exchange foreign rates	
Purchasing power parity theory	
Balance of Payments theory	
Chapter 9 WTO and BRICS	5hrs
Organisation and Functions of WTO	
TRIPS, TRIMS and GATS	
BRICS- objectives and functions	
Practicum: Study on various international institutions facilitating global trade	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

Sl. No	Reference
1.	International Trade by M L Jhingan
2.	International Trade and Export management by Francis Cherunilam
3.	Foreign Exchange & Risk Management by C. Jeevanandam
4.	International Economics by Dominick Salvatore
5.	International Economics by D.M.Mithani
6.	International Economics by H.L.Bhatia
7.	Money, Banking and International Trade by K.P.M.Sundharam
8.	International Economics by C.P. Kindleberger
9.	Money Banking and International Trade by M.L.Seth
10	International Economics- Chandan Sharma

Urban Planning and Development
Open Elective Paper under NEP

Program Name: BA in Economics	Semester: Third Semester
Course Title: Urban Planning and Development	
Course Code: OE-3.5	No. of Credits 3
Contact hours 42 Hours	Duration of SEA/Exam 2 hours
Formative Assessment Marks 40	Summative Assessment Marks 60

Outcomes of the Study:

At the end of the Course the student will be able to –

- a) Get a clear picture of the dichotomy between rural areas and urban areas.
- b) Appreciate India's urban development over the years.
- c) Analyse impediments to urban development.
- d) Discern bad governance and good governance in the urban realm.

UNIT I: EXPLORING URBAN ECONOMICS

Chapter 1: Nature and Scope of Urban Economics (5 Hrs.)

Definition of Urban Area, Town, City, Urbanisation, Sub-urbanisation – characteristics of urban area - Scope and Importance of Urban Economics – Concept of Rurban

Chapter 2: Urban Development (5 Hrs.)

Need for urban development – Objectives of urban development- Theories: Concentric Zone Theory, Central Place Theory and Public Choice Theory.

Chapter 3: Urban Activities (4 Hrs.)

Urban Occupation structure – Characteristics of Urban employment – Rural-Urban Linkages – Urban Agglomeration- Smart City Mission.

UNIT II: Urban Economy

Chapter 4: India's Urban Economy (4 Hrs.)

Salient Features – Urban Policies and Programmes – Strategies – Problems and Prospects of Urban economy

Chapter 5: Issues in Urban Infrastructural Development (5hrs.)

Urban Poverty , Urban Unemployment. Issues in Urban infrastructure- housing, health, education and sanitation – Transport bottlenecks.

Chapter 6: Urban Planning [5Hrs.]

Principles of Urban Planning- Types and levels of planning- stages in planning process- Land Acquisition and Resettlement Act.

UNIT III: Urban Issues and Governance

Chapter 7: Urban Environmental Problems (5hrs.)

Urban environmental problems– slums, pollution, Solid Waste Management- Urbanisation and sustainable development.

Chapter 8: Trade and Tourism (5 hrs.)

Trade and Tourism in towns and cities - Wholesale trade – Retail trade – E-tailing – Urban Tourism- positive or negative effects.

Chapter 9: Urban Administration (4hrs.)

Urban Local Bodies - Types, Functions and Resources — Good governance - Sustainable and liveable cities – People’s participation.

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

Select References

(Kindly refer latest editions of the books)

1. Arthur O'Sullivan Urban Economics
2. Bruenckner, Jan K. Lectures on Urban Economics
3. K. Siddhartha & S Mukherjee Cities, Urbanisation and Urban Systems (Settlement Geography)
4. B. Bhattacharya. Urban Development in India since Pre-Historic Times
5. R. Ramachandran. Urbanization and Urban Systems
6. C S Yadav (Ed.) Perspectives in Urban Geography
7. Bob Avis The Agglomeration
8. C. S, Yadav Rural – Urban Fringe
9. Ajay Gupta. Rural Management – CBS Publication
10. Ravindra Kumar B., Jayasheela and Vilas M. Kadrolkar (Eds.), Demographic Dividend for India: A Step Forward, New Delhi: Global Research Publications, 2012, ISBN 978-81-61-89635-4
11. Jayasheela, Ravindra Kumar B, and Vilas M. Kadrolkar, Urbanisation and Economic Transition, Global Research Publications, 2012, ISBN: 978-81-8973110-65-2

DIGITAL ECONOMICS

Open Elective Paper under NEP

Program Name: BA in Economics	Semester: Third Semester
Course Title: Digital Economics	
Course Code: OE-3. 6	No. of Credits 3
Contact hours 42 Hours	Duration of SEA/Exam 2 hours
Formative Assessment Marks 40	Summative Assessment Marks 60

Course Outcome:

- To understand how the digital economy influences markets and society.
- To get broad knowledge in digital economic activities
- For wider understanding of selected technical topics in the digital economy such as digital payments and digital currencies
- Acquire theoretical knowledge necessary to understand the nature of digital technologies and to effectively manage their implementation.
- Finding new opportunities in the Digital Economy.

Syllabus

Unit 1

Chapter 1 Introduction to Digital Economy

Meaning of Digital economy –Definitions-Objectives-Major attributes of digital economy-Advantages and disadvantages-Components of digital economy. 5 hrs

Chapter 2 ICT as a factor of Digital Transformation

Meaning of ICT- Types of ICT tools- Application of ICT in agricultural sector- Role of ICT in economic growth of India-Factors affecting the use of ICT. 5 hrs

Chapter 3 E- Markets

Meaning-Importance of E-markets- Traditional market Vs e-markets-Types of e-markets-working of e-markets- e-marketing mix 5 hrs

Practicum: Project report on e-commerce sites

Unit 2

Chapter 4 Digital Goods and Services

Meaning and characteristics- Externalities- Digital public goods- Benefits and examples- digital monopolies and oligopolies. 5 hrs

Chapter 5 Government and Digital Economy

Role of Government in digital transformation- Regulating the digital economy- Challenges of digital transformation 4 hrs

Chapter 6 Digital Currency

Meaning-types-crypto currencies, Bit coins-features-advantages and disadvantages-recent developments 4 hrs

Practicum: Report on crypto currencies usage in India

Unit 3

Chapter 7 Digital Banking

Meaning-Features-Growth of Digital Banking in India-Types of Digital banking- Mobile banking, Internet Banking, E Valet, NEFT, RTGS. 5 hrs

Chapter 8 Social Media and Economic growth

Meaning-Types-Social Media platforms for business-Impact of social media on economic growth 5 hrs

Chapter 9 Consumer Behavior in Digital economy

Effect of digital transformation in consumer behavior-Impact of New Consumer Protection Act of 2019 on e-commerce-the future of digital economy 4 hrs

Practicum: Visit the branch of any commercial bank and write a survey report on popular digital payment services offered to the customers.

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

References:

1. Digital Economics: by Harald Overby and Jan A Audestad
2. Introduction to Digital Economics: Foundations, Business Models and Case Studies- by Harald Overby and Jan A Audestad
3. The Digital Economy - by Don Tapscott
4. Digital Economics: by Richard McKenzie
5. The Digital Economy- by Tim Jordan
6. Principles of Digital Economics- by Zhiyi Liu

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Macroeconomics		
Course Code:	DSC-4.1	No. of Credits	3
Contact hours	42 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Understand the Theories of National Income Accounting CO2. Explain the process of Consumption and Investment Functions CO3. Evaluate the Concept of Multiplier and Inflation	
Content of Theory	42 Hrs
Unit–1: Theory of National Income Determination	14 Hrs
Chapter:1 Classical Framework: 1. Typical Features of classical theory of employment; Assumptions 2. Basis of Classical theory: ➤ Say's Law ➤ Pigou's wage price flexibility ➤ Fisher's Quantity theory of money ➤ Knut Wicksell's loanable funds theory ➤ Classical dichotomy and neutrality of money 3. Criticism of classical theory	7

Chapter-2: The Keynesian Framework 1. Introductory: connecting growth of national income to development; why incomes of all fall or rise? Are income, output, and employment related? 2. Some Basic concepts: The idea of equilibrium and identity; ex- ante and ex-post concepts. 3. Aggregate Demand and its components a. Consumption function: Algebraic and Graphical explanation; Marginal and Average propensity to consume	7
b. Investment function; savings and investment relationship. 4. Aggregate Supply: Meaning and graphical explanation; Effective demand 5. Determination of national income in Keynes' two sector economy with Aggregate Demand and Aggregate Supply with fixed prices: Analytical / Graphical and algebraic explanation; numerical problems 6. Determination of national income in Keynes' two sector economy with investment and savings with fixed prices: Analytical / Graphical and algebraic explanation; numerical problems	
Unit -2: Aggregate Consumption and Investment	15Hrs
Chapter-3: Theories of Determinants of Consumption: 1. Keynesian Psychological Law of consumption; determinants 2. Permanent Income hypothesis of Milton Friedman	5
Chapter-4: Investment: 1. Types of investment 2. Determinants of investment: a. rate of interest b. marginal efficiency of capital: meaning and determinants;	5
Chapter-5: Concepts of Multiplier and Accelerator 1. Investment Multiplier: Meaning and assumptions. 2. multiplier; leakages;	5
Unit -3: Monetary Economics	13 Hrs

Chapter-6: Money Supply: 1. Concept of Money Supply; recent measures of money supply as suggested by RBI 2. Determinants of money supply: a. high powered money b. money multiplier 3. The reserve ratio and deposit multiplier	5
Chapter-7: Money demand: 1. Cash transactions approach (only meaning) and 2. Cambridge approach (Only Marshall's equation) 3. The liquidity preference approach of Keynes	4
Chapter-8: Inflation and Unemployment: 1. Phillips Curve 2. Wage cut theory and employment	4

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

References	
1	Ackley, G. (1976), Macroeconomics: Theory and Policy, Macmillan Publishing Company, NewYork.
2	Ahuja H (2016), Macro Economics- theory and policy, S Chand and Co

3	Dwivedi DN (2016) Macro Economics: Theory and Policy, Tata McGraw-Hill
4	Heijdra, B.J. and F.V. Ploeg (2001), Foundations of Modern macroeconomics, Oxford University Press, Oxford.
5	Keynes, J.M. (1936), The General theory of Employment, Interest and Money, Macmillan, London.
6	Lucas, R. (1981), Studies in Business Cycle Theory, MIT Press, Cambridge, Massachusetts
7	Somashekar Ne. Thi., Principles of Macroeconomics, Scientific International Pvt. Ltd., Publications New Delhi
8	Somashekar Ne. Thi., ಸ್ತಮಗೌ ಅರೞಫಶೞೞಫ ಿ, Siddalingeshwara prakashana, Kalburgi.
9	H. R. Krishnaiah Gowda ಸ್ತಮಗೌ ಅರೞಫಶೞೞಫ ಿ, Mysore book house prakashana, Mysore.

Program Name	BA in Economics	Semester	Fourth Semester
Course Title	Statistics for Economics		
Course Code:	DSC-4.2	No. of Credits	3
Contact hours	42 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Understand the nature of Data and their presentation CO2. Calculate Descriptive statistics like measures of central tendency and dispersion CO3. Apply statistical techniques like correlation and regression in Economic analysis	
Content of Theory	42 Hrs
Unit-1: Preliminaries	12 Hrs
Chapter:1 Introduction to Statistics: Meaning and Importance of Statistics, Functions of Statistics, Types of Statistics: Descriptive Statistics and Inferential Statistics-Variables; Qualitative Variable and Quantitative Variable	4
Chapter-2: Datatypes, Sources and Collection of Data: Qualitative and Quantitative Data - CrossSection Data, Time Series Data and Panel Data - Primary and Secondary sources of Data – Methods of Collecting Primary Data	4
Chapter-3: Tabulation and Presentation of Data: Classification and tabulation of data - Frequency distributions – Continuous and Discrete frequency distribution. Graphical presentation- Histogram- frequency polygon - Ogive Curves -Bar Diagram, Pie Chart	4
Unit -2: Measures of Central Tendency and Dispersion	14 Hrs

Chapter-4: Arithmetic Average: Definition of Central Tendency, Types of Central Tendency: Arithmetic Mean: Meaning and Properties of Arithmetic Mean – Computation of Arithmetic Mean	5
Chapter-5: Positional Averages-Median and Mode: Definition and importance of Median-Calculation of Median- Definition and importance of Mode - Calculation of Mode.	4
Chapter-6: Dispersion: Meaning of Dispersion- Measures of Dispersion- Range- Quartile deviation- mean deviation - Standard deviation - Coefficient of Variation and Their Computation	5
Unit -3: Correlation, Regression and Time Series Analysis	16 Hrs
Chapter-7: Correlation: Meaning of Correlation - Types of correlation - Methods of measuring Correlation- Karl Pearson's correlation coefficients	5
Chapter-8: Regression: Meaning and Importance of Regression - Regression Equation - Estimation of regression equation - Applications of regression equation in Economics	6
Chapter-9: Time Series Analysis: Definition of Time Series – Components of Time Series –Estimation and Forecasting of Trend	5

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Prepara report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

References

1	Gupta S P. (2012) Statistical Methods, S. Chand and Company, New Delhi.
2	S. C. Gupta, (New edition) Fundamentals of Statistics, Himalaya publishing house, Mumbai.
3	S. N. Yogish, Statistical methods for Economists- Mangaldeep publications, Jaipur.
4	Anderson, Sweeney & Williams, (2002) Statistics for Business & Economics, Thomson South-Western, Bangalore.
5	Daniel and Terrel: Business Statistics for Management and Economics; oaghton Mifflin Co., Boston,Toronts, 7th Edition, 1995, PP 1 to 972 + 6 Appendices
6	Medhi, J., Statistical Methods: An Introductory Text, Wiley, 1992
7	Morris H. Degroot and Mark J. Schervish, "Probability and Statistics", 4th edition, 2012.
8	Teresa Bradley, Essential Statistics for Economics, Business and Management, John Willey Publisher, 2007

Program Name	BA in Economics		Semester	Fourth Semester
Course Title	Karnataka Economy			
Course Code:	OE 4.1	No. of Credits	3	
Contact hours	42 Hours	Duration of SEA/Exam	2 Hours	
Formative Assessment Marks	40	Summative Assessment Marks	60	

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Understand the nature of economic growth and problems of Karnataka state. CO2. Explain the process of structural growth in Karnataka Economy CO3. Evaluate the policies and programmes undertaken by the Govt. of Karnataka for bringing about socio-economic development	
Contents	42 Hrs
Unit-1: Karnataka Economy – An overview	12 Hrs
Chapter:1 Characteristics of Karnataka Economy - o Features of Karnataka Economy - o Trends and sectoral distribution of State Domestic Product and Per Capita Income - o Measures to redress regional imbalances – Dr. Nanjundappa Committee Report, Article 371J	5
Chapter-2: Human Resources - o Human Resources: importance, Size and Health indicators - o Human Development Index - o Poverty and Unemployment– Eradication Programmes	4
Chapter-3: Natural Resources Management - o Natural Resources: Importance and volume of different natural resources - o Karnataka Environmental Policy	3
Practicum: conduct field visit to Forest/Reservoir/Mining and prepare the report	
Unit -2: Agriculture, Rural development, and Industries in Karnataka	18 Hrs

Chapter-4: Agriculture - o Problems in Agriculture - o Land Reforms	7
- o Cropping Pattern - o Irrigation: importance, important irrigation projects and watershed development projects. - o Farmers Suicide – Causes and Solutions	
Chapter-5: Rural Development - o Public Distribution System - o Rural Development Programmes (brief) - o Government Schemes for Rural Women	4
Chapter-6: Industries in Karnataka - o Major Industries in Karnataka - Problems and Prospects - o MSMEs - Problems and Measures - o IT Industries in Karnataka - o Industrial Finance in Karnataka - o Industrial Policy of Karnataka	7
Practicum: visit to industrial units in local area and prepare the report/Trace-out the impact of Prof. D. M. Nanjundappa Committee report	
Unit -3: Infrastructure and Finance in Karnataka	12 Hrs
Chapter-7: Economic Infrastructure - o Transportation: Road, Rail, Water and Air Transport - o Information and Communication Technology Facilities	3
Chapter-8: Social Infrastructure - o Drinking Water - o Housing and Sanitation - o Health and Education - o Rural Electrification	4
Chapter-9: State Finance - o Sources of Revenue: Direct and Indirect Taxes - o Impact of GST on Karnataka economy - o State Expenditure - o State Finance Commission - o Current State Budget (Brief)	5
Practicum: Discussion on State budget	

Pedagogy

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Prepara report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

References	
1	Government of Karnataka, Economic Survey [Various Issues]
2	Planning Department, Annual Publication, Government of Karnataka.
3	Karnataka at Glance, Annual Publication Government of Karnataka.
4	Madaiah M & Ramapriya. Karnataka Economy Growth: Issues and Development, Himalaya Pub.,House, NewDelhi.
5	Adul Aziz and K.G. Vasanti. (Eds) Karnataka Economy.
6	Government District Development Reports
7	Hanumantha Rao. Regional Disparities and Development in Karnataka.
8	Krishnaiah Gowda H.R. Karnataka Economy, Spandana Publications, Bangalore
9	Somashekar Ne. Thi., ಕರ್ನಾಟಕ ಆರ್ಥಿಕತೆ, Siddalingeshwara publications, Kalburgi.
10	Nanjundappa D.M. Some Aspects of Karnataka Economy.
11	Puttaswamiah K. Karnataka Economy, Two Volume

Program Name	BA in Economics		Semester	Fourth Semester
Course Title	Entrepreneurial Economics			
Course Code:	OE 4.2	No. of Credits		3
Contact hours	42 Hours	Duration of SEA/Exam		2 Hours
Formative Assessment Marks	40	Summative Assessment Marks		60

Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Start own business as Entrepreneur CO2. Enabling the students to find career opportunities in business. CO3. To enable the students to gain knowledge and skills needed to run a business successfully.	
Contents	42 Hrs
Unit-1: Entrepreneur and Entrepreneurship	12 Hrs
Chapter 1: Entrepreneur and Entrepreneurship – Meaning, Definitions, Evolution, types- Characteristics, qualities, functions of entrepreneur- Distinction between entrepreneur and manager, Distinction between entrepreneur and intrapreneur, Chapter 2: Role and importance of Entrepreneurship in economic development: Role and importance- Factors influencing entrepreneurship'- Psychological, social, Economic and Environmental. Chapter 3: New generations of entrepreneurship viz. social, Health, Tourism and Women entrepreneurship; Barriers to entrepreneurship.	
Unit -2: Launching Entrepreneurial Ventures	18 Hrs

Chapter 4: Generation of ideas: Methods and process - sources of ideas - screening process- Assessing Opportunities-Challenges, pitfalls and critical factors of new venture;

Chapter 5: Business Plan- New Ventures: Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno-Economic Feasibility Assessment.

Chapter 6: Role of Innovation & Creativity: Innovation- Meaning and importance of innovation; Types of innovation; Sources of innovation; Conditions for effective innovation at Organization level;

Chapter 7: Creativity: Concept and process of creativity; role and importance of creativity and mental blocks to creativity; branding, trademarks, patents, copyrights, and registered design protection-Methods of protecting innovation and creativity.

Unit -3: Business and Entrepreneurial development

12 Hrs

Chapter 8: Entrepreneur Assistance: Assistance to an entrepreneur-Industrial Park (Meaning, features, & examples)-Special Economic Zone (Meaning, features & examples)-Financial assistance by different agencies-License, Environmental Clearance, e-tender process, Excise exemptions and concession, Exemption from income tax -Quality Standards with special reference to ISO.

Chapter 9: Business and Entrepreneurial development - Determining and acquiring required resources (Financial, Physical and Human): Search for entrepreneurial capital- Debt vs. Equity; Venture Capital Market; Angel Financing and Alternative sources of finance for Entrepreneurs. Entrepreneurship development programme (EDP) in India– Objectives, Phases, and inputs of EDP; - Government initiatives for entrepreneurship – Make in India, Start-up India, MUDRA etc.

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	

Case study / Field work / Project work/ Industrial Visit and Prepara report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

References	
1	Donald F Kuratko, “Entrepreneurship – Theory, Process and Practice”, 9 th Edition, CengageLearning, 2014.
2	Khanka. S.S., “Entrepreneurial Development” S.Chand & Co. Ltd., Ram Nagar, New Delhi, 2013.
3	Kuratko and Rao, Entrepreneurship: A South Asian Perspective; Ferrell, Fraedrich, Farrell, BusinessEthics, Cengage Learning
4	Entrepreneurship, R. Saibaba, Kalyani Publishers, New Delhi.
5	Entrepreneurship Development and Business Ethics, Sanjeet Sharma – V.K. Global Pvt. Ltd., NewDelhi
6	SS Khanka, Entrepreneurial Development, S. Chand & Co, Delhi.

References	
7	Desai, Vasant. Dynamics of Entrepreneurial Development and Management. Mumbai, HimalayaPublishing House
8	Plsek, Paul E. Creativity, Innovation and Quality (Eastern Economic Edition), New Delhi:Prentice-Hall of India. ISBN-81-203-1690-8.
9	Singh, Nagendra P. Emerging Trends in Entrepreneurship Development. New Delhi: ASEED.
10	Entrepreneurship Development and Business Ethics - M K Nabi, K C Rout, Vrinda Publications (P)Ltd
11	Robert Hisrich and Michael Peters, Entrepreneurship, Tata Mc Graw– Hill Vasant Desai, Entrepreneurship
12	Marc J Dollinger, Entrepreneurship – Strategies and Resources, Pearson Education
13	Venkateshwara Rao and Udai Pareek,(Eds)Developing Entrepreneurship-A Handbook
14	Ravi J. Mathai, Rural Entrepreneurship A Framework in Development Entrepreneurship – Ahandbook



Program Name	BA in Economics		Semester	Fourth Semester
Course Title	Economics and Law			
Course Code:	OE 4.3	No. of Credits		3
Contact hours	42 Hours	Duration of SEA/Exam		2 Hours
Formative Assessment Marks	40	Summative Assessment Marks		60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Comprehend the basic economic issues affecting the economy along with the related legal provisions
- CO2. Acquire knowledge on the basic provisions of law relating to consumer activities, business organizations, environment
- CO3. To appreciate the understanding the law framework in order to frame the economics model close to reality.
- CO4. To enable the students to understand the consequences of legal rules, primarily as an exercise in applied microeconomics, macroeconomics, industrial and international economics.

Contents	42 Hrs
Unit-1: Economic analysis of law	14 Hrs
Chapter 1: Introduction to legal reasoning • Efficiency. • Markets and efficiency. • Market failure. • Coase theorem and related ideas,	5

Chapter 2: welfare economics • Compensation principles. • Social welfare function. • Maximization problem;	4
Chapter 3: Economic Reasoning • Nature of economic reasoning. • Economic approach to law • History • Criticism.	5
Practicum: 1. Group Discussions on Economic reasoning 2. Assignment on Coase theorem and related issues	
Unit -2: An Introduction to Law and Legal Institutions	12 Hrs
Chapter 4: Law • Definition • Territorial Nature of Law • Kinds of Law • General Law and Special Law • Kinds of Special Law	4
Chapter 5: Civil law and the and the Common Law Traditions • The institutions of the federal and State Court systems; • The nature of legal dispute, • How legal rules evolve.	4
Practicum: 1. Group Discussions on Civil law and the and the Common Law Traditions 2. Assignment on the different kinds of Law	
Unit -3: Economic Laws	16 Hrs

Chapter 6: Law Relating to Consumer Activities • Bargaining theory. • Economic theory of contract. • Defining tort law, • Economics of tort liability. • Definition of Consumer	5
• Consumer protection; The Consumer Protection Act, 2019 • Consumer courts.	
Chapter 7: Law of Business Organizations • Structure of firm — Kinds, Corporations, • Capital, Shares, Debentures, Insiders' trading, • RBI, IRDA, MRTP, Role of SEBI,	5
Chapter 8: Macroeconomics and Law • Inequality; Contract theory of Distributive justice • Economic and social costs of poverty • Wealth distribution by Liability Rules • Taxation and efficiency • National and global environmental problems and international environmental agreements — their legal and economic implications	6

Practicum

1. Hold the moot court in the classroom and let there be discussion consisting of at least two or more different views on National and Global environment problems and acts
2. Discuss the case studies on Economic and social costs of poverty and consumer court judgements protecting the consumers

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Prepara report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

References	
1	Bouckaert, B. and G. De Geest (Ed.) (1999), Encyclopaedia of Law and Economics, (Volume I to V), Edward Elgar Publishing Ltd., U.K.
2	Cooter, R.D. and T.S. Ulen, (2000), Law and Economics, (3rd Edition), Addison Wesley, New York.
3	Dan-Schmidt, K.G. and T.S. Ulen (Ed.) (2000), Law and Economic Anthology, Addison Wesley, New York.
4	Newman, P. (Ed.) (1998), The New Palgrave Dictionary of Economics and Law, Stockton Press, New York.
5	Oliver, J.M. (1979), Law and Economics, George Allen and Unwin, London.

6	Posner, R.A. (1998), <i>Economic Analysis of Law</i> , (5th Edition), Little Brown, Boston.
7	Posner, R.A. and F. Parisi (Eds.) (1997), <i>Law and Economics</i> , Edward Elgar Publishing Ltd., U.K.
8	Massey, I.P. (1995), <i>Administrative Law</i> , Eastern Book Company, Lucknow.
9	Indian Law Institute, <i>Annual Survey of Indian Law</i> , Indian Law Institute, New Delhi.

Program Name	BA in Economics		Semester	Fourth Semester
Course Title	Economics of GST			
Course Code:	OE 4.4	No. of Credits		3
Contact hours	42 Hours	Duration of SEA/Exam		2 Hours
Formative Assessment Marks	40	Summative Assessment Marks		60

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

CO1. Acquire knowledge on indirect taxes with special reference to GST

CO2. Acquire the theoretical and application knowledge of GST and its Evolution in India

CO3. To enable the students to understand the GST Law, ITC, Valuation of supply and returns

CO4. Simple calculation of GST and Input Tax Credit, Valuation of Supply (Numerical on valuation and calculation of tax)

Contents	Hrs
Unit-1: Introduction to Economics of GST	14 Hrs
Chapter 1: Indirect taxes before GST - Indirect Taxes-Meaning, Types with examples - Constitutional framework of Indirect Taxes before GST (Taxation Powers of Union & State Government) - Concept of VAT: Meaning, Variants and Methods;	5

Chapter 2: Reforms in Indirect Taxes - Major Defects in the structure of Indirect Taxes prior to GST; Need for Tax reforms - Kelkar committee on Tax Reforms	4
Chapter 3: Introduction to GST - Rationale for GST; - Constitution [101st Amendment] Act, 2016; - GST- Meaning, Overview of GST - Taxes subsumed under GST - Territorial Jurisdiction of GST	5
- Multiple rates of GST - Recent reforms in GST	
Practicum: - Group Discussions on Indirect Taxes defects prior to GST - Assignment on Types of Indirect Taxes prior to GST and After introduction of GST	
Unit – 2 Fundamentals of GST	12 Hrs
Chapter 4: GST Structure in India, - GST: Advantages and Disadvantages - One Nation-One Tax, - Structure of GST; - Features of Single and Dual GST Model	4
Chapter 5: Dual GST Mode and GST Council - Dual GST Mode in India: I SGST, CGST, UTGST & IGST); - Goods and Services Tax Network [GSTN], - GST Council; Creation, Members, Decisions, Compensation to states. - GST Network, - Registration,	4

Practicum: 1. Group Discussions on advantages and disadvantages of GST 2. Hold the moot of GST Council in the class room and decide the different slabs of GST	4
Unit -3: Taxes and Duties	16 Hrs
Chapter 6: Transactions and taxes covered and not covered • Transactions and taxes covered under GST • Taxes and duties outside the purview of GST • Tax structure Computation • Administration of Tax on items containing alcohol, petroleum products, tobacco products • Taxation on services	4
Chapter 7: Levy and Collection of Tax • Taxable event- “Supply” of Goods and Services • Place of Supply: Within state, Interstate Levy and Collection • Import and Export; Time of supply • Valuation for GST- Valuation rules, • Taxability of reimbursement of expenses; • Exemption from GST: Small supplies and Composition Scheme Classification of Goods and Services: Composite and Mixed Supplies.	6

Chapter 8: Input Tax Credit • Eligible and Ineligible Input Tax Credit • Apportionments of Credit and Blocked Credits • Tax Credit in respect of Capital Goods • Recovery of Excess Tax Credit • Availability of Tax Credit in special circumstances • Transfer of Input Credit (Input Service Distribution) • Payment of Taxes; Refund; Doctrine of unjust enrichment	6
Practicum 1. Simple illustrations on calculation of GST and Input Tax Credit, 2. Valuation of Supply (Numerical on valuation and calculation of tax) 3. Simple calculation Adjustment of Input tax credit against output CGST, SGST, IGST.	

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

References	
1	The Central Goods and Services Tax, 2017
2	The Integrated Goods and Services Tax, 2017

3	The Union Territory Goods and Services Tax, 2017
4	The Goods and Services Tax (Compensation to States), 2017
5	The Constitution (One hundred and First Amendment) Act, 2016
6	Gupta, S.S. , <i>GST- How to meet your obligations (April 2017)</i> , Taxmann Publications
7	Datey, V.S. (2019) . <i>Indirect Taxation</i> . New Delhi <i>Vastu and Sevakar Vidhan</i> by Government of India
8	Mehrotra, H.C. & Goyal, S.P.(2019), <i>Indirect Taxes</i> , Agra: Bhawan Publications.

Public Economics

Program Name: BA in Economics	Semester: Fourth Semester
Course Title: Public Economics	
Course Code: OE-4.5	No. of Credits 3
Contact hours 42 Hours	Duration of SEA/Exam 2 hours
Formative Assessment Marks 40	Summative Assessment Marks 60
Course Outcomes (COs): CO1. Understand the significance of Public economics in developing economies. CO2. Understanding the public sector activities. CO3. Understand and analyse the different canons of taxation. CO4. Knowledge on Public Expenditure, its principles and classifications CO5. Understand the mechanics of the government budget.	
Contents	42 Hrs
Unit 1 Nature & Scope of Public Economics	
Chapter 1 Public Economics Meaning, Definitions & Scope of Public Economics Components of Public Economics Fiscal functions of the government	4hrs
Chapter 2 Public finance Difference between Public Finance and Private Finance	4hrs

Role of Public Finance in Developing Economies Public goods- features Externalities	
Chapter 3 Principle of Public Finance Principle of Maximum Social Advantage- Pigou and Musgrave's version	3hrs
Practicum: Project work on, Private Goods and Public Utilities- Types	
Unit 2 Public Revenue, Public Expenditure and Public Debt	
Chapter 4 Public Revenue Meaning Sources of Public Revenue- Tax and Non- tax sources Canons of taxation- Adam Smith & Bastable's canons Taxable Capacity- Meaning & Determinants Direct Tax: Types Indirect Tax: GST	6hrs
Chapter 5 Public Expenditure Causes for increase in public expenditure Types or Classification of public expenditure Principles of public expenditure	5hrs
Chapter 6 Public Debt Meaning & Sources Types of Public debt Methods of public debt redemption	5hrs
Practicum: Discussion on GST Collection & Its Impact	
Unit 3 Budget and Financial Administration	

Chapter 7 Budget Meaning & Types of Budget Components of Budget Budgetary deficit- types	5hrs
Chapter 8 Fiscal Policy Meaning & Objectives Instruments of Fiscal Policy Role of fiscal policy in developing economies	5hrs
Chapter 9 Deficit Financing Meaning & Definitions Role of Deficit Financing in developing economies Safe limits of deficit financing FRBM Act	5hrs

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

Sl. No	References

1	Public Economics- B P Thyagi
2	Public Finance in Theory and Practice- Dr. S K Singh
3	Public Finance and Fiscal Policy- Rabindra Kumar Choudhury
4	Public Finance- R K Lekhi & Joginder Singh
5	Public Finance- Ambar Ghosh & Chandana Ghosh
6	Public Finance Theory and Approach- N Radhakrishnan
7	Public Finance In Theory and Practice- Richard A Musgrave & Peggy B Musgrave
8	Public Finance- H L Bhatia
9	Public Finance- David N Hyman
10	Economics of Public Finance- Om Prakash

POPULATION STUDIES
Open Elective Paper under NEP

Program Name: BA in Economics	Semester: Fourth Semester
Course Title: Population Studies	
Course Code: OE-4.6	No. of Credits 3
Contact hours 42 Hours	Duration of SEA/Exam 2 hours
Formative Assessment Marks 40	Summative Assessment Marks 60

Outcomes of the Study

- OC 1. Understand the theories of population
- OC 2 Get an idea of the concepts like nuptial rate fertility rate, maternal mortality rate, reproductive rate, etc.
- OC 3 Identify the relationship between population and employment
- OC 4 Appreciate the population policies as they have evolved
- OC 5 Attain capability to contribute to do population research

Syllabus

UNIT I: INTRODUCTION [12]

Chapter 1: Source of Population Data (6)

- World: Census, Registration of vital events. Demographic Surveys, Population Registers.
- India: Census, Sample Registration Scheme, and Civil Registration System (CRS), National Sample Survey (NSS)

Chapter 2: Theories of Population (4)

- Malthusian Theory

- Theory of Optimum Population
- Theory of Demographic Transition

Chapter 3: Change in Population (4)

- Composition of India's population.
- Demographic Composition.
- Social Composition.
- Economic Composition.

UNIT II: Chapter 4: Methods of Demographic/Population Analysis (6)

- Rate of Population Growth: Arithmetic, Exponential, and Geometric
- Cohort and cross-sectional indicators.
- Crude rates and standardized methods.
- Methods of population projections.

Chapter 5: Nuptiality, Mortality and Fertility (4)

- Details referring to fertility and sources of nuptiality (the frequency or incidence of marriage within a population).
- Birth Rate – trend
- Mortality – Concepts and trends
- Fertility – concept and trend

Chapter 6: Migration and Urbanisation (4)

- Concepts and numerous types of Migration.
- Urbanization and economic development.
- Density, Slums and Solutions

UNIT III: Chapter 7: Environment and Population Growth (7)

- Concepts, relevance, definitions, measurement.
- The interrelationship between population growth, environment, and sustainable development.
- Environment Development Index.

- Implications of population growth on food supply, sanitation, housing, employment, health and education

Chapter 8: Population and Gender (4)

- Marginalisation of girls and women
- Women Empowerment: meaning, policies and progress
- Gender Development Index

Chapter 9: Population Policies and Programs (3)

- National Population policy 2000.
- Family Welfare Program in India.
- Policy of HRD

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

- ***Note: Strictly follow the Practicum***

References

1. Rajendra K. Demography and Population Problems
2. Asha AB Principles of Population Studies
3. T R Malthus, An Essay on the Principle of Population
4. Hans Raj Population Studies
5. David Y. Demography the Study
6. Shashi Bushan Demography
7. M L Jhingan Demography

CORPORATE ECONOMICS
Open Elective Paper under NEP

Program Name: BA in Economics	Semester: Fourth Semester
Course Title: Corporate Economics	
Course Code: OE-4.7	No. of Credits 3
Contact hours 42 Hours	Duration of SEA/Exam 2 hours
Formative Assessment Marks 40	Summative Assessment Marks 60

Learning outcome:

- To inculcate business attitude and develop skills among students to pursue higher education, world of work including self employment.
- To develop students with an understanding of the processes of business and its environment;
- To acquaint students with the dynamic nature and interdependent aspects of business;
- To develop an interest in the theory and practice of business, trade and industry;
- To familiarize students with theoretical foundations of the process of organizing and managing the operations of a business firm;

- To help students appreciate the economic and social significance of business activity and the social cost and benefits arising there from;
- To acquaint students with the practice of managing the operations and resources of business;
- To enable students to act more effectively and responsibly as consumers, employers, employees and citizens;

Unit 1 Evolution and Fundamentals of corporate economics

Chapter-1: Introduction, meaning, Definitions, Nature, Scope, Objectives, Features and importance. 6hrs

Chapter -2: Industry-types: primary, secondary, tertiary Meaning and subgroups. Industrial development as a means of economic development. 5hrs

Chapter-3: Commerce-trade: (types-internal, external; wholesale and retail) and auxiliaries to trade; (banking, insurance, transportation, warehousing, communication, and advertising) 6hrs

Practicum: A Industrial Visit with a report

Unit 2 Public, Private and Global Enterprises

Chapter-4: Public sector and private sector enterprises – features and concepts. 3hrs

Chapter-5: Forms of public sector enterprises: Departmental Undertakings, Statutory Corporations and Government Company. 3hrs

Chapter-6: Global Enterprises – Feature. Public private partnership – concept 3hrs

Practicum: Visit to a public enterprise and prepare report

Unit 3 Small Business and Enterprises

Chapter-7: Entrepreneurship Development (ED): Concept, Characteristics and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund start-up. Intellectual Property Rights and Entrepreneurship 6hrs

Chapter-8: Role of small business in India. Problems of small scale enterprises. MSMEs 4hrs

Chapter-9: Government schemes and agencies for small scale industries: National Small Industries Corporation (NSIC) and District Industrial Centre (DIC) 6hrs
 Practicum: Visit to beneficiary of governmental schemes and submit a report

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Preparaea report	-	10
Total	40 Marks	
Formative Assessment as per NEP guidelines are compulsory		

Note: Strictly follow the Practicum

References:

1. Corporate Economics Kindle Edition by V.G. Kondalkar
2. The Corporate Economy Growth, Competition, and Innovative Potential By Robin Marris & Adrian Wood
3. Modern Economics- By H L Ahujha
4. Managerial Economics And Business Strategy By Michael R Baye & Jeffrey T Prince
5. Managerial Economics By D N Dwivedi
6. Economic Environment & Business By H L Ahujha
7. Indian Economy By Ramesh Singh
8. Corporate Economic Laws By C A Munish Bhandari
9. Industrial Economics By Barthwal

Question Paper Pattern for UG Semester DSC & OEC

Paper Code:

Paper Title:

Duration of Exam 2 Hours

Max Marks 60 Marks

Instruction: Answer all the sections

Section-A

**1. Answer ALL the following sub-questions, each sub-question carries ONE mark
(10X1=10)**

- A.
- B.
- C.
- D.
- E.
- F.
- G.
- H.
- I.
- J.

Section-B

**Answer any FOUR of the following questions, each question carries FIVE marks
(4X5=20)**

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

Section-C

**Answer any THREE of the following questions, each question carries TEN marks
(3X10=30)**

- 8.
- 9.
- 10.
- 11.
- 12.

AECC – 2: CONSTITUTION OF INDIA
Ability Enhancement Compulsory Course (AECC)

Course Title: CONSTITUTION OF INDIA	
Course Code: AECC-2	Course Credits: 2
No. of Teaching Hours/Week: 3	Duration of End Sem. Exam: 2 Hours
Total Contact Hours: 42	Assessment (Marks): 30 (Theory) + 20 (IA) =50

Course Objectives:

1. To familiarize the students with the key elements of the Indian constitution.
2. To enable students to grasp the constitutional provisions and values.
3. To acquaint the students with the powers and functions of various constitutional offices and institutions.
4. To make students understand the basic premises of Indian politics and role of constitution and citizen oriented measures in a democracy.

Learning Outcomes:

At the end of the course the students will-

1. Understand the key aspects of the Indian Constitution.
2. Comprehend the structure and philosophy of the Constitution
3. Understand the power and functions of various constitutional offices and institutions.
4. Realise the significance of the constitution and appreciate the role of constitution and citizen oriented measures in a democracy.

AECC – 2: CONSTITUTION OF INDIA

Unit 1:	Indian Constitution: Making and basic premise	10 Hours
1.1	Meaning and Significance of Constitution.	
1.2	Constituent Assembly- Composition, Objectives	
1.3	Preamble and Salient features of the Indian Constitution.	
1.4	Fundamental Rights, Fundamental Duties. Directive Principles	
Unit 2:	Union and State Government	10 Hours
2.1	President of India- Election, Powers and functions	
2.2	Prime Minister and Cabinet – Structure and functions	
2.3	Governor- Powers and functions	
2.4	Chief Minister and Council of Ministers – Functions.	
Unit 3:	Legislature and Judiciary	11 Hours
3.1	Parliament – Lok Sabha and Rajya Sabha – Composition and powers	
3.2	State Legislative Assembly and Legislative Council – Composition and powers	
3.3	Judicial System in India – Structure and features	
3.4	Supreme Court and High Court: Composition, Jurisdiction.	
Unit 4:	Governance and Constitution	11 Hours
4.1	Federalism in India - Features	
3.2	Local Government -Panchayats –Powers and functions; 73 rd and 74 th amendments	
3.3	Election Commission – Composition, Powers and Functions; Electoral Reforms	
3.4	Citizen oriented measures – RTI and PIL – Provisions and significance.	

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end Counselling.

Exercise:

- Department can debate on the role of Constitution in the country's development.
- Students can empirically find evidence on the effectiveness of concepts like–Freedom, Equality, Justice, Rights and Duties by conducting surveys.
- Can hold special lectures on various provisions of Constitution like working of Election Commission, Art 246,356 etc

Suggested Readings:

1. Durga Das Basu, *Introduction to the Constitution of India*, Gurgaon; LexisNexis, (23rd edn.) 2018.
2. M.V. Pylee, *India's Constitution*, New Delhi; S.Chand Pub., (16th edn.) 2017.
3. J.N.Pandey, *The Constitutional Law of India*, Allahabad; Central Law Agency, (55th edn.) 2018.
4. *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
5. K B Merunandan, *Bharatada Samvidhana Ondu Parichaya*, Bangalore, Meragu Publications, 2015.
6. K.Sharma, *Introduction to the Constitution of India*, Prentice Hall of India, NewDelhi, 2002.
7. P.M Bakshi, *Constitution of India*, Universal Law Publishing House, NewDelhi, 1999.
8. D.C.Gupta, *Indian Government and Politics*, Vikas publishing House, NewDelhi, 1975.
9. S.N.Jha, *Indian Political System: Historical Developments*, Ganga Kaveri Publishing House, Varanasi, 2005.
10. Arora & Mukherji, *Federalism in India, Origin and Developments*, Vikas Publishing House, New Delhi, 1992.

Model Question Paper

AECC – 2: CONSTITUTION OF INDIA

Ability Enhancement Compulsory Course (AECC)

----- Semester Examination, (Month & Year)

Time: 2 hours

Maximum Marks: 30

Section A

(2 x 5 = 10 marks)

Note: Answer **any five** of the following, each not exceeding 2-3 sentences

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

Section B

(5x 4 = 20 marks)

Note: Answer the following, each not exceeding two pages

9. (a)
OR
(b)
10. (a)
OR
(b)
11. (a)
OR
(b)
12. (a)
OR
(b)

ಮಂಗಳೂರು
MANGALORE



ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
UNIVERSITY

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR.15/2022-23/A8

ಕುಲಸಚಿವರ ಕಛೇರಿ

ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199

Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date: 07/11/2022

NOTIFICATION

Sub: Revised Syllabus of Artificial Intelligence as a skill Enhancement course for UG Degree Programmes (Except BCA) under NEP 2020-reg.

Ref:1. This Office Notification of even No. dated : 06.10.2022

2. Vice Chancellors approval Dated: 07.11.2022

As per the instructions received from the KSHEC , Bangalore , the Revised syllabus of Artificial Intelligence as a Skill Enhancement Course for UG Degree Programmes (Except BCA) under NEP 2020 is hereby notified for implementation with immediate effect. The syllabus of Artificial Intelligence notified vide notification referred to(1)above is hereby repealed.

Copy of the modified Syllabus should be downloaded from the Mangalore University website. www.mangaloreuniversity.ac.in

FOR REGISTRAR. 07/11/22

To:

- 1) The Principals of all the colleges affiliated to Mangalore University
- 2) The Registrar (Evaluation), Mangalore University.
- 3) Dr. V Ravindrachary, Nodal Officer-NEP 2020 & Professor, P.G. Dept. of Physics ,Mangalore University
- 4) Prof. B.H. Shekhar, Chairman, UG BOS in Computer Science & Computer Applications, Dept. of Computer Science, Mangalore University
- 5) The Assistant Registrar/The Superintendent, Academic Section, O/o the Registrar, Mangalore University.
- 6) The Director, DUIMS, Mangalore University - with a request to publish in the Website.
- 7) Guard File.

Skill Enhancement Course: SEC for B.Sc. & other Subject Students

Semester: III/IV

Course Title: Artificial Intelligence	Course Credits: 2
Total Contact Hours: 13 hours of theory and 26 hours of practical	Duration of ESA: 01 Hour
Formative Assessment Marks: 20 marks	Summative Assessment Marks: 30 marks

Course Outcomes (COs):

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

- Appraise the theory of Artificial intelligence and list the significance of AI.
- Discuss the various components that are involved in solving an AI problem.
- Illustrate the working of AI Algorithms in the given contrast.
- Analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.
- Apply the AI concepts to build an expert system to solve the real-world problems.

Course Content (Artificial Intelligence)

	Details of topic	Duration
Course – 1 - Azure AI Fundamentals (AI-900)	AI-900 pathway consists of 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 vi. Tune Model Hyperparameters - Azure Machine Learning (Reading) vii. Neural Network Regression: Module Reference - Azure Machine Learning (Reading)	05 hours
Practical	1. Prepare the data 2. Model the data 3. Visualize the data 4. Analyse the data 5. Deploy and maintain deliverables	13 hours

Course – 2 - Data Analyst Associate (DA-100)	DA-100 pathway consists of 5 courses and 2 reading material: 1. Get started with Microsoft data analytics 2. Prepare data for analysis 3. Model data in Power BI 4. Visualize data in Power BI 5. Data analysis in Power BI 6. Manage workspaces and datasets in Power BI 7. Key Influencers Visualizations Tutorial - Power BI 8. Smart Narratives Tutorial - Power BI Microsoft Docs	08 hours
Practical	1. Describe Artificial Intelligence workloads and considerations 2. Describe fundamental principles of machine learning on Azure 3. Describe features of computer vision workloads on Azure 4. Describe features of Natural Language Processing (NLP) workloads on Azure	13 hours

References to learning resources:

1. The learning resources made available for the course titled “Azure AI Fundamentals (AI-900) and Data Analyst Associate (DA-100).” on Future Skills Prime Platform of NASSCOM.

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 each chapter students’ needs to complete exercises based on the learning in Azure environment.	No Weightage (But students need to complete it to move to next chapter) .

Assessment:

Formative Assessment	
Assessment Occasion	Weightage in Marks
1. Summative Assessment: After completion of both the courses, the student can optionally give Assessment for each of the courses on Future Skills Prime platform. Students will have two 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 students.

Pattern of Question Paper

Skill Enhancement Course: SEC for B.Sc. & other Subject Students

Semester: III/IV

Course Title: Artificial Intelligence

Duration: 2 hrs.

Max. Marks: 30

Section-A: Answer all the questions (1x10 = 10)

This section shall contain 10 questions of type such as multiple choice questions, fill in the blanks or true/false.

(The first five questions shall be given from Course – 1: Azure AI Fundamentals and the next five questions shall be given from Course – 2: Data Analyst Associate).

Section-B: Answer any five questions (2x5 = 10)

This section shall contain eight questions out of which five questions shall be answered and all the questions shall be given from Course – 1: Azure AI Fundamentals.

Section-C: Answer any five questions (2x5 = 10)

This section shall contain eight questions out of which five questions shall be answered and all the questions shall be given from Course – 2: Data Analyst Associate.



Mangalore University

National Education Policy-2020 (NEP-2020)

**Curriculum Structure for Degree Program
B. Sc. in Zoology
(Basic and Honours)**

**Syllabus and Scheme of Examination of
Discipline Core and Open Elective courses
For III and IV Semesters**

Academic Year 2022-23 onwards

Syllabus for B.Sc. (Basic & Honours) in Zoology

Name of the Degree Program: **B. Sc. (Basic & Hons)**
 Discipline Core: **Zoology**
 Total Credits for the Program: **50/100/142/184/268**
 Starting year of implementation: **2021-22 (I & II sem)**
2022-23 (III & IV sem)

Progressive Certificate, Diploma, Bachelor Degree or Bachelor Degree with Honours
 Provided at the End of Each Year of Exit of the Four-year Undergraduate Programme/ Five-year Integrated Master's Degree Programme.

Introduction:

The curriculum framework takes into account the need to maintain globally competitive standards of achievement in terms of the knowledge and skills in Zoology and allied courses, as well develop scientific orientation, spirit of enquiry problem solving skills and human and professional values which foster rational and critical thinking in the students. This course serves as plethora of opportunities in different fields right from classical to applied Zoology.

AIMS AND OBJECTIVES OF UG PROGRAM IN ZOOLOGY

- The Program offers both classical as well as modern concepts of Zoology in higher education.
- It enables the students to study animal diversity in both local and global environments.
- To make the study of animals more interesting and relevant to human studies more emphasis is given to branches like behavioural biology, evolutionary biology and economic Zoology.
- More of upcoming areas in cell biology, genetics, molecular biology, biochemistry, genetic engineering and bioinformatics have also been included.
- Equal importance is given to practical learning and presentation skills of students.
- The lab courses provide the students necessary skills required for their employability.
- Skill enhancement courses in classical and applied branches of Zoology enhance enterprising skills of students.
- The global practices in terms of academic standards and evaluation strategies.
- Provides opportunity for the mobility of the student both within and across the world.
- The uniform grading system will benefit the students to move across institutions within India to begin with and across countries.
- It will also enable potential employers in assessing the performance of the candidates across the world.

**Course content under New Education Policy Year 2022-23 for III Semester B.Sc.
Zoology Core Course Content**

Course Title/Code: Molecular Biology, Bioinstrumentation & Techniques in Biology	Course Credits: 4
Course Code: BSCZOCN301	L-T-P per week: 4-0-0
Total Contact Hours: 56	Duration of ESA: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Outcomes (COs):

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

1. After successful accomplishment of the course, the learners will be able to acquire better understanding and comprehensive knowledge regarding most of the essential aspects of Molecular Biology subject which in turn will provide a fantastic opportunity to develop professional skill related to the field of molecular biology.
2. The course will mainly focus on the study of principal molecular events of cell incorporating DNA Replication, Transcription and Translation in prokaryotic as well as eukaryotic organisms.
3. Acquiring knowledge on instrumentation and techniques in biology.

Semester III - Zoology Core Course Content:

Content	Hours
Unit -I	14
Chapter 1: Process of Transcription • Fine structure of gene: Cistron, Recon, Muton. • RNA polymerases: Types and functions. • Protein synthesis: Introduction, phases-transcription, translation. • Transcription in prokaryotes and eukaryotes: Steps involved, differences between prokaryote and eukaryote transcription.	8
Chapter 2: Process of Translation • Genetic code: Definition, salient features. • Translation in prokaryotes and eukaryotes: Steps involved.	6
Unit II	14
Chapter 3. Regulation of gene expression-I • Regulation of gene expression in prokaryotes: lac operon (inducible) and trp operon (repressible) in <i>E. coli</i>. • Regulation of gene expression in eukaryotes - Role of chromatin	9

(euchromatin and heterochromatin) in gene expression. • Post-transcriptional modification: capping, splicing, polyadenylation. • Concept of RNA editing (mRNA), gene silencing, and, RNAi (RNA interference).	
Chapter 4. Regulation of gene expression-II • Post-translational modifications: purpose, advantages and significance; glycosylation, methylation, phosphorylation, and acetylation. • Intracellular protein degradation (lysosomal autophagy and ubiquitin proteasome pathway).	5
Unit III	14
Chapter 5: Microscopy • Principles and applications of Light microscopy, Dark field microscopy, Phase contrast microscopy, Fluorescence microscopy, Confocal microscopy and Electron microscopy (SEM and TEM).	9
Chapter 6: Centrifugation and Chromatography • Centrifugation: Principles, types and applications. (High speed and Ultracentrifugation) • Chromatography: Principle and applications of TLC and HPLC and GC.	5
Unit IV	14
Chapter 7: Biochemical Instrumentation • Colorimetry and Spectrophotometry: Definition, principle and applications. Beer-Lambert's law, UV-Vis Spectrophotometer. • pH meter, measurement of pH. • Principle, applications and safety measures of Radio-tracer techniques - Autoradiography.	6
Chapter 8: Molecular Techniques • Principle and applications of Agarose gel-electrophoresis, SDS-PAGE, DNA Sequencing (Sanger's Dideoxy method), • PCR, DNA Fingerprinting, ELISA, Southern Blotting and Western Blotting.	8

Suggested Reading:

1. Chromatography: <https://microbenotes.com/chromatography-principle-types-and-applications/>
2. David Freifelder. 2003. Molecular Biology, 2nd edition, Narosa Publishing House, New Delhi.
3. E.D.P. De Robertis, E.M.F. De Robertis, Jr. 2001. Cell and Molecular Biology, 8th edition, Wolters Kluwer (India) Pvt. Ltd, New Delhi.
4. Gurdeep R. Chatwal, Sham K. Anand. 2007. Instrumental methods of chemical analysis, Himalaya Publishing House, Bangalore.
5. H. Kaur. 2016. Instrumental methods of chemical analysis, XII edition, Pragati Prakashan, Meerut.
6. H.D. Kumar. Molecular Biology, 2nd edition, Vikas publishing house Pvt Ltd, New Delhi.
7. Lodish, Berk, Matsudaira, Kaiser, Krieger, Scott, Zipursky, Darnell. 2003. Molecular Biology, 5th edition, W.H. Freeman and Company, New York.

8. Neal U, Thorpe. 1984. Cell Biology-Methods in Cell Biology, John Wiley & Sons, Inc. USA.
9. P.K. Gupta. 2015. Cell and Molecular Biology, 4th edition, Rastogi Publications, Meerut.
10. Primrose SB, Richard M, Twyman RM and Old RW. 2002. Principles of Gene Manipulation, 6th edition, Blackwell Publishers.
11. R.C. Dubey. 2010. A text book Biotechnology. S Chand and Company Ltd, New Delhi.
12. S.C. Rastogi. 2009. Biotechnology-Principles and Applications, Narosa publication. New Delhi.
13. U. Satyanarayana. 2006. Biotechnology, Books and Allied (p) Ltd, Kolkata (India).

Pedagogy: Written Assignment/Presentation/Project / Term Papers/Seminar

Formative Assessment	
Assessment Occasion	Weightage in Marks
House Examination/Test	20
Written Assignment/Presentation/Project /Term Papers/Seminar	15
Class performance/Participation	05
Total	40

Scheme of Examination: Theory (Semester III)

Question No.	PART - A	Marks
I	Answer any SIX Questions out of EIGHT Questions (2 questions of 2 marks from each unit)	6 x 2 = 12
	PART - B	
	Unit - I	
II	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
III	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Unit - II	
IV	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
V	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Unit - III	
VI	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
VII	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Unit - IV	
VIII	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
IX	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Total	60

Zoology Core Course Lab Content

Semester III

Course Title: Molecular Biology, Bioinstrumentation and Techniques in Biology	Course Credits: 2
Course Code: BSCZOPN302	L-T-P per week: 0-0-4
Total Contact Hours: 56	Duration of ESA: 3 Hours
Formative Assessment Marks: 25	Summative Assessment Marks: 25

Course Outcomes (COs):

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

1. At the end of the course, students will be able to understand the applications of biophysics and principle involved in bio-instruments.
2. Understand the methodology involved in bio techniques.
3. Students can demonstrate knowledge and practical skills of using instruments in biology and medical field.
4. They can perform techniques involved in molecular biology and diagnosis of diseases.

Lab Course Content

List of labs to be conducted	56 Hours
1. To study the principle and applications of simple, compound and binocular microscopes.	1
2. To study the principle and applications of various lab equipments- Electronic balance, Vortex mixer, use of glass and micropipettes, Laminar air flow, Incubator, shaker, Water bath and centrifuge.	2
3. Calibration of pH meter and determination of pH of natural samples (milk, honey, urine).	1
4. To prepare Buffer solutions (Phosphate, Citrate, Tris-HCl buffer).	1
5. To learn working of Colorimetry and Spectrophotometry (using cadmium chloride).	1
6. To estimate amount of RNA by Orcinol method.	1
7. To estimate amount of protein by Lowry's method (liver tissue).	1
8. To estimate amount of DNA by di-phenylamine (DPA) method.	1
9. Demonstration of differential centrifugation techniques to fractionate components in a given mixture (blood or liver tissue).	1
10. To identify different unknown amino acids using ascending paper chromatography (using amino acid kit).	1
11. Extraction of DNA using suitable animal tissue sample.	1
12. Study of different forms of DNA (A, B and Z) and types of RNA (t, r, m): Models or Photos.	1

Suggested Reading:

1. Bal Ram Singh, Raj Kumar. 2022. Practical Techniques in Molecular Biotechnology, Cambridge University Press, USA.
2. Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter 2002. Molecular Biology of the Cell, 4th edition. New York: Garland Science.
3. Daniel L. Hartl and Maryellen Ruvolo. 2012. Genetics: Analysis of Genes and Genomes, 8th edition. Burlington, Mass.: Jones & Bartlett Learning.
4. Gerald Karp. Cell and Molecular Biology. 2008. Concepts and Experiments, 5th edition. Wiley Publication.
5. Harvey Lodish, Arnold Berk, Paul Matsudaira, Chris A. Kaiser, Monty Krieger, Freeman. 2003. Molecular Cell Biology, 5th edition. W. H. & Company.
6. Herman Sunil D Souza, Shyam Prasad Sajankila, K Satyamoorthy. 2012. Manipal University Press, Manipal, India.
7. James D. Watson, Tania A. 2003. Baker, Stephen P. Bell, Alexander Gann, Michael Levine, Richard Losick. Molecular Biology of the Gene, 5th edition. Cold Spring Harbor Laboratory Press.
8. Stryer, Lubert. 1981. Biochemistry, 2nd edition. W. H. Freeman and Company, New York.

Pedagogy: Written Assignment/Presentation/Project / Term Papers/Seminar

Formative Assessment	
Assessment Occasion	Weightage in Marks
House Examination/Test	10
Project*	05
Class performance/Participation	05
Record writing and timely submission	05
Total	25

***Topic for the project may be selected from the practical syllabus**

**Course Title/Code: Molecular Biology, Bioinstrumentation and Techniques in Biology
(BSCZOPN302)**

Scheme of Practical Examination

B.Sc. Zoology III Semester

Duration: 3 hours

Max. Marks: 25

I. Extraction of DNA from the given animal tissue.

(Flow chart of the procedure-2 Marks; principle-1 Mark; DNA Isolation-4 Marks; Report-1Mark)

OR

Estimation of DNA / RNA / Proteins.

08

(Flow chart of the procedure-2 Marks; principle-1 Mark; conducting the experiment-4 Marks;
Report-1 Mark)

II. Separate and identify the given unknown amino acids by using ascending paper chromatography.

06

(Procedure-2 Marks; conducting the experiment-2 Marks; Identification & Report-2 Marks)

III. Identify and give the working principle of the spotters A and B.

(Equipments/photographs of the instruments).

3X2=06

(Identification-1 Mark; working principle-2 Marks)

IV. Class record

05

Total=25

Note: Questions must be framed as per the scheme provided.

Open Elective Course Content

Zoology

Semester: III

Course Title: Endocrinology Course Code: BSCZOEN301	Course Credits: 3
Total Contact Hours: 42	Duration of ESA: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Outcomes (COs):

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

Differentiate among endocrine, paracrine and autocrine systems.

1. Describe the different classes and chemical structures of hormones.
2. Identify the glands, organs, tissues and cells that synthesize and secrete hormones, hormone precursors and associated compounds.
3. Identify and discuss the integration of the endocrine system in general with focus on specific interactions.
4. Explain the consequences of under- and overproduction of hormones.

Course Content

Content	Hours
Unit I	14
Chapter 1. Endocrine glands • Endocrine glands and classifications of hormones. • Characteristics and transport of hormones. Chapter 2. Hypothalamus - Hypophysis • Hypothalamus as a neuroendocrine organ. • Pituitary gland: Structure and functions. • Pituitary hormones: Chemical nature, mode of action and functions. • Pituitary disorders. Chapter 3. Pineal gland • Structure and functions. • Hypo and hyperactive states.	
Unit II	14
Chapter 4. Thyroid and parathyroid glands • Chemical nature, mode of action and functions of the hormones. • Hypo and hyperactive states. Chapter 5. Adrenal gland • Hormones: Chemical nature and functions. • Hypo and hyperactive states. Chapter 6: Prostaglandins • Chemical nature and functions.	
Unit – III	14
Chapter 7: Pancreas • Pancreatic islets: Chemical nature and functions. Hormonal control of blood sugar. • Hyperinsulinism and diabetes mellitus.	

Chapter 8: Gastro-intestinal hormones

- Functions and regulation of secretion.

Chapter 9: Different types of rhythms

- Ultradian, circadian, infradian. Different zeitgebers and their relation with circadian clock.
- Sleep-wakefulness cycle. Time keeping genes. Jet-lag and shift work.

Suggested Reading:

1. Eric Widmaier and Hershel Raff and Kevin Strang. 2019. Vander's Human Physiology, McGraw-Hill, Higher Education.
2. H.E. De Wardener. 1985. The Kidney: An Outline of Normal and Abnormal Function, 5th revised edition, Churchill Livingstone.
3. Knut Schmidt- Nielsen. 1998. Animal Physiology: Adaptation and environment, 5th edition, Cambridge University Press.
4. Leslie J. De Groot, J. Larry Jameson, Leslie J. Degroot, J. Larry Jameson. 2001. Endocrinology (3-Volume Set) 4th edition.
5. Mac Hadley, Jonathan Levine. 2006. Endocrinology, 6th edition, Pearson.
6. Mohan P. Arora. Animal physiology, Himalaya Publishing house, 5th edition, Bangalore.
7. R. Nagabhushanam, M.S. Kodarkar. 1978. A text book of Animal Physiology, Oxford & IBH publishing Company, New Delhi.
8. R.A. Agarwal, Anil K, Srivastava, Kaushal Kumar. 2015. Physiology and Biochemistry, S. Chand and Company Pvt Ltd, New Delhi.
9. S.C. Rastogi. 2001. Essentials of Animal Physiology, 3rd edition, New age international (P) Ltd, New Delhi.
10. Shlomo Melmed, Kenneth Polonsky, P. Reed Larsen, Henry Kronenberg. 2016. Williams Textbook of Endocrinology, 13th edition, An Imprint of Elsevier.
11. Sujit Kumar Chaudhuri. 2011. Concise Medical Physiology, New Central Book Agency.

Pedagogy: Chalk and Talk, PPT, Group discussion, Seminar.

Formative Assessment	
Assessment Occasion	Weightage in Marks
House Examination/Test	20
Written Assignment / Case Presentation/Project/ Seminar	15
Class performance/Participation	05
Total	40

Scheme of Examination: Open elective (Semester III)

Question No.	PART - A	Marks
I	Answer any SIX Questions out of NINE Questions (3 questions of 2 marks from each unit)	6 x 2 = 12
	PART - B	
	Unit - I	
II	3 Marks Questions (Answer any THREE out of FOUR)	3 x 3 = 9
III	7 Marks Questions (Answer any ONE out of TWO)	7 x 1 = 7
	Unit - II	
IV	3 Marks Questions (Answer any THREE out of FOUR)	3 x 3 = 9
V	7 Marks Questions (Answer any ONE out of TWO)	7 x 1 = 7
	Unit - III	
VI	3 Marks Questions (Answer any THREE out of FOUR)	3 x 3 = 9
VII	7 Marks Questions (Answer any ONE out of TWO)	7 x 1 = 7
	Total	60

**Course content under New Education Policy-Year 2022-23
For IV Semester B.Sc., (Hons)**

Zoology Core Course Content

Course Title/Code: Gene Technology, Immunology and Computational Biology	Course Credits: 4
Course Code: BSCZOCN401	L-T-P per week: 4-0-0
Total Contact Hours: 56	Duration of ESA: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Outcomes (COs):

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

1. Acquaint knowledge on versatile tools and techniques employed in genetic engineering and recombinant DNA technology.
2. An understanding on application of genetic engineering techniques in basic and applied experimental biology.
3. To acquire a fundamental working knowledge of the basic principles of immunology.
4. To understand how these principles, apply to the process of immune function.
5. Use, and interpret results of, the principal methods of statistical inference and design; helps to communicate the results of statistical analyses accurately and effectively; helps in usage of appropriate tool of statistical software.

Core Course content:

Course Content	56 Hrs.
Unit I	14
Chapter 1: Principles of Gene Manipulation • Recombinant DNA Technology: Introduction, steps involved. • Restriction enzymes, Ligases and Nucleic acid modifying enzyme. • Gene cloning vector: Concept of plasmids-pBR322, Lambda phage vectors, cosmids. • Gene transfer techniques (Direct and indirect). • Screening and selection of recombinant colonies.	07
Chapter 2: Applications of Genetic Engineering • Transgenic animals (Transgenic cow, Transgenic fish); Transgenic plants (cry protein); Gene silencing (Knock out and Knock in mouse). • Production of Human Recombinant insulin and • Hybridoma technology: Synthesis and applications of Monoclonal antibodies. • Gene Therapy: Definition, types (In vivo and ex vivo), application (SCID). • Biosensors: Definition, applications.	07
Unit II	14

Chapter 3: Introduction to the Immune System - Types of immunity: Innate, acquired, active and passive immunity. - Cells of the immune system: Macrophages, neutrophils, eosinophils, basophils, lymphocytes, APC's. - Organs of the immune system: Bone marrow, Thymus, Spleen, Lymph node; Small intestine (Peyer's patches). - Primary and secondary immune response. - Role of B and T-lymphocytes.	07
Chapter 4: Antigens and Antibodies - Antigens, haptens and immunogen: Definitions, intrinsic properties (foreignness, molecular size, heterogeneity). - B and T cell epitopes: Definitions. - Structure of IgG and functions of different classes of immunoglobulins. - Major histocompatibility complex -Structure of MHC I & II.	07
Unit III	14
Chapter 5: Clinical Immunology - Immunity against diseases of viral (Hepatitis B), bacterial (TB) and protozoan infections (Malaria). - Vaccines: Types and Uses-Immunization schedule for children. - Transplantation immunology: Transplantation of organ- Types, graft rejection and Immuno-suppressors.	07
Chapter 6: Bioinformatics - Scope and applications of Bioinformatics. - Databases: Definition, Biological databases – Nucleotide databases (Gene bank, EMBL, DDBJ), Protein databases (Swiss-PROT, TrEMBL, PROSITE). - Sequence analysis (homology): Pairwise and Multiple Sequence alignment-BLAST, CLUSTALW, FASTA.	07
Unit IV	14
Chapter 7: Biostatistics I - Measures of central tendency: Mean, Median, Mode. - Data summarizing: Frequency distribution, Graphical presentation - bar diagram, pie diagram, histogram. - Elementary idea of probability and its applications.	07
Chapter 8: Biostatistics II - Measures of dispersion: Range, Standard Deviation, Variance. - Correlation and Regression. - Tests of significance: F-test, ANOVA, t-test and Chi square test.	07

Suggested Reading:

1. Anil Kumar, Ashwani Pareek, Sanjay Mohan Gupta. 2013. Biotechnology in Medicine and Agriculture: Principles and Practices, I.K. International Publishing house Pvt Ltd, Bangalore.
2. Attwood, T.K. and Parry-Smith, D.J. 1999. Introduction to Bioinformatics, Published by Prentice Hall.
3. B.D. Singh. 2010. Biotechnology Expanding Horizon, Kalyani Publishers, New Delhi.
4. C.S.V. Murthy. 2016. Bioinformatics, Himalaya Publishing House.
5. C.V. Rao. 2002. An Introduction to Immunology. Narosa Publishing house, New Delhi.
6. Desmond S.T. Nicholl. 2002. An Introduction to Genetic Engineering, 2nd edition, Cambridge University press.
7. Gurumani N. 2015. An Introduction to Biostatistics, 2nd edition, MJP Publisher.
8. Hepsyba, Hemalatha. 2019. Basic Bioinformatics. MJP Publishers; 1st edition.
9. K Visweswara Rao. 1999. Biostatistics: A Manual of statistical methods for use in health, nutrition and anthropology, Jaypee Brothers- Medical Publishers (p) Ltd, New Delhi.
10. Kumaresan, Sundaralingam. 2021. Bioinformatics, Saras Publication.
11. P K Gupta. 2008. Elements of Biotechnology, Rastogi Publications, New Delhi.
12. P. Joshi. 2003. Genetic Engineering and its Applications. Agro Botanica, India.
13. Philip L. Carpenter. 1965. Immunology and Serology, 2nd edition, W.B. Sanders Company Philadelphia and London Toppan Company, Limited Tokyo, Japan.
14. R.C. Dubey. 2010. A text book Biotechnology. S Chand and Company Ltd, New Delhi.
15. Ramakrishnan P. Biostatistics. Saras Publication.
16. U. Satyanarayana. 2006. Biotechnology, Books and Allied (p) Ltd, Kolkata (India).
17. Wayne W. Daniel, Chad L. Cross. 2013. Biostatistics: A Foundation for Analysis in the Health Sciences.

Pedagogy: Lectures, Presentations, Videos, Assignments and Weekly Formative Assessment Tests.

Formative Assessment	
Assessment Occasion	Weightage in Marks
House Examination/Test	20
Written Assignment/Presentation/ /Project/ Term Papers/Seminar	15
Class performance/Participation	05
Total	40

Scheme of Examination: Theory (Semester IV)

Question No.	PART - A	Marks
I	Answer any SIX Questions out of EIGHT Questions (2 questions of 2 marks from each unit)	6 x 2 = 12
	PART - B	
	Unit - I	
II	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
III	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Unit - II	
IV	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
V	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Unit - III	
VI	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
VII	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Unit - IV	
VIII	3 Marks Questions (Answer any TWO out of THREE)	3 x 2 = 6
IX	6 Marks Questions (Answer any ONE out of TWO)	6 x 1 = 6
	Total	60

Zoology Semester IV Core Course Lab Content

Course Title/Code: Gene Technology, Immunology and Computational Biology	Course Credits: 2
Course Code: BSCZOPN402	L-T-P per week: 0-0-4
Total Contact Hours: 56	Duration of ESA: 3 Hours
Formative Assessment Marks: 25	Summative Assessment Marks: 25

Course Outcomes (COs):

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

1. Accurately, safely and appropriately use all the equipment regularly used in Molecular Biology (DNA manipulation, including balances, pipettes, electrophoresis and centrifuges).
2. Prepare chemical solution and reagents to the precision appropriate to the task.
3. Demonstrate knowledge of the biochemical basis underpinning the molecular biology.

Course Content:

List of labs to be conducted	56 Hours
1. To study Restriction enzyme digestion using teaching kits (Demonstration only).	1
2. To detect genetic mutations by Polymerase Chain Reaction (PCR) using teaching kits (Demonstration only).	1
3. Demonstration of agarose gel electrophoresis for detection of DNA.	1
4. Demonstration of Polyacrylamide Gel Electrophoresis (PAGE) for detection of proteins.	1
5. Determination of ABO Blood group and Rh factor.	1
6. Identification of cells of Immune system- Macrophages, neutrophils, eosinophils, basophils, lymphocytes, APC's (slides/photographs).	1
7. Identification of organs of immune system – Bone marrow, Thymus, Lymph nodes, Spleen, Peyer's patches (slides/photographs).	1
8. To calculate molecular weight of unknown DNA and protein fragments from gel pictures. (https://youtube/mCiCiO0cfbg)	1
9. Calculate the mean, median, mode and standard deviation (with suitable examples).	1
10. Representation of data by bar diagram, pie diagram and histogram.	1
11. Measure the height and weight of all students in the class and apply statistical measures (Correlation, Regression, ANOVA, t-test).	1
12. To learn nucleotide sequence database (GenBank, EMBL, DDBJ).	1
13. To learn sequence alignment: Pairwise alignment (Protein/ DNA).	1
14. BLAST, CLUSTALW, FASTA Programme colour charts for identification.	1

Suggested Reading:

1. Attwood, T.K. and Parry-Smith, D.J. 1999. Introduction to Bioinformatics, Published by Prentice Hall.
2. C.S.V. Murthy. 2016. Bioinformatics, Himalaya Publishing House.

3. Gurumani N. 2015. An Introduction to Biostatistics, Kindle Edition, 2nd edition, MJP Publisher.
4. Hepsyba, Hemalatha. 2019. Basic Bioinformatics. MJP Publishers; 1st edition.
5. K Visweswara Rao. 1999. Biostatistics: A Manual of statistical methods for use in health, nutrition and anthropology, Jaypee Brothers- Medical Publishers (p) Ltd, New Delhi.
6. Kumaresan, Sundaralingam. 2021. Bioinformatics, Saras Publication.
7. Orpita Bosu, Simminder Kaur Thukral. 2007. Bioinformatics: databases, tools, algorithms. Oxford University Press, New Delhi.
8. P Joshi. 2006. Genetic Engineering. Agrobios (India).
9. Ramakrishnan P. Biostatistics. Saras Publication.
10. Sandhya Mitra. 2015. Genetic Engineering: Principles and Practice, 2nd edition, McGraw Hill Education (India) Private Limited.
11. Sharma, Munjal, Shanker. 2018. A text book of Bioinformatics. Rastogi publications.
12. Sundar Rao, J. Richard. 2006. Introduction to Biostatistics and Research Methods. Prentice-Hall of India Pvt. Limited.
13. Wayne W. Daniel, Chad L. Cross. 2013. Biostatistics: A Foundation for Analysis in the Health Sciences.

Pedagogy: Lectures, Presentations, Videos, Labs, Assignments, Tests, Individual or group Field oriented Project Report.

Formative Assessment	
Assessment Occasion	Weightage in Marks
Test	10
Project*	05
Participation in class	05
Record writing and timely submission	05
Total	25

***Topic for the project may be selected from the practical syllabus**

**Course Title/Code: Gene Technology, Immunology and Computational Biology
(BSCZOPN402)**

**Scheme of Practical Examination
B.Sc. Zoology IV Semester**

Duration: 3 hours

Max. Marks: 25

- I.** Identify the ABO and Rh blood group of the given blood sample and comment on the significance of blood typing. **04**
(Identification of ABO and Rh blood group- $\frac{1}{2}+\frac{1}{2}=1$ Mark; Reasons- $1+1=2$ Marks; significance-1 Mark)
- II.** Identify and comment on the spotter A (Immune cells and organs-slides/photographs). **02**
(Identification-1 Mark, comments-1)
- III.** Biostatistics problem on Chapter 7 **04**
- IV.** Biostatistics problem on Chapter 8 **04**
- V.** Identify and comment on the given spotters B, C and D. **3X2=06**
(PCR/PAGE/Restriction enzyme kit/ BLAST, CLUSTALW, FASTA/Database)
(Identification - 1 Mark; comments -1 Mark)
- VI.** Class record **05**

Total= 25

Note: Questions must be framed as per the scheme provided.

Open Elective Course Content

Semester: IV Zoology

Course Title: Animal Behaviour Course Code: BSCZOEN401	Course Credits: 3
Total Contact Hours: 42	Duration of ESA: 2 Hours
Formative Assessment Marks: 40	Summative Assessment Marks: 60

Course Outcomes (COs):

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

1. Examine and critically to evaluate the emergence of ideas that have shaped how we observe and collect data on animal behaviour.
2. Understand the main historical ideas that underpin animal behaviour theory
3. Critically review hypotheses to explain animal behaviour
4. Understand different methods for collecting data on animal behaviour
5. Have advanced their written and oral presentation skills.

Course Content

Content	42 Hrs.
Unit – 1	
Chapter 1. Introduction to Animal Behaviour • Contributions of Karl Von Frisch, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen. • Proximate and ultimate causes of behaviour. Chapter 2. Patterns of Behaviour • Stereotyped Behaviours - Orientation and Reflex. • Individual Behavioural patterns: Instinct and Learned Behaviour. • Associative learning, classical and operant conditioning, Habituation, Imprinting.	14
Unit – 2	14
Chapter 3. Social Behaviour • Social organization in termites and honey bees. • Social behaviour: Altruism. • Conflict behaviour. Chapter 4. Sexual Behaviour • Sexual dimorphism, Mate choice in peacock. • Intra-sexual selection (male rivalry in red deer). • Kinship theory: Relatedness & inclusive fitness. • Parental care in fishes (Nest building).	
Unit – 3	14
Chapter 5. Chronobiology • Brief historical developments in chronobiology. • Adaptive significance of biological clocks. Chapter 6: Communications in animals • Bioluminescence in deep sea fishes and insects. • Territoriality in Monkeys and Dogs.	

- Role of pheromones in animal communication- Insects and Vertebrates.
- Communication in Honey bees (Waggle Dance).

Suggested Reading:

1. D. S. Saunders , X. Vafopoulou C. G. H. Steel , R. D. Lewis . 2002. Insect Clocks, 3rd edition, Barends and Noble Inc. New York, USA.
2. Hosang S. Gundevia, Hare Govind Singh. 2001. A text book of Animal Behaviour, S Chand and Company Ltd, New Delhi.
3. Jay. C. Dunlap, Jennifer. J. Loros, Patricia J. DeCoursey. 2004. Chronobiology: Biological Timekeeping, Sinauer Associates, Inc. Publishers, Sunderland, MA, USA.
4. John Alcock, Animal Behavior: An Evolutionary Approach, 4th edition, Sinauer Associate Inc., USA.
5. Lee C Drickamer, Stephen H Vessey. 2001. Animal Behavior: Mechanisms, Ecology, Evolution.
6. Mohan P. Arora. 2000. Animal Behaviour, Himalaya Publishing house, New Delhi.
7. Paul W. Sherman and John Alcock. Exploring Animal Behaviour, Sinauer Associate Inc., Massachusetts, USA.
8. Reena Mathur. 2018. Concepts of Animal Behaviour, Rastogi Publications, 1st edition, Meerut, India.
9. Vinod Kumar. 2002. Biological Rhythms, Narosa Publishing House, Delhi/ Springer-Verlag, Germany.

Pedagogy: Chalk and Talk, PPT, Group discussion, Seminar, Interaction, virtual lab, Lab visit

Formative Assessment	
Assessment Occasion	Weightage in Marks
House Examination/Test	20
Written Assignment / Project / Seminar	15
Class performance/Participation	05
Total	40

Scheme of Examination: Open elective (Semester IV)

Question No.	PART - A	Marks
I	Answer any SIX Questions out of NINE Questions (3 questions of 2 marks from each unit)	6 x 2 = 12
	PART - B	
	Unit - I	
II	3 Marks Questions (Answer any THREE out of FOUR)	3 x 3 = 9
III	7 Marks Questions (Answer any ONE out of TWO)	7 x 1 = 7
	Unit - II	
IV	3 Marks Questions (Answer any THREE out of FOUR)	3 x 3 = 9
V	7 Marks Questions (Answer any ONE out of TWO)	7 x 1 = 7
	Unit - III	
VI	3 Marks Questions (Answer any THREE out of FOUR)	3 x 3 = 9
VII	7 Marks Questions (Answer any ONE out of TWO)	7 x 1 = 7
	Total	60

MANGALORE UNIVERSITY
POLITICAL SCIENCE

BA Political Science Programme offered from the Academic year 2021-22

Programme Structure

Third Semester

Course Code	Course Title	Credits	Teaching Hrs/Week	Total Marks/ Assessment*
DSC-5	Indian Government and Politics	3	3	100 (60+40)
DSC-6	Parliamentary procedures in India	3	3	100 (60+40)
OE-3.1	Gender and Politics	3	3	100 (60+40)
OE-3.2	Understanding Gandhi	3	3	100 (60+40)
OE-3.3	Citizen, Citizenship and the Indian Constitution	3	3	100 (60+40)

Fourth Semester

DSC-7	Ancient Indian Political Ideas and Institutions	3	3	100 (60+40)
DSC-8	Modern Political Analysis	3	3	100 (60+40)
OE-4.1	Good governance in India	3	3	100 (60+40)
OE-4.2	Understanding Dr. B.R. Ambedkar	3	3	100 (60+40)
OE-4.3	Political Journalism	3	3	100 (60+40)

* Total marks for each course is 100. This would consist of an Internal Assessment (IA) for 40 marks and end semester examination for 60 marks.

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POLITICAL SCIENCE

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Programme Structure

Third Semester

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DSC-5	Indian Government and Politics	3	3	100 (60+40)
DSC-6	Parliamentary procedures in India	3	3	100 (60+40)
OE-3.1	Gender and Politics	3	3	100 (60+40)
OE-3.2	Understanding Gandhi	3	3	100 (60+40)
OE-3.3	Citizen, Citizenship and the Indian Constitution	3	3	100 (60+40)

Fourth Semester

DSC-7	Ancient Indian Political Ideas and Institutions	3	3	100 (60+40)
DSC-8	Modern Political Analysis	3	3	100 (60+40)
OE-4.1	Good governance in India	3	3	100 (60+40)
OE-4.2	Understanding Dr. B.R. Ambedkar	3	3	100 (60+40)
OE-4.3	Political Journalism	3	3	100 (60+40)

* Total marks for each course is 100. This would consist of an Internal Assessment (IA) for 40 marks and end semester examination for 60 marks.

Programme Objectives:

1. Upgrade the learning of Political Science and to familiarise students with the functioning of political institutions both in contemporary and ancient India, and to inculcate values and moral ethos for effective governance.
2. To acquaint students of the dimensions of Indian government, parliamentary procedures, gender concerns in Politics, Gandhian philosophy and citizen responsibilities.
3. To enable students to understand and assess the influence of ancient Indian political ideas and institutions on the later Indian political thought and political analysis.
4. To analytically reflect upon the nature of emerging hybridised themes like Political Journalism and good governance and its role.
5. To understand the ideas and actions of Dr. B.R. Ambedkar and to assess his contribution to the making of modern India.

Learning Outcome: The courses comprise both knowledge and skill components and at the end of the programme students will have –

1. A nuanced understanding of the functioning of the political institutions both in contemporary and ancient India, and internalise the values and moral ethos relevant from Indian point of view for political participation and governance.
2. A fair understanding of the dimensions of Indian government, parliamentary procedures, gender concerns in politics, Gandhian philosophy and Citizen Duties and responsibilities.
3. An ability to grasp and evaluate the influence of ancient Indian political ideas and institutions on the later Indian political thought and modern political analysis.
4. An understanding of the nature of hybridised themes like Political Journalism and good governance with an ability to evaluate their role and significance.
5. A comprehension of the ideas, acts, vision and mission of Dr. B.R. Ambedkar and will assess his contribution to the making of modern India.

INDIAN GOVERNMENT AND POLITICS
(DSC – 5)

Course Title: INDIAN GOVERNMENT AND POLITICS	
Course Code: DSC - 5	Semester: III
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To provide students an understanding of the functioning of the Indian Government and Politics.
2. To make students understand the philosophy of Indian constitution and its commitment towards citizens.
3. To provide students necessary knowledge to assess the performance of the Union and state governments.
4. To help students to develop interest in politics and grasp the dynamics/nuances of the politics, leadership and the role of socio-economic, religious and lingual issues.

Learning Outcome:

At the end of the course students will -

1. Have an understanding of the functioning of the Indian Government and Politics.
2. Have an comprehension of the philosophy of Indian constitution
3. Grasp the performance of both the Union and state governments and the challenges they confront.
4. Comprehend the power structures, response of the political parties and the effects of judicial decisions on policy making and social development in India.

DSC-5: INDIAN GOVERNMENT AND POLITICS

Unit 1: The Framework (15 hours)

- 1.1 Indian Politics: Approaches to study of State and politics in India (Liberal, Marxist and Gandhian).
- 1.2 Constituent Assembly- Composition and major debates regarding the structure of Indian State.
- 1.3 Preamble and salient features of Indian Constitution

Unit: Organs of the Government (15 hours)

- 2.1 The Union Executive: The President, Vice-President, Prime Minister and the Council of Ministers
- 2.2 Parliament: Powers and Functions of Lok Sabha and Rajya Sabha; Relationship between the two Chambers: Amendment Process and Major Amendments (42nd, 73rd, 74th, 86th, 101st).
- 2.3 Judiciary and Judicial Review; Appellate Authority: Basic Structure of the Indian Constitution and debates.

Unit: Political process (15 hours)

- 3.1 Nature of Indian Political System, Union-State Relations (Commissions and Committees), President's Rule: Processes and politics.
- 3.2 Ideologies of National and Regional Political Parties; Coalition Politics and Elections in Indian Politics.
- 3.3 Issues in Indian Democracy: Caste, Religion, Communalism, Regionalism, Criminalization, Terrorism, Social and Distributive Justice.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end Counselling.

Exercise:

- Debate on the ‘basic structure of Indian Constitution’ and the need for changes in the Constitution, functioning of the Constitution; Cases with regard to Governor and President’s rule.
- List out the major amendments to the constitution, Commission and Committees to review power sharing.
- Examine the functioning of various political parties, its inclusive approaches, influence of dynasties on their performance

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

Suggested Readings

1. Iqbal Narain, State Politics in India, Meenakshi Prakashan, New Delhi, 1967.
2. Rajani Kothari, Politics in India, Orient Longman, 1970.
3. D. Basu, An Introduction to the Constitution of India, New Delhi, Prentice Hall, 1980.
4. Granville Austin, The Indian Constitution: Corner Stone of a Nation, Oxford University Press, India, 1966.
5. C. P. Bhambhari, The Indian State, Fifty Years, New Delhi, Shipra, 1997.
6. V. Pylee, Constitutional Government in India, Bombay, Asia Publishing House, 1977.
7. J. C. Johri, Indian Government and Politics, Vol. 1, Shoban Lal and Company, India, 2012.
8. Weiner, Party Politics in India, Princeton University Press, 1957.
9. A. G. Noorani, Constitutional Questions in India: The President, Parliament and the States, Delhi, Oxford University Press, 2000.
10. A.S. Narang, Indian Government and Politics, Geetanjali Publishing House, New Delhi, 1996.
11. Bidyut Chakrabarty & Rajendra Kumar Pandey, Indian Government and Politics, SAGE, New Delhi, 2008
12. D.D. Basu, An Introduction to the Constitution of India, 25th Edition, LexisNexis, India, 2021.
13. M.P. Singh & Rekha Saxena, Indian Politics: Contemporary issues and Concerns, Prentice Hall of India, Delhi, 2008.
14. M. V. Pylee, An Introduction to the Constitution of India, New Delhi, Vikas, 1998.
15. Niraja Gopal Jayal & Pratap Bhanu Mehta, The Oxford Companion to Politics in India, Oxford University Press, New Delhi, 2010.
16. Sunder Raman. Indian Government and Politics, Allied Publishers, New Delhi, 1988.
17. C. P. Bhambhari, The Indian State Since Independence: 70 Years, New Delhi, Shipra, 2017.

PARLIAMENTARY PROCEDURES IN INDIA
(DSC – 6)

Course Title: PARLIAMENTARY PROCEDURES IN INDIA	
Course Code: DSC - 6	Semester: III
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To provide a basic understanding of the parliamentary system of governments and the constitutional provisions relating to the parliamentary procedures in India.
2. To familiarise students with the legislative procedures and practices in India.
3. To impart the students adequate skills for participation in deliberative processes and democratic decision making.
4. To enable students to understand the working of democracy through an institutional mechanism.

Learning Outcome:

At the end of the course students will –

1. Have a basic understanding of parliamentary system of governments and the constitutional provisions relating to the parliamentary procedures in India.
2. Become familiar with the legislative procedures and practices in India as well as the working of Committees, budgetary aspects and deliberative mechanism within parliament.
3. Have adequate skills for participation in deliberative processes and democratic decision making with a keen understanding of parliamentary procedures and requirements.
4. Have an understanding of the institutional mechanism for working of democracy, learn about the privileges of people's representatives and will be able to assess their performance.

DSC-6: PARLIAMENTARY PROCEDURES IN INDIA

- Unit 1: Constitutional provisions** (15 hours)
- 1.1 Elections to the Legislatures: Parliament and State Legislatures.
 - 1.2 Powers, Functions and Privileges of People’s Representatives – Members of Parliament and State Legislature
 - 1.3 Legislative Procedures of the Parliament: Articles 107-122.
- Unit 2: Making of Law** (15 hours)
- 2.1 Kinds of Bills: Ordinary Bills, Money Bills, Finance Bills, Private Member Bills
 - 2.2 Drafting of the Bill, First Reading and Departmental Standing Committee, Second Reading, Third Reading, Passage of the Bill, Consent by the President, Gazette Notifications.
 - 2.3 Parliamentary Committees: Composition and Functioning (Departmental Standing Committees, Select Committees, Joint Parliamentary Committees, Public Accounts Committee on Privilege Business, Advisory Committee, Ethics Committee).
- Unit 3: Parliamentary procedures and practices** (15 hours)
- 3.1 Motions and Hours in the House – Question Hour, Zero Hour, Half an Hour Discussion, Calling Attention Motion, Adjournment motion, Privilege motion, Censure Motion, ‘No Confidence’ Motion, Cut motion.
 - 3.2 Parliamentary Questions: Types, Starred and Unstarred Questions, Questions Addressed to Private Members and Short Notice Questions.
 - 3.3 Parliamentary Privileges: Constitutional Provisions, Codification of Privileges, Privileges of Parliamentarians and Legislators, Breach of Privilege.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Mock Parliaments as Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end Counselling.

Exercise:

- The college can organise mock parliaments and teach students the etiquettes of parliamentary behaviour.
- Can organise debates on the codification of privileges and match it with the performance of people's representatives.
- Can organise special lectures by inviting officers/bureaucrats to deliberate on the procedural aspects of democracy.

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

Suggested Readings

1. M.N. Kaul and S.L. Shakdher, Practice and Procedure of Parliament, Metropolitan, New Delhi, 1968.
2. Subhash C. Kashyap, Our Parliament, National Book Trust, New Delhi, 2021.
3. S H. Belavadi, Theory and Practice of Parliamentary Procedure in India, 1988.
4. Study Material on Parliamentary Practices and Procedures. Lok Sabha Secretariat Parliamentary Research and Training Institute for Democracies (Erstwhile BPST), New Delhi.
5. Apoorva Shankar and Shreya Singh, Parliamentary Procedures A Primer Rajya Sabha, PRS Legislative Research, 2015.
7. Dr. K. S. Chauhan, Parliament Powers Functions and Privileges, LexisNexis, India, 2013.
8. Ajit Ranjan Mukharjea, Parliamentary Procedure in India, Oxford University Press, 1958.
9. M N. Kaul, Parliamentary Institutions and Procedures, National Publishing House, 1978.
10. Jalan, India's Politics, Penguin, New Delhi, 2007.
11. Abbas, H., Kumar, R. & Alam M. A., Indian Government and Politics, Pearson, New Delhi, 2011.
12. Chakravarty, B. & Pandey, K. P, Indian Government and Politics, Sage, New Delhi, 2006.
13. K. Sanyal, Strengthening Parliamentary Committees, PRS, Centre for Policy Research, New Delhi, 2011. Available at: [http://www.prsindia.org/administrator/uploads/media/Conference%202011/Strengthening %20Parliamentary%20Committees.pdf](http://www.prsindia.org/administrator/uploads/media/Conference%202011/Strengthening%20Parliamentary%20Committees.pdf).

GENDER AND POLITICS
(Open Elective- OE- 3.1)

Course Title: GENDER AND POLITICS	
Course Code: OE – 3.1	Semester: III
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To provide an overview of political participation of women in general and specifically in India.
2. To enable the students to understand the issues related to women leadership, participation and governance.
3. To understand how gender issues are progressively integrated into political science and social sciences.
4. To sensitise students about the patriarchal society and help to improve the relationship between men and women, remove exploitation and violation of women's rights and to bring to focus the need for the education and empowerment.

Learning Outcomes:

At the end of the course the students will –

1. Have an understanding of the political participation of women in general and specifically in India.
2. Be aware of the relevance of gender issues in politics.
3. To grasp the forces and values that condition power and significance of gender in the understanding of political science.
4. Become aware of the values and operation of patriarchal society and ground realities of women's participation in politics that would sensitise them to positively contribute to the women's empowerment.

OE- 3.1: GENDER AND POLITICS

- Unit 1: Gender: A framework** (15 hours)
- 1.1 Defining Gender, Significance of Gender Studies, Difference between Gender Studies and Women Studies, Feminist Perspectives (with reference to India), Opportunities and Constraints (Party Choices of Candidates, Social Taboos and Stereotypes).
 - 1.2 Gender Imbalance in Political Representation and Electoral Process, Gender Discrimination in Indian Politics – including LGBTQ, Feminist Critique of Politics.
 - 1.3 Governance and Gender Structures, Gender Budgeting and Gender Issues in Governance.
- Unit 2: Gender and Politics** (15 hours)
- 2.1 Gender and Empowerment Process: Education, Economic, Political and Socializing and sensitizing gender issues.
 - 2.2 Gender Differentiation in Political Parties and Leadership, Challenging Gender Stereotypes in Socio-Political sphere.
 - 2.3 Capacity Building and Role of Women in Karnataka Politics, Women Representation in Local Governments.
- Unit 3: Gender and society** (15 hours)
- 3.1 Women and Poverty, Women and Health, Women and wealth creation, Violence against Women, Women and Armed Conflict.
 - 3.2 Women and Literature, Women and the Media, Women and the Environment.
 - 3.3 Women and Societal Challenges: Dowry, Domestic Violence, Girl Child - Programmes for Empowerment of Women, Educating children and socio-religious taboos including patriarchy.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end Counselling.

Exercise:

- Conduct one day workshop and make an assessment of role of women in politics.
- Collage making, short films and video watching can be done by the students and measures can be discussed to minimise the gender gap.
- Students can make field visits to understand the persistent of patriarchal values and traditions.

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

Suggested Readings

1. P.K.Swaib and S.N.Tripathy, "Unequal Treatment to Women and Gender", Bias, Sonali Publications, New Delhi, 2006.
2. Malashrilal, Chandra Mohan, Enakshi K.Sharma, Devika Khanna Narula and Amrit Kaur Basra, "Gender and Diversity", Rawat Publications, Jaipur, 2015.
3. Andrew Heywood, "Global Politics", Palgrave Macmillan Publication, New York, 2014.
4. Kranti Rana, "Modern Working Women and the Development Debate", Kanishka Publishers, New Delhi, 1998.
5. Dr.Tanuja Trivedi, "Encyclopedia of Women's Empowerment", Janapada Prakashan, New Delhi, 2012.
6. Bhaswati Das and VimalKhawas, "Gender Issues in Development –Concerns for the 21st century", Rawat Publications, New Delhi, 2009.
7. U. Kalpagam, "Gender and Development in India: Current Issues", Rawat Publication, 2011.
8. B.N.Singh, "Rural Women and Education," vista International Publishing House, Delhi, 2016.
9. Meera Kosambi, "Women writing Gender", Permanent Block Publication, New Delhi, 2012.
10. Brush, Lisa D., Gender and Governance, Rawat Publications, New Delhi, 2007.
11. Sangeeta Bharadwaj, "Gender, Social Structure and Empowerment Status Report of Women in India", Rawat Publication, 2009.
12. Dr.Tapan Biswal, "Human Rights Gender and Environment", Viva Books Private Ltd, New Delhi, 2006.
13. Dr. S. Murty, "Women and Employment", RBSA Publishers, Jaipur, 2001.
14. Singh, Narpal, 'Changing Status of Women' Vista International Publishing House, Delhi, 2008.
15. Anuradhamathu, "Gender and Development in India", Kalpaz Publication, Delhi, 2008.
16. M.Bahati Kumba, "Gender and Social Movements", Rawat Publication, New Delhi, 2003.
17. Saxena, Alka, Women and Political Leadership, Altar Publishing House, New Delhi, 2011.

UNDERSTANDING GANDHI
(Open Elective – OE- 3.2)

Course Title: UNDERSTANDING GANDHI	
Course Code: OE – 3.2	Semester: III
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To enable students to understand the core elements of Gandhian thought and Gandhi's approach to the key issues of contemporary India.
2. To familiarise students on the Gandhian ideas on wide range of issues including politics, economics, social reconstruction, religion and issues of sustainable development.
3. To acquaint the students on the ideas of Gandhi on social relations and issues.
4. To assess the relevance of Gandhi on the current political discourses through the analysis of his ideas on modern society, Swadeshi etc.

Learning Outcome:

At the end of the course the students will-

1. Grasp the core ideas of Gandhi, in particular the idea of truth and non-violence.
2. Understand the Gandhian ideas on wide range of issues including politics, economics, social reconstruction, religion and issues of sustainable development.
3. Comprehend the position of Gandhi on issues like Hindu- Muslim relations, gender question, cow protection, caste and untouchability questions.
4. Be able to understand the Gandhian reasoning in favour of Swadeshi and his critique of modern Civilization.

OE-3.2: UNDERSTANDING GANDHI

Unit 1: Gandhi: Background (15 hours)

- 1.1 Background Influences: Historical: South Africa, Intellectual: Thoreau, Ruskin and Tolstoy.
- 2.1 Gandhian Experiments: Satyagraha, Non-Violence, Truth, Movements led by Gandhi- Champaran, Bardoli, Khilafat, Non- Cooperation, Salt Satayagraha.
- 3.1 Social Movements- Ahmedabad Mill Strike, Vaikom Satyagraha, Forest, Health and Naturopathy, Sustainable Development.

Unit 2: Gandhi and Politics (15 hours)

- 2.1 Gandhi as a Leader: Gandhi as a model, Gandhian Methodology: Prayer, Consensus Building and Fasting.
- 2.2 Gandhian Views on Politics: Role of Ethics, Morality, Religion and Service.
- 2.3 Gandhi's critique on English Parliament, Gandhi on Nation and Nationalism.

Unit 3: Gandhi and society (15 hours)

- 3.1 Gandhi on Swadeshi and Swaraj, Critique on Modern Civilization, Modern Education and Machines.
- 3.2 Gandhi on Violence (Doctrine of the Sword) Gandhi and Sins, Gandhi's views on Women and Sustainable Development.
- 3.3 Gandhi as Political Strategist, Gandhi's Views on Hindu-Muslim Relation, Cow Protection, Untouchability and Caste Question.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end Counselling.

Exercise:

- Students shall have a group reading of Gandhiji's texts like Hindswarj, My Experiment with truth, Sarvodaya, etc,
- Shall conduct the group discussion on the significance of Satyagraha, Sustainable Development, Swadeshi, etc.
- By reviewing literature on Gandhian critiques students can discuss the strengths and weakness of Gandhian Philosophy and his relevance in 21st century.

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

Suggested Readings

1. Lal, V, The Gandhi Everyone Loves to Hate, Economic and Political Weekly, 43(40), 2008, pp.55-64.
2. Power, P, Towards a Re-Evaluation of Gandhi's Political thought. The Western Political Quarterly, 16(1), 1963, pp. 99-108.
3. Gandhi, M. K, Hind Swaraj, Navajivan Publishing House, Ahmedabad, 1939, pp 49-55.
4. Indian Council for Historical Research, The Logic of Gandhian Nationalism Civil Disobedience and the Gandhi- Irwin Pact ,1930-31, Indian Historical Review, 1976.
5. Dey, A. Islam and Gandhi: A Historical Perspective. Social Scientist, 41(3/4), 2013, pp. 19- 34.
6. Chandra, B, Gandhiji, Secularism and Communalism. Social Scientist, 32(1/2), 2004, pp. 3-29.
7. Parekh, B, The Critique of Modernity In Gandhi: A Brief Insight, Sterling Publishing Company, Delhi, 1997. pp. 63-74.
8. Heredia, R, Interpreting Gandhi's Hind Swaraj, Economic and Political Weekly, 34(24), 1999. pp. 1497-1502.
9. Parel, A. J. (Ed.), Introduction. In: Gandhi, freedom and Self Rule, Vistaar Publication, Delhi, 2002.
10. Kumar, R. Class, Community or Nation? Gandhi's Quest for a popular consensus in India, Modern Asian Studies, 3(4), 1969, 357-376.
11. Parel, A.J. (Ed), Introduction. In: Gandhi, Freedom and Self Rule, Vistaar Publication, Delhi, 2002.
12. Sarah Claerhout Gandhi, Conversion, and the Equality of Religions: more experiments with truth, Numen-International Review for the History of Religions, 61(1), 2014, p.53-82.
13. Collected Works of Mahatma Gandhi Hindu-Muslim Tension: Its Cause and Cure, Young India, 1924, pp. 58-59.
14. Collected Works of Mahatma Gandhi: Save the Cow, Young India, 1921.
15. <http://www.gandhiashramsevagram.org/gandhi-literature/mahatma-gandhi-collected-worksvolume-23.pdf>.

CITIZEN, CITIZENSHIP AND THE INDIAN CONSTITUTION
(Open Elective OE- 3.3)

Course Title: CITIZEN, CITIZENSHIP AND THE INDIAN CONSTITUTION	
Course Code: OE – 3.3	Semester: III
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To comprehend the concept of citizenship
2. To realise the significance of mindfulness, empathy and compassion and to be responsible citizen.
3. To be sensitive and apply socially relevant values for emotional wellbeing and social relationship.
4. To support nation building by inculcating responsible citizenry.

Learning Outcome:

At the end of the course the students will -

1. Have a nuance understanding of the concept of citizenship
2. Understand the values and requirements to be a good citizen and take part in social reconstruction as responsible citizens.
3. Be socially sensitive to the identity of others including those belonging to a different race, ethnicity, culture, colour, gender or nationality and deal appropriately.
4. Be responsible citizen, understanding and appreciating the privacy of other fellow citizens.

OE- 3.3: CITIZEN, CITIZENSHIP AND THE INDIAN CONSTITUTION

- Unit 1: Citizenship: Foundations** (15 hours)
- 1.1 Concept of Citizen: Subject- Slave-Citizen: a Comparison, Aspirational Citizenship.
 - 1.2 Citizenship in India: Milestones- Citizenship and Partition of India (Nehru and Liyaqat Ali Khan Pact) The Citizenship Act, 1955, The Citizenship (Amendment) Act, 1986, The Citizenship (Amendment) Act, 2003 and 2005, National Register of Citizens (NRC).
 - 1.3 Citizens and Constitutional Provisions: Fundamental Rights and Duties, Socio-Economic and Cultural Rights.
- Unit 2: Citizenship: Issues** (15 hours)
- 2.1 Citizenship Issues in India: Laws for Immigrants, Laws for Migrants and Asylum seekers, Process of acquiring Citizenship.
 - 2.2 Dual Citizenship: Needs and Demands- Impact of Globalization, Advantages of Dual Citizenship.
 - 2.3 IPC and Citizens Rights: First Information Report, Arrest, Detention, Bail Provisions, Sedition Act, Citizen and Civic Culture.
- Unit 3: Citizenship: Concerns** (15 hours)
- 3.1 Citizen and His Responsibility: Constitutional Provisions, Local Acts, Right to Privacy, Role of NGO's.
 - 3.2: Citizen and Discrimination: Caste, Gender (LGBTQ), language, Race, Colour, Place of Origin.
 - 3.3 Protection of Citizens: Women and Property Rights, Rights of Forest Dwellers, and Displaced People (War, Natural Calamities and Rehabilitation) and Universal Declaration of Human Rights.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end Counselling.

Exercise:

- Students and teachers collectively work towards building communication network among vulnerable citizens who have no knowledge about their own rights.
- Through activities they may form empowering groups and support immigrants/ migrants resolve their legal issues with authorities like police and government.
- They may visit courts, police stations, regional passport offices and spread the laws relating to migrants, immigrants regarding their rights.

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

Suggested Readings

1. Marcus Raskin, 'Nation Building and Citizenship: Studies of our Changing order' Routledge India, New Delhi, 1996.
2. Atul Kolhi, 'Democracy and Discontent: India's growing crises of Governability, Cambridge University Press, 1991.
3. Atul Kolhi, The success of India Democracy, Cambridge University Press, 2001.
4. Savitaha Rao, India's Positive Citizen Building- A Great Nation One Action at a Time, Wings Publishing, Bangalore, 2020.
5. Anupama Roy, 'Mapping Citizenship in India', (Oxford India short introductions), OxfordUniversity Press, New Delhi, 2012.
6. Nirag Gopal Jayal, 'Citizenship and its Discontents', Harvard University Press, 2013.
7. Ornit Shani, 'How India become a democratic citizenship and making of the UniversalFranchise', Cambridge University Press, New Delhi, 2017.
8. Koenig Lion, 'Cultural Citizenship in India; Politics Power and Media', Oxford UniversityPress, New Delhi, 2016.
9. Blog.mygov.in/we-the-people-we-the-citizen.
10. Subrata .K.Mitra, 'Citizenship as cultural flow, structure agency and flow', e-Book, 2013, Springer link.

ANCIENT INDIAN POLITICAL IDEAS AND INSTITUTIONS
(DSC – 7)

Course Title: ANCIENT INDIAN POLITICAL IDEAS AND INSTITUTIONS	
Course Code: DSC - 7	Semester: IV
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To provide students an understanding of the social and political philosophy of ancient India.
2. To facilitate assessment of modern notions on socio-political arrangements in the background of the study of Ancient India.
3. To enable critical reflection and to decolonise the mind-set related to India's past.
4. To focus and develop indigenous political theories relevant to changing times.

Learning Outcome:

At the end of the course students will -

1. Have a nuanced understanding of the social and political philosophy of ancient India.
2. Be able to assess modern notions on socio-political arrangements with an understanding of ancient India and its concepts like Dharma, Rajadharma, Nyaya, Viveka etc.
3. Have a critical reflection on the ideas and institutions of ancient India and appreciate the texts and stories that reflect upon our own experience.
4. Be able to revisit our own socio-political structures through understanding of the textual and non-textual sources related to early India, critically reflect upon the European representation of Indian Society and heritage, and develop indigenous political theories relevant to changing times.

DSC-7: ANCIENT INDIAN POLITICAL IDEAS AND INSTITUTIONS

Unit 1: The Framework (15 hours)

- 1.1 Sources of Early Indian Thought: Sources and Limitations: Pre and Post-Colonial.
- 1.2 Perspectives: Orientalists, Nationalists, Marxian (Asiatic Mode of Production) and Gandhiji on Varnashrama Dharma, Dr. Radhakrishnan perspective.
- 1.3 Indian Culture: Colonial Narratives (William Jones, Macaulay) v/s Post-Colonial (Dharampal and Edward Said, S.N. Balagangadhara).

Unit 2: Ideas, concepts and institutions (15 hours)

- 2.1 Socio-Political Ideas in the Early Indian Thought: Dharma, Rajadharma, Dandaniti, Nyaya, Vaisheshika, Shunya, Ratnin Ceremony, Varnadharma, and Ashramadharma, values in Thirukural.
- 2.2 Kingship: Origin Stories, Gopati to Bhupati, Nature and Structure.
- 2.3 Functions of Institutions: Sabha, Samiti, Vidhata, Paura-Janapada.

Unit 3: Governance (15 hours)

- 3.1 Ganasanghas: Nature, Structure, Functions Role of Stories in Indian Tradition.
- 3.2 Ramayana (Valmiki): Ramarajya, Subaltern and Adhyatmic perspective.
- 3.3 Mahabharata (Vyasa): Rajadharma in Shantiparva, Idea of war and Peace.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Close-Reading Sessions of texts/ Assignments/ Seminars/ Group Discussions and Week-end seminars.

Exercise:

- Close reading sessions to be organised to understand the ancient text in its original context by way of discussions.
- Students shall visit the nearby historical places and collect artefacts, stories, and other relics with the help of the native people.
- Students shall respond to accommodate the important criticisms of Ramayana and Mahabharata by its critics and enact dramas and costumes.

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

Suggested Readings

1. Alterkar A.S, State and Government in Ancient India, Motilal Banarsidass, Chowk Banaras, 1949.
2. R.S. Sharma, Early Indian Social and Political Thought and Institutions (Aspects of the Political Ideas and Institutions in Ancient India, Motilal Banarsidass, Delhi, 1991.
3. Jayaswal K.P, Hindu Polity, Bangalore Printing and Publishing Co. LTD, Bangalore, 1943.
4. Goshal U.N, History of Hindu Political Theory, Oxford University Press, Culcutta, 1923.
5. Kangle R.P, Kautilya's Arthasastra, Motilal Banarsidass Publishers Pvt.Ltd, New Delhi, 1986.
6. Bhandarkar D.D, Some Aspects of Ancient Indian Culture, Madras, University of Madras, 1940.
7. Romila Thaper. From Lineage to State, Oxford University Press, United Kingdom, 1984.
8. R.S.Sharma, Shudaras in Ancient India, Motilal Banarsidass, Delhi, 1957.
9. Sharma,R. S India's, Ancient Past, Oxford University Press, New Delhi, 2006.
10. Sharma,R. S, Rethinking India's Past, Oxford University Press, New Delhi, 2010.
11. Kraedar Lawrence, "Formation of the state", Prentice Hall, United State, 1968.
12. Kosambi. D.D, "Introduction to the Study of Indian History", Popular Prakashan, Mumbai, 1956.
13. Said Edward, Orientalism, Pantheon Books, USA, 1978.
14. Misra Vibhuti Bhushan, From the Vedas to the Manusamhita, City/Country BrillAcademic, United States, 1982.
15. Sircar D.C, Studies in the Religious life of Ancient and Medieval India, Motilal Banarsidass, Delhi, 1971.
16. Aiyangar K.R, Ancient Indian Polity, Oriental Books Agency, Poona, 1941.
17. Pargiter R, Ancient Indian Historical Tradition, Oxford University Press, London, 1922.
18. Levin G.M, Bongard, A Complex Study of Ancient India – Multidisciplinary Approach, American Oriental Society, USA, 1989.
19. Kumar S, "Role of State in Ancient India Economy", Ramanand Vidya Bhawan, Delhi, 1986.
20. Sircar D.C, Political and Administrative System of Ancient and Medieval India. Motilal Banarsidass, Delhi, 1975.

21. Maity S. K and Upendra Thakur, Indological Studies, Abhinav Publications, New Delhi, 1991.
22. Mukherjee Shobha, The Republican trends in Ancient India. Munshiram Manoharlal Publishers Private Limited, New Delhi, 1989.
23. Bandyopadhyaya N.C, Development of Hindu Polity and Political Theories, Munshiram Manoharlal Publishers, New Delhi, 1980.
24. Chattopadhyaya D. Lokayata, Peoples Publishing House, New Delhi, 1959.
25. Kosambi D.D, The Culture and Civilization of Ancient India and Historical Outline, Vikas Publishing House Pvt. Ltd, Noida, 1965.
26. Majumdar R. C, History and Culture of Indian People, Vol.I, Dacca University, Bangladesh, 1977.
27. Kulke, Hermen (Ed), State in India, 1000 to 17000, Oxford University Press, Delhi, 1995.
28. Kane P.V, History of Dharmashastras, Vol-1-5, Bhandarkar Institute Press, Poona, 1930.
29. Balagangadhara S.N, Purvavalokana, (Translated and Edited - Rajaram Hegde and J. S. Sadanand)Vasanta Prakashana, Bangalore, 2016. (2010).

MODERN POLITICAL ANALYSIS
(DSC – 8)

Course Title: MODERN POLITICAL ANALYSIS	
Course Code: DSC - 8	Semester: IV
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To equip students to understand the functioning of political institutions with a insights on both normative and empirical ways of understanding.
2. To enable students to grasp and evaluate the value laden and value neutral aspects of government functioning.
3. To enable students to scientifically assess the functioning of the governments as result oriented institutions.
4. To familiarise students with the process of decision making in political institutions.

Learning Outcome:

At the end of the course students will –

1. Have an understanding of the functioning of political institutions and key concepts involved.
2. Understand the political process and various influences operating thereupon.
3. Be able to assess the functioning of the governments and its output.
4. Be able to comprehend and visualise the process of decision making.

DSC – 8: MODERN POLITICAL ANALYSIS

Unit 1: Introduction (15 hours)

- 1.1 Genesis and Emergence of Modern Political Analysis, Modern Political Analysis - Meaning, Nature, Scope and Goals
- 1.2 Political System-Types, similarities and differences, classification- Aristotle and Weber.
- 1.3 Approaches – Traditional- Philosophical, Historical, Institutional, Modern- Behavioural, Systems, Game.

Unit 2: System and Power (15 hours)

- 2.1 Talcott Parson's General Systems theory- Pattern of Inter Relationship, Hierarchical order, Integration.
- 2.2 David Easton's Input-Output model of Political System, Features, Functions and Critical Evaluation.
- 2.3 Power-Meaning, significance, and measurement, difference between Power, Authority, Legitimacy and Influence

Unit 3: Political Process (15 hours)

- 3.1 Almond on Structural – Functional Analysis Karl Deutsch's Communication Theory.
- 3.2 Richard C Snyder's Decision Making Theory, Arthur F. Bentley and David Truman Group theory of Politics.
- 3.3 Political Development - Concept of Political Development - its variables, Development syndrome, Theory of Lucian Pye.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end counselling.

Exercise:

- The department can lead the students to a nearby political institution and explain to them the process of administrative decision making.
- The department may invite functionaries of these institutions to deliberate upon issues of redundancy and simplifying administration.
- Assignments can be given to the students to innovate methods of simplification of administrative procedures in offices of Governments and offer consultancy.

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

Suggested Readings

1. Almond, G. and Coleman. J.S. "The politics of the Developing Areas", Princeton University Press, Princeton NJ, 1960.
2. Almond, G.A. and Verba, S, "The Civic Culture: political Attitudes and Democracy in Five Nations", Princeton NJ, Princeton University Press, 1963.
3. Amin, S, "Accumulation on an old Scale: A Critique of the Theory of underdevelopment", Monthly Review Press, New York, 1974.
4. Apter, D.E, "The Politics of Modernization", University of Chicago Press, Chicago, 1965.
5. Gabriel Almond, "Cooperative Politics: A Development approach" Little Brown, Boston, 1966.
6. Hannah Arendt, "The Origins of Totalitarianism", Harcourt Press, New York, 1951.
7. Johari, J.C, "Comparative Government and Politics", Sterling Publishers Private Limited, New Delhi, 1982.
8. Powell, G.B, Russell J.D, and Kaare Strom, "Comparative Political Today, A World View". London Press, New York, 1970.
9. Rod Hague. Martin Harrop, Shaun Breslin, "Comparative Government and Politics", Palgrave Macmillan press, UK, 1992.
10. Verba S and Almond, "The Civic Culture Revisited", little Brown, Boston, 1980.
11. Dahl, Robert A, Modern Political Analysis, Prentice Hall of India, New Delhi, 1981.

GOOD GOVERNANCE IN INDIA

(Open Elective OE - 4.1)

Course Title: GOOD GOVERNANCE IN INDIA	
Course Code: OE – 4.1	Semester: IV
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To make students understand the concept of Governance and its difference from traditional form of administration
2. To familiarise the students with the concept and elements of Good Governance.
3. To comprehend the changing approach of states to administration.
4. To help students to link the theory taught in the class room with the realities of outside world.

Learning Outcome:

At the end of the course the students will -

1. Understand the difference between traditional form of Administration and the concept of Governance.
2. Be familiar with the concept and elements of Good Governance.
3. Get a perspective of changing modes of Governance with the examples drawn from central and state Governments.
4. Link theory with practice and appreciate the participation of citizens in day to day administration through a charter and other programmes like Sakala, Bhoomi etc.

OE - 4.1: GOOD GOVERNANCE IN INDIA

- Unit 1: Introduction** (15 hours)
- 1.1 Meaning, Characteristics, Elements, Growth and need for Good Governance.
 - 1.2 Theories and Concepts of Governance- Public Choice and Public Value Theory, Good Governance and Globalization.
 - 1.3 Corporate Governance – Networking and Collaborative governance.
- Unit 2: Instruments of Governance** (15 hours)
- 2.1 Public Service Guarantee Act 2011: Features, Provisions and Impact, Right to Information Act- Meaning, Characteristics and Importance.
 - 2.2 E-Governance -Meaning, Characteristics, Importance and E Governance Policy, ICT and Governance.
 - 2.3 Citizens Charter, Digital India, Gender and Governance.
- Unit 3: Governance and society** (15 hours)
- 3.1 Sakala Project, Bhoomi Yojana, SWAYAM and eKissan, eCourt.
 - 3.2 People's Participation and Role of Civil Society, Ethics and Accountability in Governance.
 - 3.3 Challenges before good governance in India.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end counselling.

Exercise:

- Students and the department can undertake survey regarding causes and consequences of failed administration.
- Through activities they can visit their respective villages and prepare papers regarding the working of programmes like Sakala, Bhoomi etc.,
- The department may invite officers connected to Governance projects and have interaction with the students.

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

Suggested Readings

1. Kanak Kanti Bagchi, Good Governance and Development, Abhijeet Publications, New Delhi, 2009,
2. C.P Bharthwal Ed. Good Governance in India, Deep and Deep, New Delhi, 2003.
3. Dhameja Alka Ed, Contemporary Debates in Public Administration, Prentice Hall of India, New Delhi, 2003.
4. World Bank, Governance and Development, Washington, DC, 1992.
5. Niraja Gopal Jayal, Ed, Democratic Governance in India, Sage, New Delhi, 2003.

UNDERSTANDING Dr. B.R. AMBEDKAR

(Open Elective OE - 4.2)

Course Title: UNDERSTANDING Dr. B.R. AMBEDKAR	
Course Code: OE – 4.2	Semester: IV
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To acquaint students of the life, ideas and contribution of Dr. B.R. Ambedkar.
2. To familiarise students with the arguments and position of Dr. B.R. Ambedkar on key social, political, constitutional and democratic issues in India and enable them to critically examine his perceptions.
3. To understand and assess his contribution to modern India and to the making of Indian Constitution.
4. To make students aware of his views on partition of the country and Indian historiography.

Learning Outcome:

At the end of the course the students will -

1. Be able to understand his life, mission and vision.
2. Be sensitised and be able to appreciate his views on democracy, citizenship, freedom, equality, equal treatment and justice.
3. Be equipped to assess his contribution to modern India and to the making of Indian Constitution.
4. Understand his views on some of the important debates like Aryan Invasion Theory, Uniform Civil Code, Islam and partition of India.

OE – 2: UNDERSTANDING Dr. B.R. AMBEDKAR

Unit 1: Life, social views and actions (15 hours)

- 1.1 Dr. B. R. Ambedkar's Journey of Life and Experiences.
- 1.2 Dr. B. R. Ambedkar's perception on Hindu Social Order, Caste and Untouchability (refer Annihilation of Caste).
- 1.3 Dr. B. R. Ambedkar's Initiatives: Mahad Satyagraha, Kalaram Temple Entry Movement.

Unit 2: Dr. B. R. Ambedkar and Indian Politics (15 hours)

- 2.1 Dr. B. R. Ambedkar and Round Table Conference: His Memorandum, Communal Award and Poona Pact.
- 2.2 Dr. B. R. Ambedkar on Partition of India, Dr. B. R. Ambedkar's contribution as the Chairman of the Drafting Committee.
- 2.3 Dr. B. R. Ambedkar's deliberations on key issues in the Constituent Assembly (Article 40, Article 370, Uniform Civil Code, Shariat Laws, Hindu Code Bill, and Affirmative Action).

Unit 3: Ideas and vision (15 hours)

- 3.1 Dr. B. R. Ambedkar's Political Ideas: Democracy, Citizenship, Equality, Freedom and Justice.
- 3.2 Dr. B. R. Ambedkar's views: on Islam, Buddhism, on Religious Conversion, on Aryan Invasion Theory.
- 3.3 Dr. B. R. Ambedkar and Language Question, Dr. B. R. Ambedkar on Education and Women Empowerment and Nationalism.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end counselling.

Exercise:

- Students and teachers collectively debate on the issues of Reservation, Constitutional provisions of reservation, reservation within reservation, creamy layer theory, etc.,
- Give assignments to students to visit colonies of Scheduled Caste and Scheduled Tribes and discuss it in the group about the perception that they have carried.
- Debate on the need for social reform, inclusiveness, changing the cultural and religious outlook among the Indian citizens keeping the view inhuman practice like untouchability, exploitation and visit courts, police stations, etc, to understand conflict resolution mechanisms.

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

Suggested Readings

1. Ambdekar, B.R. "What Congress and Gandhi have Done Untouchables"
["http://www.ambedkar.org/ambcd/41A.What%20Congress%20and%20Gandhi%20Preface.htm"](http://www.ambedkar.org/ambcd/41A.What%20Congress%20and%20Gandhi%20Preface.htm).
2. Ambedkar Annihilation of Caste, Navayana, 11th Edition, 2015.
3. Dhanjaya Keer, Dr.Ambedkar-Life and Mission, Popular Prakashana, Bombay, 1964.
4. Valerian Rodrigues, Essential Writings on Ambedkar, OUP, New Delhi, 2003.
5. Marcus Raskin, 'Nation Building and Citizenship: Studies of our Changing order' Rutledge India, New Delhi, 1996.
6. Atul Kolhi, 'Democracy and Discontent: India's growing crises of Governability, Cambridge University Press, 1991.
7. Atul Kolhi, The Success of Indian Democracy, Cambridge University Press, 2001.
8. Savitaha Rao, India's Positive Citizen Building- A Great Nation One Action At A Time, Wings Publishing, Bangalore, 2020.
9. Nirag Gopal Jayal, 'Citizenship and its Discontents', Harvard University Press, 2013.
10. Koenig Lion, 'Cultural Citizenship in India; politics power and media', Oxford University Press, New Delhi, 2016.
11. Subrata K. Mitra, 'Citizenship as cultural flow; structure agency and flow', e-Book, Springer link, 2013.
12. Sharma, A, Dr. B.R. Ambedkar on the Aryan Invasion and the Emergence of the Caste System in India, Journal of the American Academy of Religion, 73(3), 2005, pp. 843-870.
13. Ambedkar, B. R. (1946). Pakistan or The Partition of India, In Narke, H. (2nd ed.), 2014.
14. Dr. B. R. Ambedkar Writing and Speeches, Vol. 8. Delhi: Dr. Ambedkar Foundation, Ministry of Social Justice & Empowerment, Govt. of India.
 Available at: https://mea.gov.in/Images/attach/amb/Volume_08.pdf.
15. Misra, J., & Mishra, J. Dr. B.R. Ambedkar and The Constitution - Making In India, Proceedings of the Indian History Congress, 1991, 52, pp. 534-541.
16. Constituent Assembly Debates, Ambedkar's speech on Draft Constitution on 4th November 1948, CAD Vol. VII, Lok Sabha Secretariat, Government of India, 3rd Print, pp. 31-41.
17. Ambedkar, B. R. Thoughts on Linguistic States. Bombay: Ramakrishna Press, 1955.
18. Dr. Babasaheb Ambedkar Writings & Speeches – Vol.1, to Vol. 17- Published by Social Justice and Empowerment, Govt. of India and Ambedkar Foundation, New Delhi, 2015.

POLITICAL JOURNALISM**(Open Elective OE- 4.3)**

Course Title: POLITICAL JOURNALISM	
Course Code: OE – 4.3	Semester: IV
Course Credits: 3	Total Contact Hours: 45
Formative Assessment Marks: 40	No. of Teaching Hours/Week: 3
Summative Assessment (Marks): 60 (Theory)+40 (IA) = 100	Duration of End Sem. Exam: 2 Hours

Course Objective:

1. To equip students to develop insights into political reporting.
2. To grasp the essentials of writing skills backed by proper use of grammar and economy of words.
3. To provide a broad overview of the nuances of interpreting the political phenomena from grassroots to the Parliament.
4. To consider seriously Media as a career option.

Learning Outcome:

At the end of the course the students will -

1. Understand the nature and skills required for reporting and have insights about the system and political contours.
2. Develop writing and interpretative skills.
3. Acquire skills for political reporting covering government and governance, campaigns and candidates, tactics and strategies and policy issues in the public arena.
4. Grasp the basics of reporting and develop interest in Media as a career option.

OE – 4.3: POLITICAL JOURNALISM

- Unit 1: Introduction** (15 hours)
- 1.1 Defining Political Journalism, Traditional and Modern views about State and Politics.
 - 1.2 Understanding of Political Development: Caste, Religion, Linguistic and Party Perspectives.
 - 1.3 Defining the Role of Mass Media- Print, Electronic and Web (Social Media).
- Unit 2: Political system and journalism** (15 hours)
- 2.1 Political Culture- Shared Beliefs, Values, Ideologies and Norms, Process of Socialisation.
 - 2.2 Political Participation –Modes of participation, Political Apathy.
 - 2.3 Methods of Political Journalism- Interviews, Political Debates, Commentary on Legislations.
- Unit 3: Essentials of Reporting** (15 hours)
- 3.1 Communication- Defining Communication, Shaping Public Opinion, Encoding and Decoding.
 - 3.2 Skills of Writing - Vocabulary, Epitomizing, Punctuation.
 - 3.3 Report Writing- Journalistic Writing Skills, Yellow Journalism, and Use of Facts and Figures and Interpretations.

Pedagogy:

Lectures/ Tutorials/ Interactive Sessions/ Self-guided Learning Materials/ Open Educational Resources (as reference materials)/ Practical Exercises/ Assignments/ Seminars/ Group Discussions and Week-end counselling.

Exercise:

- Conducting classroom Common seminars on Media and Politics
- Making students to read and write newspaper headlines focusing on politics,
- Visit to media houses and talks with senior political news room heads.

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

Suggested Readings

1. Iorio, Sharon Hartin. *Qualitative Research In Journalism*, Erlbaum Associates, London, 2004.
2. Merritt, Davis, *Public Journalism And Public Life*, Erlbaum Associates, London, 2004.
3. Kuhn, Raymond, *Political Journalism New Challenges, New Practices*, Rutledge, New York, 2003.
4. Sedorkin, Gail, & McGregor, Judy. *Interviewing – A Guide For Journalist And Writers*, Crows Nest, Allen and Unwin, N.S.W, 2002.
5. McNair, Brian, *Journalism and Democracy*, Rutledge, London, 2000.
6. Bovie, Waxen G, *Discovering Journalism*, Greenwood Press, West Port CT, 1999.
7. Winch, Samuel P, *Mapping the Cultural Space Of Journalism*, Praeger, West Port CT, 1997.
8. Jangam, R.T. (et al), *Political Analysis*, Oxford and IBH Publication, New Delhi, 1997.
9. Johari, J.C, *Comparative Politics*, Sterling Publishers, New Delhi, 1982.
10. Dahl, Robert A, *Modern Political Analysis*, Prentice Hall of India, New Delhi, 1981.

Model Question Paper

MANGALORE UNIVERSITY

POLITICAL SCIENCE

(Title of the Course)

----- Semester BA Degree Examination, (Month & Year)

Time: 3 hours

Maximum Marks: 60

Section A

(5 x 3 = 15 marks)

Instruction: Answer **any three** of the following, each not exceeding two pages

- 1.
- 2.
- 3.
- 4.
- 5.

Section B

(15x 3 = 45 marks)

Instruction: Answer **any three** of the following, each not exceeding four pages

- 6.
- 7.
- 8.
- 9.
- 10.
- 11.

BA
Semester 3

DSC-5

Course Title: Political History of India (From Indus Culture upto 1206)	
Total contact Hours: 39-42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 2hours
Model Syllabus Authors:	Summative Assessment Marks:60

Course Pre-requisites(s): History and Culture of Political History of India

Course Outcomes (Cos):

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

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the history and culture of Political History of India region.
- Analyse the importance of causes for backwardness of this region.
- Understand the influence of political influence on the people and culture of this region.
- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

Course Outcomes (Cos)/Program Outcomes (Pos)	DSC 1	DSC 2	DSC 3	DSC 4	DSC 5	DSC 6	OE 1	OE 2	SEC 1	SEC 2
Disciplinary knowledge	X	X	X	X	X	X	X	X		
Communication Skills	X	X	X	X	X	X	X	X	X	X
Critical Thinking	X	X	X	X	X	X	X	X	X	X
Problem Solving	X	X	X	X	X	X	X	X	X	X
Analytical Reasoning	X	X	X	X	X	X	X	X		
Cooperation and Team Work	X	X	X	X	X					

Reflective Thinking	X	X	X	X	X	X	X	X	X	X
Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

BA
Semester 3

DSC-5

POLITICAL HISTORY OF INDIA (From Indus Culture upto 1206)

The main objective of this syllabus is to provide a broad historic outline about the process of socio-political formations in the north and south India up to 1206 CE. Four modules introduce four main process of the Socio - Political formations; the emergence of the first urbanization in the north western part of early India during bronze age, the Socio - Political formations of Indo Gangetic plains in the Iron Age, the emergence of an empire under Mauryas in the north the chola – chera policy in the South and the formation of feudal cultures in the north and south.

UNIT -1 Towards Civilization -Harappan and Vedic Civilization	
Chapter-I	6
Pre-Harappan cultures; - extension of the Harappan culture- features of the Harappan sites; Harappa, Mohenjodaro, Lothal, Dholavira, Kalibangan	
Chapter-II	6
Debate on the decline of Indus civilization, Debate on Harappan script: AiravathamMahadevan – AskoParpola	
Chapter-III	6
Vedic literatures and Archaeological evidences - PGW, NBPW- early tribal pastoral and agrarian society in the Gangetic Plains, Early and later Vedic polity	
UNIT -2 : Socio-Political Formations in the Indo - Gangetic Plains Nature of state	
Chapter-IV	6
Formation of urban centers- Mahajanapadas,- Oligarchies, Monarchies and republics	
Chapter-V	6
Material setting of the formation of Jainism and Buddhism ,From Mahajanapadas to the empire- domination of Magadha- foundation of Mauryan polity,	
Chapter-VI	5
Asokan Edicts and Megasthenees'sIndica, Arthasasthra and early Indian treatise on the theory of state; Sapthanga – nature of Asoka's dhamma	
UNIT -3 :	
Chapter-VII	5
Chera, Chola and Pandya polity- Chalukyan polity -Guptha polity.	
Chapter -VIII	6
Debates on Indian feudalism; R.S Sharma, HerbansMukhiaSouth Indian feudalism	
Chapter -IX	5
Arab conquest of Sind- the Sultanate ascendancy in India.	

Essential Readings:

D.N Jha. Ancient India an Introductory Outline
ShareenRatnagar. Understanding Harappa
M.K Bhavalikar. Cultural Imperialism
R.S. Sharma. India's Ancient Pasts
Upinder Singh. A History of Ancient and Early Medieval India
R.S. Sharma. Material Culture and Social formations in Ancient India
.....India's Ancient Past
RomilaThappar. From Lineage to State
.....Early India
Upinder Singh. A History of Ancient and Early Medieval India

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Political History Of India Region. The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history and Culture of Political History Of India Region. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History and Culture of Political History Of India region. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage and also the cultural diversity of Political History Of India region in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)**Outlines for continuous assessment activities for C1 and C2**

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

DSC-6

Summative Assessment Marks:60

- [illegible]

Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

BA

Semester 3

DSC-6

History of Coastal Karnataka and Kodagu (Compulsory paper)

Content of Course 1	42 Hours
UNIT -1 Introducing History of Coastal Karnataka and Kodagu	
Chapter-I Historical Geography	5
Geographical Features of Coastal Karnataka and Kodagu - Sources:	
Chapter-II Pre -History	7
Palaeolithic Culture – Mesolithic Culture –Neolithic Culture Megalithic Culture – Types of Megalithic Burials – Grave goods – Formation of Villages and Social life – Beliefs and Customs – Iron and tank irrigation. Rock Art – Avalakki Pare – Buddhanajeddu – Gavali sites.	
Unit II Historical Period	

Chapter III	5
Maurya – Shatavahana – Kadamba's. Early Alupa's – Aluvarasa I – Chitravahana I – Aluvarasa II – Civil war	
Chapter IV	5
Medieval Alupa's – Kundavarma – Jayasimha – Kulasekhara I – Kundana – Ballamahadevi. Hoysala invasions on Coastal Karnataka and Kodagu	
Unit III Vijayanagar Period	
Chapter V	10
Rise of Vijayanagar Empire Chikkayi Tayi and Rise of Sangama Dynasty – Governor's – Banga Chiefs. Saluva's and Tuluva's – Governor's and Bhairara's of Kalasa and Karkala – Haduvalli – Gerusoppe Chiefs – Honneya Kambali's Araveedu Dynasty – Nayakas of Keladi	
Unit – IV Rise of Hyder and Tippu- Haaleri Dynasty	
Chapter-VI	5
Anglo-Mysore war's – Fall of Tippu	
Chapter-VII Haaleri Dynasty – Chikaveera Rajendra – Rajendra Name	5

BOOKS SUGGESTED:

1. K. V. Ramesh, A History of South Kanara, 1975
2. K. V. Ramesh , Tulunadina Itihasa, 1968
3. K. V. Ramesh, and M. J. Sharma , Tulunadina Arasumanethanagalau mattu Dharma Samanvaya, 1985
4. K. V. Ramesh, and M. J. Sharma, Tulunadina Sasanagalu.
5. B.A. Saletore, Ancient Karantaka, Vol. I: History of Tuluva, 1936
6. B.A. Saletore, Karnataka's Tans-Oceanic Contacts, 1956
7. M. Ganapathi Rao, Aigal, Dakshina Kannada Jilleya Prachina Itihasa.
8. Gaovinda Pai, Samagra Barahagalu

9. Gururaja Bhat, P, Studies in Tuluva History and Culture, 1975.
10. Gururaja Bhat, P -, Antiquities of South Kanara, 1969.
11. Gururaja Bhat, P, Tulunadu, 1963.
12. Kushalappa Gowda and Chinnappa Gowda K, Dakshina Kannada Jilleya Kaifiyattugalu, 1983.
13. Vasantha Madhava K.C., Religions in Coastal Karnataka, 1985.
14. Vasantha Madhava K.C , Western Karnataka: its Agrarian Relations (1500- 1800 A.D), 1991.
15. J. Sturrock, U., Madras District Manuals of South Canara Vol. 1., 1894.
16. H. A. Stuart, Madras District Manuals of South Canara Vol. 2., 1895
17. C. N. Ramachandran, et. al, (ed.) Perspectives on Dakshina Kannada and Kodagu, 1991.
18. Thurston, Castes and Tribes of Southern India, Vol V, 1909.
19. The Early Coorgs: A History of Early Kodagu and Its People: [Mookonda Kushalappa](#)
20. **Mysore and Coorg a Gazetteer by Benjamin Lewis Rice:** [Benjamin Lewis Rice](#)
21. Kodagina Itihasa D N Krishnappa
22. Kodagina Haleri Raajavamsha M G Nagaraj

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of History of Coastal Karnataka and Kodagu. The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history and Culture of History of Coastal Karnataka and Kodagu. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History of Coastal Karnataka and Kodagu

It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of pre-history, political, Culture and Heritage and also the cultural diversity of History of Coastal Karnataka and Kodagu in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the political forms.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

Cooperation and Team Work	X	X	X	X	X					
Reflective Thinking	X	X	X	X	X	X	X	X	X	X
Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

Introduction to Epigraphy
Paper -3.3
Open Elective -3
Course Category: Elective course 2

No. of Credits: 3

No. of Contact Hours: 3 Hours per week

This paper aims to provide a broad outline about the nature of epigraphical studies in India and also familiarize the ancient scripts. Students could differentiate the inscriptions based on script and language. Use inscriptions as source material for reconstruction of History and historical Understanding. Read the inscriptions and manuscripts and compares it with present style of writing

CONTENT OF COURSE	42 HOURS
UNIT-I Introduction to Epigraphy	
CHAPTER-1 ❖ Evolution of Indian Epigraphy and methods of epigraphy, ❖ Definitions- Key concepts; epigraphy, paleography.	06
CHAPTER-2 ❖ James Prinsep and the decipherment of Brahmi inscriptions ❖ Attempts to decipher the Indus script Methods; eye copy, estampage and photography	06
CHAPTER-3 ❖ Presentation of Text- ❖ Dating- Eras; Kali era, Saka era, Vikrama era. ❖ Collections of inscriptions during Colonial Period; EpigraphiaIndica, ❖ South Indian Inscriptions,	06
UNIT-II Epigraphic carnatica.	
CHAPTER-4 Scripts; Brahmi ,Kharoshti, Vattezhuttu, , Grantha ❖ Medium of inscriptions ❖ palm leaves, ❖ copper plates, ❖ silver plates, ❖ walls of caves	05
CHAPTER-5 ❖ Nature of inscriptions; Memorials, Labels, land grants, phashasthi.	03
CHAPTER-6 Historicizing Some Important Inscriptions Asokan inscriptions in Karnataka ❖ Halmidi inscriptions ❖ Uttaramerur inscription ❖ Aihole ❖ Inscriptions of vijayanagara period	04
UNIT-III	
CHAPTER-7 North Indian Epigraphy/Inscriptions. ❖ Hatigumpha Inscription of Kharavela. ❖ Samudragupta's Allahabad Pillar Inscription.	04
CHAPTER-8 South Indian Epigraphy/Inscriptions. ❖ Talagunda Inscription ❖ Nasik Inscription	04
CHAPTER-9 PracticalsIn Kannada Palaeography. ❖ Practical Training in taking estampages of stone and copper plate inscriptions by visiting the historical places.	04

REFERENCE BOOK

1. Buhler, G., Indian Palaeography, Indological Book House, N.Delhi, 1968
2. Pandey, R.B., Indian Palaeography, Motilal Banarsidas, Benaras, 1952
3. Dani, A.H., Indian Palaeography
4. Mahalingam, T.V., Early South Indian Palaeography, University of Madras, 1967
5. Sivaramamurthy, Indian Epigraphy and South Indian Scripts
6. Burnell, A.C., Elements of South Indian Palaeography
7. Mahalingam, T.V., Early South Indian Palaeography
8. Rajan, K., Kalvettiyal (Tamil), Mano Pathippagam, Thanjavur
9. Natana. Kasinathan, Kalleluttukalai, (Tamil)
10. Subramanian, T.N., South Indian Temple Inscriptions.

Pedagogy:

Knowledge: the student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Introduction to Epigraphy. The student should be able to recall, recognize, show and read the history of the medieval times.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc., related to Introduction to Epigraphy. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of Introduction to Epigraphy. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts and figures.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, diplomatic relations of the rulers of medieval times in historical perspective that discusses numerous political practices that have evolved over centuries. The students will gather knowledge about the various dynasties, political diplomacy, results and impact wars and battles the people. It also helps the students to develop the knowledge and awareness about the political ideologies.

Assessment:**Weight age for assessment (in percentage)****Outlines for continuous assessment activities for C1 and C2**

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

O.E III Semester

Title of the Course: Freedom Movement in Karnataka (1800-1947)	
Total contact Hours: 39-42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 60
Model Syllabus Authors:	Summative Assessment Marks:

Course Pre-requisites(s): Freedom Movement in Karnataka (1800-1947)

Course Outcomes (Cos):

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

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the Freedom Movement in Karnataka (1800-1947)
- Analyse the importance of causes for backwardness of this region.

Understand the influence of Freedom Movement in Karnataka (1800-1947)

- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

[illegible]

Cooperation and Team Work	X	X	X	X	X					
Reflective Thinking	X	X	X	X	X	X	X	X	X	X
Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

BA**O.E III Semester****O.E-3: Freedom Movement 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 Early Uprisings in Karnataka	12/13
Chapter No.1 Dhondya Wagh, Venkatadri Nayaka, Koppala Veerappa, Deshmuks of Bidar, Shivalingaiah, Sindagi Revolt.	05
Chapter No.2 Rani Chennamma-Sangolli Rayanna-Nagar Revolt-Kodagu Revolt	04
Chapter No.3 1857 and After-Bedas of Halagali-Naragunda Babasaheb Revolt-Surapura Venkatappa Nayaka-Mundaragi Bheema Rao	04
Unit – 2 Nationalism in Karnataka	13/14
Chapter No.4 Nationalism-Causes for the Rise of Nationalism-Impact of Tilak-Chatrusutras-Gandhi in Karnataka-Belguam Congress1924	05
Chapter No.5 Khadi Movement-Koujalagi Hanumantha Rao-Hallikeri Gudleppa-Tagaduru Ramachandra Rao	05
Chapter No.6 Harijana Movement -Harijana Sevaka Sangha-Sardhar Veeranna Gowda Patil-Nagamma Patil-Siddamati Mylar	04
Unit – 3 Gandhi Movements in Karnataka	14/15
Chapter No.7 Non-Cooperation Movement-Salt Sathyagraha-Ankola-No Tax Campaign in Uttar Karnataka-Forest Sathyagraha.	05
Chapter No.8 Genesis of Mysore Congress-Shivapura Dhwaja Sathyagraha-Vidurashwatha Tragedy-Patel Mirza Pact-Quit India Movement-Isooru Tragedy.	05
Chapter No.9 Establishment of Responsible Government in Princely Mysore-Mysore Chalo Sathyagraha-First Congress Ministry-A Brief Profile of Karnataka Freedom Fighter.	05

Books for Reference

AUTHORS – BOOKS

1. Diwakar.R.R -Karanirakaneya Veerakathe
2. Diwakar.R.R -Karmayogi Hanumantharayaru
3. Diwakar.R.R-Karnataka Through the Ages
4. Doreswamy.H.S-Horatada Ditta Hejjegalu
5. Hallappa G.S-History of Freedom Movement in Karnataka, Volume-2
6. Handa.R.L-History of Freedom Movement in Princely Mysore
7. Joyish M.N-Karmayogi Tagaduru Ramachandra Rayaru
8. Nagarathnamma.S-Karnatakadalli Asahakara Mattu Nagareeka Khanunubanga Chaluvali
9. Sardar Veerannagowda Patil-Atma Neevedane
10. Sarojini Sindri and Raghavendra Rao- Women Freedom Fighters in Karnataka
11. Suryanath Kamath (Ed)-Swatantrya Sangramada Samthigalu,
12. Suryanath Kamath-A Concise History of Karnataka
13. Tee.Tha.Sharma-Karnatakadalli Swatantra Sangrama
14. Veerathappa. K-Mysuru Samsthanadalli Swatantrya Chaluvali
15. Veerathappa. K-Readings in Modern History of Mysore Vol-1,2,3
16. ಪಿ.ಎ.ಆರ್.ಪಾಟೀಲ - ಇತಿಹಾಸದ ದೃಷ್ಟಿ - 1
17. ಡಿ.ಜಿ.ಎಸ್.ಪಾಟೀಲ - ಇತಿಹಾಸದ ದೃಷ್ಟಿ - 2

Pedagogy:

Knowledge: the student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of History of Freedom Movement in Karnataka (1800-1947). The student should be able to recall, recognize, show and read the history of the medieval times.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc., related to History of Freedom Movement in Karnataka (1800-1947). The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History of Freedom Movement in Karnataka (1800-1947). It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts and figures.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, diplomatic relations of the rulers of medieval times in historical perspective that discusses numerous political practices that have evolved over centuries. The students will gather knowledge about the various dynasties, political diplomacy, results and impact wars and battles the people. It also helps the students to develop the knowledge and awareness about the political ideologies.

Assessment:

Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

DSC-7

Course Pre-requisites(s): Political History Medieval India (from 1206 to 1761).

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

- Understand the Political History Medieval India (from 1206 to 1761). Analyse the importance of causes for backwardness of this region.
- Understand the influence of Political History Medieval India (from 1206 to 1761).
- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

[illegible]

Cooperation and Team Work	X	X	X	X	X					
Reflective Thinking	X	X	X	X	X	X	X	X	X	X
Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

BA**Semester 4**Title of the Course: **History of Medieval India**

Course 1 (DSC-7)		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 Hours
Unit -1 Interpreting Medieval Indian History		14
Chapter No. 1	Interpreting Medieval Indian History	2
Chapter No. 2	Debate on Indian Feudal System	6
Chapter No. 3	Interpretation of Peasant State and Society of Medieval India – North India & South India – Agrarian System of Mughal and Vijayanagara Period. Bhakti Movement – Kabir, Nanak, Meera Bai, Sri Chaithanya – Alvars, Nainars.	6
Unit -2 Political Structure of Medieval Northern India and Southern India		14
Chapter No. 4	Comparative study of Vijayanagara Polity, Delhi Sultanate and Mughals – process of Urbanization in Mughals and Vijayanagara period	6
Chapter No. 5	Nature of state in Vijayanagara Kingdom, Delhi Sultanate and Mughal dynasties	6
Chapter No. 6	Military Technology of Mughals and Vijayanagara dynasties – Development of Science & Technology in Medieval India	4
Unit -3 Minor Kingdoms of North India		14
Chapter No. 7	Rajaputs, Gurjara Pratiharas, Palas, Paramaras	6
Chapter No. 8	Vijayanagara dynasy – Amaranayaka System – Creation of Wealth.	6
Chapter No. 9	The rise of the Marathas – Shivaji and his administration – Astha Pradhana System Map Extent of Vijayanagara Empire under Krishnadevaraya, Extent of Mughal Empire under Akbar, Important trade Centers of Medieval India : 1. Agra 2. Fatehpur Sikri 3. Delhi 4. Mewar 5. Hampi 6. Honnavara 7. Bhatkal 8. Raighad 9. Tirupati 10. Anegondi	4

Books for Reference:

1. Anil Chandra Banarjee	History of India
2. S.C.Rayachoudhary	History of Medieval India (From 1000-1707 C.E.)
3. Sarkar, Jadunath	Shivaji and his Times
4. Sharma S.R.	Mughal Administration
5. Tripathi R.P.	Rise and Fall of Mughal Empire
6. Wolseley Haig and Richard Burn	Cambridge History of India Vo. IV
7. Khosala, R.P.	Mughal Kingship and Nobility
8. Srivastav A.L.	Mughal Empire
9. A.C.Banarjee	New History of Medieval India
10. Satish Chandra	History of Medieval India
11. Banerjee A.C.	The State and Society in Northern India (1206 -1526 C.E.)
12. Kulkarni A.R.	Maharashtra in the Age of Shivaji
13. R.C.Majumdar (Ed.)	The Delhi Sultanate
14. R.C.Majumdar (Ed.)	The Mughal Empire
15. ¥ÉÆ.Dgi.qÁdt ¢ÄÄvÄÄÜ qÁ.J.¹.ÉÁUÉÄ±	ªÄÄzsÄÄPÄ°ÃÉ "sÁgÄvÄzÄ Ew°ÄÄ

Pedagogy:

Knowledge: the student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of History of Medieval India. The student should be able to recall, recognize, show and read the history of the medieval times.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc., related to medieval India. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of medieval Indian history. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts and figures.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, diplomatic relations of the rulers of medieval times in historical perspective that discusses numerous political practices that have evolved over centuries. The students will gather knowledge about the various dynasties, political diplomacy, results and impact wars and battles the people. It also helps the students to develop the knowledge and awareness about the political ideologies.

Assessment:**Weight age for assessment (in percentage)****Outlines for continuous assessment activities for C1 and C2**

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

DSC-8

[illegible]

Analytical Reasoning	X	X	X	X	X	X	X	X		
Cooperation and Team Work	X	X	X	X	X					
Reflective Thinking	X	X	X	X	X	X	X	X	X	X
Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

BA

Semester 4 (DSC-8)

CULTURAL HISTORY OF INDIA (From Saraswati - Indus culture to 1206 CE)

Objectives in this lesson

students investigate various facets of Indian culture. Throughout the chapter, emphasis will be on the concept and importance of Indian culture through various ages of India. After studying this lesson you will be able to:

- understand the concept and meaning of culture;
- establish the relationship between culture and civilization;
- establish the link between culture and heritage;
- discuss the role and impact of culture in human life.
- describe the distinctive features of Indian culture;
- identify the central points and uniqueness of Indian culture;
- explain the points of diversity and underlying unity in it; and
- trace the influence and significance of geographical features on Indian culture.

CONTENT OF COURSE	42 HOURS
UNIT-I Indian Culture: An Introduction	
CHAPTER-1 Characteristics of Indian culture.	06
CHAPTER-2 Significance of Geography on Indian Culture.	06
CHAPTER-3 Religion and Philosophy in India: Ancient Period: Pre-Vedic and Vedic Religion, Buddhism and Jainism, Indian philosophy.	06
UNIT-II A Brief History of Indian Arts and Architecture	
CHAPTER-4 Indian Languages and Literature – Nagari – Devanagari, Grantha – Dravidian languages – Kannada.	05
CHAPTER-5 Evolution of script and languages in India: Harappan Script and Brahmi Script.	03
CHAPTER-6 Short History of the Sanskrit literature: The Vedas, and Upanishads , Epics: Ramayana and Mahabharata - History of Buddhist and Jain Literature in Pali, Prakrit .	04
UNIT-III ART & ARCHITECTURE	
CHAPTER-7 Indian Art & Architecture: Gandhara School and Mathura School of Art; - Hindu Temple Architecture, Buddhist Architecture- Indian Painting Tradition: ancient painting at Ajantha.	04
CHAPTER-8 Performing Arts: Divisions of Indian classical music: Hindustani and Carnatic, -Dances of India: Various Dance forms: Classical and Regional,	04
CHAPTER-9 Indian Culture in South East Asia	04

Books for Reference

1. Gore, M. S., Unity in Diversity: The Indian Experience in Nation-Building, Rawat Publication, Jaipur, 2002.
2. Kabir, Humayun N, National Information and Publications Ltd., Mumbai, 1946.
3. Malik, S. C., Understanding Indian Civilisation : A Framework of Enquiry, Indian Institute of Advanced Study, Simla, 1975.
4. Mukerji, D. P., Sociology of Indian Culture, Rawat Publications, Jaipur, 1948/1979.
5. Pandey, Govind Chandra, Foundations of Indian Culture, Books and Books, New Delhi, 1984.

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Cultural History of India (From Saraswati - Indus Culture to 1206 CE). The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history of Cultural History of India (From Saraswati - Indus Culture to 1206 CE). The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History of Cultural History of India (From Saraswati - Indus Culture to 1206 CE). It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage of Cultural History of India (From Saraswati - Indus Culture to 1206 CE) in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

OPEN ELECTIVE

Course Title: Freedom Movement in India (1885-1947)	
Total contact Hours: 39-42	Course Credits: 3
Formative Assessment Marks: 40	Duration of ESA/Exam: 2hours
Model Syllabus Authors:	Summative Assessment Marks:60

Course Pre-requisites(s): History of Freedom Movement in India (1885-1947).

Course Outcomes (Cos):

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

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the History of Freedom Movement in India (1885-1947). Analyse the importance of causes for backwardness of this region.
- Understand the influence of History of Freedom Movement in India (1885-1947).
- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

[illegible]

Cooperation and Team Work	X	X	X	X	X					
Reflective Thinking	X	X	X	X	X	X	X	X	X	X
Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

BA**O.E IV Semester****O.E-4: Freedom Movement in India (1885-1947)**

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 Indian Nationalism	12/14
Chapter No.1 Genises of Indian National Congress-Moderate-Objectives-Techniques-Partion of Bengal-Swadeshi Movement	05
Chapter No.2 Split of Congress-Extremists-Objectives-Techniques, Lalalajpat Ray-Balagandharanatha Tilak-Bipan Chandra Pal-Arabindo Ghosh	05
Chapter No.3 Revolutionary Movement-Bhagat Singh-Chandra Sheker Azad-Rajaguru, Sukh Dev. Revolutionary Women-Kumudini Mitra Busu – Madam Bhikaji Cama – Preethi Latha Waddedar	04
Unit – 2 1914 and After	10/12
Chapter No.4 First World War and Indian Nationalism	04
Chapter No.5 Home Rule Movement-Balagangadharanatha Tilak and AnniBesant	03
Chapter No.6 Luknow Pact-1916-Rowllet Act-Jallianwala Bagh Massacre	04
Unit – 3 Gandhian Era	15/17
Chapter No.7 Early Experiments of Gandhi-Non Co-operation Movement-Constructive Programmes-Swaraj Party-Siman Commission	06
Chapter No.8 Lahore Congress-Salt Sathyagraha-Round Table Conference-Communal Award-Poona Pact-Subaschandra Bose-INA	06
Chapter No.9 Partion and Independence: Growth of Communalism Two Nation Theory-August offer-Crips Proposal-Quit India Movement-Cabinet Mission-Mount Batten Plan-1947 Indian Independence Act.	05

Books for Reference:

1. Asharani- Gandhian Non-Violence and Indian Freedom Struggle
2. Bipan Chandra- Indian Struggle for Independence
3. Bipan Chandra-Communalism and Modern India
4. Bukshi S.R-Gandhi and Dandi March
5. Dominique Larry Collins-Freedom at Midnight
6. Judith M Brown-Gandhi's Rise to Power, Indian Politics 1915-22
7. Lakshmi Jain- History of Freedom Movement in India
8. Moulana Abdul Khalam Azad-India Wins Freedom
9. Richard Sesan and Sekhar Bandyopadhyay- Congress and Indian Nationalism -From Plassey to Partion Senley Wofort
10. Shankara Narayana Rao V.S-Swatantrada Guri Bharatada Dari
11. Shankara Narayana Rao V.S-Swatantraya Gangeya Savira Toregalu
12. Subas Chndra Bose-The Indian Struggle
13. Sumit Sarkar-Modern India
14. Tharachand- History of the Freedom Movement in India
15. DzsÄÄPÄ - "sÄgÄVÄZÄ EwPÄÄ - ¥ÉÆ.Dgİ.gÄdt ºÄÄvÄÄÜ qÄ.ÉÄUÉÄ± J.1

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Freedom Movement in India (1885-1947). The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history of Freedom Movement in India (1885-1947). The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History of Freedom Movement in India (1885-1947). It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage of Freedom Movement in India (1885-1947) in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

BA

Semester 4

Course Title: **Principles and Practice of Museology**

Total contact Hours: **39-42**

Course Credits: **3**

Formative Assessment Marks: **40**

Duration of ESA/Exam: 2hours

Model Syllabus Authors:

Summative Assessment

Course Pre-requisites(s): Principles and Practice of Museology

Course Outcomes (Cos):

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

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the History of Principles and Practice of Museology.
- Analyse the importance of causes for backwardness of this region.
- Understand the influence of History of Principles and Practice of Museology.
- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

[illegible]

Self-Motivated Learning	X	X	X	X	X	X	X	X	X	X
Diversity Management and Inclusive Approach	X	X	X	X	X	X	X	X	X	X
Moral and Ethical Awareness Reasoning	X	X	X	X	X	X	X	X	X	X
Lifelong Learning	X	X	X	X	X	X	X	X	X	X

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

BA**Semester 4****PRINCIPLES AND PRACTICE OF MUSEOLOGY**

Content of Course 1		37 Hours
UNIT -1 Introduction to Museology		
Chapter-I		5
History of Museums and Collection - Definition and scope of Museum.		
Chapter-II		4
General Principles of Museums. Functions of Museums		
Chapter-III		4
Museum Movement in Indian subcontinent, Europe, and Western Hemisphere.		
UNIT -2 : Functions and types Museums		
Chapter-IV		5
Functions of Museums: (a.) Collection (b.) Identification (c.) Preservation (d.) Documentation (e.) Presentation (Exhibition) (f.) Research (g.) Educational activities		
Chapter-V		4
Various Types of Museums: Archaeology museums, Art museums History museums, Maritime museums ,Military and war museums, Science museums		
Chapter-VI		3
New trends in Museums and Legislations concerning Museums.		
UNIT -3 : Management and Administration		
Chapter-VII		5
Museum Management and Administration: 1. Location and Surrounding of Museums (a.) Selection of site (b.) Surrounding (c.) Use of space, design (d.) Planning (e.) Construction of museum (f.) Special Problems (war. flood, fire & earthquake etc.).		
Chapter -VIII		3
Museum Conservation and Preservation. 1. General Principles of Conservation (a) Preventive measures (b.) Curative measures		
Chapter -IX		4
Classification of Museums based on the nature of collections, concepts of eco Museum, Personallia Museums, Children Museums, and Virtual Museums.		

Books for Reference

1. Dr. V. Jayaraj - Museology - Heritage Management - Seawaves Printers, Chennai - 86, 2005
2. M.L. Nigam - Fundamentals of Museology, Deva Publicaitons, Hyderabad, 1985
3. Grace Morley - The Museum and its functions, Ed. Saifur Rahman dar, Lahore Museum, Lahore, 1981
4. Dr. V. Jayaraj - Handbook on Conservation in Museums Published by the Commissioner of Museums, Chennai, 1995
5. J. Smifa, J. Baxi and Vinod P. Dwivedi - Museum Storage, Modern Museum, V.P. Abbhinav Publications, New Delhi, 1985
6. Agarwala. V.S. - Museum studies, Prithivi Prakashan, Varanashi, 1978
7. Grace Morley - Museum today, Lucknow, 1981

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of History of Principles and Practice of Museology. The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the History of Principles and Practice of Museology. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of Principles and Practice of Museology. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage and also the cultural diversity of Principles and Practice of Museology in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

Formative Assessment			
Activities	C1	C2	Total Marks
Session Test	10 Marks	10	20
Sessions/Presentations/Activities	10 Marks		10
Case Study/Assignment/Field Work Etc.		10	10
Total			40

[As per NEP-2020 Guidelines]

THIRD SEMESTER

Paper No.	Course	Title of the Course	Instruction Hours per week	Exam Duration	Marks			Credits
					IA	ETE	Total	
1. 1	DSC-5	Political History of India (From Indus Culture upto 1206)	3	2	40	60	100	3
1. 2	DSC-6	History of Coastal Karnataka and Kodagu	3	2	40	60	100	3
1. 3	OE-3	Introduction to Epigraphy OR Freedom Movement in Karnataka (1800-1947)	3	2	40	60	100	3
Total Credits								9

FOURTH SEMESTER

Pape rNo.	Course	Title of the Course	Instructio nHours per week	Exam Duratio n	Marks			Credits
					IA	ETE	Total	
2. 1	DSC-7	History of Medieval India	3	2	40	60	100	3
2. 2	DSC - 8	Cultural History of India (From Saraswati - Indus Culture to 1206 CE).	3	2	40	60	100	3
2. 3	OE-4	Freedom Movement in India (1885-1947) OR Principles and Practice of Museology	3	2	40	60	100	3
Total Credits								9



Mangalore University



Youth Red Cross

Syllabus for III, IV, V & VI Semester

Academic year 2022 - 23 onwards

Mangalore University
Youth Red Cross Syllabus for Skill Enhancement Courses (SEC) (BA/BSc/BCom/BBA/BCA & all other UG programmes)

III Semester

YOUTH RED CROSS	
No of Credits	No of Practical hours/Semester
01	25

Course Objectives	Teaching Learning Process	Learning Outcomes	Course Evaluation
1. To provide facts, figures of blood types, donors and blood storage. 2. To study about various kinds of disasters as well as their causes, this will prepare youth to take precautions.	1. Lecture/PPT 2. Assignment/Projects 3. Online and Offline 4. Self and Referral Studies 5. Focused Group discussion 6. Training 7. Internship 8. Residential/ Non Residential Camps 9. Case Study 10. Survey	1. Youths will acknowledge the importance of Blood donation and will be well prepared to donate blood regularly, also influence others to do the same. 2. Preparedness to assess the situation and contribute for recovery during any sort of disaster.	Formative Assessment for 25 marks. Camp/Internship-internal Viva-Voce and Report Submission

Syllabus, Chapter and Input-wise Objectives:

Objectives:

- 1. To sensitize them on the need for voluntary blood donation and to practice it as a virtue
- 2. To prepare them to volunteer their services in accidental and natural emergencies.

Outcomes:

- 1. They learn about calculated risk taking. Develop altruistic values.
- 2. Their functions skills are upgraded and Orient them for social cause.

Chapters	Subjects	Teaching Hours	Internal Marks
1	Blood Donation: Concept/ Significance/ Eligibility/- Blood in Human Body-Types of Blood/Storage and testing after Blood Donation.	10	10
2	Disaster Management: Meaning/Vulnerability/Types: Man Made/ Natural / Hydride (Man & Nature)- Retro fitting/ Awareness & Preparedness on Disaster Management/ Search & Rescue/Resilience/ Mitigation/ Relief & Rehabilitation & Sheltering/Triaging/Family News Service/ Hygiene Promotion/ Psychological care & Support./ Food & Medicine Distribution	15	15
		25	25

References:

- Biddle, W.W., and Biddle L.J. The Community Development Process. New York: Holt, Rinehart and Winston, 1965.
- Damon, P. Copola, (2006) Introduction to International Disaster Management, Butterworth
- Disaster Management Guidelines, GOI-UND Disaster Risk Program (2009-2012)
- Dahama, O. P., and O. P. Bhatnagar. Education and Communication for Development. New Delhi: Oxford & IBH Publishing Co., 1985.
- Gupta A.K., Niar S.S and Chatterjee S. (2013) Disaster management and Risk Reduction,
- Samuel. Problem Solving in Families: Research and Practice. New Delhi: Sage Publications, 1999.
- Schwartz, Mary Ann, and Barbara Marliene Scott. Marriages and Families. 3rd ed. New Jersey: Prentice Hall, 2000.
- Murthy D.B.N. (2012) Disaster Management, Deep and Deep Publication PVT. Ltd. New Delhi.
- Role of Environmental Knowledge, Narosa Publishing House, Delhi.
- Yudenich,V.V. Accident First Aid.Moscow:MIR Publishers,1982.
- ಸಾಗೇಶ್ವರ. ಪ್ರಥಮ ಚಿಕಿತ್ಸೆ. ಬೆಂಗಳೂರು: ಹೇಮಂತ ಸಾಹಿತ್ಯ, 2008

E- References:

□ <https://www.indianredcross.org/ircs/index.php>

IV semester

YOUTH RED CROSS	
No of Credits	No of Practical hours/Semester
01	25

Course Objectives	Teaching Learning Process	Learning Outcomes	Course Evaluation
1. To be aware of different kinds of facilities, opportunities, duties and responsibilities youths have. 2. To be conscious of diverse schemes and programs government offers for the citizens of India.	1. Lecture/PPT 2. Assignment/Projects 3. Online & Offline 4. Self and Referral Studies 5. Focused Group discussion 6. Training 7. Internship 8. Residential & Non Residential Camps 9. Case Study 10. Survey	1. To contribute for the betterment of the society by making use of different facilities available 2. Identify beneficiaries of schemes and programs provided by the government.	Formative Assessment for 25 marks. Camp/Internship - internal VivaVoce and Report Submission

Syllabus, Chapter and Input-wise Objectives:

Objectives

- 1. To attune them towards the minimum skills and competencies needed to function as useful citizens
- 2. To impart information on welfare schemes available to the poor and needy.

Outcomes:

- 1. They are enabled to identify the right beneficiaries and guide them.

Chapters	Subjects	Teaching Hours	Internal Marks
1	Basic Awareness on – Consumer Awareness- Employment Awareness- Community Resources mobilization & Utilization – Health Awareness Facilities- Awareness of Law & Governance-	15	15

2	Government of India Flagship programs for Community Development -Water conservation-Waste Management- Environment Protection-Bank programs like Sukanya-PMJBY-Bhagya Laxmi-Education Program like Beti Padao Beti Bachao- gender ratio etc.	10	10
		25	25

References:

- Dhama, O.P. Extension and Rural Welfare. Agra: Ram Prasad & Sons, 1968.
- Datar, Sudha, et al., eds. Skill Training for Social Workers: A Manual. New Delhi: Sage Publications India, 2010. □ Desmond, D'Abreo. From Development Worker to Activist. Mangalore: DEEDS, 1989.
- Gangrade, K.D. Community Organisation in India. Bombay: Popular Prakashan, 1971.
- Goel, S.L., and Rajneesh Shalini. Panchayati Raj in India. New Delhi: Deep and Deep Publications, 2003.
- Stephen, T.S. Project Formulation for Voluntary Organisations. Bhubaneswar: PDC, 1994.
- ಹೆಗಡೆ ರೇಖಾ. ಪ್ರಥಮ ಚಿಕಿತ್ಸೆ ಜೆನೈ: ಸುರಾ ಬುಕ್ಸ್ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್, 2009
- **E- References:**
- <https://www.indianredcross.org/ircs/index.php> □ **Journals:.**
- Journal of Social Work and Development Issues. Udaipur School of Social Work.

Teaching Eligibility Criteria:

It is mandatory for the Youth Red Cross (YRC) Programme officers to undergo at least two- day Training of Trainers (ToT). YRC program officer will work as course coordinator and decide two hours for conducting sessions during weekend or holidays. YRC program officer shall identify resource persons available within his/her college and outside the colleges and Voluntary organizations to engage the classes.

Along with the above syllabus all other YRC activities mentioned in the programme guidelines issued by the Government of Karnataka Department of Higher Education in their letter No: ED 38 Vividha 2016, dated: 17/06/2016, Bengaluru. Shall be scrupulously followed.

V semester

YOUTH RED CROSS	
No of Credits	No of Practical hours/Semester
01	25

Course Objectives	Teaching Learning Process	Learning Outcomes	Course Evaluation
1. To Developing values and attitudes that are appropriate for working with community people from various cultural, religious, socio-economic, and political backgrounds	1. Lecture/PPT 2.Assignment/Projects 3.Self and Referral Studies 4.Focused Group discussion 5.Training 6.Case Study 7.Survey	Youth attain professionalism in voluntary action by working with community people from various cultural, religious, socio-economic, and political backgrounds.	Formative Assessment for 25 marks. Camp/Internship- internal Viva-Voce and Report Submission

Syllabus, Chapter and Input-wise Objectives:

Objectives:

1. To make them understand the need for co- operative group living through door camping.
2. To enable them to learn hand-on experience as interneers and attaches and experience gained.
3. To teach them problem solving skills.
4. To impart reporting skills.
- organising out
- also analyse the

Outcomes:

1. Learn to adapt themselves into new situations
2. Learn to link their abilities to the organizational needs of the interned or attached agencies.
3. Helps in gaining negotiating skills in problem solving.
4. Learn to write and record daily activities, work done report and lessons learnt during the placement settings

Chapters	Subjects	Teaching Hours	Internal Marks
01	<u>Internships & attachments- suggestive agencies:</u> 8 hours a day/5 days/ total 40 hours of Service for a student: Attachments in Hospitals/ Schools/ Govt. Establishment's/ Police/ Fire service/Dispensaries/Clinic/Medical Shops/ Nursing home/ Blood Banks/ Pathological laboratories / Anganavadi/ NGO's/ Primary health Care Center/ Self Help Group/Voluntary Organization/Panchayat/ Town Municipals/ City Corporation/ Traffic Control – Road Safety/ Elderly Homes/ Rescue and Rehabilitation/ Destitute centers/ Cooperative Centers/ Help Desk/ Emergency Service centers/ Child line centers • Attendance certificate from concerned authority to acknowledge their service is mandatory) • Submitting a Report on his/her Internships & attachments service to Programme Officer (PO) during Holidays or half days	25	25
		25	25

References:

- Aims, Policy, Rules & Organization. New Delhi: The Bharath Scouts&Guides.2008
- Belilios, Arthur D., Desmond K Mulvany, and Katharine F Armstrong. A Handbook of First AID and Bandaging. London: Balliere, Tindall & Cox., 1962
- Bezzant, Norman. First Aid for Everyday Emergencies. Bombay: Jaico Publishing House,1980
- Chouhan,T.S. Disaster Management: In 21 Century.Jaipur: Mark Publishers,2012.
- Goel, S. L. Disaster Administration & Management: Text & Case Studies. New Delhi: Deep & Deep Publications, 2007.
- Kapoor, Mukesh. Disaster Management. New Delhi: Saurabh Publishing House,2012.
- Misra, Anish. Recent Approaches on Disaster Management. New Delhi: Random Publications, 2011.
- Natarajan, Mayilvahanan. Principles of First Aid & Home Nursing. Madras: Indian Red Cross Society, Tamilnadu Branch, 1993.
- **E- References:**
- <https://www.indianredcross.org/ircs/index.php> □ **Journals:**
- Participative Development. Centre for Social Research and Development

VI semester

YOUTH RED CROSS	
No of Credits	No of Practical hours/Semester
01	25

Course Objectives	Teaching Learning Process	Learning Outcomes	Course Evaluation
1. To obtain practical experience for self-development and for the betterment of the society. 2. To understand the community net-working and its effective linkages to wellbeing of community.	1. Lecture/PPT 2. Assignment/Projects 3. Self and Referral Studies 4. Focused Group discussion 5. Training 6. Case Study 7. Survey	1. Confidence level is enhanced and positive skills are developed for empowerment	Formative Assessment for 25 marks. Camp/Internship-internal Viva-Voce and Report Submission

Syllabus, Chapter and Input-wise Objectives:
Objectives:

- 1. To help develop organizational skills
- 2. To develop capacities to adjust to new environs.
- 3. Regular inter – face with the community.
- 4. To understand the problems and find solutions with community participation.

Outcomes:

- 1. They learn to share responsibilities and analyse the experience.
- 2. Adjust themselves to situations
- 3. Gain first hand knowledge of the community in which they live or intend to serve.
- 4. Acquire writing and reporting skills

Chapter	Subjects	Teaching hours	Internal Marks

01	<u>Community Camps (Residential or Non Residential)</u> 1. 8 hours a day/5 days/ total 40 hours 2. The theoretical knowledge must be helpful in implementing the camping activities 3. Budget could be mobilized from the local donations or college YRC unit fund 4. Camps can be conducted at the college level for their own students or at the cluster level clubbing other small college units together.	25	25
		25	25

Teaching Eligibility Criteria:

It is mandatory for the Youth Red Cross (YRC) Programme officers to undergo at least two- day Training of Trainers (ToT). YRC program officer will work as course coordinator and decide two hours for conducting sessions during weekend or holidays. YRC program officer shall identify resource persons available within his/her college and outside the colleges and Voluntary organizations to engage the classes.

Along with the above syllabus all other YRC activities mentioned in the programme guidelines issued by the Government of Karnataka Department of Higher Education in their letter No: ED 38 Vividha 2016, dated: 17/06/2016, Bengaluru. Shall be scrupulously followed.

Certification:

Core Group Youth Red Cross Volunteers on Completion of all Semesters of Volunteership and assigned tasks and targets shall be issued with the certificate by the University on receipt of the eligible list of volunteers from the colleges.

References:

- Ganguli, L.K.,and A. K. Ganguli. First Aid to the Injured, Nursing and Bandaging. Calcutta: Academic Publishers, 1979.
- Girl Guiding in India.New Delhi:The Bharath Scouts &Guides.2002.
- Newburn, Time. Disaster and After: Social Work in the Aftermath of Disaster. London: Jessica Kingsley Publishers, 1993.
- Palanithurai, G. Panchayats in Disaster Preparedness and Management. New Delhi: Concept Publishing Company, 2009.
- Reza, B. K. Disaster Management. Delhi: Global Publications,2010.
- Sahni, Pradeep, Alka Dhameja, and Uma Medury. Disaster Mitigation: Experiences and Reflections. New Delhi: PHI Learning Private Limited, 2011.
- Shaw, Rajib, and Krishnamurthy R.R. Disaster Management: Global Challenges and Local Solutions. Hyderabad: Universities Press, 2009. □ Singh, R.B. Disaster Management. Jaipur: Rawat Publications,2000.
- Uttarkhand Disaster 2013. New Delhi: National Institute of Disaster Management. 2015.
- Yadav, R. J. Disaster Management in India; Acts: Policies: Guidelines. Vol. I& II. Jaipur: Paradise Publishers, 2011.
- Modh S. (2010) Managing Natural Disasters, Mac Millan publishers India LTD.

- First Aid Hand Book. Bengaluru: Indian Red Cross Society. Karnataka State Red Cross Branch, 2017.
- First Aid Manual: The Authorised Manual of St. John Ambulance St. Andrew's
- Ambulance Association The British Red Cross Society. London: Dorling Kindersley, 1987.
- INDIAN FIRST AID MANUAL 2016 (7th edition) AUTHORIZED MANUAL – ENGLISH VERSION
- ಡಾ. ಸತ್ಯನಾರಾಯಣ, ಎಂ. ಪ್ರಥಮ ಚಿಕಿತ್ಸೆ. ಬೆಂಗಳೂರು: ನವ ಕರ್ನಾಟಕ ಪಬ್ಲಿಕೇಷನ್ಸ್ ಪ್ರೈವೇಟ್ ಲಿಮಿಟೆಡ್, 2011

□ **E- References:**

- <https://www.indianredcross.org/ircs/index.php>
- **Journals:.**
 - Social Change. Journal of the Council for Social Development.

MANGALORE UNIVERSITY

SYLLABUS FOR UNDER GRADUATE PROGRAM (UG) SANSKRIT LANGUAGE CURRICULUM FRAMEWORK

**FRAMED ACCORDING TO THE NATIONAL EDUCATION POLICY
(NEP 2020)**

(III & IV SEMESTERS)

**Ability Enhancement Compulsory Course (L+T)
TO IMPLEMENT FROM THE ACADEMIC YEAR 2022-23**

FOR ALL COURSES

**BOARD OF STUDIES IN SANSKRIT
MANGALORE UNIVERSITY**

MANGALAGANGOTTHRI - 574199

MANGALORE UNIVERSITY

Syllabus

For the year 2022-23 and onwards

**Syllabus framed under National Education
Policy -2020**

SANSKRIT LANGUAGE

Ability Enhancement Compulsory Course

BA/B.Sc/B.Com/BSW/BCA/BBA

III & IV semesters

Course pattern and scheme of examination for all UG Courses

MANGALORE UNIVERSITY
NATIONAL EDUCATION POLICY 2020
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)
LANGUAGES L+T
Board Of Studies in Sanskrit
SYLLABUS FOR SANSKRIT LANGUAGE
UNDER GRADUATE COURSES
CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER SCHEME 2022-23 ONWARDS

III Semester : BA, BSW, HRD, BVA		
BASSKLN301/BSWSKLN301/HRDSKLN301/BVASKLN301		
Sanskrit Language Paper-3 Title – Champu Literature and Concepts of Alankarashastra Maximum Marks: 100		
1	Champu Kavya 1. Introduction to Champu Kavya 2. Champu Ramayane Shoorpanakha Manabhangaha 3. Neelakanthavijayachampu (Sangraha)	15
2	Nirvahanashastram 1. Natyotpattihi 2. Alankarashastram 3. Mahabharate Nirvahanashastram 4. Ashtangayogaha 5. Indriyajayaha 6. Loukika Nyayaha	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation	2 of 4	2X5=10
2	Explanation of a given quote	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Explanation of Nyayas	1 of 2	1X3=03
8	Match the following	4 of 4	4X1=04
9	Fill in the blanks	5 of 7	5X1=05

Learning Outcomes:

•

with Champu Kavyas.

This course aims to acquaint the students

- Champo Kavyas are a beautiful blend of Prose and Poetry in Sanskrit literature which not only reflect poetic excellence but also depicts contemporary society and highlights human values, which would help students in their daily lives.
- The students in this semester are also introduced to specific texts in keeping with their course of study.
- The students of Arts study portions of Bharatha's Natyashastra, Nirvahanashastra as depicted in Mahabharatha, Ashtangayoga in Yogashastra, Indriyavijaya, Manonigraha from Koutilya's Arthashastra, which would not only help in their course of study but also allows them imbibe moral values and life skills.
- Students are introduced to the concepts of Alankarashastra, such as Rasa, Reeti, Guna, etc.
- The semester also focuses on Nyayas, which enables students learn certain proverbs which have hidden in depth meaning and explanation. Understanding these would improve the writing and public speaking skills of students.

Prescribed Textbook:

1. Nirvahanasopanam, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Champooramayanam	-	Bhojaraja
2. Champooramayanam	-	Vyakhyana by Ramachandrabudhendra
3. Neelakanthavijayachampoo	-	Neelakanthadeekshitha
4. Samskrutha Bhashashastra mattu Sahityacharitre	-	Dr K Krishnamurthy, Vidwan N Ranganathasharma and Vidwan H K Siddagangayya
5. Natyashastra	-	Translated by Adya Rangacharya
6. Vishvanatha Virachitam Sahityadarpana	-	Translated by Dr. T G Siddapparadhya
7. Dhvanyaloka	-	Anandavardhana
8. Kavyaprakashaha	-	Mammata
9. Shrimanmahabharatha	-	Bharata Darshana Prakashana
10. Pantanjala Yogashastram	-	Swami Adidevananda
11. Kotuileeya Arthashastram		
12. Sandarbhasooktihi	-	Vidwan Ranganathasharma
13. Loukika Nyayakoshaha by Dr. Penna Madhusoodan	-	Dr. Pramod Ganesh Laale, translated to Sanskrit

IV Semester: BA, BSW, HRD, BVA BASSKLN401/BSWSKLN401/HRDSKLN401/BVASKLN401		
Sanskrit Language Paper-4 Title – Sanskrit Drama and Dramaturgy Maximum Marks: 100		
1	Unit 1: Introduction to Sanskrit Drama and Dramaturgy Origin and development of Sanskrit Drama - Dasarupakas and their lakshana Bhasa Kavi – Place, date and works.	15
2	Unit 2: Pratimanatakam 1-3 Anka Alankara - Upama, Roopakam, Utpreksha, Arthantarnyasaha, Anuprasaha, Yamakam Chandassu - Anushtup, Indravajra, Upendravajra, Vasantatilaka, Malini, Mandakranta	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation of Padya	2 of 4	2X5=10
2	Reference to context	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Alankara	1 of 3	1X4=04
8	Chandassu	1 of 3	1X4=04
9	Fill in the blanks	4 of 6	1X4=04

Learning Outcomes:

- This course aims to acquaint the students with popular Classical Dramas in Sanskrit literature.
- The course also teaches in detail the origin, development and lakshanas of Sanskrit Drama, which gives in depth knowledge on Sanskrit Literature.
- Sanskrit Dramas not only reflect prose and poetic excellence but also depicts contemporary society and highlights human values, which helps the students.
- The students also learn the theoretical aspects related to the production of the play. The concepts like Rasa, Bhava, Abhinaya are blended into the teaching learning of the play.
- The semester also focuses on Chandassu and Alankara, which enables students learn to compose Shlokas and recite them.

Prescribed Textbook:

1. Pratimanatakam, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Bhasanatakachakram - Vyakhyana by Acharya Baladevananda Upadhyaya, Choukamba Samskruta Series, Varanasi
2. Shreevishvanathakavirajapraneetaha Sahityadarpanaha - Vyakhyana by Krishnamohanashastri Choukamba Samskruta Samsthanam, Varanasi
3. Pratimanatakam - Translated by Vidwan Mysuru Seetharama Shastri
4. Pratimatakam - Translated by Dr. K Krishnamurthy
5. Samskruthanataka - Prof. A R Krishnashastri
6. Bhasamahakavi - Prof. C K Venkataramayya
7. Dasharoopakam - Dhananjaya

MANGALORE UNIVERSITY
NATIONAL EDUCATION POLICY 2020
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)
LANGUAGES L+T
Board Of Studies in Sanskrit
SYLLABUS FOR SANSKRIT LANGUAGE
UNDER GRADUATE COURSES
CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER SCHEME 2022-23 ONWARDS

III Semester : BCom		
BCMSKLN301		
Sanskrit Language Paper-3		
Title – Champu Literature and Vanijyashastram		Maximum Marks: 100
1	Champu Kavya 1. Introduction to Champu Kavya 2. Champu Ramayane Devatanam Abhayapradhanam 3. Neelakanthavijayachampu (Sangraha)	15
2	Vanijyashastram 1. Koutaleeya Arthasangraha 2. Geetayam Nirvahanashastram 3. Pracheenam Rajyashastram 4. Krishiparasharaha 5. Patralekhanam 6. Loukika Nyayaha	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation	2 of 4	2X5=10
2	Explanation of a given quote	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Letter Writing	1 of 2	1X6=06
7	Explanation of Nyayas	1 of 2	1X3=03
8	Match the following	3 of 3	3X1=03
9	Fill in the blanks	4 of 6	4X1=04

Learning Outcomes:

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with Champu Kavyas.

This course aims to acquaint the students

- Champu Kavyas are a beautiful blend of Prose and Poetry in Sanskrit literature which not only reflect poetic excellence but also depicts contemporary society and highlights human values, which would help students in their daily lives.
- The students in this semester are also introduced to specific texts in keeping with their course of study.
- The students of Commerce will study Arthaneeti, Rajaneeti from Kautilya's Arthashastram, Management and Administration Skills, Manonigraha from Bhagavadgeeta, Taxation, Raajaneeti, Adhikara Vikendrikarana from Mahabharata, Agriculture from Krishiparashara which would not only help in their course of study but also allows them imbibe moral values and life skills.
- Students are also introduced to the art of Letter Writing and Resume Writing in Sanskrit.
- The semester also focuses on Nyayas, which enables students learn certain proverbs which have hidden in depth meaning and explanation. Understanding these would improve the writing and public speaking skills of students.

Prescribed Textbook:

1. Vanijyavaibhavam, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Champooramayanam	-	Bhojaraja
2. Champooramayanam	-	Vyakhyana by Ramachandrabudhendra
3. Neelakanthavijayachampoo	-	Neelakanthadeekshitha
4. Samskrutha Bhashashastra mattu Sahityacharitre	-	Dr K Krishnamurthy, Vidwan N Ranganathasharma and Vidwan H K Siddagangayya
5. Shreemad Bhagavadgeetha	-	Swamy Ramasukadas
6. Shrimanmahabharatha	-	Bharata Darshana Prakashana
7. Koutileeya Arthashastram	-	
8. Kirshiparashara	-	
9. Sandarbhasooktihi	-	Vidwan Ranganathasharma
10. Loukika Nyayakoshaha Penna Madhusoodana	-	Dr. Pramod Ganesh Laale, translated to Sanskrit by Dr.

IV Semester: BCom BCMSKLN401		
Sanskrit Language Paper-4 Title – Sanskrit Drama and Dramaturgy Maximum Marks: 100		
1	Unit 1: Introduction to Sanskrit Drama and Dramaturgy Origin and development of Sanskrit Drama - Dasarupakas and their lakshana Bhasa Kavi – Place, date and works.	15
2	Unit 2: Pancharatram Alankara - Upama, Roopakam, Utpreksha, Arthantarnyasaha, Anuprasaha, Yamakam Chandassu - Anushtup, Indravajra, Upendravajra, Vasantatilaka, Malini, Mandakranta	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation of Padya	2 of 4	2X5=10
2	Reference to context	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Alankara	1 of 3	1X4=04
8	Chandassu	1 of 3	1X4=04
9	Fill in the blanks	4 of 6	1X4=04

Learning Outcomes:

- This course aims to acquaint the students with popular Classical Dramas in Sanskrit literature.
- The course also teaches in detail the origin, development and lakshanas of Sanskrit Drama, which gives in depth knowledge on Sanskrit Literature.
- Sanskrit Dramas not only reflect prose and poetic excellence but also depicts contemporary society and highlights human values, which helps the students.
- The students also learn the theoretical aspects related to the production of the play. The concepts like Rasa, Bhava, Abhinaya are blended into the teaching learning of the play.
- The semester also focuses on Chandassu and Alankara, which enables students learn to compose Shlokas and recite them.

Prescribed Textbook:

1. Pancharatram, Published by Mangalore University Sanskrit Teachers Association

Reference Books:

1. Bhasanatakachakram - Vyakhyana by Acharya Baladevananda Upadhyaya, Choukamba Samskruta Series, Varanasi
2. Shreevishvanathakavirajapraneetaha Sahityadarpanaha - Vyakhyana by Krishnamohanashastri Choukamba Samskruta Samsthanam, Varanasi
3. Shreebhasapraneetam Pancharatram - With Introduction, English and Kannada Translation, Notes etc by Vidyaratna, Pandit S Rangachar
4. Vishvanatha Virachitam Sahityadarpana - Translated by Dr. T G Siddapparadhya
5. Bhasamahakavi - Prof. C K Venkataramayya
6. Dasharoopakam - Dhananjaya

MANGALORE UNIVERSITY
NATIONAL EDUCATION POLICY 2020
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC) LANGUAGES L+T
Board Of Studies in Sanskrit
SYLLABUS FOR SANSKRIT LANGUAGE
UNDER GRADUATE COURSES
CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER SCHEME 2022-23 ONWARDS

III Semester : BSc, BSc/FND, BHS, BFD, BID, BHM, BSA, BFT, BCS BSCSKLN301/FND SKLN301/BHSSKLN301/BFDSKLN301/BIDSKLN301/ BHMSKLN301/BSASKLN301/BFTSKLN301/BCSSKLN301		
Sanskrit Language Paper-3 Title – Champu Literature and Scientific Literature in Sanskrit Maximum Marks: 100		
1	Champu Kavya 1. Introduction to Champu Kavya 2. Champu Ramayane Devatanam Abhayapradanam 3. Neelakanthavijayachampu (Sangraha)	15
2	Vijnanashastram 1. Sasyajeevavaividya 2. Dinacharyapradeepika 3. Ayurvedasubhashitani 4. Pracheenam Rasayanashastram 5. Patanjala Yogadarshanam 6. Loukika Nyaha	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation	2 of 4	2X5=10
2	Explanation of a given quote	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Explanation of Nyayas	1 of 2	1X3=03
8	Match the following	4 of 4	4X1=04
9	Fill in the blanks	5 of 7	5X1=05

Learning Outcomes:

- This course aims to acquaint the students with Champu Kavyas.
- Champu Kavyas are a beautiful blend of Prose and Poetry in Sanskrit literature which not only reflect poetic excellence but also depicts contemporary society and highlights human values, which would help students in their daily lives.
- The students in this semester are also introduced to specific texts in keeping with their course of study.
- The students of Science study Sasyajeevavaividya (Plant Diversity) from Bhagavatha, Personal and Societal Health from Astangahrudaya, Ayurveda from ancient Sanskrit Literature, Chemistry from Mahabharata, Yoga from Patanjala Yogadarshanam which would not only help in their course of study but also allows them imbibe moral values and life skills.
- The semester also focuses on Nyayas, which enables students learn certain proverbs which have hidden in depth meaning and explanation. Understanding these would improve the writing and public speaking skills of students.

Prescribed Textbook:

1. Vijnanaprasoonam, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Champooramayana	-	Bhojaraja
2. Champooramayana	-	Vyakhyana by Ramachandrabudhendra
3. Neelakanthavijayachampoo	-	Neelakanthadeekshitha
4. Samskrutha Bhashashastra mattu Sahityacharitre	-	Dr K Krishnamurthy, Vidwan N Ranganathasharma and Vidwan H K Siddagangayya
5. Shrimadbhagavatapurana	-	Bharata Darshana Prakashana
6. Shrimanmahabharatha	-	Bharata Darshana Prakashana
7. Pantanjala Yogashastra	-	Swami Adidevananda
8. Ashtangahrudaya	-	Vagbhatacharya
9. Vaidyakeeyasubhashitasahityam	-	Dr. B G Ganekar
10. Sandarbhasooktihi	-	Vidwan Ranganathasharma
11. Loukika Nyayakoshaha	-	Dr. Pramod Ganesh Laale, translated to Sanskrit by Dr. Penna Madhusoodana

IV Semester: BSc, BSc/FND, BHS, BFD, BID, BHM, BSA, BFT, BCS BSCSKLN401/FNDSKLN401/BHSSKLN401/BFDSKLN401/BIDSKLN401/ BHMSKLN401/BSASKLN401/BFTSKLN401/BCSSKLN401		
Sanskrit Language Paper-4 Title – Sanskrit Drama and Dramaturgy Maximum Marks: 100		
1	Unit 1: Introduction to Sanskrit Drama and Dramaturgy Origin and development of Sanskrit Drama - Dasarupakas and their lakshana Bhasa Kavi – Place, date and works.	15
2	Unit 2: Pratijnayougandharayanam Alankara - Upama, Roopakam, Utpreksha, Arthantarnyasaha, Anuprasaha, Yamakam Chandassu - Anushtup, Indravajra, Upendravajra, Vasantatilaka, Malini, Mandakranta	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation of Padya	2 of 4	2X5=10
2	Reference to context	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Alankara	1 of 3	1X4=04
8	Chandassu	1 of 3	1X4=04
9	Fill in the blanks	4 of 6	4X4=04

Learning Outcomes:

- This course aims to acquaint the students with popular Classical Dramas in Sanskrit literature.
- The course also teaches in detail the origin, development and lakshanas of Sanskrit Drama, which gives in depth knowledge on Sanskrit Literature.
- Sanskrit Dramas not only reflect prose and poetic excellence but also depicts contemporary society and highlights human values, which helps the students.
- The students also learn the theoretical aspects related to the production of the play. The concepts like Rasa, Bhava, Abhinaya are blended into the teaching learning of the play.
- The semester also focuses on Chandassu and Alankara, which enables students learn to compose Shlokas and recite them.

Prescribed Textbook:

1. Pratijnayougandharayanam, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Bhasanatakachakram - Vyakhyana by Acharya Baladevananda Upadhyaya, Choukamba Samskruta Series, Varanasi
2. Shreevishvanathakavirajapraneetaha Sahityadarpanaha - Vyakhyana by Krishnamohanashastri Choukamba Samskruta Samsthanam, Varanasi
3. Samskruthanataka - Prof. A R Krishnashastri
4. Bhasakavi - Prof. A R Krishnashastri
5. Pratijnayougandharayanam - Vyakhyana by Pandit Kapiladevagiri, Choukamba Vidya Bhavan, Varanasi
6. Pratijnayougandharayanam - Vyakhyana by Pandit Vaidyanath Jha, Choukamba Saraswati Bhavan, Varanasi
7. Pratijnayougandharayanam - Edited by Prof M P L Shastri, published by Prasaranga, Mysuru University
8. Samskrutasahityapravesha - Edited by Prof V R Joshi, Kumta, Umaprakashana, Baggona
9. Dasharoopakam - Dhananjaya

MANGALORE UNIVERSITY
NATIONAL EDUCATION POLICY 2020
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)
LANGUAGES L+T
Board Of Studies in Sanskrit
SYLLABUS FOR SANSKRIT LANGUAGE
UNDER GRADUATE COURSES
CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER SCHEME 2022-23 ONWARDS

III Semester : BBA BBASKLN301		
Sanskrit Language Paper-3 Title – Champu Literature and Vanijyashastram Maximum Marks: 100		
1	Champu Kavya 1. Introduction to Champu Kavya 2. Champu Ramayane Sriramavataraha 3. Neelakanthavijayachampu (Sangraha)	15
2	Vanijyashastram 1. Samskrute Vanijyam 2. Pracheenam Rajyashastram 3. Koutileeya Arthapaddatihi 4. Mahabharate Nirvaha Paddatihi 5. Patralekhanam 6. Loukika Nyayaha	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation	2 of 4	2X5=10
2	Explanation of a given quote	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Letter Writing	1 of 2	1X6=06
7	Explanation of Nyayas	1 of 2	1X3=03
8	Match the following	3 of 3	3X1=03
9	Fill in the blanks	4 of 6	4X1=04

Learning Outcomes:

- This course aims to acquaint the students with Champu Kavyas.
- Champu Kavyas are a beautiful blend of Prose and Poetry in Sanskrit literature which not only reflect poetic excellence but also depicts contemporary society and highlights human values, which would help students in their daily lives.
- The students in this semester are also introduced to specific texts in keeping with their course of study.
- The students of Commerce and Management will study the history of Management (Vanijyashastra) according to Sanskrit Literature, Arthaneeti, Rajaneeti from Chanakya neeti, Taxation, Raajaneeti, Adhikara Vikendrikarana from Mahabharata would not only help in their course of study but also allows them imbibe moral values and life skills.
- Students are also introduced to the art of Letter Writing and Resume Writing in Sanskrit.
- The semester also focuses on Nyayas, which enables students learn certain proverbs which have hidden in depth meaning and explanation. Understanding these would improve the writing and public speaking skills of students.

Prescribed Textbook:

1. Vanijyamouktikam, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Champooramayanam - Bhojaraja
2. Champooramayanam - Vyakhyana by Ramachandrabudhendra
3. Neelakanthavijayachampoo - Neelakanthadeekshitha
4. Samskrutha Bhashashastra mattu Sahityacharitre - Dr K Krishnamurthy, Vidwan N Ranganathasharma and Vidwan H K Siddagangayya
5. Shrimanmahabharatha - Bharata Darshana Prakashana
6. Chankya Neethi - Mahabala Seethalabhavi
7. Complete Chanakya Neethi - Vishwanatha sharma and Igen
8. Sandarbhasooktihi - Vidwan Ranganathasharma
9. Loukika Nyayakoshaha - Dr. Pramod Ganesh Laale, translated to Sanskrit by Dr. Penna Madhusoodana

IV Semester: BBA BBASKLN401		
Sanskrit Language Paper-4 Title – Sanskrit Drama and Dramaturgy Maximum Marks: 100		
1	Unit 1: Introduction to Sanskrit Drama and Dramaturgy Origin and development of Sanskrit Drama - Dasarupakas and their lakshana Bhasa Kavi – Place, date and works. Shree Harsha Kavi – Place, date and works.	15
2	Unit 2: Madyamavyayoga Nagananda - 5 th Anka Alankara - Upama, Roopakam, Utpreksha, Arthantarnyasaha, Anuprasaha, Yamakam Chandassu - Anushtup, Indravajra, Upendravajra, Vasantatilaka, Malini, Mandakranta	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation of Padya	2 of 4	2X5=10
2	Reference to context	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Alankara	1 of 3	1X4=04
8	Chandassu	1 of 3	1X4=04
9	Fill in the blanks	4 of 6	4X4=04

Learning Outcomes:

- This course aims to acquaint the students with popular Classical Dramas in Sanskrit literature.
- The course also teaches in detail the origin, development and lakshanas of Sanskrit Drama, which gives in depth knowledge on Sanskrit Literature.
- Sanskrit Dramas not only reflect prose and poetic excellence but also depicts contemporary society and highlights human values, which helps the students.
- The students also learn the theoretical aspects related to the production of the play. The concepts like Rasa, Bhava, Abhinaya are blended into the teaching learning of the play.
- The semester also focuses on Chandassu and Alankara, which enables students learn to compose Shlokas and recite them.

Prescribed Textbook:

1. Natakamouktikam, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Bhasanatakachakram - Vyakhyana by Acharya Baladevananda Upadhyaya, Choukamba Samskruta Series, Varanasi
2. Shreevishvanathakavirajapraneetaha Sahityadarpanaha - Vyakhyana by Krishnamohanashastri Choukamba Samskruta Samsthanam, Varanasi
3. Samskruthanataka - Prof. A R Krishnashastri
4. Bhasakavi - Prof. A R Krishnashastri
5. Mahakavi Sriharshapraneetam Naganandam - Vyakhyana by Pandit Ramanatha Tripathi Shastri, Choukamba Krishnadas Academy, Varanasi
6. Bhasamahasamputa - Dr. S V Parameshwara Bhatta
7. Harshanatakasamputa - Dr. S V Parameshwara Bhatta
8. Dasharoopakam - Dhananjaya

MANGALORE UNIVERSITY
NATIONAL EDUCATION POLICY 2020
ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)
LANGUAGES L+T
Board Of Studies in Sanskrit
SYLLABUS FOR SANSKRIT LANGUAGE
UNDER GRADUATE COURSES
CHOICE BASED CREDIT SYSTEM (CBCS)
SEMESTER SCHEME 2022-23 ONWARDS

III Semester : BCA		
BCASKLN301		
Sanskrit Language Paper-3		
Title – Champu Literature and Scientific Literature in Sanskrit		
Maximum Marks: 100		
1	Champu Kavya 1. Introduction to Champu Kavya 2. Champu Ramayane Sriramavataraha 3. Neelakanthavijayachampu (Sangraha)	15
2	Vijnanashastram 1. Pracheena Bharateeya Vijnanam 2. Vichikitsa 3. Karmayogaha 4. Chittavruttinirodhaha 5. Dinacharyapradeepika 6. Loukika Nyayaha	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation	2 of 4	2X5=10
2	Explanation of a given quote	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Explanation of Nyayas	1 of 2	1X3=03
8	Match the following	4 of 4	4X1=04
9	Fill in the blanks	5 of 7	5X1=05

Learning Outcomes:

- This course aims to acquaint the students with Champu Kavyas.
- Champu Kavyas are a beautiful blend of Prose and Poetry in Sanskrit literature which not only reflect poetic excellence but also depicts contemporary society and highlights human values, which would help students in their daily lives.
- The students in this semester are also introduced to specific texts in keeping with their course of study.
- The students of Science study Science, Maths, Physics, Atomic Science, Chemistry and Ayurveda as depicted in Ancient Sanskrit Literature, Yoga, Manonigraha from Patanjala Yogadarshanam, Personal and Societal Health from Astangahrudayam, Karmayoga from Bhagavadgeeta, which would not only help in their course of study but also allows them imbibe moral values and life skills.
- The semester also focuses on Nyayas, which enables students learn certain proverbs which have hidden in depth meaning and explanation. Understanding these would improve the writing and public speaking skills of students.

Prescribed Textbook:

1. Vijnanachandrika, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Champooramayanam	-	Bhojaraja
2. Champooramayanam	-	Vyakhyana by Ramachandrabudhendra
3. Neelakanthavijayachampoo	-	Neelakanthadeekshitha
4. Samskrutha Bhashashastra mattu Sahityacharitre	-	Dr K Krishnamurthy, Vidwan N Ranganathasharma and Vidwan H K Siddagangayya
5. Shrimanmahabharatha	-	Bharata Darshana Prakashana
6. Pantanjala Yogashastram	-	Swami Adidevananda
7. Ashtangahrudaya	-	Vagbhatacharya
8. Shreemad Bhagavadgeetha	-	Swamy Ramasukadas
9. Sandarbhasooktihi	-	Vidwan Ranganathasharma
10. Loukika Nyayakoshaha	-	Dr. Pramod Ganesh Laale, translated to Sanskrit by Dr. Penna Madhusoodana

IV Semester: BCA BCASKLN401		
Sanskrit Language Paper-4 Title – Sanskrit Drama and Dramaturgy Maximum Marks: 100		
1	Unit 1: Introduction to Sanskrit Drama and Dramaturgy Origin and development of Sanskrit Drama - Dasarupakas and their lakshana Kalidasa Kavi – Place, date and works. Shudraka Kavi – Place, date and works.	15
2	Unit 2: Malavikagnimitra - 1 st Anka Mrucchakatika - 1 st Anka Alankara - Upama, Roopakam, Utpreksha, Arthantarnyasaha, Anuprasaha, Yamakam Chandassu - Anushtup, Indravajra, Upendravajra, Vasantatilaka, Malini, Mandakranta	45
3	Internal Assessment Tests, Seminars, Assignments	40
4	Teaching hours/week – 4 Total Teaching Hours - 56 CREDITS – 3	

Scheme of Examination			
1	Translation and Explanation of Padya	2 of 4	2X5=10
2	Reference to context	4 of 7	4X3=12
3	Essay Type Questions	1 of 2	1X7=07
4	Essay Type Questions	1 of 3	1X7=07
5	Short Notes	2 of 4	2X4=08
6	Short notes (To be answered in Sanskrit only)	1 of 3	1X4=04
7	Alankara	1 of 3	1X4=04
8	Chandassu	1 of 3	1X4=04
9	Fill in the blanks	4 of 6	4X4=04

Learning Outcomes:

- This course aims to acquaint the students with popular Classical Dramas in Sanskrit literature.
- The course also teaches in detail the origin, development and lakshanas of Sanskrit Drama, which gives in depth knowledge on Sanskrit Literature.
- Sanskrit Dramas not only reflect prose and poetic excellence but also depicts contemporary society and highlights human values, which helps the students.
- The students also learn the theoretical aspects related to the production of the play. The concepts like Rasa, Bhava, Abhinaya are blended into the teaching learning of the play.
- The semester also focuses on Chandassu and Alankara, which enables students learn to compose Shlokas and recite them.

Prescribed Textbook:

1. Natakachandrika, Published by Mangalore University Sanskrit Teachers Association

Reference books:

1. Malavikagnimitram - Vyakhyana by Narayana Rama Acharya, Nirnaya Sagara Press, Mumbai
2. Mrucchakatikam - Vyakhyana by Dr. Mahaprabhulal Goswami, Choukamba Amarabharathi Prakashana, Varanasi
3. Sahityasourabham - Published by Prasaraṅga, Samskrutha Vishvavidyalaya, Bangalore
4. Kalidasamahāsamputa - Dr. S V Prameśwara Bhat
5. Malavikagnimitram - Edited by Dr. K Krishnamurthy, Published by Pathyapustaka Nirdeśhanalaya, Karnataka Vishvavidyalaya, Dharwad
6. Kalidasa - M Lakshminarasimhayya, Published by Mysuru University
7. Avemānnina Atadabandī - Vidyavachaspati Bannanje Govindacharya
8. Shreevishvanathakavirajapraneetaha Sahityadarpanaha - Vyakhyana by Krishnamohanashastri Choukamba Samskruta Samsthanam, Varanasi
9. Samskruthanataka - Prof. A R Krishnashastri
10. Dasharoopakam - Dhananjaya

MANGALORE UNIVERSITY

**COURSE PATTERN AND SCHEME OF EXAMINATION FOR ALL UG
COURSES AS PER NEP -2020**

SUB: LANGUAGE SANSKRIT

ABILITY ENHANCEMENT COMPULSORY COURSE

**COURSE PATTERN AND SCHEME FRAMED UNDER NATIONAL
EDUCATION POLICY-2020**

III and IV Semesters

**BOARD OF STUDIES IN SANSKRIT
MANGALORE UNIVERSITY,
MANGALAGANGOTRI - 574199**

Course Pattern and Scheme of Examination for all UG Courses as per NEP 2020

(2022-23 and onwards)

Subject : Language Sanskrit

Sl. No.	Se me ster	Title of the Paper	Teachi ng hours L+T	Hours Per week	Examination Pattern Max/Min Marks			Duration of Exam	Total marks	Credits
					Theory		I.A			
					Max	Min				
1	III	Champu Literature and Alankara/Vij nana/Vanijya shastram	56	4	60	21	40	2 Hours	100	3
2	IV	Sanskrit Drama and Dramaturgy	56	4	60	21	40	2 Hours	100	3

Ability enhancement Compulsory course (AECC) and Open Elective (OE)

Scheme of Internal Assessment Marks : Theory

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
TOTAL Theory IA Marks		40

MANGALORE UNIVERSITY

DISCIPLINE ELECTIVE/OPEN ELECTIVE

Three credits each

UNDER GRADUATE

BA/B.Sc/B.Com/BSW/BCA/BBA

Syllabus framed under National Education policy-2020

SYLLABUS

For the year 2022-2023 and onwards

Discipline Electives/

Open electives for all UG Courses

III & IV SEMESTERS

**BOARD OF STUDIES IN SANSKRIT
MANGALORE UNIVERSITY,
MANGALAGANGOTHRI – 574199.**

MANGALORE UNIVERSITY
NATIONAL EDUCATION POLICY 2020

Discipline Elective / Open Elective Courses in Sanskrit
III Semester – BA/B.Sc./B.Com/BSW/BCA/BBA and other UG Courses

BASSKEN301/BSCSKEN301/BCMSKEN301/BSWSKEN301/BCASKEN301/BBASKEN301

Title: Kshemakuthuhalam and Sanskrit Epics - Ramayana, Mahabharatha

Semester	Discipline Elective (DSE) / Open Elective (OE) –OE-1 (3) Credits	Marks	Credits
III	• Kshemakuthuhalam : Introduction to Cookery in Ancient India (Pakashastra) • Ramayanam tatha Mahabharatham	60	3
	Continuous Evaluation: Assignment, Internal Test, Creative Writing	40	
	Total Teaching hours/week – 3 Total Teaching Hours - 42	100	3

Scheme of Examination

1. Multiple choice question	15 of 20	15x1=15
2. Essay type Question	3 of 5	3x8=24
3. Question Formation	5 of 8	5x1=05
4. Match the Following		5x1=05
5. Fill in the blanks	5 of 7	5x1=05
6. Translation –From Sanskrit to Kannada / English	6 of 7	1x6=06

Learning Outcomes:

- The course intends to enable students understand Pakashastra (Cookery) as depicted in the Ancient Indian Literature.
- Students learn to imbibe healthy practices as described in these texts, which in turn would lead to a better and healthy lifestyle.
- The study of Indian Epics like Ramayana and Mahabharatha would enable students gain moral values and life values which can be incorporated into their daily lives.

Books for study & Reference:

1. Kshemakutuhalam	-	Kshemasharma
2. Kshemakutuhalam	-	Gyanendra Pandey
3. Food for Life	-	Shanti Gowans
4. Bhojana Kutuhalam	-	Translated to English by Dr. R Shankar
5. Shrimanmahabharatha	-	Bharata Darshana Prakashana
6. Shrimadramayanam	-	Vidwan Ranganatha Sharma
7. Shrimadramayanam	-	Bharata Darshana Prakashana
8. Bharathasangraha	-	Lakshmanasuri
9. Ramayanasangraha	-	Lakshmanasuri

Discipline Elective / Open Elective Courses in Sanskrit
IV Semester – BA/B.Sc./B.Com/BSW/BCA/BBA and other UG
BASSKEN401/BSCSKEN401/BCMSKEN401/BSWSKEN401/
BCASKEN401/BBASKEN401

Courses Title: Swasthya Samrakshanam, Ayurveda Subhashithani
tatha Natyashastra Parichayaha

Semester	Discipline Elective (DSE) / Open Elective (OE) –OE-1 (3) Credits	Marks	Credits
IV	• Swasthyasamrakshanam tatha Ayurveda Subhashitani : About Health and Wellness, Subhashitas from Ayurveda • Bharatha's Natyashastra	60	3
	Continuous Evaluation: Assignment, Internal Test, Creative Writing, Conversation in Sanskrit	40	
	Total Teaching hours/week -3 Total Teaching Hours - 42	100	3

Scheme of Examination

1. Multiple choice question	15 of 20	15x1=15
2. Essay type Question	3 of 5	3x8=24
3. Question Formation	5 of 8	5x1=05
4. Match the Following		5x1=05
5. Fill in the blanks	5 of 7	5x1=05
6. Translation –From Sanskrit to Kannada / English	6 of 7	1x6=06

Learning Outcomes:

- This course aims to get the students acquainted with Ayurveda.
- Students learn to imbibe healthy practices as described in these texts, which in turn would lead to a better and healthy lifestyle.
- The course introduces Bharatha's Natyashastra to the students, including its origin, progress, and concepts like Rasa, Bhava, Abhinaya, etc, which in turn helps students learn the art of Dance and Drama.

Books for study & Reference:

1. VaidyakeeyaSubhashitaSahityam	-	Dr. B G Ganekar
2. Ashtangasangraha	-	Vagbhata
3. Bharata's Natyashastram	-	Translated by Adyarangacharya

MANGALORE UNIVERSITY

DISCIPLINE CORE COURSE

Three credits each

UNDER GRADUATE

BA (Basic/Hons.)

(for subjects without practicals with two major)

Syllabus framed under National Education policy-2020

SYLLABUS

For the year 2022-2023 and onwards

III to VIII SEMESTERS

**BOARD OF STUDIES IN
SANSKRIT MANGALORE
UNIVERSITY,**

MANGALAGANGOTRI - 574199

Discipline Core Course in Sanskrit/ Discipline Elective/ Open Elective

III Semester Bachelor of Arts (Basic/ Hons.)

(for subjects without practicals with two major)

B.A. (With Sanskrit major)

BASSKCN301

BASSKCN302

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective (DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
History of Vedic Literature C5 (3) BASSKCN301 (Vaidika Sahitya Charitre) Total Hours/Week – 3 Total Teaching Hours - 42	60	40	OE-1 (3) BASSKCN301 Kshemakuthuhalam and Sanskrit Epics - Ramayana, Mahabharatha	60	40
Epics & Puranas C6(3) BASSKCN302 1. Introduction of Ashtadasha Puranas 2. Lakshmanasoori's Ramayanasangrahaha - Balakanda 3. Lakshmanasoori's Bharatasangrahaha - Udyogaparva Total Hours/Week – 3 Total Teaching Hours - 42	60	40			

Scheme of Examination			
2	Essay Type Questions	3 of 5	3X8=24
3	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	5 of 8	5X4=20
6	One Mark Questions	10 of 15	10X1=10
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
Total IA Marks		40

Learning Outcomes:

- This course aims to get the students acquainted with Vedic Literature, Epics and Puranas.
- It intends to give an understanding of literature, through which students will be able to understand the poetic nuances and texts. They develop the ability to use language in a descriptive way.
- Student gains an understanding of the evolution of Kavya Literature.
- The study of Ancient Indian Literature would enable students gain moral values and life values which can be incorporated into their daily lives.

Books for study & Reference:

1. Vaidikasahityacharitre	-	Ananth Rangachar
2. Vedic Literature	-	Mek Donals
3. History of Sanskrit Litreture	-	Krishnamacharya
4. Samskritha Sahitya Ithihasa	-	Baladevananda Upadhyaya; translated by Ramachandra Shastri
5. Bhashashastra mattu Samskritha Sahitya Charithre	-	Dr. K Krishnamurthy, Vidwan Ranganath Sharma and Siddalingayya
6. Bharateeya Darshana	-	Dr. K Krishnamurthy
7. Kshemakutuhalam	-	Kshemasharma
8. Bhojana Kutuhalam	-	Translated to English by Dr. R Shankar
9. Bharatasangraha	-	Lakshmanasoori
10. Ramayanasangraha	-	Lakshmanasoori
11. Puranagalu	-	K S Kannan, Published by Bharatadarshana Prakashana

Discipline Core Course in Sanskrit/ Discipline Elective/ Open Elective

IV Semester Bachelor of Arts (Basic/ Hons.)

(for subjects without practicals with two major)

B.A. (With Sanskrit major)

BASSKCN401

BASSKCN402

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective(DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
C7 (3) - Dasharoopaka BASSKCN401 1. Dhananjaya's Dasharoopaka - Chapter 1 to 4 Total Hours/Week – 3 Total Teaching Hours - 42	60	40	OE-1 (3) BASSKEN401 Swasthya Samrakshanam, Ayurveda Subhashithani tatha Natyashatra Parichayaha	60	40
C8 (3)-Vyakaranam BASSKCN402 Laghusiddhantakoumudi - Sanjnaprakaranam, Paribhashaprakaranam, Karakaprakaranam, Sandhiprakaranam Total Hours/Week – 3 Total Teaching Hours - 42	60	40			

Scheme of Examination : C7 (3) - Natyashastra / Dasharoopaka			
1	Translation and Explanation of Shloka	2 of 3	2X5=10
2	Reference to context	5 of 7	5X3=15
3	Essay Type Questions	2 of 4	2X8=16
4	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	2 of 3	2X4=08
6	One Mark Questions	5 of 8	5X1=05
	Total Marks		60

Scheme of Examination : C8 (3) - Vyakaranam			
1	Sootravivaranam	9 of 12	9X4=36
2	Sandhim Vibhajya Sandhinama Likhata	4 of 6	4X2=08
3	Vakyadoshan Pariharata	4 of 6	4X1=04
4	Karakani Soochayata	4 of 6	4X1=04
5	Sanjnam Vivrunuta	4 of 6	4X2=08
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
Total IA Marks		40

Learning Outcomes:

- This course aims to get the students acquainted with Dasharoopaka.
- It intends to give an understanding of Natakalakshana and concepts of Drama like Rasa, Bhava, Abhinaya, etc.
- Students learn to imbibe healthy practices as described in these texts, which in turn would lead to a better and healthy lifestyle.
- Shastra will be introduced to the students, which will enable them to study Sanskrit Grammar in technical background.
- The course also seeks to help the students communicate in both written and verbal form, with the help of proficiency in Sanskrit Language.

Books for study & Reference:

1. Dhananjaya's Dasharoopaka with Hindi- Samskruta Commentary - Choukamba Samskruta Series
2. Dasharoopakam - Translated by K V Subbanna
3. Dasharoopakam - Translated by Sanur Bheema Bhatta
4. Laghusiddhantakoumudi - Translated by G Vishnumurthy Bhat
5. Siddhantakoumudi - Bhattoji Dixit
6. The Ashtadhyayi of Panini - S T Joshi
7. Laghusiddhantakoumudi - Sri M S Rushwaha
8. VaidyakeeyaSubhashitaSahityam - Dr. B G Ganekar
9. Ashtangasangrahaha - Vagbhata
10. Bharata's Natyashastram - Translated by Adyarangacharya

Discipline Core Course in Sanskrit/ Discipline Elective/ Open Elective

V Semester Bachelor of Arts (Basic/ Hons.)

(for subjects without practicals with two major)

B.A. (With Sanskrit major)

BASSKCN501

BASSKCN502

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective(DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
C9 (4) - Tarkasangraha BASSKCN501 Annambhatta's Tarkasangraha : Pratyakshyapramanam, Anumanapramanam, Shabdapramanam Total Hours/Week – 3 Total Teaching Hours - 42	60	40	Vocational - 1(3) BASSKEN501 Pandulipishastram (Manuscriptology)/ Natural Language Processing	60	40
C10 (4)- Ishavasyopanishat BASSKCN502 Total Hours/Week – 3 Total Teaching Hours - 42	60	40			

Scheme of Examination			
1	Translation and Explanation	2 of 3	2X5=10
2	Explanation of Context	5 of 7	5X3=15
3	Essay Type Questions	2 of 4	2X8=16
4	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	2 of 3	2X4=08
6	One Mark Questions	5 of 8	5X1=05
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
Total IA Marks		40

Learning Outcomes:

- This course aims to get the students acquainted with Tarkasangraha.
- Students shall study logic in technical background.
- Students shall become capable of presenting views in Nyaya style.
- Students will learn in detail about Vedas and the ways to recite the Vedas.
- The course enabled the study of Upanishads would enable students gain moral values and life values which can be incorporated into their daily lives.
- Students gain knowledge of dealing with manuscripts and also various scripts like nagari, nandinagari, grantha, titalari and others. The student is also groomed in research methods and shall also practically learn how to execute a research project.

Books for study & Reference:

1. Tarkasangraha	-	Translated by Dr. Mahesh Adkoli and Dr. Shankarabhatta
2. Tarkasangraha	-	Translated by Sanur Bheemabhatta
3. Nyayamuktavali	-	Vishwanath
4. Tarkasangraha	-	Translated by G Vishnumurthy Bhat
5. Kathopanishat	-	Swami Adidevananda
6. Upanishat Bhavadhare	-	Sri Somanathananda
7. Vaidika Sooktagalu	-	Prof. M N Joshi
8. Vaidika Sahitya Charitre	-	Anant Rangacharya
9. Ishopanishat	-	Bannanje Govindacharya

Discipline Core Course in Sanskrit/ Discipline Elective/ Open Elective

VI Semester Bachelor of Arts (Basic/ Hons.)

(for subjects without practicals with two major)

B.A. (With Sanskrit major)

BASSKCN601

BASSKCN602

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective(DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
C11 (4) - Kavyaprakasha BASSKCN601 1,2 and 10 Ullasa (Upamadi Dasha Alankara) Total Hours/Week – 3 Total Teaching Hours - 42	60	40	Vocational - 2(3) BASSKEN601 Manuscriptology/ Natural Language Processing	60	40
C12 (4)-Arthashastra BASSKCN602 Vinayadikaranam Total Hours/Week – 3 Total Teaching Hours - 42	60	40			

Scheme of Examination			
1	Translation and Explanation of Shloka	2 of 3	2X5=10
2	Exaplanation to context	5 of 7	5X3=15
3	Essay Type Questions	2 of 4	2X8=16
4	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	2 of 3	2X4=08
6	One Mark Questions	5 of 8	5X1=05
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
Total IA Marks		40

Learning Outcomes:

- This course aims to get the students acquainted with Kavyashastra.
- Student gains knowledge of Alankarashastra.

- Students shall study the Arthashastra in depth, which will help students learn about concepts like Dandaneeti, Vyavahara, Vidye, etc .

Books for study & Reference:

1. Kavyaprakasha with Samskruta-Hindi Vyakhyana - Choukamba Samskruta Series
2. Kavyaprakasha - Translated by Dr K Krishnamurthy
3. Koutileeya Arthashastram - Translated by Krishna Bhat

Discipline Core Course in Sanskrit/ Discipline Elective/ Open Elective

VII Semester Bachelor of Arts (Basic/ Hons.)

(for subjects without practicals with two major)

B.A. (With Sanskrit major)

(Specialisation in Darshana)

BASSKCN701

BASSKCN702

BASSKCN703

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective(DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
C13 (4) - Vedantasara Of Sadananda BASSKCN701 Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DS- A Elective 1 (3) Koutilya's Arthashastra BASSKEN701 Vidyasamuddesha Anveeshaki Sthapana Amathyotpattihi Goodapranidihi Dhootapranidihi	60	40
C14 (4)-Bhagavadgeeta 1 and 2 Adhyaya BASSKCN702 Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DSE- A Elective 2 (3) BASSKEN702 Karnataka's Contribution to Sanskrit Literature	60	40
C15 (3)-Sankhyakarika Of Eshwarakrishna BASSKCN703 Total Hours/Week – 3 Total Teaching Hours - 42	60	40			

Scheme of Examination			
1	Translation and Explanation	2 of 3	2X5=10
2	Explanation to context	5 of 7	5X3=15
3	Essay Type Questions	2 of 4	2X8=16
4	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	2 of 3	2X4=08
6	One Mark Questions	5 of 8	5X1=05
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
Total IA Marks		40

Learning Outcomes:

- This course aims to get the students acquainted with Vedanta, Bhagavadgeeta and Sankhyadarshana.
- Students will also study Arthashastra and Contribution of Karnataka to Sanskrit Literature.
- Vedanta Darshanas shall be understood and the students gain the knowledge of philosophy.
- Bhagavadgeeta and Arthashastra are highly beneficial to the society.

Books for study & Reference:

1. Sadananda Vedantasara - Swami Harshananda
2. Shad Darshanam - Shatavadhani R Ganesh
3. Sarvadarshana Sangraha - Immadi Shivabasavaswami
4. Geeta Bhavadhare - Sri Adidevananda
5. Bhagavadgeeta - Samskrutha Hindi Commentary
6. Sankhyadarshana - G Vishnumurthy Bhat

B.A. (With Sanskrit major)
(Specialisation in Alankarashastra)

BASSKCN704

BASSKCN705

BASSKCN706

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective(DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
C13 (4) - Bhaarateeya Kavyameemamse BASSKCN704 Rajashekhara's Kavyameemamsa - Chapters 1,2,3 Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DS- A Elective 1 (3) Koutilya's Arthashastra BASSKEN701 Vidyasamuddesha Anveeshaki Sthapana Amathyotpattihi Goodapranidihi Dhootapranidihi	60	40
C14 (4)-Kavyalankara BASSKCN705 Bhamaha's Kavyalankara Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DSE- A Elective 2 (3) BASSKEN702 Karnataka's Contribution to Sanskrit Literature	60	40
C15 (3)-Kuvalayananda Of Appayadikshita BASSKCN706 Total Hours/Week – 3 Total Teaching Hours - 42	60	40			

Scheme of Examination			
1	Translation and Explanation	2 of 3	2X5=10
2	Explanation to context	5 of 7	5X3=15
3	Essay Type Questions	2 of 4	2X8=16
4	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	2 of 3	2X4=08
6	One Mark Questions	5 of 8	5X1=05
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks

1	Internal Tests , Assignments, Seminars	40
Total IA Marks		40

Learning Outcomes:

- This course aims to get the students acquainted with Kavyameemamsa, Kavyalankara and Sahitaydarpana.
- Students will also study Arthashastra and Contribution of Karnataka to Sanskrit Literature.
- Alankarashastra shall be understood by the students.
- Students shall gain in depth knowledge about Upamadi Alankaras, Kavyalakshanas, Kavya Utpatthi.

Books for study & Reference:

1. Shreerajashekharavirachita Kavyameemamsa	-	Vyakhyana by Dr. Gangasagar
Roy, Published by Choukamba Vidyabhavan, Varanasi		
2. Kavyalankara	-	Dr. K Krishnamurthy
3. Kavyalankara Smaskruta Hindi Vyakhyana	-	Choukamba Samskruta Series
4. Kuvalayananda	-	Appayyadikshita
5. Kuvalayananda	-	Translation in kannada

Discipline Core Course in Sanskrit/ Discipline Elective/ Open Elective

VIII Semester Bachelor of Arts (Basic/ Hons.)

(for subjects without practicals with two major)

B.A. (With Sanskrit major)

(Specialisation in Darshana)

BASSKCN801

BASSKCN802

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective(DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
C16 (4) - Shaddarshana Samucchaya BASSKCN801 Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DS- A Elective 3 (3) Modern Sanskrit Literature BASSKEN801	60	40
C17 (4)-Vedasooktas Agni, Rudra, Parjanya Samjnanasooktam BASSKCN802 Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DS- A Elective 3 (3) History of Indian Linguistics BASSKEN802	60	40
			Research Project (6)		

Scheme of Examination			
1	Translation and Explanation	2 of 3	2X5=10
2	Explanation to context	5 of 7	5X3=15
3	Essay Type Questions	2 of 4	2X8=16
4	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	2 of 3	2X4=08
6	One Mark Questions	5 of 8	5X1=05
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
Total IA Marks		40

Learning Outcomes:

- This course aims to get the students acquainted with Shad Darshanas.
- Students shall gain knowledge of modern Sanskrit literature and shall gain a progressive understanding of Indian Linguistics.
- Student shall be conversant with Vedanta Darshanas.
- Students are introduced to Vedasooktas, which would enable them to understand the in depth meaning of Vedas.

Books for study & Reference:

1. Shad Darshanam	-	Shatavadhani R Ganesh
2. Sarvadarshana Sangraha	-	Immadi Shivabasavaswami
3. Vaidika Sahitya Charitre	-	Anant Rangachar
4. Vaidika Sooktagalu	-	Prof. M N Joshi

B.A. (With Sanskrit major)
(Specialisation in Alankarashastra)

BASSKCN803

BASSKCN804

Discipline Core (DSC) (L+T+P)	Max Marks		Discipline Elective(DSE) / Open Elective (OE)	Max Marks	
	Theory	IA		Theory	IA
C16 (4) - Dhvanyaloka BASSKCN803 1 and 2 Udyotha Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DS- A Elective 3 (3) Modern Sanskrit Literature BASSKEN801	60	40
C17 (4)-Vakrokti Jeevita BASSKCN804 Kuntaka's Vakroktijeevita - 1,2 Unmesha Total Hours/Week – 3 Total Teaching Hours - 42	60	40	DS- A Elective 3 (3) History of Indian Linguistics BASSKEN802	60	40
			Research Project (6)		

Scheme of Examination			
1	Translation and Explanation	2 of 3	2X5=10
2	Explanation to context	5 of 7	5X3=15
3	Essay Type Questions	2 of 4	2X8=16
4	Short notes (To be answered in Sanskrit only)	2 of 3	2X3=06
5	Short notes in Kannada	2 of 3	2X4=08
6	One Mark Questions	5 of 8	5X1=05
	Total Marks		60

Scheme of Internal Assessment Marks

Sl. No.	Particulars	IA Marks
1	Internal Tests , Assignments, Seminars	40
	Total IA Marks	40

Learning Outcomes:

- This course aims to get the students acquainted with Dhvanyaloka and Vakroktijeevita.
- Students shall gain knowledge of modern Sanskrit literature and shall gain a

progressive understanding of Indian Linguistics.

- Students shall gain in depth knowledge about Kavyalakshanas, Kavya Utpatthi etc.
- Students shall be made familiar with advanced texts of Alankara Shastra.

Books for study & Reference:

1. Anandavardhana's Dhvanyaloka - Vyakhyana by Ramasagar Tripathi, Published by Motilal Banarasi Das, Varanasi
2. Dhvanyaloka Lochanasara - Dr. K Krishnamurthy
3. Vakroktijeevita - Dr. K Krishnamurthy
4. Vakroktijeevita Hindi Samskrutha Commentary

MANGALORE UNIVERSITY



National Education Policy – 2020 [NEP-2020]

Curriculum Structure For B.Com. COMPUTER APPLICATIONS (VOCATIONAL) Syllabus for III and IV semesters

SYLLABUS FOR III AND IV SEMESTERS

Sem.	Course Code and Course Title	Hour / Week	
		Theory	Lab
III	B.Com 3.2: Java Programming	3	
	B.Com 3.3: DBMS	3	
	B.Com 3.4: Java and DBMS Lab		4
IV	B.Com 4.2: Web Application Development	3	
	B.Com 4.3: Computerized Accounting	3	
	B.Com 4.4: WEB and Tally Lab		4

III SEMESTER

Course Title: Java Programming	Course code: B.Com 3.2
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Understand the object-oriented concepts and JAVA Technology
- Present the Java Technology basics including classes, objects, sub-classes, etc.
- Implement Classes and multithreading using JAVA.
- Demonstrate the basic principles of creating Java applications with GUI.

Unit	Description	Hours
1	Java Evolution: Java history, Java features, Java support systems, Java environment. Overview of Java Language: Introduction, Java program structure, Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. Constants, Variables and Data Types: Introduction, Constants, variables, data types, Declaration of variables, Scope of variables, Standard default values. Operators: Introduction, Arithmetic, Relational, Logical, Assignment, Increment & decrement, conditional, Bitwise operators, special operators, Precedence of operators Expressions: Arithmetic expressions, Evaluation of expressions, Type conversions in expressions, Operator precedence and associativity, Mathematical functions.	11

2	Decision making and branching: Introduction, Decision making with If statements, simple IF statement, Nesting of IF ELSE statements. ELSE.....if.....ladder, switch statement, ?: operator, Decision making and Looping: Introduction, while statement, Do statement, For statement, Jumps in Loops, Labeled Loops. Classes objects and methods: Introduction, Defining a Class, Adding Variables, Adding methods, Creating Objects, Accessing Class members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance, Overriding Methods, Final variables and Methods, Final classes, Finalizer Methods, Abstract Methods and Classes, Visibility Control.	11
3	Arrays: One dimensional Arrays, Creating an Array, Two Dimensional Arrays, Strings, Vectors, Wrapper Classes. Interfaces: Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables. Packages: Introduction, Java, API Packages, Using System Packages, Naming Conventions, Creating Packages, accessing a Package, using a Package, adding a class to a Package, Hiding classes.	10
4	Managing Errors and Exceptions: Introduction, Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using Finally Statement, throwing our own Exceptions, Using Exceptions for Debugging Input / Output Programming: The Java I/O Classes and Interfaces, The Stream Classes, The Byte Streams, The Character Streams, Basics of File Programming: Reading from the file and Writing to the file.	10
Text Books: 1. Programming with Java, By E Balaguruswamy – A Primer, 4th Edition, McGraw Hill Publication. 2. Core Java Volume I – Fundamentals, By Cay S. Horstmann, Prentice Hall. References: 1. Object Oriented Programming with Java: Somashekara M.T., Guru, D.S., Manjunatha K.S, 1st Edition, PHI Learning 2017. 2. Java 2 - The Complete Reference, Herbert Schildt, 5th Edition, McGraw Hill Publication, 2017. 3. Java - The Complete Reference, Herbert Schildt, 7th Edition, McGraw Hill Publication, 2017.		

Semester: III

Course Title: DBMS	Course code: B.Com 3.3
Total Contact Hours: 42	Course Credits: 03

Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Explain the various database concepts and the need for database systems.
- Identify and define database objects, enforce integrity constraints on a database □ Identify entities and relationships and draw ER diagram for a given real-world problem.
- Convert an ER diagram to a database schema and its representation in Relational model. □ Formulate queries in Relational Algebra and implement using Structured Query Language (SQL) □ The importance of transaction processing and concurrency control techniques.

DSC7: DBMS

Unit	Contents	Hours
1	Database Architecture: Introduction to Database system applications. Characteristics and Purpose of database approach. 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.	11
2	Relational Data Model: Relational model concepts. Characteristics of relations. Relational model constraints: Domain constraints, key constraints, primary & foreign key constraints, integrity constraints and null values. Basics of SQL: Table fundamentals, Data types, CREATE TABLE command, Inserting data into table, Viewing Data in the table, sorting data in a table, Creating a table from a table, Inserting data into a table from another table, Delete operations, Updating the contents of a table, Modifying the structure of tables, Renaming tables, destroying tables, displaying table structure.	11
3	Integrity Constraints: Types of data constraints, IO constraints-The PRIMARY KEY constraint, The FOREIGN KEY constraint, The UNIQUE KEY constraint, Business Rule Constraints- NULL value concepts, NOT NULL constraints, CHECK constraint, DEFAULT VALUE concepts.	10

	Operators and Basic Functions: Arithmetic Operators, Logical Operators, Range Searching, Pattern Matching, Oracle Table – DUAL, Oracle Function- Types, Aggregate Function, Date Conversion Function. GROUPING DATA FROM TABLES IN SQL: Group By clause, Having clause, subqueries, JOINS, Using the UNION, INTERSECTION, MINUS clause. Control Structure - Conditional Control, Iterative Control	
4	Basics of PL/SQL: The Generic PL/SQL Block, Character set, Literals, Data types, Variables, Logical comparisons, Comments PL/SQL Transactions: Cursor-Types of Cursor, Cursor Attributes. Explicit cursor-Explicit cursor Management, Cursor for loop PL/SQL Database Objects: Procedures and Functions, Oracle Packages, Error Handling in PL/SQL. Database triggers: Use of database triggers, Applying database triggers, Syntax of creating triggers. Oracle Packages, Components of an oracle package, use of packages, Packages Specification, Creating packages. Error handling in PL/SQL: Oracle's Named Exception handlers (only predetermined internal PL/SQL Exceptions)	10
Text Books: 1. RamezElmasri and Shamkant B. Navathe, Fundamentals of Database Systems, 7th Edition, Pearson Education Asia Publication, 2016 2. Ivan Bay Ross, SQL, PL/SQL the Programming Language of Oracle, 4th Edition, BPB Publication 2009. References: 1. Database Systems Concepts, Abraham Silberschatz, Henry Korth, S.Sudarshan, 6th Edition, McGraw Hill, 2010. 2. Introduction to Database System, C J Date, Pearson, 1999. 3. Database Management Systems, Raghu Rama Krishnan and Johannes Gehrke, 3rd Edition, McGraw Hill, 2002		

Semester: III: PRACTICAL LIST -: Java and DBMS Lab

Course Title: Java and DBMS Lab	Course code: B.Com 3.4
Total Contact Hours: 52	Course Credits: 02
Formative Assessment Marks: 25	Duration of SEE/Exam: 03 Hours
Summative Assessment Marks: 25	

PART-A: JAVA Lab:

1. Write a Java program to find whether the given number is palindrome or not.
2. Write a program to initialize an integer array and find the maximum and minimum value of the array.
3. Given two strings, *a* and *b*, print a new string which is made of the following combination-first character of *a*, the first character of *b*, second character of *a*, second character of *b* and so on. Any characters left, will go to the end of the result.

a. Sample Example:

i. Input string: Hello,World ii.

Output string: HWeolrllod

4. Create a class Box that uses a parameterized constructor to initialize the dimensions of a box. The dimensions of the Box are width, height, depth. The class should have a method that can return the volume of the box.
5. Create a school application with a class called Person. Create name and Date of Birth as member variables. Create a class called Teacher that inherits from the Person class. The teacher will have additional properties like salary, and the subject that the teacher teaches. Create a class called Student that inherits from Person class. This class will have a member variable called student-Id. Create a class called College Student that inherits from Student class. This class will have college Name, the year in which the student is studying (first/second/third/fourth) etc.
Create objects of each of these classes, invoke and test the methods that are available in these classes.
6. Write a Menu drive Java program to perform following operation using Vector.
 - a. INSERT an ITEM
 - b. DELETE a SPECIFIC ITEM
 - c. DISPLAY SPECIFIC ITEM
 - d. DISPLAY ALL ITEMS
7. Write a Java program using package to convert Celsius to Fahrenheit.
8. Write a Java program to read number from NUMBER.txt file and count the number of zero's, positive and negative numbers and display the result.

PART-B: DBMS Lab

SQL Queries

1. Create a table EMPLOYEE using SQL command, employee (empno, ename, desg, dept, gender, salary). Specify primary key and NOT NULL constraints and allow 'M' or 'F' for gender.

Write the following SQL Queries:

- a. Display all the information about all employees.
- b. Display empno, ename and desg of all employees.
- c. Display the details of all female employees.

- d. List empno, ename and desg of all employees whose salary more than 5000.
- e. Display the names of employees who gets the maximum salary.
- f. Display the number of employees working in marketing and sales department.

2. Create table STUDENT using SQL command to store

Column Name	Data Type	Size
rno	Varchar2	6
Name	Char	15
Class	Varchar2	8
Marks1	Number	3
Marks2	Number	3
Marks3	Number	3

Write SQL queries for the following:

- a). Display the structure of the table STUDENT.
- b). Add new column TOTAL and update the contents of TOTAL column of STUDENT table.
- c). Display the students details whose TOTAL is between 70 to 90.
- d). Display the names of students whose name ends with 'th'.
- e). Delete all the records of the table STUDENT.

3. Create a table BOOK using SQL command to store

Column_Name	Data Type	Size
BOOKCODE	Varchar2	10
TITLE	Varchar2	20
PUBLISHER	Varchar2	15
CATEGORY	Varchar2	10
YEAR	Number	04
PRICE	Number	8,2

Write SQL queries for the following:

- a). List the details of the books whose publisher's name start with 'M'.
- b). List the details of publishers having 'A' as the second character in their names.

- c). Find the books published in 2010,2011,2012.
 - d). Display the BOOKCODE, TITLE, PUBLISHER of all books in the descending order of YEAR.
 - e). Display the details of all books other than MICROSOFT PRESS publishers.
4. Create the following tables by identifying primary and foreign keys. Specify the not null property for mandatory keys.

SUPPLIERS (SUPPLIER_NO, SNAME, SADDRESS, SCITY)

COMPUTER_ITEMS (ITEM_NO, SUPPLIER_NO, ITEM_NAME, IQANTITY)

Write SQL statement for the following:

- a) List ITEM and SUPPLIER details.
- b) List the names of the suppliers who are supplying keyboard.
- c) Display the items supplied by 'Microtech'.
- d) List the items supplied by the suppliers 'Cats' and 'Electrotech'.

PL/SQL

- 5. Write a PL/SQL program to process a bank transaction whenever a request for withdrawal issued, a check is made if there is sufficient fund in the account. If the fund is not available print the message fund not available.
- 6. Write a PL/SQL program to compute DA, HRA, Tax and net pay of employees which contains the following columns. empno, empname, basicpay, DA, HRA, TAX, NET PAY. Given HRA is 10% of basicpay, DA is 12% of basicpay, Tax is 10% of basicpay. Using Open, fetch and close statements.
- 7. Write a PL/SQL program to find factorial of a given number using function.
- 8. Write a PL/SQL program to compute the selling price of books depending on the book code. The Book table contains columns: BookNo, Book Code, Author, Title and Price.

The selling price= Price-Discout.

The discount is calculated as follows:

Book Code	Discount percentage
A	10% of Price
B	20% of Price
C	25% of Price

SCHEME FOR PRACTICAL VALUATION:

Question No. 1: From Part A -10 marks

Question No. 2: from Part B - 10 marks

Record – 05 Marks

Total: 25 Marks

SEMESTER: IV

Course Title: Web Application Development	Course code: B.Com 4.2
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Design and implement websites with good aesthetic sense of designing
- Use scripting languages and web services to add interactive components to web pages.
- Select and apply markup languages for processing, identifying, and presenting information in web pages.
- Have a sound knowledge of Web Application Terminologies, Internet Tools and web services. Design to be reusable the software components in a variety of different environments.

WEB APPLICATION DEVELOPMENT

Unit	Contents	Hours
1	Internet Basics, Hyper Text Markup Language: Formatting Tags, Creating Web Page Links, Listing Text, Tables in HTML, Frames in HTML, Brightening Page With Animated Text And Images, HTML5: Web Forms, Building forms in HTML5, Drawing with the Canvas Element, Cascading Style sheet, Style sheet basic, Applying CSS to HTML document, Understanding CSS Transitions, Enriching Forms Using CSS3 Properties, Transforming The Message	11
2	Introduction to JavaScript, Advantages of JavaScript, JavaScript syntax, Data type, Variables, Arrays, Operator & expression, Looping constructor, Function Dialog Box	11
3	JavaScript document object model, Introduction, Objects in HTML, Event Handling, Window Object, Document Object, Browser Object, Form Object, Navigator Object Screen Object, Build In Object, User Defined Object, Cookies.	10
4	ASP. NET Language Structure: Introduction To Visual Studio 2012 IDE, Understanding ASP.NET 4.5 Directives. HTML server controls, Anchor, Tables, Forms and Files, Basic Web server Controls, Label, Textbox, Button, Image, Links, Check & Radio button, Hyperlink. Data List Web Server Controls, Check box list, Radio button list, Drop down list, List box, Data grid, Repeater.	10

Text Book:

1. Ivan Bayross, HTML5 and CSS3 made Simple, BPB publications.
2. ASP.NET4.0 in Simple Steps, Kogent Publication and dreamtech PRESS Publication
3. ASP .NET 4.5(covers c# and vb codes), Black book by Kogent and Dreamtech PRESS Publication
4. Javascript, A Beginner's Guide 3rd edition, by John Pollock, Published by McGraw-Hill Professional Publishing
5. Javascript:The Definitive Guide, 6th edition By David Flanagan – Published by O'Reilly Media, Inc

Course Title: Computerized Accounting	Course code: B.Com 4.3
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs): At the end of the course, students will be able to:

- Understanding of basic concepts of accounting in respect of revenue, expense, assets, liability and equity
- Competency to enter accounting transactions in the accounting software and generate different accounting reports/documents.
- Abilities to make cost analysis reports, profit & loss accounts, balance sheets, and cash flow statements
- Develop skills in maintaining accounting records, provides in-depth exposure to accounts receivable/ accounts payable, payroll and inventory modules.
- Know about Computerized Accounting for account maintenance, making management decisions, and processing common business applications with primary emphasis on a general ledger package

COMPUTERIZED ACCOUNTING

Unit	Contents	Hours
1	Advanced Excel: Sorting and Filtering, Look up data by using Functions, Apply Advanced Date and Time Functions, Perform Data Analysis and Business Intelligence, Troubleshoot Formulas. Create and Manage Pivot Charts, Create Advanced Charts and Tables. Define Named Ranges and Objects, Macros,	11
2	Computerized Accounting: Introduction–Importance–Application -Advantages and disadvantages – Difference between Manual Accounting and Computerized Accounting – Features of Accounting packages – Creation of Company– Groups–Ledgers, Pre-defined vouchers - Displaying - Altering – Deleting of vouchers, ledger and company.-	11
3	Accounts with Inventory: Creation of Company with inventory and stock – Creation of Groups - Stock categories - Stock items – Godowns - Units of Measure - Inventory Vouchers - Pure Inventory Vouchers - Creating purchase order & Sales order – Invoicing - Display of inventory reports & statements. Reports: Account Books – Registers - Statement of Accounts - Bank Reconciliation Statement - Day Book – Cash and Bank Books- Final Accounts of Sole Traders: Trail Balance - Profit and Loss Account - Balance Sheet	10

4	Tax Accounting: Goods and Service Tax (GST): Create Company and Activate GST in Company Level, Creating Master and Set GST Rates, Creating Tax Ledgers, Recording GST Sales and Printing Invoices, Recording GST Interstate Sales and Printing Invoices, Recording an Advance to Supplier under GST, Recording GST Local Purchase, Recording GST Interstate; Payroll: Introduction, steps to generate pay-slips, creation of Employee group and Employee, Salary details, Payroll reports.	10
Text Books: 1. Student Guide-40571A Microsoft Excel expert 2019 2. SIA Experts, Computerized Accounting, SIA Publishers & Distributors Pvt Ltd, 2018 3. Yadagiri M., Srinivas G., Computerized Accounting, Jain Book Agency, 1st edition, 2008 4. Francis Princy, Computerized Accounting Tally-9 , Kalyani Publications, 2014 5. Tally Education Pvt Ltd, GST Using Tally. ERP 9 Release 6.1, Sahaj Enterprises; 1 Edition, 2017. Reference Books: 1. Parag Joshi, Tally.ERP 9 with GST with Solved Problems, Dnyansankool Prakashan; 1st edition, 2017. 2. Asok K. Nadhan, Tally ERP 9 Training Guide, BPB Publications; Fourth edition, 2018. 3. Rajesh Chheda, Learn Tally.ERP 9 with GST and E-Way Bill, Ane Books; 3 edition, 2018. 4. Yogesh Patel, Free Accounting with Free Software, Skylark Publications (UK); First edition, 2011.		

MANGALOREUNIVERSITY
B. Sc. MICROBIOLOGY
National Education Policy (NEP) - 2020

SYLLABUS AND EXAMINATION SCHEME
FOR
III AND IV SEMESTER

2022-23

PREAMBLE

The role of education is paramount in nation building. One of the major objectives of UGC is maintenance of standards of higher education. Over the past decades the higher education system of our country has undergone substantial structural and functional changes resulting in both quantitative and qualitative development of the beneficiaries. Such changes have gained momentum with the introduction of Choice Based Credit System (CBCS) which further expects Learning Outcome-Based curriculum to maximize the benefits of the newly designed curriculum. The Learning Outcome- Based Curriculum in Microbiology will help the teachers of the discipline to visualize the curriculum more specifically in terms of the learning outcomes expected from the students at the end of the instructional process. The commission strives to promote the link of students with the society/industry such that majority of the students engage in socially productive activities during their period of study in the institutions and at least half of the graduate students will secure access to employment/self-employment or engage themselves in pursuit of higher education. The model curriculum envisages to cater to the developmental trends in higher education, incorporating multi- disciplinary skills, professional and soft skills such as teamwork, communication skills, leadership skills, time management skills and inculcate human values, professional ethics, and the spirit of Innovation / entrepreneurship and critical thinking among students and promote avenues for display of these talents, linking general studies with professional courses. Besides imparting disciplinary knowledge to the learners, curriculum should aim to equip the students with competencies like problem solving, analytical reasoning and moral and ethical awareness. Introduction of internship and appropriate fieldwork/case studies are embedded in the curriculum for providing wider exposure to the students and enhancing their employability.

Learning outcomes specify what exactly the graduates are expected to know after completing a Programme of study. The expected learning outcomes are used as reference points to help formulate graduate attributes, qualification descriptors, Programme learning outcomes and course learning outcomes. Keeping the above objectives of higher education in mind the Learning Outcome-Based Curriculum Framework (LOCF) for the discipline of Microbiology has been prepared and presented here.

Composition of Curriculum - Committee for Microbiology

Sl. No.	Name and Organization	Designation
1	Prof. Dayanand Agsar Vice-Chancellor Gulbarga University, Kalaburagi	Chairman
2	Prof. S.R. Niranjana Professor, University of Mysore, Mysore	Member
3	Dr. Vedamurthy.A.B Professor, Karnataka University, Dharwad	Member
4	Dr.V.Krishna Professor, Kuvempu University, Shivamogga	Member
5	Dr.C.Srinivas Professor, Bangalore University, Bengaluru	Member
6	Dr.M.Jayashankar Professor, Mangalore University, Konaje	Member
7	Dr.Arun Jyothi MathiasAssociate Professor Maharani Cluster University, Bengaluru	Member
8	Smt. K.M.Sharuraj Associate Professor Govt. Science College, Hassan	Member
9	Dr. Anuradha.M Principal, Padmashree Institute of Management and Sciences, Bengaluru.	Member
10	Dr.Gayatri Devaraj Professor, Davangere University, Davangere	Member
11	Dr.Syeda Kausar Fathima Associate Professor, Govt. College for Women, Mandya	Member
12	Dr. M. Jayappa Special Officer, KSHEC, Bengaluru	Member Convener

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Curriculum as per KSHEC

Program Name	B.Sc. Discipline	Total Credits for the Program	Credits
Core	Microbiology	Year of implementation	2021-22

Program Outcomes: At the end of the program the student should be able to:

(Refer to literature on outcome-based education (OBE) for details on Program Outcomes)

PO1. Knowledge and understanding of concepts of microbiology and its application in pharma, food, agriculture, beverages, nutraceutical industries.

PO2. Understand the distribution, morphology and physiology of microorganisms and demonstrate the skills in aseptic handling of microbes including isolation, identification and maintenance

PO3. Competent to apply the knowledge gained for conserving the environment and resolving the environmental related issues.

PO4. Learning and practicing professional skills in handling microbes and contaminants in laboratories and production sectors.

PO5. Exploring the microbial world and analysing the specific benefits and challenges.

PO6. Applying the knowledge acquired to undertake studies and identify specific remedial measures for the challenges in health, agriculture, and food sectors.

PO7. Thorough knowledge and application of good laboratory and good manufacturing practices in microbial quality control.

PO8. Understanding biochemical and physiological aspects of microbes and developing broader perspective to identify innovative solutions for present and future challenges posed by microbes.

PO9. Understanding and application of microbial principles in forensic and working knowledge about clinical microbiology.

PO10. Demonstrate the ability to identify ethical issues related to recombinant DNA technology, GMOs, intellectual property rights, biosafety and biohazards.

PO11. Demonstrate the ability to identify key questions in microbiological research, optimize research methods, and analyse outcomes by adopting scientific methods, thereby improving the employability.

PO12. Enhance and demonstrate analytical skills and apply basic computational and statistical techniques in the field of microbiology.

Assessment: Weightage for assessments (in percentage)

Type of Course	Formative Assessment / IA	Summative Assessment
Theory	40	60
Practical	25	25
Projects	-	-
Experiential Learning (Internships etc.)	-	-

Contents of Courses for B.Sc. Microbiology as Major

Model II A

Semester	Course code	Course Category	Theory / Practical	Credits	Paper Title	Marks	
						S.A	I.A/ F.A
3.		DSC- 7	Theory	3	Microbial Diversity	60	40
			Practical	2	Microbial Diversity	25	25
		OE- 3	Theory	3	Microbial Entrepreneurship	60	40
4.		DSC- 8	Theory	3	Microbial Enzymology and Metabolism	60	40
			Practical	2	Microbial Enzymology and Metabolism	25	25
		OE- 4	Theory	3	Human Microbiome	60	40
	Exit Option with Diploma in Microbiology (100 Credits)						

Program Name	BSc Microbiology		Semester	Third Semester
Course Title	Microbial Diversity			
Course No.	MBL-103	DSC -3T	No. of Theory Credits	4
Contact hours	56 hrs		Duration of ESA/Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60
Course Pre-requisite (s):.				
Course Outcomes (COs): At the end of the course the student should be able to: 1. Acquire knowledge about microbes and their diversity 2. Study the characteristics, classification and economic importance of Prokaryotic and Eukaryoticmicroorganisms. 3. Gain knowledge about viruses and their diversity				
Content				Hrs
Unit–I				08 Hrs
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.				
Unit -II				
Diversity of Prokaryotic Microorganisms Distribution, factors regulatingdistribution of Prokaryotic Microorganisms. An overview of Bergey’s Manual of Systematic Bacteriology. General characteristics; Classification; Economic importance of: Archaea: Thermus aquaticus, Methanogens Bacteria: Escherichia coli, Bacillus subtilis, Cyanobacteria: Microcystis, Spirulina Actinomycetes: Streptomyces, Frankia Rickettsiae: Rickettsia rickettsi Chlamydiae: Chlamydia trachomatis Spirochaetes: Trepanema pallidum, Mycoplasma: A general account.				16 Hrs
Unit -III				
Diversity of Eukaryotic Microorganism General characters, distribution, Classification of eukaryotic Microorganisms: Fungi: Ainsworth classification- detailed study up to the level of classes. Salient features, reproduction and economic importance of fungi. Type study: Rhizopus, Saccharomyces, Aspergillus, Agaricus, Fusarium Algae: Occurrence, distribution,; thallus organization and economic importance. Type study: Chlorella, Diatom, Gracilaria. Symbiotic association- Lichen Protozoa: Occurrence, distribution, reproduction and economic importance. Classification up to the level of classes. Type study: Euglena, Trichomonas,Plasmodium, Trypanosoma				16 Hrs

Unit -IV	16 Hrs
Diversity of Viruses General structure, Isolation, purification and culturing of viruses. Principles of Viral Taxonomy- Baltimore and ICTV and the recent trends. Capsid symmetry- Icosahedral, helical, complex Animal viruses: HIV, Corona, Ortho and Paramyxovirus, Oncogenic virus Plant viruses: TMV, Papaya virus Microbial viruses: T4, lambda, cyano and myco phages. Sub viral particles. Viroids and Prions.	

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	2	3	4	5	6	7	8	9	10	11	12
Knowledge about microbes and their diversity		✓			✓			✓				
Study, characters, classification and economic importance of Pro-eukaryotic and Eukaryotic microbes		✓	✓		✓							
Knowledge about viruses and their diversity		✓				✓				✓		

Pedagogy: Lectures, Seminars, Industry Visits, Debates, Quiz and Assignments

Summative Assessment = 60 Marks

Formative Assessment Occasion / type	Weightage in Marks
Attendance	10
Seminar and Assignment	10
Debates and Quiz	10
Test	10
Total	60 marks + 40 marks = 100 marks

Course Title	Microbial Diversity (Practical)		Practical Credits	2
Course No.	MBL-103	DSC-3P	Contact hours	26 Hrs
Content				
1.	Isolation and identification of bacteria from soil, air and water			
2.	Isolation, and identification of fungi from soil, air and water			
3.	Isolation, and identification of Cyanobacteria			
4.	Isolation, and identification of Actinomycetes			
5.	Study of morphology of bacteria - cocci, bacilli, vibrio and spiral			
6.	Measurement of microbial cell size by Micrometry,			
7.	Spore count by haemocytometer			
8.	Type study: Cyanobacteria <i>Nostoc</i> , <i>Microcystis Spirulina</i>			
9.	Type study: Algae; <i>Chlorella</i> , <i>Diatoms</i> , <i>Gracilaria</i>			
10.	Type study: Fungi; <i>Rhizopus</i> , <i>Saccharomyces</i> , <i>Agaricus</i>			
11.	Type study: Protozoa: <i>Euglena</i> , <i>Plasmodium</i> , <i>Trypanosoma</i>			
12.	Study of micrographs /models - HIV, TMV, Corona virus			
Practical assessment				
Assessment				
Formative assessment			Summative Assessment	Total Marks
Assessment Occasion / type	Weightage in Marks		Practical Exam	
Record	5		25	50
Test	10			
Attendance	5			
Performance	5			
Total	25		25	

References:

1. Black, J.G. 2002. Microbiology-Principles and Explorations. John Wiley and Sons, Inc. New York
2. Brock, T.D. and Madigan, M.T. 1988. Biology of Microorganisms, V Edition. Prentice Hall. New Jersey
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4. 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
5. Prescott, Harley, Klein's Microbiology, J.M. Willey, L.M. Sherwood, C.J. Woolverton, 2008. 7th International, edition, McGraw Hill
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13. Vashishta, B.R Sinha A.K and Singh V. P. 2005. Botany - Algae S. Chand and Company Limited, New Delhi
14. Dubey R. C., and Maheshwari, D. K. 1999. A Textbook of Microbiology, 1st edition, S. Chand & Company Ltd, New Delhi
15. K. P. Talaro, 2009. Foundations in Microbiology, 7th International edition, McGraw Hill

Date:

Subject Committee Chairperson

Program Name	BSc Microbiology		Semester	Third Semester
Course Title	Microbial Entrepreneurship			
Course Code	MBL:303	OE-3	No. of Theory Credits	3
Contact hours	Lecture		Duration of ESA/Exam	2 Hours
	Practical			
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Pre-requisite(s):

Course Outcomes (COs): At the end of the course the student should be able to:

1. Demonstrate entrepreneurial skills
2. Acquire knowledge on Industrial entrepreneurship
3. Acquire knowledge on Healthcare Entrepreneurship

Content	42 Hrs
Unit-I	14 Hrs
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.	
Unit -II	14 Hrs
Industrial Entrepreneurship Microbiological Industries – Types, processes and products, Dairy products, Fermented foods, Bakery and Confectionery, Alcoholic products and Beverages, Enzymes – Industrial production and applications. Biofertilizers and Biopesticides, SCP and SCO. Nutraceutical products.	
Unit -III	14 Hrs
Healthcare Entrepreneurship Production and applications: Sanitizers, Antiseptic solutions, Polyphenols (Flavonoids), Alkaloids, Cosmetics, Biopigments and Bioplastics, Vaccines, Diagnostic tools and kits.	

Pedagogy: Lectures, Seminars, Industry Visits, Debates, Quiz and Assignments

Summative Assessment = 60 Marks

Formative Assessment Occasion / type	Weightage in Marks
Attendance	10
Seminar	10
Debates and Quiz	10
Test	10
Total	60 marks + 40 marks = 100 marks

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

Date:

**Subject Committee
Chairperson**

Program Name	BSc Microbiology		Semester	Fourth Semester
Course Title	Microbial Enzymology and Metabolism			
Course No.	MBL:104	DSC -4T	No. of Theory Credits	4
Contact hours	56 hrs		Duration of ESA/Exam	2 Hours
Formative Assessment Marks	40		Summative Assessment Marks	60

Course Pre-requisite (s):	
Course Outcomes (COs): At the end of the course the student should be able to: 1. Differentiating concepts of chemoheterotrophic metabolism and chemolithotrophic metabolism. 2. Describing the enzyme kinetics, enzyme activity and regulation. 3. Differentiating concepts of aerobic and anaerobic respiration and how these are manifested in the form of different metabolic pathways in microorganisms	
Content	56 Hrs
Unit-I	14 Hrs
Metabolism of Carbohydrates Concept of aerobic respiration, anaerobic respiration and fermentation. Sugar degradation pathways i.e. EMP, ED, Pentose phosphate pathway, Phosphoketolase pathway. TCA cycle. Fermentation - Concept of linear and branched fermentation pathways. Fermentation pathways: Alcohol fermentation and Pasteur effect; Butyric acid Fermentation, Mixed acid fermentation, Propionic acid Fermentation, acetate fermentation. Chemolithotrophic metabolism: Chemolithotrophy -Oxidation of Hydrogen, Sulphur, Iron and Nitrogen. Anaerobic respiration with special reference to dissimilatory nitrate reduction and sulphate reduction.	
Unit -II	14 Hrs
Metabolism of aminoacids, nucleotides and lipids 1. 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 of purines and pyrimidines, recycling by salvage pathway 3. Amino acid degradation and biosynthesis: Deamination and decarboxylation. An overview of aminoacid biosynthesis 4. Lipid degradation and biosynthesis: β-oxidation of palmitic acid; Biosynthesis of palmitic acid. 5. Metabolism of one carbon compounds: Acetogens: Autotrophic pathway of acetate synthesis 6. Metabolism of two-carbon compounds: Acetate: Acetic acid bacteria: Ethanol oxidation, sugar alcohol oxidation. Glyoxylate and glycolate metabolism: i. Dicarboxylic acid cycle, ii. Glycerate pathway iii. Beta hydroxyl aspartate pathway. Oxalate as carbon and energy source.	

Unit -III	14 Hrs
Basics of Enzymes Introduction to enzymes–Definition, 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. Multi-substrate reactions -Ordered, Random and Ping-pong.	
Unit -IV	14 Hrs
Enzyme Kinetics and Regulation Enzyme Kinetics: Kinetics of one substrate reactions. i. Equilibrium assumptions ii. Steady state assumptions iii. Line weaver-Burk, Hanes-Woolf, Eadie-Hofstee equations and plots. Kinetics of enzyme inhibition. Competitive, non-competitive and uncompetitive inhibition. Effect of changes in pH and temperature on enzyme catalyzed reaction. Kinetics of two substrate reactions. Pre steady state kinetics. Kinetics of immobilized enzymes Enzyme regulation: Allosteric enzyme - general properties, Hill equation, Koshland Nemethy and Filmer model, Monod Wyman and Changeux model. Covalent modification by various mechanisms. Regulation by proteolytic cleavage - blood coagulation cascade. Regulation of multi-enzyme complex- Pyruvate dehydrogenase. Feedback inhibition.	

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

Course Outcomes (COs) / Program Outcomes (POs)	Program Outcomes (POs)											
	1	2	3	4	5	6	7	8	9	10	11	12
Differentiating concepts of chemoheterotrophic metabolism and chemolithotrophic metabolism		✓						✓			✓	
Describing the enzyme kinetics, enzyme activity and regulation.		✓						✓			✓	
Differentiating concepts of aerobic and anaerobic respiration and how these are manifested in the form of different metabolic pathways in microorganisms		✓						✓			✓	

Pedagogy: Lectures, Seminars, Industry Visits, Debates, Quiz and Assignments

Summative Assessment = 60 Marks	
Formative Assessment Occasion / type	Weightage in Marks
Attendance	10
Seminar and Assignment	10
Debates and Quiz	10
Test	10
Total	60 marks + 40 marks = 100 marks

Course Title	Microbial Enzymology and Metabolism(Practical)		Practical Credits	2
Course No.	MBL:104	DSC-4P	Contact hours	
Content				
1.	Estimation of total lipid			
2.	Identification of fatty acids and other lipids by TLC			
3.	Isolation of lactose from bovine milk			
4.	Estimation of total sugars by the phenol-sulphuric acid method			
5.	Estimation of DNA - DPA method & UV absorbance method			
6.	Estimation of RNA (Orcinol method)			
7.	Determination of molar absorption coefficient (ε) of l-tyrosine			
8.	Estimation of polyphenols/ tannins by Folin- Denis method			
9.	Demonstration of alcoholic fermentation			
10.	Effect of variables on enzyme activity (amylase): a. Temperature b. pH c. substrate concentration d. Enzyme concentration			
11.	Determination of Km and Vmax of amylase (Lineweaver-Burke plot; Michaelis-Mentonequation)			
12.	Identification of metabolic pathways through charts (Any 3)			
Practical assessment				
Assessment				
Formative assessment			Summative Assessment	Total Marks
Assessment Occasion / type	Weightage in Marks		Practical Exam	
Record	5		25	50
Test	10			
Attendance	5			
Performance	5			
Total	25		25	

References

1. Philipp. G. Manual of Methods for General Bacteriology.
2. David T. Plummer. An Introduction to Practical Biochemistry
3. Wood W. B. Wilson J.H., Benbow R.M. and Hood L.E. 1981. Biochemistry- A Problem Approach, 2nd edition. The Benjamin/ Cummings Pub.co
4. Segel I.R., 2nd edition., 2004, Biochemical calculations, John Wiley and Sons
5. Irwin H. Segel, 2nd Edition, Biochemical Calculations, John Wiley & Sons

Date:

Subject Committee Chairperson

Program Name	BSc Microbiology		Semester	Fourth Semester
Course Title	Human Microbiome			
Course Code	MBL:304	OE-4T	No. of Theory Credits	3
Contact hours	Lecture		Duration of ESA/Exam	Hours
	Practical			
Formative Assessment Marks		40	Summative Assessment Marks	60
Course Pre-requisite(s):				
Course Outcomes (COs): At the end of the course the student should be able to: 1. Articulate a deeper understanding on biological complexities of human micro biome. 2. Understand broader goals of biological anthropology. 3. Compare and contrast the micro biome of different human body sites and impact human healthpromotion				
Content				42 Hrs
Unit-I				14 Hrs
INTRODUCTION TO MICROBIOME Normal human microbiota and their role in health-gut microflora, skin microflora, microflora of reproductive and excretory system. Symbiotic and parasitic association.				
Unit -II				14 Hrs
MICROBIOMES AND HUMAN HEALTH Pre and post-natal Microbiome, Nutritional modulation of the gut microbiome for metabolic health -role of gut microbiomes in human obesity, human type 2 diabetes. Influence of microbiome in aging. 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.				
Unit -III				14 Hrs
CULTURING OF MICROBES FROM MICROBIOMES Culturing of organisms of interest from the microbiome: bacterial, fungal, and yeast. Study of the microbiome genome Microbiomes and diseases: Microbiome and disease risks: The gut microbiome and host immunity, bacteriocins and other antibacterials. Human microbiome research in nutrition				

Pedagogy: Lectures, Seminars, Industry Visits, Debates, Quiz and Assignments

Summative assessment = 40 marks theory paper, End semester Exam duration of exam 2 hours	
Formative Assessment Occasion / type	Weightage in Marks
Assignment	10
Seminar	10
Case studies	10
Test	10
Total	40 marks

References

1. Jason A. Tetro, 2016. The Human Microbiome, Handbook DE Stech Publications inc,
2. Rebecca E. Hirsch, 2016. The Human Microbiome, Twenty First Century Books.
3. Julian R Marchesi, 2019. The Human Microbiota And Microbiome, CABI
4. Alanna Collen, 2016. 10% Human: How Your Body's Microbes Hold the Key to Health and happiness

Date:

Subject Committee Chairperson

National Education Policy (NEP) - 2020
Question paper pattern for B.Sc. Microbiology- Practical Paper
University Examination
(III and IV Semester)

Time: 2 Hours

Max.Marks: 25

Q.No.1.Conduct the experiment A and report the result	08 Marks
Q.No.2.Conduct the experiment B and report the result	05 Marks
Q.No.3.Identify and comment on C and D	4 X 2 =08 Marks
Q.No.4.Class record	04 Marks

National Education Policy (NEP) - 2020
Question paper pattern for B.Sc. Microbiology- Practical Paper
Internal assessment Examination
(III and IV Semester)

Time: 2 Hours

Max. Marks: 25

Q.No.1.Conduct the experiment A and report the result	08Marks
Q.No.2.Conduct the experiment B and report the result	05 Marks
Q.No.3.Identify and comment on C and D	4 X2 =08Marks
Q.No.4.Viva Voce	04 Marks

National Education Policy (NEP) - 2020
Question paper pattern for B.Sc. Microbiology-DSC
University Theory examination
(III and IV Semester)

Time: 3 hrs

Max Marks: 60

NOTE: *Answer one complete set of questions from each unit

*Draw diagrams wherever necessary

UNIT-I

2+5+8=15

1. a)
b)
c)

OR

2. a)
b)
c)

UNIT-II

2+5+8=15

3. a)
b)
c)

OR

4. a)
b)
c)

UNIT-III

2+5+8=15

5. a)
b)
c)

OR

6. a)
b)
c)

UNIT-IV

2+5+8=15

7. a)
b)
c)

OR

8. a)
b)
c)

National Education Policy (NEP) - 2020
Question paper pattern for B.Sc. Microbiology-DSC
Internal Assessment Theory examination
(III and IV Semester)

Time: 1.30hrs

Max Marks: 30

NOTE:*Draw diagrams wherever necessary

Part A

I. Discuss any 5 of the following:

2X 5= 10 Marks

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

Part B

II. Answer any 2 questions

5X2=10 Marks

- 1.
- 2
- 3.
- 4.

Part C

III. Answer any 1question

10X1=10Marks

- 1.
- 2

National Education Policy (NEP) - 2020
Question paper pattern for B.Sc. Microbiology-Open Elective Paper
University Theory examination
(III and IV Semester)

Time: 3 hrs

Max Marks: 60

NOTE: *Draw diagrams wherever necessary

Part A

I. Discuss any 5 of the following:

2X 5= 10 Marks

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

Part B

II. Answer any 4 questions from the following:

5X4=20 Marks

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Part C

III. Answer any 3 questions from the following:

10X3=30 Marks

1. (6+4 or 5+5)
2. (6+4 or 5+5)
3. (6+4 or 5+5)
4. (6+4 or 5+5)

National Education Policy (NEP) - 2020
Question paper pattern for B.Sc. Microbiology-Open Elective Paper
Internal Assessment Theory examination
(III and IV Semester)

Time: 1.30hrs

Max Marks: 30

NOTE:*Draw diagrams wherever necessary

Part A

I. Discuss any 5 of the following:

2X 5= 10 Marks

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

Part B

II. Answer any 2 questions from the following

5X2=10 Marks

- 1.
- 2
- 3.
- 4.

Part C

III. Answer any 1 question from the following

10X1=10 Marks

- 1.
- 2



**Department of
Post Graduate Studies and Research in Sociology**

**Curriculum Content
For
Sociology**

**Under
New Education Policy-2020**

September 2022 (Oct 2021)

Board of Studies in Sociology (UG) Members and Syllabus Committee

Chairman:

Prof. Vinay Rajath, D. Department of Sociology, Mangalore University

Members: 2021-22

Dr Giridhar Rao M. Associate Professor, Principal, Govt. First Grade College, Mudipu.

Dr Shreemani, Associate Professor, Principal, Vijaya College, Mulki.

Invited Honourary Members:

Dr Sridhara P., Associate Professor, Principal, Govt. First Grade College, Puttur.

Dr Rajendra K., Associate Professor, Dr G Shankar Govt. First Grade Women's College, Udupi.

Members: 2022-23

Dr Sheshappa Amin, Associate Professor, Govt. First Grade College, Carstreet, Mangalore.

Dr A.N. Gayathri, Assistant Professor, FMKMC, Madikeri.

Smt. Shalini, Assistant Professor, PPC, Udupi

Smt. Meena Kumari, Assistant Professor, SDPT First Grade College, Kateel.

Adapted from the Model Curriculum Content for Sociology
Prepared by
Sociology Subject Expert Committee

Content

Sl No	Course Code	Course	Page
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iii		Scheme of new Courses	8
iv		Course Evaluation – question paper pattern	9
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1	BASSOCN101	Understanding Sociology	11
2	BASSOCN102	Changing Social Institutions in India	13
3	BASSOEN101	Indian Society: Continuity and Change	15
4	BASSOEN102	Sociology of EverydayLife	17
		Semester II	
5	BASSOCN201	Foundations of Sociological Theory	19
6	BASSOCN202	Sociology of Rural Life in India	21
7	BASSOEN201	Society through Gender Lens	23
8	BASSOEN202	Social Development in India	25
		Semester III	
9	BASSOCN301	Social Stratification and Mobility	27
10	BASSOCN302	Sociology of Urban Life in India	29
11	BASSOEN301	Sociology of Youth	31
12	BASSOEN302	Sociology of Tourism Management	33
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14	BASSOCN401	Sociology of Marginalized Groups	37
15	BASSOCN402	Population and Society	39
16	BASSOEN401	Sociology of Leisure	41
17	BASSOEN402	Sociology of Food Culture	43
18	BASSOEN403	Sociology of Sanitation	45

(A2) Model Programme Structure for Bachelor of Arts (Basic/Hons.) Programme (2Majors subjects without practical)

Sem.	Discipline Core (DSC)(Credits) (L+T+P)	Discipline Elective(DS E) /Open Elective (OE) (Credits) (L+T+P)	Ability Enhancement Compulsory Courses (AECC), Languages (Credits)(L+T+P)		Skill Enhancement Courses (SEC)			Total Credits
					Skill based (Credits) (L+T+P)	Value based (Credits) (L+T+P)		
I	DSC A1(3), A 2(3) DSC B1(3), B 2(3)	OE-1 (3)	L1-1(3), L2-1(3) (4 hrs each)		SEC-1 (2)(1+0+2)	Yoga (1) (0+0+2)	Health & Wellness (1) (0+0+2)	25
II	DSC A 3(3), A 4(3) DSC B 3(3), B 4(3)	OE-2 (3)	L1-2(3), L2-2(3) (4 hrs each)	Environmental Studies (2)		Sports (1) (0+0+2)	NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2)	25
Exit option with Certificate (48 credits)								
III	DSC A 5(3), A 6(3) DSC B 5(3) B 6(3)	OE-3 (3)	L1-3(3), L2-3(3) (4 hrs. each)		SEC-2 (2)(1+0+2)	Sports (1) (0+0+2)	NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2)	25
IV	DSC A 7(3), A 8(3) DSC B 7(3), B 8(3)	OE-4 (3)	L1-4(3), L2-4(3) (4 hrs. each)	Constitution of India (2)		Sports (1) (0+0+2)	NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2)	25
Exit option with Diploma in Arts (96 credits)								
V	DSC A 9(4), A 10(4) DSC B 9(4), B 10(4)	Vocational-1 (3)			SEC-3 (1+0+2)	Sports (1) (0+0+2)	NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2)	23
VI	DSC A 11(4), A 12(4) DSC B 11(4), B 12(4)	Vocational-2 (3) Internship (2)			SEC-4 (2)	Sports (1) (0+0+2)	NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2)	25
Exit with Bachelor of Degree (140 credits)								
VII	DSC A/B 13(4) DSC A/B 14(4) DSC A/B 15(4)	DSC E-1(3) Vocational-3 (3) Res. Methodology (3)						21
VIII	DSC A/B 16(3) DSC A/B 17(3) DSC A/B 18(3)	DSC E-2(3) Vocational-4 (3) Research Project (6)* [DSC E-3(3)*, E-4(3)]*						21
Award of Bachelor of Degree with Honours, B.A. (Hons.) 180 credits)								

*In lieu of the research Project, two additional elective papers/ Internship may be offered.

General Objectives of the Programme:

1. To introduce the students to the basic concepts and processes in sociology to understand the social life.
2. To equip the students with updated sociological knowledge pertaining to various sub-fields within the discipline of sociology.
3. To orient the students for comprehending sociological perspectives.
4. Analyzing and critically assessing the social reality.
5. Prepare students for various competitive examinations.
6. To inculcate the research aptitude and relevant skills in the students useful for their professional life.
7. To prepare the students for undertaking research, jobs in Colleges/Universities/ Research Institutions, various Government Departments and Non-governmental organizations.
8. To prepare the students for undertaking income earning jobs in organizations and agencies.
9. Continuous education in various special fields of Sociology.
10. Need based curricula and teaching to develop aptitude and skills.

Programme Outcome: Progressive Certificate, Diploma, Bachelor Degree, Bachelor Degree with Honours or Master's Degree in Sociology

The programme in Sociology is to prepare the candidate to equip the employability skills and to acquire comprehensive knowledge on human life and social analysis leading expertise in Sociology. The curricula are prepared with programme specific outcomes:

PSO 1	Relevance of sociology in the present society.
PSO 2	Strengthens in the core areas of Sociological thinking.
PSO 3	Exposure to students on special and new streams in Sociology.
PSO 4	Employability skills for efficient service in Govt departments,
PSO 5	Skills to work with research groups, and Market research firms.
PSO 6	Serve in Development agencies,
PSO 7	Teaching - Universities and colleges.
PSO 8	Work with Legal firms and correction centres
PSO 9	Take up independent choice as entrepreneurs.
PSO 10	Equipped with skills to face the social reality confidently.
PSO 11	Field work research through Project Work
PSO 12	Job orientation in Community work: as social and community worker.
PSO 13	Skill for Survey Designer, Research, Data Analyst and Social Statistician.
PSO 14	Prepared to work as Development and Health researcher and Social entrepreneur

Sociology CBCS Scheme: 2021-22 Onwards

Course Scheme							
Course Code	Course	Instruction Hrs./ Wk/Sem	Exam Hrs	Marks Final Exam	IA	Total Marks	Credit
Semester I							
BASSOC N101	Understanding Sociology	3/42	2	60	40	100	3
BASSOC N102	Changing Social Institutions in India	3/42	2	60	40	100	3
BASSOE N101	Indian Society: Continuity and Change	3/42	2	60	40	100	3
BASSOE N102	Sociology of EverydayLife	3/42	2	60	40	100	3
Semester II							
BASSOC N201	Foundations of Sociological Theory	3/42	2	60	40	100	3
BASSOC N202	Sociology of Rural Life in India	3/42	2	60	40	100	3
BASSOE N201	Society through Gender Lens	3/42	2	60	40	100	3
BASSOE N202	Social Development in India	3/42	2	60	40	100	3
Semester III							
BASSOC N301	Social Stratification and Mobility	3/42	2	60	40	100	3
BASSOC N302	Sociology of Urban Life in India	3/42	2	60	40	100	3
BASSOE N301	Sociology of Youth	3/42	2	60	40	100	3
BASSOE N302	Sociology of Tourism Management	3/42	2	60	40	100	3
BASSOE N303	Society in Coastal Karnataka	3/42	2	60	40	100	3
Semester IV							
BASSOC N401	Sociology of Marginalized Groups	3/42	2	60	40	100	3
BASSOC N402	Population and Society	3/42	2	60	40	100	3
BASSOE N401	Sociology of Leisure	3/42	2	60	40	100	3
BASSOE N402	Sociology of Food Culture	3/42	2	60	40	100	3
BASSOE N403	Sociology of Sanitation	3/42	2	60	40	100	3

Evaluation of the course consists of

1. Theory exam for 3 hours duration for 60 marks
2. Internal Formative Continuous Assessment for 40 marks
 - a. 20 marks for 2 written Internal Assessment Exams
 - b. 20 marks for 2 Activities

Pedagogy: Class Lecture, Group discussions, Role play, Micro Project, Field Visits

Internal Assessment:

The internal assessment marks for a course shall be based on two tests and two activities of 10 marks each. The test shall be of at least one hour duration. The total marks of the tests and activities shall be taken as the internal assessment marks. Any two activities may be selected from the list of the activities given below or the concerned department may choose an activity that is appropriate to the course and the local relevance.

Item	Test 1	Test 2	Activity 1	Activity 2	Total
Score	10	10	10	10	40

List of Activities:

1. Assignment and presentation.
2. Seminar presentation on the assigned topic
3. Field study and report.
4. Interview and submit the report
5. Role play
6. Collage preparation
7. Visit to the local village
8. Visit to the welfare or correction institutions
9. Group discussion

For more details and activities refer 'Model Curriculum Content for Sociology'
(not attached to this document)

Question Paper Pattern

Time: 2 Hrs

Max. Marks - 60

(Title of the Course)

Note : Answer all Sections

I. Answer any FIVE questions in 2-3 sentences each (2x5=10)

1. Q.
2. Q.
3. Q.
4. Q.
5. Q.
6. Q.
7. Q.

II. Answer any Four questions in 10-12 sentences each (5x4=20)

8. Q.
9. Q.
10. Q.
11. Q.
12. Q.
13. Q.

III. Answer any TWO in 20-25 sentences each (15x2=30)

14. Q.
15. Q.
16. Q.
17. Q.

Sd/-
Dr. Sheshappa Amin.

Sd/-
Dr A.N.Gayathri

Sd/-
Smt. Meena Kumari.

Sd/-
Smt. Shalini.

Sd/-
Dr. Vinay Rajath D.
(Chairman)

Semester 1

BASSOCN101 Understanding Sociology

Course Objectives: this course will help the students

- 1 To understand the basic concepts in Sociology
- 2 To study the relationship between sociology and other social sciences
- 3 To study the deferent branches of sociology
- 4 To understand the process of socialization and its importance
- 5 Understand the linkage between the social changes in the economic and social systems and the emergence of discipline of Sociology.
- 6 Know the theoretical foundations of Sociology on which edifice of modern Sociological theories are built.
- 7 Learn the historical, socio-economic and intellectual forces in the rise of sociological theory.
- 8 Understand the sociological thinking of the founders of Sociology.

Course Outcome:

- CO1. Understand the emergence and foundations of Sociology
- CO2. Understand the contributions of early sociologists.
- CO3. Impart critical thinking to interpret the social scenario.
- CO4. Understand the perspectives and forces in the rise of sociological theory.
- CO5. Understand the concepts of early sociologists
- CO6. Understand the nature and role of Sociology in a changing world
- CO7. Comprehend the uniqueness of sociological imagination in the study of society

Course Content:

Unit –I Foundation of Sociology

14 Hrs

- a. Definitions, and Scope of Sociology
- b. Emergence of sociology as a discipline – enlightenment, industrial revolution, French revolution, growth of other social sciences.
- c. Importance of the Study of Sociology

Unit–II Sociology as Science

14Hrs

- a. Foci of Sociology: Social Institutions, Social Inequality and Social Change
- b. Sociological Perspectives: Functionalist, Conflict, Symbolic Interactionist, Feminist
- c. Social Construction of Reality; Sociological Eye (Randall Collins), Sociological Imagination (C Wright Mills)

Unit – III Culture and Socialization

14 Hrs

- a. Characteristics, Elements and Types of Culture
- b. Meaning, Agencies and Importance of Socialization
- c. Theories of Socialization : C.H. Cooley and G.H. Mead

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- Berger, P L 1963, Invitation to Sociology: A Humanistic Perspective, Doubleday, Garden City, N.Y
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BASSOCN102 Changing Social Institutions in India

Course Objectives: This course will help the students

- 1 To understand the basic social institutions
- 2 To study the relevance of social institutions
- 3 To study the concept of social change and its dynamics
- 4 To understand the process of social change and its factors
- 5 To study the nature of inequalities in the society
- 6 The forms of social stratification in India and their dynamics
- 7 To understand the dynamics of social groupings and discrimination
- 8 To learn the ideologies behind social stratification and mobility

Course Outcome:

- CO1. Understand the nature of inequalities in the society
- CO2. Learn the dynamics of social groupings and discrimination
- CO3. Understand the ideologies behind social stratification and mobility.
- CO4. The modes of social improvement people use
- CO5. Assess the reservation policy and its implications.
- CO6. Learn the nature of social mobility
- CO7. Identify the new forms taken by institutions of family and marriage
- CO8. Undertake micro research work and communicate effectively

Course Content:

Unit – 1 Family and Marriage

14 Hrs

- a. Family - Changing structure of family; changes in size and composition; care giving of children and elderly
- b. Democratization of relationships: between spouses, parent-children; step-parenting
- c. Marriage - changing patterns of marital relations - separation, divorce and remarriage
- d. Changes in age of marriage, regional variations and choice of mate selection

Unit – 2 Religion and Education

14 Hrs

- a. Religion: Religion in modern society and secularization
- b. Challenges to religious freedom and state control
- c. Education: types of education - formal and informal;
- d. Education and Employability; social categories and equal opportunity in education

Unit – 3 Economic and Political Institutions

14 Hrs

- a. Work; Gender division of work and feminization of labour.
- b. Job opportunities and Unemployment; Technology and job insecurity.
- c. Political Institution, Government and State; Democracy in India
- d. Challenges: Militancy, Fundamentalism, Regionalism

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BASSOEN101 Indian Society: Continuity and Change

Objectives:

The course seeks to

1. Go beyond the commonsense understanding of the prevailing social issues and problems
2. Focus on the structural linkages and interrelationships.
3. Sensitize to the emerging social issues of contemporary India.
4. Acquire sociological understanding of social issues and problems
5. Empower to serve as change agents both in governmental and non-governmental organizations
6. Gain a better understanding of their own situation and region.
7. Analyse the nature and direction of change in Indian society
8. Examine the changing conditions of socially excluded groups through movement for social justice

Course Outcome:

- CO1. Understand social issues and problems of contemporary India.
- CO2. Change agents - governmental and non-governmental organizations.
- CO3. Structural linkages and interrelationships of social issues.
- CO4. Emerging social issues and problems of contemporary India,
- CO5. Sociological understanding of issues and problems
- CO6. Empower to deal with issues and problems
- CO7. Better understanding of their own situation and region.

Course Content:

Unit – 1 Social Change in India	14 Hrs
a. Nature of Change in Indian Society	
b. Changing Social Institutions: Family, Caste, Polity and Economy	
c. Rural-Urban links: Infrastructure, Education, Health	
Unit – 2 Social Movements for Social Justice	14 Hrs
a. Backward Classes and Dalit Movements	
b. New Social Movements: LGBTQ and Anticorruption Movements	
c. Women empowerment movements	
Unit – 3 India in the Globalisation Era	14 Hrs
a. Impact on Food Habits, Language, Ideas and Life Styles	
b. Changing Social Values: Impact on Youth and their World View,	
c. Impact on Family Relationships and norms	

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BASSOEN102 Sociology of Everyday Life

Course Objectives:

This course will help the students

- 1 To understand the basic concepts in Sociology
- 2 To study the relationship between social institutions
- 3 To understand the process of social life and its importance
- 4 To Understand the sociological thinking of the founders of Sociology.
- 5 To Understand social practices and their significance
- 6 To learn the process of socialization
- 7 To analyze the social construction of the reality
- 8 Look at the familiar world from a new perspective

Course Outcome:

- CO1. Impart critical thinking to interpret the social scenario.
- CO2. Understand the forces in the rise of sociological theory.
- CO3. Understand the concepts of early sociologists
- CO4. Learn the social construction of reality
- CO5. Understand the process of socialization
- CO6. Appreciate culture and its elements

Course Content:

Unit – 1 Introduction

14 Hrs

- a. Everyday Life - Meaning; Sociology as a study of Social Interaction
- b. Social practices, customs and institutions; role of socialization
- c. Challenges and Problems of Everyday Life

Unit – 2 Self and Society

14 Hrs

- a. Definition of Situation (W I Thomas)
- b. The development of Self: CH Cooley and GH Mead
- c. Role of Social Media in Constructing Self and Identity

Unit – 3 Culture in Everyday Life

14 Hrs

- a. Culture: elements and Types of Culture
- b. Social values and norms; conformity and deviance
- c. Acculturation and Cultural Diffusion

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Semester II

BASSOCN201 Foundations of Sociological Theory

Objectives:

After studying this course, the learners will be able to -

1. Understand the linkage between the social changes and the emergence of discipline of Sociology.
2. Know the theoretical foundations of Sociology on which edifice of modern Sociological theories are built.
3. Develop critical thinking, analytical ability to interpret the social scenario around.
4. Learn the historical, socio-economic and intellectual forces in the rise of sociological theory.
5. Understand the sociological theories of early sociologists as Auguste Comte, Herbert Spencer, Karl Marx, Max Weber and Emile Durkheim.

Course Outcome:

- CO1. Understand the emergence of Sociology.
- CO2. Know the foundations of Sociology.
- CO3. Understand the contributions of early sociologists.
- CO4. Impart critical thinking
- CO5. Inculcate analytical ability to interpret the social scenario.
- CO6. Understand the forces in the rise of sociological theory.
- CO7. Understand the concepts of early sociologists

Course Content:

Unit – 1 Auguste Comte and Herbert Spencer 14 Hrs

- a. Intellectual Context; Positivism,
- b. Law of Three Stages, Classification of Sciences
- c. Theory of Social Evolution, Organic Analogy,
- d. Types of Society

Unit – 2 Karl Marx and Georg Simmel 14 Hrs

- a. Dialectical Materialism, Economic Determinism,
- b. Class Struggle, Alienation
- c. Formal Sociology, Theory of Sociation,
- d. Theory of Conflict

Unit - 3 Emile Durkheim and Max Weber 14 Hrs

- a. Social Facts, Division of Labour in Society,
- b. Suicide, Sociology of Religion
- c. Social Action and types; Ideal Types, Protestant Ethics and Spirit of Capitalism
- d. Bureaucracy, Types of Authority,

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BASSOCN202 Sociology of Rural Life in India

Objectives:

This course is designed

1. To provide sociological understanding of rural society in India
2. To acquaint students with basic concepts in rural studies
3. To analyze rural problems in India
4. To provide knowledge of rural governance.
5. To impart sociological skills to reconstruct rural institutions and rural development programmes.
6. To develop the understanding regarding the linkages between urban and rural reality
7. Understand the myths and realities of village India
8. Understand the changes in land tenure systems and consequences
9. To analyze various development programmes

Course Outcome:

- CO1. Analyze rural problems in India
- CO2. Knowledge of rural governance.
- CO3. Skills to reconstruct rural institutions and rural development.
- CO4. Sociological understanding of society in India
- CO5. Basic concepts in rural studies
- CO6. Development programmes to plan, monitor and evaluate.
- CO7. Understanding of the linkages between urban and rural reality

Course Content:

Unit – 1 Rural and Agrarian Social Structure 14 Hrs

- a. Social Construction of Rural Societies: Myth and Reality (M N Srinivas)
- b. Agrarian Social Structure: Land Tenure Systems (Colonial Period); Indian Land Reform Laws (Post-Independence)
- c. Commercialization of Agriculture and Commodification of Land

Unit - 2. Rural Society in India 14 Hrs

- a. Rural Caste and Class Structure
- b. Panchayat Raj System and Rural Politics
- c. Actors in Market - Trading Castes, Role of Intermediaries and Weekly Fairs

Unit – 3 Rural Development 14 Hrs

- a. Induced Intervention: PURA, MGNREGA, Water and Land Development Efforts
- b. Challenges to Sustainable Rural Development: Casteism, Factional Politics,
- c. Natural Calamities (Droughts and Floods).

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BASSOEN201 Society through Gender Lens

Objectives:

After completion of this course, the learners will be able:

1. To introduce the debate on the determination of gender roles.
2. To orient regarding theories of gender relation in Indian society.
3. To trace the evolution of gender as a category of social analysis.
4. To introduce the basic concepts of gender and gender inequality
5. To analyze the gendered nature of major social institutions
6. To understand the challenges to gender inequality

Course Outcome:

- CO1. Understand gender determination and gender roles.
- CO2. Analyse gendered nature of major social institutions
- CO3. Understand the challenges to gender inequality
- CO4. Theories of gender relation in Indian society.
- CO5. Gender as a category of social analysis.
- CO6. Basic concepts of gender and gender inequality
- CO7. Gendered nature of major social institutions
- CO8. Social construction of gender and gender roles
- CO9. Identify gender bias and discrimination in everyday social interaction

Course Content:

Unit – 1 Social Construction of Gender

14 Hrs

- a. Gender and Sex, Gender Relations, Gender Discrimination, Gender Division of Labour
- b. Gender Equality, Androgyny and Gender Sensitivity
- c. Representation of Women and inclusion of Third Gender.

Unit – 2 Gender and Violence

14 Hrs

- a. Media presentation and Political representation
- b. Education, Employment and Health, Sexual Harassment at Work Place
- c. Domestic Violence, Dowry, Rape, Honor-Killing, Cyber Crimes

Unit-3 Addressing Gender Justice

14 Hrs

- a. The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)
- b. 73rd and 74th Constitutional Amendment and Women Empowerment
- c. Legal measures.

Reference:

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BASSOEN202 Social Development in India

Objectives:

The course is designed to achieve the following objectives:

1. To provide conceptual and theoretical understanding of social development
2. To offer an insight into the ways in which social structure influences development
3. To address the Indian experience of social change and development
4. To prepare for professional careers in the field of development planning.
5. To provide an understanding of the alternate trends and paths of development
6. To understand the contemporary socio-economic framework of development in India

Course Outcome:

- CO1. Understand social change and development
- CO2. Indian experience of social change and development
- CO3. Professional careers in development planning.
- CO4. Theoretical understanding of social change and development
- CO5. Social structure and development relationship
- CO6. Alternative trends and paths of development
- CO7. Contemporary socio-economic framework of development in India

Course Content:

Unit – 1 Social Change and Development 14 Hrs

- a. Economic development to social development and Human Development.
- b. Importance of Social Development
- c. Indian thought on Social Development - M K Gandhi and Dr BR Ambedkar

Unit - 2. Components of Social Development 14 Hrs

- a. Political Freedom, Economic Facilities
- b. Social Opportunities, Transparency,
- c. Individual and group Security

Unit – 3 Challenges to Social Development 14 Hrs

- a. Sustainable and Inclusive Development, Environmental Sustainability.
- b. Responsible Private Corporations
- c. Redressing Regional Imbalance

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Semester III

BASSOCN301 Social Stratification and Mobility

Course Objectives:

After the completion of this course the student will understand

1. The nature of inequalities in the society
2. The forms of social stratification in India and their dynamics
3. The dynamics of social groupings and discrimination
4. The modes of social improvement people use in their life time
5. The theories behind the social stratification and mobility

Course Outcome:

- CO1. Understand the nature and role of social stratification
- CO2. Recognise different types of stratification and nature of social mobility
- CO3. Describe different types of social stratification and mobility
- CO4. Critically understand and analyse different theories of social stratification
- CO5. Nature of inequalities in the society
- CO6. Dynamics of social groupings and discrimination
- CO7. Theories behind the social stratification and mobility.
- CO8. The modes of social improvement people use
- CO9. Reservation policy and implications
- CO10. Welfare activities for the OBC

Course Content:

Unit –I Features and Forms of social stratification

14 Hrs

- a. Characteristics of stratification – Melvin M Tumin
- b. Forms of social stratification – caste, class and estate.
- c. Dimensions of Stratification – Income & Wealth, Power, Occupation and Schooling

Unit–II Perspectives on Stratification

14Hrs

- a. Functional Theory: Kingsley Davis, W E Moore and Melvin M Tumin
- b. Karl Marx's Theory: Class and Social Change
- c. Weber's Theory: Class, Status and Power

Unit – III Social Stratification and Social Mobility

14 Hrs

- a. Meaning and forms of social mobility: horizontal, vertical, intergenerational and intra-generational
- b. Rise of middle class - Role of Education and Profession
- c. Mobility in Caste in Contemporary India

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- ಭೈರಪ್ಪ. 'ಸಾಮಾಜಿಕ ಸ್ತರ ವಿದ್ಯಾಸ ಮತ್ತು ಸಂರಚನೆ' ಜೈಜಗತ್ ಶ್ರೀ ನಿಲಯ ಮಾಯಸಂದ್ರ ತುಮಕೂರು

BASSOCN302 Sociology of Urban Life in India

Course Objectives: This course will help the students

1. To provide sociological understanding of rural and urban society in India
2. To acquaint students with basic concepts in rural and urban studies
3. To analyze rural and urban problems in India
4. To provide knowledge of rural and urban governance.
5. To impart sociological skills to reconstruct rural institutions and rural development programmes to plan, monitor and evaluate rural development programmes.
6. To develop the understanding of students regarding the linkages between urban and rural reality

Course Outcome:

- CO1. Define the basic concepts of Urban Sociology
- CO2. Identify and describe different types of city
- CO3. Analytically understand theoretical issues related to urban society
- CO4. Critically evaluate urban policies
- CO5. Analyze rural and urban problems in India
- CO6. Knowledge of rural and urban governance.
- CO7. Skills to reconstruct rural institutions and rural development.
- CO8. Sociological understanding of society in India
- CO9. Basic concepts in rural and urban studies
- CO10. Development programmes to plan, monitor and evaluate.
- CO11. Understanding of the linkages between urban and rural reality

Course Content:

Unit – 1 Introduction

14 Hrs

- a. Meaning of urban sociology and its importance; a brief history of Urban Sociology.
- b. Urban and Urbanism; Types of City: Metropolitan, Megacity and Global City
- a. Urbanization and its challenges: Rural-Urban Continuum, Suburbs, Urban Fringe, Urban Sprawl, Edge Cities

Unit – 2 Perspectives on Urban Society

14 Hrs

- a. Ecological Theory (Chicago School);
- b. World and Global Cities (Saskia Sassen)
- c. Spaces of Flows (Manuel Castells), Cities in the South

Unit – 3 Urban Policy

14 Hrs

- a. Inequalities - Caste, Class, Gated Communities and Social Exclusion
- b. Urban Governance: 74th Amendment; Urban Development and Planning
- c. Urban Policy: Urbanization and Environmental Concerns, Smart Cities

Reference

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- ರಾಜಶೇಖರ್ ಎಸ್ 'ನಗರಸಮಾಜಶಾಸ್ತ್ರ' ಮೈಸೂರು ಬುಕ್ ಹೌಸ್ ಮೈಸೂರು

BASSOEN301 Sociology of Youth

Objectives:

The course seeks to

1. Understand age related issues in society
2. Focus on the cultures and subcultures in a social setting.
3. Sensitize to the youth response the social inequalities.
4. Acquire sociological understanding of issues and problems of younger generation
5. Understand media and technology impact on youth
6. Examine the social, political and economic factors for youth unrest

Course Outcome:

- CO1. Recognize and explain how sociologists conceptualise and study youth and youth hood
- CO2. Understand how youth evolve in the context of social, economic and cultural settings
- CO3. Understand concerns and problems of youth

Course Content:

Unit – 1 Age Groups and Social Structure 14 Hrs

- a. Age Differentiation, Age Groups. Age Sets; Generation gap; Cultural Lag (W F Ogburn); Structural Lag ((Riley)
- b. Youth Cultures, Subcultures, Counter Culture, Contra Culture
- c. Youth response to Caste and Class inequalities

Unit – 2 Youth and Society 14 Hrs

- a. Youth, Music and Leisure
- b. Globalization of Youth Culture and Marketing Youth Culture
- c. Youth, Media and Technology

Unit – 3 Youth and Social Concerns 14 Hrs

- a. Youth Protest and Violence: Social, Political and Economic
- b. Peer groups and Drug Culture,
- c. Youth, Nationalism and Globalization

Reference

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ನಾರಾಯಣ ಎಂ. 'ಭಾರತದಲ್ಲಿ ಜನಸಂಖ್ಯಾ ಅಧ್ಯಯನ' ಅಖಿಲ ಏಜೆನ್ಸೀಸ್ ಮೈಸೂರು

ದೇಶಮಾನಿ ಸಮತಾ ಬಿ ಸಮಾಜಶಾಸ್ತ್ರ ಮತ್ತು ಮಾಧ್ಯಮ' ಚೇತನ ಬುಕ್ ಹೌಸ್ ಮೈಸೂರು.

BASSOEN302 Sociology of Tourism and Management

Course Objectives:

This course aims to provide:

1. Basic knowledge on tourism.
2. Lessons on social aspects of tourism
3. Understanding tourism as a socio-economic force in social development.
4. Understanding cultural differences and respect for others culture.
5. Motivation to choose a career in tourism management

Course Outcome:

- CO1. Explain the relationship between tourism, culture and cultural heritage
- CO2. Explain social, cultural and economic impacts of tourism on local communities
- CO3. Understand the relationship between tourism and consumption
- CO4. Understand the principles of tourism management
- CO5. Acquaint with the places of tourism in India
- CO6. Understand the perspectives on tourism
- CO7. Learn about the tourism opportunities in India
- CO8. Know the tourism policies in India
- CO9. Learn sociological analysis and effects of tourism on India
- CO10. Usefulness of sociological study of Tourism.

Course Content:

Unit – 1 Sociology, Tourism and Tourists

14 Hrs

- a. Concepts of Sociology, Culture, Tourism, Tourists, TouristGaze;
- b. Relation between Tourism, Leisure and Recreation; Sociology of Tourism
- c. Types of Tourism: Eco-tourism, Health Tourism; Religious Tourism; Educational Tourism and Sports Tourism

Unit – 2 Tourism System

14 Hrs

- a. Development and Structure of the Tourist System -Motivation and Role of Tourist
- b. Hosts and Guests: Mutual Impact of Tourism: Social, Economic, Climateand Environmental
- c. Sustainable Tourism: meaning and prospects

Unit – 3 Tourism Management

14 Hrs

- a. Demand for Tourism at Individual and Market level; Tourism Consumer Behaviour: Accommodation; Transportation; Role of Intermediaries
- b. Marketing for Tourism; Tourism as a Service Industry.
- c. Information Technology and Tourism: ICT as a Business Tool; e-Tourism

Reference

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BASSOEN303 Society in Coastal Karnataka

Course Objectives:

After completion of the course student will be able to

1. Enhance sociological knowledge about the local and regional culture.
2. Acquaint students with the changing trends in coastal Karnataka with special reference to Development processes and caste dynamics
3. Learn about the unique cultures in Coastal Karnataka
4. Enhance sociological knowledge about the local and regional cultures.
5. Acquaint with the changing trends in society in Coastal Karnataka.
6. Analyse the dynamics of social factors as caste and religion
7. Develop an appreciation to the unique culture of coastal Karnataka

Course Outcome:

- CO1. Acquaint with the cultural items in Coastal Karnataka
- CO2. Understand and appreciate the culture of Coastal Karnataka
- CO3. Understand the unique practices and festivals in local culture
- CO4. Know the local economic life popular devotions and recreation
- CO5. Learn sociological analysis on the cultural richness
- CO6. Usefulness of sociological study in the contemporary society.

UNIT - I :Introduction

Hrs – 14

- a. Historical Background and Demographic Profile in Coastal Karnataka
- b. Special Features – Tuluva, Beary and Konkan Culture, Cults and Festivals
- c. Linguistic Composition of Coastal Karnataka

UNIT - II: Social Organization:

Hrs - 14

- a. Castes in Coastal Karnataka
- b. Religions in Coastal Karnataka
- c. Tribes in Coastal Karnataka

UNIT - III : Development Scenario Coastal Karnataka

Hrs - 14

- a. Agriculture and Land Reform Impacts
- b. Growth of Industry and transport – road, water, rail and air
- c. Inter-community relations; Communal Tensions and Political Developments

Reference :

- Adiga, Malini . 2006. *The Making of Southern Karnataka: Society, Polity and Culture in the early medieval period, AD 400–1030*, Orient Longman, Chennai.
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Semester IV

BASSOCN401 Sociology of Marginalised Groups

Objectives:

This course helps the student

1. To focus on the segments of population lived on the margins of society.
2. Analyze the social situation of groups that have not received adequate attention.
3. To sensitize students to the significance of the sociological study on Dalits.
4. To study the tribal communities and nomadic castes and tribes.
5. To focus on groups and communities which have suffered extreme poverty, deprivation and discrimination over a long period of time.

Course Outcome:

- CO1. Knowledge of marginalization and marginalized groups in India
- CO2. Understand the impact of powerlessness in social life
- CO3. Ability to participate and critically view efforts undertaken to address inequalities
- CO4. Focus on the neglected segments of the population.
- CO5. Sociological study of Dalits,
- CO6. Understand tribal communities and nomadic tribes.
- CO7. Focus communities in extreme poverty, deprivation and discrimination.
- CO8. Nature of social exclusion in India.
- CO9. Positive discrimination and reservation policy.

Course Content:

Unit – 1 Introduction

16 Hrs

- a. Marginalisation: Meaning and Nature; Types of Marginalisation: Social, Political, Economic; Marginalisation and Social Exclusion
- b. Causes of Marginalisation; Marginalised Groups: Caste, Gender, People with Disabilities, Minorities, Tribes and Elderly
- c. Socio-economic Indices of Marginalisation: Poverty, Relative Deprivation, Exploitation, Discrimination and Educational Backwardness.

Unit – 2 Marginalisation and Affirmative Action

13 Hrs

- a. Views of Dr B R Ambedkar and Affirmative Principle
- b. Constitutional Provisions - Scheduled Castes, Scheduled Tribes and Status of Women; Transgenders
- c. Landless Agricultural Labourers, land ownership among scheduled castes and scheduled tribes

Unit – 3 Marginalised Groups and Social Change

13Hrs

- a. Social Mobility among Marginalised Groups: Education, Employment, Political Participation, Conversion and Migration
- b. Challenges of Privatisation and Response by Marginalised Groups
- c. Globalisation and Social Justice

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- Omvedt, Gail 2013 *Dalits and the Democratic Revolution*, Sage, New Delhi
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BASSOCN402 Population and Society

Objectives:

This course is designed

1. To provide sociological understanding of population and society
2. To acquaint students with basic concepts in demographic studies
3. To analyze population problems in India
4. To provide knowledge of population trends.
5. To impart sociological skills to conduct population studies.
6. To develop the understanding regarding the linkages between population and development
7. Understand the theories on population
8. Understand the implications of population policy

Course Outcome:

- CO1. Define the basic concepts of population studies
- CO2. Understand the dynamics of population from sociological perspectives
- CO3. Understand problems around India's population
- CO4. Critically analyze population policies of India

Course Content:

Unit – 1 Introduction 14Hrs

- a. Relationship between society and population;
- b. Global Population Trends: role of fertility, mortality and migration; Power of Doubling;
- c. Age and Sex composition in India and its impact. Demographic Dividend

Unit – 2 Sources of Demographic Data 14Hrs

- a. Population Census: Uses and Limitations; Population Censuses in India
- b. Vital Registration System
- c. National Sample Survey; Sample Registration System; National Family Health Surveys(NFHS)

Unit – 3 Population Theories and Policy 14 Hrs

- a. Population Theories: Malthusian Theory, Optimum Theory and Demographic Transition Theory
- b. Population Policy of India; Programmes and their Evaluation
- c. Need of Population Policy: Millennium Development Goals and Sustainable Development Goals.

References

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BASSOEN401 Sociology of Leisure

Objectives:

After completion of this course, the learners will be able:

1. To introduce the concept of leisure and attitudes towards leisure.
2. To understand the leisure activities in different contexts.
3. To examine the inequality in leisure participation.
4. To understand the modes of leisure participation
5. To analyze the role of media and technology in leisure activities
6. To understand the challenges to traditional leisure activities.

Course Outcome:

1. Describe the concept of leisure, associated terms and types
2. Understand the relationship between leisure and stratification
3. Analyze the impact of commodification of leisure

Course Content:

Unit – 1 Introduction

14 Hrs

- a. Definition of Leisure and its attributes; need for the study of leisure as social activity
- b. Leisure, Recreation, Play, Pleasure and Leisure Identity; Leisure, Work and Post work
- c. Types of Leisure: Serious, Casual, Postmodern, Therapeutic

Unit – 2 Constraints on Leisure Participation

14 Hrs

- a. Class Inequality and Exclusion from Leisure Participation
- b. Leisure Participation and Gender Relations - Leisure and Beauty System
- c. Leisure Participation, Age and Disability

Unit – 3 Commodification of Leisure

14 Hrs

- a. Cinemas, OTTs and Reality T V
- b. Leisure and Sports - Adding Leisure Value like branded goods (Sony Walkman, iPod, Nike, Coke etc.); Malls as areas of leisure
- c. Social Media as Leisure Activity - Role in Identity Building

Reference:

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- ದೇಶಮಾನೆ ಸಮತಾ ಬಿ ಸಮಾಜಶಾಸ್ತ್ರ ಮತ್ತು ಮಾಧ್ಯಮ' ಚೇತನ ಬುಕ್ ಹೌಸ್ ಮೈಸೂರು.

BASSOEN402 Sociology of Food Culture

Objectives:

This course aims to provide:

1. Basic knowledge on food culture.
2. Understanding on determinants of food consumption
3. Understanding local food cultures and tastes.
4. Understanding on impact of industrialisation on food habits.
5. Assessment on food habits and health practices
6. Impact of technology on food consumption and habits

Course Outcome:

- CO1. Appreciate the complex relations between food, individual and society
- CO2. Understand the evolution of food production and consumption from household to industry
- CO3. Critically understand the relationship between food and risk society

Course Content:

Unit – 1 Introduction

14Hrs

- a. Sociological Nature of Food and Eating; Sacred and Taboo Foods; Food, Sociality and Social Change
- b. Determinants of Food Consumption - Types of Food: Vegetarian, Non-vegetarian, Omnivore and Vegan
- c. Local Food Cultures and Taste for Exotic

Unit – 2 Food from Domestic to Industry

12 Hrs

- a. Industrialisation of Food Production and Distribution
- b. Hotels, Restaurants and Catering Sector
- c. Cooking as duty and Cooking for self-pleasure

Unit – 3 Food and Risk Society

16 Hrs

- a. Diet and Body: Social Appearance and Beauty
- b. Global Overview: Consumption: Patterns and Reasons; Overeating, Underrating and Hunger
- c. GM Foods, Organic Foods and Modern Food Practices as Risk Factor

References

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BASSOEN403 Sociology of Sanitation

Course Objectives:

The content of the course will enable the students:

1. To sensitize students to sanitation related health related
2. To understand the issues related to public health
3. To understand the role of the public in sanitation
4. To make aware the health and sanitation conditions in India
5. To understand the social aspects of sanitation and social ordering
6. To understand the role of the State in healthcare in India
7. To make aware the environmental sanitation conditions in India
8. To sensitize the social responsibility of environmental sanitation.

Course Outcome:

- CO1. Sensitize to health related social issues.
- CO2. Understand public health and social medicine.
- CO3. Aware of health and sanitation conditions in India
- CO4. Role of the Governments in the healthcare
- CO5. Make aware the health and sanitation conditions in India
- CO6. Social aspects of sanitation and social ordering
- CO7. Understand sanitation movement in India
- CO8. Know about Sulabh Movement in India

UNIT - I : Health and Sanitation

Hrs - 14

- a. Social Aspects of Health and Illness.
- b. Origin and Scope of Sociology of Sanitation
- c. Problem of Environmental Sanitation in India

UNIT - II: Sanitation in India

Hrs - 14

- a. Sulabh Sanitation Movement
- b. Sanitation Policies and Programmes
- c. Sanitation in Karnataka, a Regional Analysis

UNIT - III : Sanitation and Society

Hrs - 14

- a. Social Construction of Hygiene and Sanitation
- b. Scavenging Castes and Social Deprivation
- c. Sanitation and Dignity of Women

Reference :

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MANGALORE



UNIVERSITY

MANGALAGANGOTRI

Syllabus

Bachelor of Business Administration (BBA PROGRAMME)

As per NEP 2020 and as per resolutions of BOS on BBA held on 22-10-2021

**Department of Business Administration
(Faculty of Commerce)
Mangalore University, Mangalagangotri**

Bachelor of Business Administration

1. Programme Objectives:

The objectives of BBA Programme are:

- To impart knowledge of the fundamentals of Management theory and its application in problem solving.
- Select and apply appropriate tools for decision making required for solving complex managerial problems.
- To develop problem-solving skills through experiential learning and innovative pedagogy to ensure utilization of knowledge in professional careers.
- To develop sound knowledge of the entrepreneurial process and inculcate creativity and innovation among students.
- To produce industry ready graduates have highest regard for Personal & Institutional Integrity, Social Responsibility, Teamwork and Continuous Learning.
- To develop a positive attitude and life skills to become a multi faceted personality with a sense of environmental consciousness and ethical values.

2. Programme Outcomes (PO):

On successfully completing the program the student will be able to:

- Understand concepts and principles of management/business; identify the opportunities in the corporate environment and manage the challenges
- Demonstrate the knowledge of management science to solve complex corporate problems using limited resources. Display enhanced personality and soft skills
- Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- Demonstrate entrepreneurial competencies
- Exhibit managerial skills in the areas of marketing, finance, HR, etc.
- Identify business opportunities, design and implement innovations in workspace.
- Possess a sturdy foundation for higher education

3. Program Specific Outcomes (PSO):

On the successful completion of B.B.A., the students will be able to:

PSO1: Acquire Practical learning through summer internship, industrial visit and Business Plan etc.

PSO2: Demonstrate analytical and problem-solving skills through specialization in Finance, Human Recourse, and Marketing to solve the business issues.

PSO3: Understand and develop the new dimensions of knowledge through open electives to cater the need of the industry.

PSO4: Comprehend the core concepts, methods and practices in management.

PSO5: Venture into his/her own business or excel in executive roles in private /government sector.

PSO6: Demonstrate the ability to create business plans

PSO7: Develop an understanding of business that reflects the moral responsibility of business to all relevant stakeholders and the natural environment.

PSO8: Matured Individuals and responsible Citizens to the country

PSO9: Demonstrate Ability to work in Groups

4. Structure of BBA Syllabus:

First Semester BBA (Basic/Honors)							
Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks	Credits
Lang. 1.1	Language - I	AECC	3+1+0	60	40	100	3
Lang. 1.2	Language - II	AECC	3+1+0	60	40	100	3
BBA. 1.1	Management Principles & Practice	DSCC	4+0+0	60	40	100	4
BBA. 1.2	Fundamentals of Business Accounting	DSCC	3+0+2	60	40	100	4
BBA. 1.3	Marketing Management	DSCC	4+0+0	60	40	100	4
BBA. 1.4	Digital Fluency	SEC	1+0+2	30	20	50	2
BBA. 1.5	Business Organization / Office Organization and Management	O E C	3+0+0	60	40	100	3
BBA. 1.6	Health and Wellness +	SEC-VB	0+0+2	-	25	25	1
	Physical Education & Yoga		0+0+2	-	25	25	1
	Total			390	310	700	25
Second Semester BBA (Basic/Honors)							
Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks	Credits
Lang. 2.1	Language - I	AECC	3+1+0	60	40	100	3
Lang. 2.2	Language - II	AECC	3+1+0	60	40	100	3
BBA. 2.1	Corporate Accounting & Reporting	DSCC	3+0+2	60	40	100	4
BBA. 2.2	Human Resource Management	DSCC	4+0+0	60	40	100	4
BBA. 2.3	Business Environment	DSCC	4+0+0	60	40	100	4
BBA. 2.4	Environmental Studies	AECC	2+0+0	30	20	50	2
BBA. 2.5	People Management / Retail Management	O E C	3+0+0	60	40	100	3
BBA. 2.6	Physical Education-Sports	SEC-VB	0+0+2	-	25	25	1
BBA. 2.6	NCC/NSS/R&R(S&G) /Cultural	SEC- VB	0+0+2	-	25	25	1
	Total			390	310	700	25

EXIT OPTION WITH CERTIFICATION

Third Semester BBA (Basic/Honors)							
Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks	Credits
Lang. 3.1	Language - I	AECC	3+1+0	60	40	100	3
Lang. 3.2	Language – II	AECC	3+1+0	60	40	100	3
BBA. 3.1	Cost Accounting	DSCC	4+0+0	60	40	100	4
BBA. 3.2	Organizational Behavior	DSCC	3+0+2	60	40	100	4
BBA. 3.3	Statistics for Business Decisions	DSCC	4+0+0	60	40	100	4
BBA. 3.4	Artificial Intelligence	SEC	1+0+2	30	20	50	2
BBA. 3.5	Social Media Marketing/ Rural Marketing	O E C	3+0+0	60	40	100	3
BBA. 3.6	Sports	SEC-VB	0+0+2	-	25	25	1
	NSS/NCC/ Any Other	SEC-VB	0+0+2	-	25	25	1
	Total			390	310	700	25
Fourth Semester BBA (Basic/Honors)							
Course Code	Title of the Course	Category of Courses	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks	Credits
Lang. 4.1	Language - I	AECC	3+1+0	60	40	100	3
Lang. 4.2	Language - II	AECC	3+1+0	60	40	100	3
BBA. 4.1	Management Accounting	DSCC	3+0+2	60	40	100	4
BBA. 4.2	Business Analytics/ Financial Markets& Services	DSCC	4+0+0	60	40	100	4
BBA. 4.3	Financial Management	DSCC	4+0+0	60	40	100	4
BBA. 4.4	Constitution of India	AECC	2+0+0	30	20	50	2
BBA. 4.5	Business Leadership Skills/Personal Wealth Management/Financial Literacy and Investment Awareness	O E C	3+0+0	60	40	100	3
BBA. 4.6	Physical Education- Sports	SEC-VB	0+0+2	-	25	25	1
	NCC/NSS/Cultural	SEC- VB	0+0+2	-	25	25	1
	Total			390	310	700	25

EXIT OPTION WITH DIPLOMA

Acronyms Expanded

➤ AECC	: Ability Enhancement Compulsory Course
➤ DSC C	: Discipline Specific Core (Course)
➤ SEC	: Skill Enhancement Course
➤ SB/VB	: Skill Based/Value Based
➤ OEC	: Open Elective Course
➤ DSE	: Discipline Specific Elective
➤ SEE	: Semester End Examination
➤ CIE	: Continuous Internal Evaluation
➤ L+T+P	: Lecture + Tutorial + Practical(s)

Note:

1. One Hour of Lecture is equal to 1 Credit.
2. One Hour of Tutorial is equal to 1 Credit (Except Languages).
3. Two Hours of Practical is equal to 1 Credit.

Practical Classes may be conducted in the Business Lab or in Computer Lab or in Class room depending on the requirement. One batch of students should not exceed half (i.e., 30 or less than 30 students) of the number of students in each class/section. 2 Hours of Practical Class is equal to 1 Hour of Teaching, however, whenever it is conducted for the entire class (i.e., more than 30 students) 2 Hours of Practical Class is equal to 2 Hours of Teaching

5. Pedagogy:

In addition to Conventional Time-Tested Lecture Method, the following approaches may be adopted as and when found appropriate and required:

1. **Case Based Learning:** Practical exposure can be given to students through Case based learning/critical learning tool. It enhances skills of students in analyzing the organizational problems and learning to arrive at critical decisions. They learn to apply concepts, principles and analytical skills to solve the real situation problems.
2. **Experiential/Live Projects/Grass Root Projects:** To bridge the gulf between the theory and practice, the students have to be encouraged to take up experiential projects/Live Projects/Grass Root Projects in companies/organizations/factories.
3. **Team Spirit and Building:** To internalize the core curriculum, working in teams and developing team spirit is essential. Interdisciplinary learning across outside the faculty would help students in equipping with these skills.
4. **ICT enabled teaching with global touch:** With the use of modern ICT technology students' learning in class room marches towards digitization. Getting connected to people through e-mode who are located all over the world and who bring real-time insights from their industries, their customers, happenings in their local place and environment.
5. **Leadership Building:** Apart from developing a strong background in the functional areas of Commerce and Business, the Model Curriculum focuses on developing New Age Leadership capabilities among the students.
6. **Emphasis on Indian Business Models:** Over the past two decades, several Indian Business domains and organizations have made remarkable contribution in developing innovative business models by occupying a space in the global business scenario. The academia can make use of such examples in the pedagogy.

6. Suggestive 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
1. Continuous Internal Evaluation (CIE)		
A.	Continuous & Comprehensive Evaluation (CCE)	15 Marks
B.	Internal Assessment Tests (IAT)	25 Marks
Total of CIE (A+B)		40 Marks
2. Semester End Examination (SEE)		
C.	Semester End Examination (SEE)	60 Marks
Total of CIE and SEE (A + B + C)		100 Marks

a) **Continuous & Comprehensive Evaluation (CCE):** The CCE will carry a maximum of 15% weightage (15 marks) 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 five of the following assessment methods with three (3.0) marks each:

- i. Individual Assignments
- ii. Seminars/Class Room Presentations/ Quizzes
- iii. Group Discussions /Class Discussion/ Group Assignments
- iv. Case studies/Case lets
- v. Participatory & Industry-Integrated Learning/ Field visits
- vi. Practical activities / Problem Solving Exercises
- vii. Participation in Seminars/ Academic Events/Symposia, etc.
- viii. Mini Projects/Capstone Projects
- ix. Any other academic activity

b) **Internal Assessment Tests (IAT):** The IAT will carry a maximum of 25% weightage (25 marks) of total marks of a course, under this component, two tests will have to be conducted in a semester for 25 marks each and the same is to be scaled down to 25 marks.

c) In case of 50 percentage of CIE weightage courses, faculty members can choose assessments methods accordingly for the required marks as mentioned above.

7. Suggestive Template for IAT

Internal Assessment Test
Bachelor of Business Administration (BBA)
Course Code: Name of the Course

Duration: 1 Hour

Total Marks: 25

SECTION-A

I. Answer any two of the following questions.(Questions are asked on Remembering)

(2 x 2= 4)

- 1.
- 2.
- 3.

SECTION- B

II. Answer any two of the following questions. (Questions are asked on Understanding and Applying)

(2 x5= 10)

- 4.
- 5.
- 6.

SECTION- C

III. Answer any one of the following questions. (Questions are asked on analyzing and evaluating)

(1x 11=11)

- 7.
- 8.

Note: Internal Test question papers format is prepared based on Revised Bloom's Taxonomy.
(https://www.apu.edu/live_data/files/333/blooms_taxonomy_action_verbs.pdf)

8. Semester End Examination (SEE):

The Semester End Examination for all the courses for which students who get registered during the semester shall be conducted. SEE of the course shall be conducted after fulfilling the minimum attendance requirement as per the Universities/Institutes' norms.

Suggestive Template for SEE

Semester End Examination
Bachelor of Business Administration (BBA)
Course Code: Name of the Course

Duration: 3 Hours

Total Marks: 60

SECTION-A

Answer any five of the following questions. Each question carries 2 marks (5 x 2= 10)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

SECTION- B

Answer any four of the following questions. Each question carries 5 marks (4 x5=20)

- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

SECTION- C

Answer any three of the following questions. Each question carries 10 marks
(3x 10=30)

- 15.
- 16.
- 17.
- 18.
- 19.

BBA THIRD SEMESTER

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 3.1 Name of the Course: COST ACCOUNTING		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Tutorials, and Problem Solving.		
Course Outcomes: On successful completion of the course, the students will - 1. Be able to demonstrate an understanding of the elements of cost and prepare a costsheet. 2. Be able to prepare material related documents, understand the management of stores and issue procedures. 3. Develop the ability to calculate Employee costs. 4. Able to classify, allocate apportion overheads and calculate overhead absorption rates. 5. Understand and reconcile 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 Driver, Responsibility Centers; Cost Reduction and Cost Control; Methods and Techniques of Costing (Meanings only); Use of IT in Cost Accounting; 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.		
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 the procurement of materials- (Bill of materials, Material requisition note, Purchase requisition note, Purchase order, Goods received note); Materials Storage and Records: Duties of Storekeeper, Store records- (Bin cards, Stores Ledger, Stock Control Cards); Materials 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, Simple Average Price and Weighted Average Price Methods- 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, Physical Control- Two-Bin system, KANBAN, JIT Inventory Management technique, Perpetual Inventory system (Concepts only).	
Module No. 3: EMPLOYEE COST	10
Employee Cost: Meaning, Components, Classification and Importance of Employee (Labour) Cost in Organizations; Attendance Procedure- Timekeeping 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 (Straight piece rate and Taylor's differential piece rate); 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 and Secondary distribution and Secondary distribution using Reciprocal Service Methods only (Repeated Distribution Method and Simultaneous Equation Method); Accounting and Control of Administrative, Selling and Distribution overheads; Absorption of overheads: Meaning and Methods of Absorption of overheads; Problems on Machine hour rate	
Module No. 5: RECONCILIATION 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:

1. Prepare a Cost Sheet with imaginary figures.
2. List the documents required in Inventory Management.
3. Demonstrate the valuation of inventory using any one method of pricing material issues.
4. Calculate the amount of Wages under Halsey / Rowan Plans, using imaginary data.

Text Books:

1. Jain and Narang, Cost Accounting, Kalyani Publication House.
2. M.N Arora, Cost Accounting , HPH
3. N.K. Prasad, Cost Accounting, Books Syndicate Pvt. Ltd.
4. Dr. V Rajeshkumar, Dr. R K Srikanth, Cost Accounting, MH India
5. P V Ratnam, Cost Accounting, Kitab Mahal
6. P C Tulsian, Cost Accounting, MHE India
7. Nigam & Sharma, Cost Accounting, HPH
8. Dr. B. Mariyappa, Cost Accounting, HPH
9. Khanna, Ahuja & Pandey, Practical Costing, S Chand & Co. Ltd.
10. B.S. Raman, Cost Accounting, United Publisher
11. Ravi M. Kishore, Cost Management, Taxmann

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 3.2 Name of the Course: ORGANIZATIONAL BEHAVIOUR		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Tutorials, Role Plays and Case study method.		
Course Outcomes: On successful completion of the course, the Students will: 1. Demonstrate an understanding of the role of OB in business organization. 2. Demonstrate an ability to understand individual and group behavior in an organization. 3. Be able to explain the effectiveness of organizational change and development of organisation. 4. Demonstrate an understanding of the process of organizational development and OD Interventions.		
Syllabus:		Hours
Module No.1: INTRODUCTION TO ORGANIZATIONAL BEHAVIOUR		16
Organization Behaviour – Meaning, Definition of OB, Importance of OB, Foundations of OB. Individual behaviour - Personal Factors, Environmental Factors, organization systems and resources. Personality -Meaning, Determinants and Traits of Personality. Perception - Meaning, Factors influencing perception, Perceptual Process, Perceptual Errors.		
Module No. 2: GROUP AND TEAM DYNAMICS		10
Group Dynamics -Meaning, Types of Group, Development of Groups- Stages of Group Development, Determinants of Group Behaviour. Team Dynamics - Meaning, Types of Teams: Conflict-sources of conflict and ways of resolving conflict.		
Module No. 3: CHANGE MANAGEMENT		8
Introduction to Change Management: Meaning of Change, Importance and Nature of Planned Change, Factors Influencing Change - Resistance to Change, Overcoming Resistance to Change.		
Module No. 4: ORGANIZATIONAL DEVELOPMENT		12
Organizational Development: Meaning and Nature of Organizational Development (OD), Process of Organizational Development: Overview of Entering and Contracting, Diagnosing: Meaning of Diagnosing, Comprehensive Model for Diagnosing Organizational Systems (Organizational Level, Group Level and Individual Level).		

Module No. 5: OD INTERVENTIONS	10
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.	
Skill Developments Activities: 1. Two cases on the above syllabus should be analyzed and record in the skill development 2. Draw Blake and Mouton managerial grid 3. List the Personality Traits of Successful Business Leaders. SAMPLE CASES FOR REFERENCE: Module 1 For business continuity, during Covid-19, XYZ organisation has encouraged the employees to Work From Home (WFH). But Post lock down, when the employees are called back to office, they resisted. Majority of the employees are preferring WFH. Few employees have resigned the job too. If you are the manager of XYZ, can you justify the employee behaviour? Draw up a list of all the strategies you incorporate in bringing employees back to office Module 2 You are heading a global team, which consist of employees from various culture and background. The diversity and lack of inclusion is negatively impacting the functioning of this heterogeneous team. Dysfunctional conflict is common among the members. Chart a plan of action to resolve the conflict within the global team. Suggest remedies for a long-term solution Module 3 The ABC Bank is planning to introduce Finacle digital banking platform for competitive advantage. Majority of the employees have more than 15 years' work experience in the bank. They do not want to change from their comfort zone. As a manager, design the methods of overcoming employee resistance to change in order to achieve the objectives of ABC Bank in the best possible manner. Module 4 Owing to the rapid expansion, the XYZ start-up's transition from a "one-man show' to a 'professionally run" set-up was initiated. The aim was to develop the strengths of each member of the team and to channel them towards autonomous decision making. Chart the steps in the OD process that can be followed by XYZ firm. Identify the four target of change - Human Resources, Functional Resources, Technological Capabilities and Organizational Capabilities.	

Module 5

Employee retention is a critical issue in your E-Commerce organisation. The talented employees are moving to competitive firms. Chart an organizational development intervention plan to maximize effectiveness and minimize organizational strain.

Text Books:

1. Fred Luthans, Organizational Behaviour. McGraw Hill
2. Robbins, Organizational Behaviour, International Book House.
3. John W. Newstrom and Kieth Davis, Organizational Behaviour, McGraw Hill.
4. K. Aswathappa, Organizational Behaviour, HPH.
5. Appanniah and, Management and Behavioural Process, HPH
6. Sharma R.K and Gupta S.K, Management and Behaviour Process, Kalyani Publishers.
7. Rekha and Vibha – Organizational Behavioural, VBH.
8. P.G. Aquinas Organizational Behaviour, Excel Books.
9. M. Gangadhar. V.S.P.Rao and P.S.Narayan, Organizational Behaviour

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 3.3 Name of the Course: STATISTICS FOR BUSINESS DECISIONS		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Tutorials, and Problem Solving.		
Course Outcomes: On successful completion of the course, the Students will be able 1. To understand the basic concepts in statistics. 2. To classify and construct statistical tables. 3. To understand and construct various measures of central tendency, dispersion and skewness. 4. To apply correlation and regression for data analysis.		
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 dispersion - Standard Deviation in Individual, Discrete and Continuous Series – Problems Measures of Skewness: Calculation of Karl Pearson's Co-efficient of Skewness (Uni-modal) – Problems.		
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, Regression Analysis – Concept of Regression, Regression equations- Problems.		
Module No. 4: TIME SERIES ANALYSIS		12

Meaning, Components, fitting a straight-line trend using Least Square Method (Problems where $\Sigma X=0$ only), calculation and estimation of trend values.

Module No. 5: INDEX NUMBERS

12

Index number, Construction of Index number, Methods of Index number - simple aggregate method, Weighted method - Fishers Ideal Index Number-Problems. Tests of Adequacy (Unit test, TRT, FRT, Circular test). Consumer Price Index Number-Problems.

Skill Developments Activities:

1. Data Visualization practical session Using Table/Power BI.
2. Execute Average, Variance, Standard Deviation, CV, and Covariance using Excel.
3. Execute and Analyse Regression Model using Excel,
4. Practical session on Time series models using GRET
5. 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, Sahitya Bhavan
3. S.C Gupta: Business Statistics, HPH
4. N.V.R Naidu: Operation Research I.K. International Publishers
5. Elhance: Statistical Methods, Kitab Mahal
6. Sanchethi and Kapoor: Business Mathematics, Sultan Chand
7. Veerachamy: Operation Research I.K. International Publishers
8. S. Jayashankar: Quantitative Techniques for Management
9. D.P Apte; Statistical Tools for Managers
10. Chikoddi & Satya Prasad: Quantitative Analysis for Business Decision, HPH
11. Dr. Alice Mani: Quantitative Analysis for Business Decisions - I, SBH

Note: Latest edition of text books may be used.

BBA 3.4 – ARTIFICIAL INTELLIGENCE (SEC)			
Course Credits	02	Total Contact Hours	30
Internal Assessment Marks :	20	Semester End Examination Marks :	30

Common syllabus for all UG Programmes

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 3.5 Name of the Course: SOCIAL MEDIA MARKETING (OEC)		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs.	42 Hrs.
Pedagogy: Classroom lectures, Tutorials, and Case study method.		
Course Outcomes: On successful completion of the course, the Students will able to: 1. Understand social media marketing goals for successful online campaigns. 2. Analyze the effective social media marketing strategies for various types of industries and businesses. 3. Design social media content and create strategies to optimize the content's reach to the target audience. 4. Appraise the reach and track progress in achieving social media objectives with a variety of measurement tools and metrics. 5. Design a suitable social media campaign for the business goals.		
Syllabus:		Hours
Module No. 1: SOCIAL MEDIA INTRODUCTION		08
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, creates 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 a personal 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	08
Search Engine Optimisation (SEO) Introduction, Understanding SEO, User Insights, Benefits and Challenges, Content Marketing, Traditional Media v/s Social Media, recent trends and challenges in Social Media marketing. Search Engine Optimization-Recent trends and challenges	
Skill Developments Activities: 1. Prepare Facebook Page in your name. 2. Open a YouTube channel. 3. Create a blog and write an article on Climate change. 4. 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. Note: Latest edition of text books may be used.	

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 3.5 Name of the Course: RURAL MARKETING (OEC)		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs.	42 Hrs.
Pedagogy: Classroom lectures, Tutorials, and Case study method.		
Course Outcomes: On successful completion of the course, the Students will demonstrate 1. Describe the importance and application of various concepts of rural marketing. 2. Demonstrate the appropriate selection of the segmentation, targeting and positioning strategies along with the environmental factors that influence rural consumers' buying behaviour. 3. Design a Pricing Strategy that suits the characteristics of rural products and the stage in the product life cycle. 4. Formulate the appropriate marketing communication and rural distribution channel plans to promote and deliver the rural products. 5. Appraise the recent trends in Rural marketing and the application of digital technology in rural marketing.		
Syllabus:		Hours
Module No. 1: INTRODUCTION TO RURAL MARKETING		08
Nature and scope of rural marketing, rural v/s urban markets, concepts and classification of rural markets, rural marketing environment, rise of rural consumerism.		
Module No. 2: RURAL CONSUMER BEHAVIOUR		06
Consumer buying Behaviour in rural markets, factors affecting consumer behaviour. 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		10
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, creating promotion mix for rural audiences - advertisement, sales promotion, publicity.	
Module No. 5: TRENDS IN RURAL MARKETING	10
Digitizing rural India, online marketing reach in the rural market, recent trends in packing, labeling, grading, transporting, order processing, payment methods, storage and warehousing. Corporate Farming -Meaning Only. Include live cases (ITC E-Choupal, TARAhatt, EID Parry's Indiagriline)	
Skill Developments Activities: 1. Prepare a Product life cycle for a Rural product 2. Select a Rural Product and conduct a Consumer Satisfaction Survey 3. Prepare an advertisement copy for a rural product 4. Visit an APMC Yard/Mandis and prepare a report on any one Agri-product pricing.	
Text Books: 1. Debarun Chakrabaorty and Soumya Kanti Dhara, et al. (2021), Rural Marketing in India: 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, SAGE Publications 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. Note: Latest edition of text books may be used.	

BBA 3.6 – Sports/ NCC/NSS/R&R(S&G) /Cultural (SEC-VB)			
Course Credits	02	Total Contact Hours	30
Internal Assessment Marks : 25+25		Semester End Examination Marks : Nil	

Common syllabus for all UG Programmes

BBA - FOURTH SEMESTER

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 4.1 Name of the Course: MANAGEMENT ACCOUNTING		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Tutorials, and Problem Solving.		
Course Outcomes: On successful completion of the course, the Students will demonstrate: 1. Explain the application of management accounting and various tool used 2. Make inter – firm and inter- period comparison of financial statements 3. Analyse financial statements using various ratios for business decisions. 4. Prepare fund flow and cash flow statements 5. Prepare different types of budgets for the business.		
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.		
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 andratios 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		10
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.		

Module No. 5: BUDGETARY CONTROL	12
Meaning and Definition of Budget and Budgetary Control, objectives of budgetary control, advantages and limitations of budgetary control, essentials of effective budgeting, Types of budget-Functional budgets, Master Budget, Fixed and Flexible Budget, Problems on Flexible budget and Cash Budget.	
Skill Developments Activities: 1. Collect the financial statement of a company and calculate important ratios. 2. Collect the annual report of a company and prepare a cash flow statement. 3. Prepare a Break-even-chart with imaginary figures. 4. Prepare a flexible budget using imaginary figures. 5. Prepare a Cash budget using imaginary figures	
Text Books: 1. Dr. S.N. Maheswari, Management Accounting, Mahavir Publications 2. T.S. Sexana, Advanced Cost and Management Accounting, Sultan Chand 3. Jain and Narang, Cost and Management Accounting, Kalyani Publisher. 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 N Arora, Accounting for Management, Himalaya Publisher 8. Jawahar Lal, Cost Accounting; McGraw-Hill Education (India) Note: Latest edition of text books may be used.	

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 4.2 Name of the Course: BUSINESS ANALYTICS		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Tutorials, and Problem Solving.		
Course Outcomes: On successful completion of the course, the Students will able to: 1. Understand types of analytics and data models 2. Understand the role of data indecision making, sources and types of Data. 3. Ability to analyse data using different data analytic tools and draw inferences. 4. Understand applied statistics for business problems. 5. Demonstrate visualization of data.		
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		11
Introduction to data analytics software – Types of data analytics software – open source and proprietary software.		
Lab sessions: R, JAMOWI, 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 software).		
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 JAMOVl.
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

Note: Latest edition of text books may be used.

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 4.2 Name of the Course: FINANCIAL MARKETS AND SERVICES		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures and Tutorials		
Course Outcomes: On successful completion of the course, the Students will be able to: 1. Understand the financial system, Institutions, financial markets and services. 2. Analyse the concepts relevant to Indian financial market and relevance. 3. Understand concept of financial services, types and functions. 4. Understand the types of financial Instruments. 5. Demonstrate an understanding the functioning of stock markets.		
Syllabus:		Hours
Module No. 1: OVERVIEW OF FINANCIAL SYSTEM		08
Introduction to Financial System – Features, Constituents of Financial System; Financial Institutions; Financial Services; Financial Markets and Financial Instruments.		
Module No. 2: FINANCIAL INSTITUTIONS		16
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; SEBI guidelines for Listing of Shares and Issue of Commercial Papers.		

Module No. 5: STOCK MARKETS	10
Meaning of Stock, Nature and Functions of Stock Exchange; Stock Market Operations - Trading, Settlement and Custody (Brief discussion on NSDL & CSDL); Brief discussion of BSE, NSE and OTCEI.	
Skill Developments Activities: 1. Visit any financial institution and prepare a report regarding its structure, functions and performance. 2. Analyze the ratings given by any credit rating agency, for at least 5 companies. 3. Collect information on NASDAQ, Nifty, Sensex and write brief report on the same. 4. 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 Note: Latest edition of text books may be used.	

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 4.3 Name of the Course: FINANCIAL MANAGEMENT		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Tutorials, and Problem Solving.		
Course Outcomes: On successful completion of the course, the Students will able: 1. To identify the goals of financial management. 2. To apply the concepts of time value of money for financial decision making. 3. To evaluate projects using capital budgeting techniques. 4. To design optimum capital structure using EBIT and EPS analysis. 5. To evaluate working capital effectiveness in an organization.		
Syllabus:		Hours
Module No. 1: INTRODUCTION TO FINANCIAL MANAGEMENT		10
Introduction – Meaning of Finance, Business Finance, Finance Functions, Organization structure of Finance Department; Financial Management – Goals of Financial Management, Financial Decisions-Types of Financial Decisions, Role of a Financial Manager; Financial Planning – Principles of Sound Financial Planning, Steps in Financial Planning, Factors influencing a Sound Financial Plan.		
Module No. 2: TIME VALUE OF MONEY		10
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)		
Module No. 3: FINANCING & DIVIDEND DECISIONS		12
Financing Decision: Sources of Long-Term Finance -- Meaning of Capital Structure, Factors influencing Capital Structure, Optimum Capital Structure – EBIT, EPS Analysis, Leverages – Problems. Dividend Decision: Meaning & Determinants of Dividend Policy, Types of Dividends, Bonus Shares (Meaning only)		

Module No. 4: INVESTMENT DECISION	12
Meaning and Scope of Capital Budgeting, Features & Significance, Techniques --Payback Period, Accounting Rate of Return, Net Present Value, Internal Rate of Return and Profitability Index (Problems)	
Module No. 5: WORKING CAPITAL MANAGEMENT	12
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)	
Skill Developments Activities: 1. Calculate Equated Installment and prepare Loan Repayment schedule using imaginary figures. 2. Identify capital structure practices followed in any firm/company of your choice. 3. Collect the information on various types of bonds offered by government and record the same. 4. Prepare a working capital statement using imaginary values.	
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, HPH 9. Sharma and Shashi Gupta, Financial Management, Kalyani Publication Note: Latest edition of text books may be used.	

BBA 4.4 – CONSTITUTION OF INDIA (SEC)			
Course Credits	02	Total Contact Hours	30
Internal Assessment Marks :	20	Semester End Examination Marks :	30

Common syllabus for all UG Programmes

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 4.5 Name of the Course: BUSINESS LEADERSHIP SKILLS (OEC)		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs.	42 Hrs.
Pedagogy: Classrooms lecture, Tutorials, and Problem Solving.		
Course Outcomes: On successful completion of the course, the Students will able: 1. To understand the significance of leadership skills for effective people management. 2. To increase the comprehension of leadership through various leadership theories. 3. To analyse different leadership styles, types, patterns and functions. 4. To demonstrate an understanding of various leadership approaches for effective management of people. 5. To demonstrate an awareness of ethical leadership.		
Syllabus:		Hours
Module No. 1: INTRODUCTION TO BUSINESS LEADERSHIP		6
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		10
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; traits of an ethical leader.		
Module No. 3: LEADERSHIP -THEORETICAL PERSPECTIVES.		8
Great man theory, Trait theory, Situational leadership theory, transactional leadership, transformational leadership theory, Blake and Mouton's Managerial Grid.		
Module No. 4: LEADERSHIP STYLES		10
Leadership styles: a) Autocratic leadership, b) Bureaucratic leadership, c) Democratic leadership, and d) Laissez faire leadership e) Transformational Leadership, f) Charismatic Leadership.		

Module No. 5: LEADERSHIP SKILLS	8
Communications Skills, Decision Making Skills, Emotional Management Skills, Public Relation Skills, Personal Values and Ethics, Conflict Resolution Skills.	
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. “What if?” This practical activity identifies how members of a team solve their problems differently? 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. 4. Analyze two cases related to leadership styles/strategies.	
Text Books: 1. Northouse, P. (2007). Leadership: Theory and Practice. Sage Publications. 2. Stephen, R. P. (1988). Organizational Behaviour - Concepts, controversies and Applications. 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. 5. Daloz Parks, S., Leadership can be taught: A Bold Approach for a Complex World, Boston: Harvard Business School Press. 6. Drucker Foundation (Ed.), Leading Beyond the Walls, San Francisco: Jossey Bass. 7. Al Gini and Ronald M. Green, Virtues of Outstanding Leaders: Leadership and Character, John Wiley & Sons Inc. 8. S Balasubramanian, The Art of Business Leadership – Indian Experiences, Sage Publications Note: Latest edition of text books may be used.	

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 4.5 Name of the Course: PERSONAL WEALTH MANAGEMENT (OEC)		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs.	42 Hrs.
Pedagogy: Classroom lectures and Tutorials		
Course Outcomes: On successful completion of the course, the Students will able to: 1. Demonstrate an understanding of the importance of Wealth Management and Financial Planning in personal life. 2. Identify the Real Estate Investment Routes and understand the tax planning that minimises tax burden. 3. Select and Apply the Asset Allocation strategies to balance between Risk and Return. 4. Analyse the Retirement Planning Benefits and retirement strategies to provide regular income for life. 5. Understand the basic principles and importance various insurance policies.		
Syllabus:		Hours
Module No. 1: WEALTH MANAGEMENT AND FINANCIAL PLANNING		08
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		08
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		08
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 and Post 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: 1. List out different Insurance schemes 2. Create your own personal portfolio using imaginary numbers and justify. 3. Conduct a survey of 20 salaried employees on their investment avenues through questionnaire. 4. Prepare technical charts report of any 5 listed stocks in BSE S&P SENSEX.	
Text Books: 1. Pawan V. Jhabak – Wealth Management, Himalaya Publishing House Pvt. Ltd., Mumbai - 400 004. 2. S.K Bagchi – Wealth Management Jaico Publishing House, First Edition. 3. NSE Academy – Financial Planning and Wealth Management. 4. NCFM Work Book – Financial Markets (Advanced). Note: Latest edition of text books may be used.	

Name of the Program: Bachelor of Business Administration (BBA) Course Code: BBA 4.5 Name of the Course: FINANCIAL LITERACY AND INVESTMENT AWARENESS (OEC)		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs.	42 Hrs.
Pedagogy: Classroom lectures and Tutorials		
Course Outcomes: On successful completion of the course, the Students will able to: 1. Provide the foundation for financial decision making. 2. List out various savings and investment alternatives for a common man. 3. Give a detailed overview of stock market and stock selection 4. Orient the learners about mutual funds and the criteria for selection		
Syllabus:		Hours
Module No. 1: FOUNDATION FOR FINANCE		
Understand the need for financial planning-basic concepts-life goals and financial goals-form of a sample financial plan for young adults. Economics-Meaning-scope-key concepts influencing decisions making both micro and 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 Wallets, 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.		04 Hours
Module No. 2: INVESTMENT MANAGEMENT		
Investment Goals-Basic investment objectives-investment goals-time framing-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, PMLV MY, PMKMDY etc., stocks, bonds, mutual funds. Investor Protection and Grievance Redressal.		08 Hours

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, Indicator and Oscillators. Stock Return and Risk: Analysing risk and returns trade off-relationship-investment risk.	
Module No. 3: MUTUAL FUNDS AND FINANCIAL PLANNING ESSENTIALS	
Mutual Funds: Features of Mutual Funds, Mutual Fund History in India, Major funds houses in India and Mutual Fund Schemes. Types of Mutual Funds Plan. Net Asset Value. Criteria for Selection of Mutual Funds: Returns, Performance Measures- Sharpe, Treynor, Alpha, Beta and R Square. 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.	03 Hours
Module No. 4: PRACTICAL COMPONENT:	
<u>Unit 1: Foundation of Finance</u> • Spreadsheet Modeling • IF Function • SUM Function • AVERAGE Function: INDEX, MATCH and VLOOKUPFunction: • RANK Function • SUMPRODUCT Function • MAX & MIN Function • ERRORS in Modeling (#VALUE!, #NAME?, #DIV/O!,#REF!, #NUM!, #NA) • PRESENT VALUE Functions • FUTURE VALUE Functions • ANNUITY Functions • PERPETUITY Functions • Statistical Functions in Excel • Financial Statements in Excel	06 Hours

<u>Unit 2: Investment Management</u> • Administering Risk Tolerance Tool • 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 Model and Relative Valuation) • Demonstration of Technical Analysis and Exercises (NSE - TAME) • Spreadsheet Modelling for calculating Stock Return, Risk and Beta	15 Hours
<u>Unit 3: Mutual Funds and Financial Planning Essentials</u> • 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.	06 hours
Skill Developments Activities: 1. Prepare a Spreadsheet modeling using financial functions. 2. Prepare a group presentation on investment alternatives (advantages, sustainability and limitations) 3. Prepare a exercise on calculation of net asset value of mutual fund scheme.	
Text Books: 1. RBI Financial Education Handbook 2. Prasanna Chandra, Financial Management, Mc Graw Hill. 3. Aswath Damodaran, Corporate Finance, John Wiley & Sons Inc. 4. Pitabas Mohanty, Spreadsheet Skills for Finance Professionals, Taxmann Publications. 5. Fischer & Jordan, Security Analysis and Portfolio Management, Prentice Hall. 6. NSE Knowledge Hub, AI-powered Learning Experience Platform for BFSI 7. 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 Note: Latest edition of text books may be used.	

BBA 4.6 – Sports/ NCC/NSS/R&R(S&G) /Cultural (SEC-VB)			
Course Credits	02	Total Contact Hours	30
Internal Assessment Marks : 25+25		Semester End Examination Marks : Nil	

Common syllabus for all UG Programmes

SEMESTER III

COURSE TITLE	BIO-ORGANIC CHEMISTRY
COURSE CREDITS	04
TOTAL CONTACT HOURS	56
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	40
SUMMATIVE ASSESSMENT MARKS	60

Course outcome:

These topics will enable students to understand the fundamentals of organic chemistry pertinent to their importance in understanding biochemical reactions.

Course outcomes /Program outcomes	1	2	3	4	5	6	7	8	9	10	11	12
Aptitude	X	X	X	X								
Critical thinking		X										
Subject clarity	X	X				X	X	X		X		X
Analytical skill	X				X	X	X	X	X			X

UNIT 1: Reaction mechanisms and aliphatic hydrocarbons

14 hours

Introduction, meaning of the term, kinetic and non-kinetic. Fundamental aspects: Homo and heterolytic cleavage. Concept of inductive effect, mesomeric effect, resonance, and hyper conjugation. Classification of organic reactions (substitution, addition, elimination, and re-arrangement), with two examples for each. Concepts Reactive intermediates of the following – free radicals, carbo cations and carbanions, free radicals, carbines, nucleophiles and electrophiles (Formation and Stability).

Hydrocarbons -Mechanism of addition of HCl to propene, Markovnikov's rule. Peroxide effect, 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

14 hours

S_N1 and S_N2 reactions on tetrahedral carbon, energy profile diagrams, Stereochemistry, factors affecting S_N2 and S_N1 reactions

The Elimination reactions- E₂ reaction, Zaitsev rule, E₁ reaction. Stereochemistry of E₁ & E₂ reactions, E₂ & E₁ elimination from cyclic compounds. Substitution and Elimination reactions in Synthesis.

Addition reactions - Aldehydes and Ketones - nucleophilic addition of acetals & ketals. Addition of Ammonia, primary amines, and other ammonia derivatives. Conjugate addition. Conjugation addition in alpha and beta unsaturated aldehydes and ketones 1, 2 and 1,4 addition.

UNIT 3: Mechanism of electrophilic aromatic substitution reactions

14 hours

Aromatic compounds - aromaticity, criteria for aromaticity, anti-aromatic, and non-aromatic compounds with examples. Mechanism of electrophilic aromatic substitution reactions- Halogenation, nitration, sulfonation, Friedel crafts alkylation. Friedel crafts acylation- mechanism involved. Relative reactivity of substituted benzenes, polycyclic benzenoid hydrocarbons.

The reaction of the coenzymes.

Overall view of metabolism, 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 B₂ its role in rearrangement reactions.

Vit B₂ coenzymes its role in redox reactions with suitable examples.

UNIT 4: Bio-organic compounds

14 hours

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 and properties.

Amines: Classification, properties, functional group – Basicity of amines, acylation. Reaction with HNO₂ & 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 Publishers 2019.
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 Publications 2012
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 Science 2000.

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING /ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TESTS)	20
SEMINARS / CLASS WORK	10
ASSIGNMENT/ OPEN DISCUSSION	10
TOTAL	40

SEMESTER III
PRACTICALS III

COURSE TITLE	BIO-ORGANIC CHEMISTRY
COURSE CREDITS	02
TOTAL CONTACT HOURS	4 Hours/Week
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	25
SUMMATIVE ASSESSMENT MARKS	25

Course outcome:

This course aims to familiarize students with the principles of organic chemistry and basic qualitative analysis of organic compounds. Course objective is to provide experimental practice of preparation of organic compounds and extraction of biologically important compounds.

Experiments:

I. Systematic qualitative analysis of organic compounds (6 practicals)

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

II. Preparation of following organic compounds (2 practicals)

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.

III. Extractions

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

REFERENCES:

1. Practical Organic Chemistry: Qualitative Analysis by S.P. Bhutani, A. Chhikara 2009
2. Textbook of Practical Organic Chemistry Including Qualitative Organic Analysis by Arthur Israel Vogel 2003
3. Comprehensive practical organic chemistry- preparation and quantitative analysis. V. K. Ahluwalia and Renu Aggarwal 2004

4. Practical Hand Book of Systematic Organic Qualitative Analysis. Md. Rageeb Md. Usman, S. S. Patil 2017
5. Laboratory Manual of Inorganic & Organic Chemistry (Qualitative Analysis) Kalpa Mandal, Sonia Ratnani 2020

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING/ ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CONTINUOUS EVALUATION AND CLASS TEST	15
RECORD / VIVA VOCE	10
TOTAL	25

SEMESTER III
OPEN ELECTIVE 1

COURSE TITLE	BIOCHEMICAL TECHNIQUES
COURSE CREDITS	03
TOTAL CONTACT HOURS	42
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	40
SUMMATIVE ASSESSMENT MARKS	60

Course outcome:

These topics will enable students to develop competence in handling various chromatographic, electrophoretic and isotopic techniques and apply them in isolating and characterizing different biological molecules.

UNIT 1 :

14 hours

Microscopy: Different types of microscopes – electron microscopes – TEM, SEM. Fluorescence and confocal microscopes used in fine structure studies.

Centrifugation Techniques: Introduction, basic principles, and applications of sedimentation. Centrifuges and their use - small bench centrifuges, large capacity refrigerated centrifuges, high speed refrigerated centrifuges, continuous flow centrifuges, Preparative ultra- centrifuges, analytical ultracentrifuges, and density gradient centrifugation.

UNIT 2 :

14 hours

Chromatography: Introduction, classification of chromatographic techniques. Principle, materials, theory and applications of paper chromatography, thin layer chromatography, column chromatography- adsorption chromatography, gel permeation, ion exchange chromatography, affinity chromatography, gas chromatography, FPLC, high performance (pressure) liquid chromatography.

Electrophoresis techniques: Introduction. Principles and application of electrophoretic techniques-paper electrophoresis, starch gel electrophoresis, polyacrylamide gel electrophoresis, agarose gel electrophoresis, isoelectric focusing, isotachopheresis, pulse field electrophoresis, two-dimensional electrophoresis, capillary electrophoresis, preparative and high voltage electrophoresis.

UNIT 3 :**14 hours**

Radio isotopic techniques: Introduction to isotopes; mass and radioisotopes. Nature of radioactive decay, rate of radioactive decay, units of radioactivity, measurement of radioactivity- proportional counters, scintillation counters, autoradiography, isotopic dilution technique. Applications of radioisotopes in the biological sciences.

Spectroscopy: Introduction, Nature of electromagnetic Radiations. Principles and applications of the following spectroscopic techniques in biochemical investigations- Visible and Ultraviolet spectroscopy, Fluorescence spectroscopy, Infrared spectroscopy, Optical rotation dispersion (ORD), Circular dichroism (CD) spectroscopy, electron spin resonance (ESR), Atomic Absorption spectroscopy, Nuclear Magnetic resonance (NMR) spectroscopy 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

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING /ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TESTS)	20
SEMINARS / CLASS WORK	10
ASSIGNMENT/ OPEN DISCUSSION	10
TOTAL	40

SEMESTER III
OPEN ELECTIVE 2

COURSE TITLE	HORMONES - BIOCHEMISTRY AND FUNCTION
COURSE CREDITS	03
TOTAL CONTACT HOURS	42
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	40
SUMMATIVE ASSESSMENT MARKS	60

Course outcome: These topics will enable the students to:

- Understand the function of hormones and their regulation.
- Know how hormonal systems act in an integrated manner to regulate overall body functions.
- Understand how failure of these normal physiologic functions and integrations are associated with some endocrine disorders.

UNIT 1 :

14 hours

Introduction to the system and concepts of signaling. Classification, intercellular communication, regulation of synthesis and secretion of hormones. Chemical signaling- endocrine, paracrine, autocrine, and neuroendocrine mechanisms. Mechanisms of hormone action: synergism, antagonism, permissive effects. Division 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 – ADH and Oxytocin

UNIT 2 :

14 hours

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. Structure and 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 :

14 hours

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, Elsevier Publications.
2. Bolander F (2004), Molecular Endocrinology, 3rd Edition, Elsevier Publications.
3. Rifai N (2007), Teitz Fundamentals of Clinical Chemistry, 6th Edition, Elsevier Publications.
4. Henry's Clinical Diagnosis and Management by Laboratory Methods (2011), 22nd Edition, 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, Jaypee Publications.
7. Bishop ML, Fody EP, Schoeff LE (2013), Clinical Chemistry: Principles, Techniques, and Correlations, 7th Edition, Wiley Publications.
8. J N Singh (2017), Biochemistry General, Hormonal and Clinical - 1st Edition, Atithi books Publishers.
9. Rifai N (2017), Teitz Textbook of Clinical Chemistry and Molecular Diagnostics, 6th Edition Saunders Publications.

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING /ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TESTS)	20
SEMINARS / CLASS WORK	10
ASSIGNMENT/ OPEN DISCUSSION	10
TOTAL	40

SEMESTER IV

COURSE TITLE	ANALYTICAL BIOCHEMISTRY
COURSE CREDITS	04
TOTAL CONTACT HOURS	56
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	40
SUMMATIVE ASSESSMENT MARKS	60

Course outcome: These topics will enable the students to

- Understand the concept of biological sample preparation
- Appreciate chemistry and application of analytical instruments.
- Get acquainted with care and maintenance of equipment and chemicals.
- Understand clinically relevant biochemical analysis of all biochemical components i.e., proteins, electrolytes, hormones etc.,
- Have basic knowledge of clinical and forensic analytical methods and their principles.

Course outcomes /Program outcomes	1	2	3	4	5	6	7	8	9	10	11	12
Aptitude	X	X	X	X								
Critical thinking		X				X						
Subject clarity	X	X						X				X
Analytical skill				X	X	X	X	X	X	X	X	X

UNIT 1: Biological sample preparation and fractionation

14 hours

Introduction and objectives of bioanalysis and extraction of molecules from tissues and cells. Sample preparation types of sample living, postmortem extraction of macromolecules from tissues; liquid-liquid, liquid-solid and precipitation methods.

Centrifugation- Introduction, principles of centrifugation, Sedimentation, angular velocity, centrifugal field, relative centrifugal field. Types of centrifugations- Preparative and analytical. Differential, density gradient and ultra-centrifugation. Basic instrumentation; types of rotors and their design. Laboratory centrifuge; operational instruction and applications. Analytical Centrifuges- Optics; Application in sub-cellular fractionation. Sedimentation coefficient, care, and maintenance of instrument.

UNIT 2: Chromatography

14 hours

General principles of chromatography, history of chromatography. Classification based on 1. physical way stationary and mobile phase are brought together- Planar and column chromatography, 2. based on types of mobile and/or liquid phase adsorption and partition- Gas chromatography and liquid chromatography. Based on stationary phase- thin layer chromatography, Paper chromatography - ascending, descending and circular, 2-D chromatography, R_f values.

Classification of chromatography based on separation: Principles, methodologies and applications of adsorption, partition, ion-exchange, gel-filtration and affinity-chromatography. Advanced chromatography- HPLC and FPLC, UPLC and GLC.

UNIT 3: Electrophoretic and radio isotopic methods

14 hours

Electrophoresis: General principle of electrophoresis, velocity of a charged molecule in the applied electric field, relevance of Ohm's law in electrophoretic separations. Supporting media for electrophoresis; work of Tiselius, paper, agarose, polyacrylamide. Chemistry of polymerization of acrylamide gels, methodology and applications of native PAGE and SDS-PAGE, 2-D electrophoresis, Identification of proteins post electrophoresis- dyes and biological activities. Agarose gel and Pulse field electrophoresis, Applications of capillary electrophoresis and isoelectric focusing. Cellulose acetate electrophoresis. Principle and applications of immune-electrophoresis.

Radioisotopic methods: Radioactivity—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 (only principal and working) Applications of radioisotopes – ^3H , ^{14}C , ^{131}I , ^{60}Co and ^{32}P . Biological effects of radiations. Radiolabeling, safety measure in handling radio isotopes.

UNIT 4: Spectroscopic methods of bio-analysis

14 hours

Spectroscopic methods: Wave particle duality of light, electromagnetic spectrum, transition in spectroscopy. Principle, design and application of UV-Vis spectrophotometer. Beer's law and its limitations, determination of molar absorption coefficient of molecules. Working principle and application of a colorimeter, flame photometer and fluorimeter. Principle and application of IR, and Raman, ESR and NMR spectroscopy.

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 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

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING /ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TESTS)	20
SEMINARS / CLASS WORK	10
ASSIGNMENT/ OPEN DISCUSSION	10
TOTAL	40

SEMESTER IV
PRACTICALS IV

COURSE TITLE	ANALYTICAL BIOCHEMISTRY
COURSE CREDITS	02
TOTAL CONTACT HOURS	4 Hours/ Week
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	25
SUMMATIVE ASSESSMENT MARKS	25

Course outcome: This course aims to provide experimental practice of analytical techniques in Biochemistry. Upon successful completion, students should develop skills in handling instruments and understand its application in research work.

- Sourcing and handling biological samples.
Develop skill and proficiency in basic techniques
- Centrifugation
- Chromatography
- Electrophoresis and
- Spectroscopy

Experiments:

1. Preparation of human lymphocytes using clinical centrifuge
2. Determination of packed cell volume/ hematocrit
3. Resolution of basic, acidic and aromatic amino acids by descending and circular paper chromatography.
4. Separation of plant pigments by gel-permeation chromatography
5. Identification and resolution of pigments by thin layer chromatography.
6. Determination of void volume of a gel-filtration column
7. Recording the absorption spectrum of riboflavin
8. Colorimetric estimation of glucose by DNS method
9. Estimation of DNA by diphenylamine method
10. Electrophoretic separation of plasma proteins

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 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

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING /ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CONTINUOUS EVALUATION AND CLASS TEST	15
RECORD / VIVA VOCE	10
TOTAL	25

SEMESTER IV
OPEN ELECTIVE 1
BIOCHEMICAL TOXICOLOGY

COURSE TITLE	BIOCHEMICAL TOXICOLOGY
COURSE CREDITS	03
TOTAL CONTACT HOURS	42
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	40
SUMMATIVE ASSESSMENT MARKS	60

Course outcome: This open elective course offered to various streams gives basic idea about biochemical basis of various effects of toxins/ pharmaceuticals and an outline of process involved in toxicity testing and drug dosing.

- Categorize the classes of toxicants/drugs and know specific examples
- State the routes of exposure to toxins/drugs;
- Explain the processes of absorption, metabolism and elimination of toxins/drugs; and
- Explain environmental and physiological factors that affect toxicant metabolism

UNIT 1 : Fundamentals of toxicology and dose response

14 hours

Scope of toxicology; why should we know about toxins/xenobiotics (drugs) and What makes a substance toxic? Grading toxicity, Use of animal studies for toxicity, *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, ED₅₀, LD₅₀/TD₅₀. Hazard and risk assessment, risk, acceptable daily intake (ADI) and tolerable daily intake (TDI).

UNIT 2 : Factors affecting toxic responses

14 hours

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, skin, role of transporters, role of plasma proteins in distribution, plasma levels of toxins/drugs, plasma half-life, excretion- disposition by kidney, biliary excretion. Metabolism- types of metabolic changes of foreign compounds, biotransformation/detoxification reactions, phase-1 and, phase -2 reactions, nature of phase-1 and phase 2 enzymes.

UNIT 3 : Targets of toxic damages and biochemical mechanism of toxicity 14 hours

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, cyclophosphamide.

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

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING /ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TESTS)	20
SEMINARS / CLASS WORK	10
ASSIGNMENT/ OPEN DISCUSSION	10
TOTAL	40

SEMESTER IV
OPEN ELECTIVE 2
PLANT BIOCHEMISTRY

COURSE TITLE	PLANT BIOCHEMISTRY
COURSE CREDITS	03
TOTAL CONTACT HOURS	42
DURATION OF ESA	03
FORMATIVE ASSESSMENT MARKS	40
SUMMATIVE ASSESSMENT MARKS	60

Course outcomes: These topics will enable the students to

- Understand the plant cell, photosynthesis, transporters, and important primary metabolites.
- Illustrate plant growth regulators, plant's responses to various biotic and abiotic stresses.
- Explain about plant secondary metabolites and their functional importance.

UNIT 1 :

14 hours

Plant cell- structure and molecular components: Cytoskeleton- an overview. Plant cell division, cell cycle. Outlines of energy production in plant cells, Carbon assimilation and nitrogen assimilation.

An overview of photosynthesis: C₃, C₄ plants and crassulacean acid metabolism (CAM); photorespiration; Phytochromes, cryptochromes and phototropins. Non-protein thiols and 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; classification and importance of H⁺-ATPases. Ion channels-properties and significance; Aquaporins and water transport.

Important Primary metabolites of plants: Cellulose, starch, sucrose, oligosaccharides; fructans, gums, mucilages, poly unsaturated fatty acids, lignin, suberin, surface waxes, sulfides and sweet proteins.

UNIT 2 :

14 hours

Plant growth regulators: Auxins, cytokinins, gibberellins, abscisic acid, ethylene, brassinosteroids, 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 :

14 hours

Plant secondary metabolites (Natural products):

Introduction; secondary metabolites (natural productions) definition; classification of plant secondary metabolites (natural products). An overview of primary metabolism contribution to secondary metabolites biosynthesis.

Alkaloids: Classification of alkaloids; Contribution of amino acids for alkaloid biosynthesis; Isolation, purification and characterization of alkaloids. (S)-Seticuline-the chemical chameleon.

Phenolics: Classification of phenolic compounds; Classification of flavonoids; Classification of anthocyanins; Isolation, purification and characterization of phenolics.

Terpenoids: Classification of terpenoids, biogenic isoprene rule; volatile compounds; plant growth regulator terpenoids – 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' signalling, 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
3. Plant Biochemistry - P.M. Dey & J.B. Harborne. Hart Court Asia Pvt Ltd. 1997
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
6. Biochemistry and Molecular Biology of Plants - Buchanan, Greussem and Jones. American Society of Plant Physiologists. 2000
7. Natural Products from plants. Peter B. Kaufman, Leland J. Cseke, Sara Warber, James A. Duke, Harry L. Brielmann, CRC Press, Boca Raton 1999.
8. Natural Products Targeting Clinically Relevant Enzymes. Paula B. Andrade, Patricia Valenta David M. Pereira. Wiley-VCH Verlag GmbH & Co 2017

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; 4:5 doi: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.
12. Temussi PA. Natural sweet macromolecules: how sweet proteins work. Cell Molec Life Sci
CMLS. 63:1876-1888, 2006

PEDAGOGY: MOOC/DESK WORK/BOOK CHAPTER/PROBLEM SOLVING /ASSIGNMENT

Formative Assessment	
ASSESSMENT OCCASION	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TESTS)	20
SEMINARS / CLASS WORK	10
ASSIGNMENT/ OPEN DISCUSSION	10
TOTAL	40

B Sc III & IV SEMESTERS
MODEL QUESTION PAPER
BIOCHEMISTRY

TIME: 3 h

MAX. MARKS: 60

NOTE: ALL SECTIONS ARE COMPULSORY

SECTION A

1. Answer any FIVE of the following

5 x 2 = 10

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

SECTION B

Answer any FOUR of the following

4 x 5 = 20

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

SECTION C

Answer any THREE Questions

3 x 10 = 30

- 8. .
- 9.
- 10.
- 11.
- 12.

Note: *Section C may include sub questions a, b*

BSc III & IV SEMESTERS
MODEL QUESTION PAPER
BIOCHEMISTRY

TIME: 3 h

OPEN ELECTIVE

MAX. MARKS: 60

NOTE: ALL SECTIONS ARE COMPULSORY

SECTION A

1. Answer any FIVE of the following

5 x 2 = 10

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

SECTION B

Answer any FOUR of the following

4 x 5 = 20

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

SECTION C

Answer any THREE Questions

3 x 10 = 30

- 8.
- 9.
- 10.
- 11.
- 12.

Note: section C may include sub questions a, b

INTERNAL ASSESMENT (as on 4th October meeting proceedings)

DISCIPLINE CORE	DISCIPLINE /OPEN ELECTIVE	PRACTICLAS
60 + 40 (IA)	60 + 40 (IA)	25 + 25 (IA)
Class Test -20	Class Test -20	Continuous evaluation & class test - 15
Seminars /Class work - 10	Seminars /Class work – 10	Record / Viva - 10
Assignment /Open discussion - 10	Assignment /Open discussion - 10	

ಮಂಗಳೂರು
MANGALORE



ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
UNIVERSITY

ಕ್ರಮಾಂಕ/No. :MU/ACC/CR.28/2021-22/A8

ಕುಲಸಚಿವರ ಕಛೇರಿ

ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199

Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date: 24.12.2021

NOTIFICATION

Sub: Modified Syllabus of Computer Applications, a vocational course for B.Com (Basic/Hons) Degree Programmes under NEP 2020-reg

Pursuant to the above, the modified syllabus of Computer Applications, a vocational course for B.Com (Basic/Hons) Degree Programmes under NEP 2020 is hereby notified for implementation with effect from the academic year 2021-22 subject to the ratification of Academic Council meeting .

Copy of the Syllabus shall be downloaded from the Mangalore University Website.
www.mangaloreuniversity.ac.in


REGISTRAR.

To:

1. The Principals of all the Colleges affiliated to Mangalore University.
2. The Registrar (Evaluation), Mangalore University.
3. Prof. Manjaiah D.H, Chairman, UG Combined BOS in Computer Applications & Computer Science & Department of Computer Science, Mangalore University, Mangalagangothri.
4. The Assistant Registrar/The Superintendent, Academic Section, O/o the Registrar, Mangalore University.
5. The Director, DUIMS, Mangalore University - with a request to publish in the Website.
6. Guard File.

B.Com (Computer Applications) (Basic/Hons) (Vocational)

Programme Objectives (PO):

PO1: Impart advanced learning to students in the discipline of Commerce, specifically with the application of software technology for professional requirements, merging the academic domains of Commerce and Computer Applications

PO2: To impart central knowledge and skills to the students in emerging areas of commerce like accounting, auditing, finance, marketing, HR, company laws, taxation etc with computing skills for effective domain enrichment

PO3: To groom students with desired competence in commerce education and research with computing leverage.

PO4: To strengthen theoretical and applied aspects of commerce for preparing the students for higher education and research.

PO5: To equip the students with necessary skill sets pertaining to computing principles, software technologies and business practices in software solutions essential for gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

PO6: To impart demonstratable knowledge, skills and values in order to support students' eventual progression to higher learning and gainful career with resilient value system.

Programme Outcomes (PO)

The Commerce graduates should be able to:

PO1: Apply the knowledge of commerce and computers to obtain constructive solutions to complex business & management problems.

PO2: Understand the concepts of key areas in computer science and apply latest technologies to solve problems in the areas of computer applications in business and commerce

PO3: Design solutions for Socio-economic, commerce and business problems and plan case study, processes to meet the specifications with consideration for sustainable development.

PO4: Use modern computing models and tools to conduct investigations of complex economic, business and management problems including analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Understand digital ethics - what can be made possible by digital technology and what is ethically desirable, in order to be successful leaders in the business world

PO6: Use digital edge in order to function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings, communicate effectively with the business community & IT professionals and with society at large.

PO7: Demonstrate knowledge and understanding of Commerce, Management & Software engineering principles and apply these to one's own work, as a member and leader in a team.

PO8: Recognize the need for and have the preparation and ability to engage in independent and life – long learning in the broadest context of technological change.

Program Structure
Proposed Scheme of Teaching & Evaluation for B.Com (Computer Applications)(Basic/Hons) with Commerce as Core subject

Semester I							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
1	Lang.1.1	Language-I	3	3+1+0	60	40	100
2	Lang.1.2	Language-II	3	3+1+0	60	40	100
3	B.Com.1.1	Financial Accounting	4	3+0+2	60	40	100
4	B.Com.1.2	Information Technology	3	3+0+0	60	40	100
5	B.Com.1.3	Problem solving with C	3	3+0+0	60	40	100
6	B.Com.1.4	IT & C Lab	2	0+0+4	25	25	50
7	B.Com.1.5	Digital Fluency	2	1+0+2	30	20	50
8	B.com. 1.6	Yoga	1	0+0+2	-	25	25
9	B.com. 1.7	Health and Wellness	1	0+0+2	-	25	25
10	B.Com.1.8	Accounting for Everyone/Financial Literacy/Managerial Economics	3	3+0+0	60	40	100
Sub-Total (A)			25		415	335	750

Semester II							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
11	Lang.2.1	Language-I	3	3+1+0	60	40	100
12	Lang.2.2	Language-II	3	3+1+0	60	40	100
13	B.Com.2.1	Advanced Financial Accounting	4	3+0+2	60	40	100
14	B.Com.2.2	Operating System	3	3+0+0	60	40	100
15	B.Com.2.3	Desktop Publishing	3	3+0+0	60	40	100
16	B.Com.2.4	Linux & DTP Lab	2	0+0+4	25	25	50
17	B.Com.2.5	Sports	1	0+0+2	-	25	25
18	B.Com.2.6	NCC/NSS/R&R(S&G)/Cultural	1	0+0+2	-	25	25
19	B.Com.2.7	Environmental Studies	2	2+0+0	30	20	50
20	B.Com.2.8	Financial Environment/Investing in Stock Markets/ Public Finance	3	3+0+0	60	40	100
Sub-Total(B)			25		415	335	750

EXIT OPTION WITH CERTIFICATION-with ability to solve well defined problems

Semester III							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
21	Lang.1.1	Language-I	3	3+1+0	60	40	100
22	Lang.1.2	Language-II	3	3+1+0	60	40	100
23	B.Com.3.1	Corporate Accounting	4	3+0+2	60	40	100
24	B.Com.3.2	Java Programming	3	3+0+0	60	40	100
25	B.Com.3.3	DBMS	3	3+0+0	60	40	100
26	B.Com.3.4	Java & DBMS lab	2	0+0+4	25	25	50
27	B.Com.3.5	Artificial Intelligence	2	1+0+2	30	20	50
28	B.Com.3.6	Sports	1	0+0+2	-	25	25
29	B.Com.3.7	NCC/NSS/R&R(S&G)/Cultural	1	0+0+2	-	25	25
30	B.Com.3.8	Advertising Skills/Entrepreneurial Skills/Modern Bank Management	3	3+0+0	60	40	100
Sub–Total(C)			25		415	335	750

Semester IV							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
31	Lang.1.1	Language-I	3	3+1+0	60	40	100
32	Lang.1.2	Language–II	3	3+1+0	60	40	100
33	B.Com.4.1	Advanced Corporate Accounting	4	3+0+2	60	40	100
34	B.Com.4.2	Web Application Development	3	3+0+0	60	40	100
35	B.Com.4.3	Computerized Accounting	3	3+0+0	60	40	100
36	B.Com.4.4	Web & Tally Lab	2	0+0+2	25	25	50
37	B.Com.4.5	Constitution of India	2	2+0+0	30	20	50
38	B.Com.4.6	Sports	1	0+0+2	-	25	25
39	B.Com.4.7	NCC/NSS/R&R(S&G)/Cultural	1	0+0+2	-	25	25
40	B.Com.4.8	Business Ethics/ Corporate Governance/ International Trade	3	3+0+0	60	40	100
Sub–Total(D)			25		415	335	750

EXIT OPTION WITH DIPLOMA –Ability to solve broadly defined problems.

Semester V							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
41	B.Com.5.1	Financial Management	4	3+0+2	60	40	100
42	B.Com.5.2	VB.NET Programming	3	3+0+0	60	40	100
43	B.Com.5.3	Computer Graphics and Animations	3	3+0+0	60	40	100
44	B.Com.5.4	VB.Net & CG lab	2	0+0+4	50	50	100
45	B.Com.5.4 Elective	One Course from the Selected Elective Group	3	3+1+0	60	40	100
46	B.Com.5.6 Elective	GST- Law & Practice	3	2+0+2	60	40	100
47	B.Com.5.6 Elective	Internship	2	0+0+4	-	50	50
48	B.Com.5.7	Sports	1	0+0+2	-	25	25
49	B.Com.5.8	NCC/NSS/R&R(S&G)/ Cultural	1	0+0+2	-	25	25
50	B.Com.5.7	Cyber Security/Ethics & Self Awareness	2	1+0+2	30	20	50
Sub-Total(E)			24		380	370	750

Semester VI							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
51	B.Com.6.1	Software Engineering	3	3+0+0	60	40	100
52	B.Com.6.2	Information securities & Cyber Laws	3	3+0+0	60	40	100
53	B.Com.6.3	Project	2	0+0+4	50	50	100
54	B.Com.6.3	Financial Derivatives	4	3+0+2	60	40	100
55	B.Com.6.4 Elective	One courses from the Selected Elective Group	3	3+1+0	60	40	100
56	B.Com.6.5	Basics of Spread Sheet Modeling OR Report on Study of Startups and Innovative Business Ideas	3	2+0+2	60	40	100
57	B.Com.6.6 Elective	Internship	2	0+0+4	-	50	50
58	B.Com.6.7	Sports	1	0+0+2	-	25	25
59	B.Com.6.8	NCC/NSS/R&R(S&G)/ cultural	1	0+0+2	-	25	25
60	B.Com.6.9	Professional Communication	2	2+0+0	30	20	50
Sub-Total(F)			24		380	370	750
Grand Total - Degree			148		2420	2080	4500

EXIT OPTION WITH BACHELOR DEGREE-Ability to solve complex problems that are ill-structured requiring multi-disciplinary skills to solve them.

Semester VII							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
61	B.Com.7.1	International Business	4	4+1+0	60	40	100
62	B.Com.7.2	Advanced Business Statistics	4	4+1+0	60	40	100
63	B.Com.7.3	Advanced Financial Management	4	4+1+0	60	40	100
64	B.Com.7.4	One Course from the Selected Elective Group	3	3+1+0	60	40	100
65	B.Com.7.5	ERP Applications	3	2+0+2	60	40	100
66	B.Com.7.6	Research Methodology	3	2+0+2	60	40	100
Sub-Total(G)			21		360	240	600

Semester VIII							
Sl. No.	Course Code	Title of the Course	Credits	Teaching Hours per Week (L + T + P)	SEE	CIE	Total Marks
67	B.Com.8.1	Financial Reporting-IND.AS	4	3+0+2	60	40	100
68	B.Com.8.2	Strategic Financial Management	4	4+0+0	60	40	100
69	B.Com.8.3	Business Analytics OR Data Analysis & Decision Sciences	4	3+0+2	60	40	100
70	B.Com.8.4	One Course from the Selected Elective Group	3	3+1+0	60	40	100
71	B.Com.8.5	Managing Digital Platforms	3	2+0+2	60	40	100
72	B.Com.8.6	Research Projects/Internship with Viva – voce	6	0+0+12	120	80	200
		OR	3*	3+1+0	60*	40*	100*
		Two Courses from the Selected Elective Group 8.5 (A) & 8.5 (B)	3*	3+1+0	60*	40*	100*
Sub–Total (H)			21/ 21*		420/ 420*	280/ 280*	700/ 700*
Grand Total - Honors			190		3200/ 3200*	2600/ 2600*	5800/ 5800*

*** Students who do not opt Research Project / Internship shall take two elective courses such as 8.5 (A) & 8.5 (B).**

Sub Total (H) and Grand Totals Honors vary accordingly.

BACHELOR DEGREE WITH HONORS – Experience of work place problem solving in the form of internship or research experience preparing for higher education or entrepreneurship experience.

Notes:

- **One Hour of Lecture is equal to 1 Credit.**
- **One Hour of Tutorial is equal to 1 Credit (Except Languages).**
- **Two Hours of Practical is equal to 1 Credit**

Acronyms Expanded

- **AECC : Ability Enhancement Compulsory Course**
- **DSC © : Discipline Specific Core (Course)**
- **SEC-SB/VB : Skill Enhancement Course-Skill Based/Value Based**
- **OEC : Open Elective Course**
- **DSE : Discipline Specific Elective**
- **SEE : Semester End Examination**
- **CIE : Continuous Internal Evaluation**
- **L+T+P : Lecture+Tutorial+Practical(s)**

Note: Practical Classes may be conducted in the Business Lab or in Computer Lab or in Class room depending on the requirement. One batch of students should not exceed half (i.e., 50 or less than 50 students) of the number of students in each class/section. 2 Hours of Practical Class is equal to 1 Hour of Teaching, however, whenever it is conducted for the entire class (i.e., more than 50 students) 2 Hours of Practical Class is equal to 2 Hours of Teaching.

ELECTIVE GROUPS AND COURSES:

Discipline Specific Electives - V Semester						
Sl. No	Accounting	Finance	Banking & Insurance	Marketing	Human Resources	IT
1	Ind. AS and IFRS	Financial Markets & Intermediaries	Indian Banking System	Retail Management	Human Resources Development	Financial Analytics

Discipline Specific Electives - VI Semester						
1	e-Business & Accounting	Investment Management	Banking Innovations & Technology	Customer Relationship Marketing	Cultural Diversity at Work Place	HR Analytics
2	Accounting for Services Sector	Global Financial System & Practices	Principles & Practice of Insurance	Digital Marketing	New Age Leadership Skills	Marketing Analytics
3	Accounting for Government and Local Bodies	Risk Management	Insurance Law and Regulations	Consumer Behavior & Marketing Research	Labour Laws & Practice	ICT Application in Business

Discipline Specific Electives - VII Semester						
1	Forensic Accounting	Corporate Structuring	Banking Products & Services	Logistics & Supply Chain Management	Strategic HRM	DBMS & SQL

Discipline Specific Electives - VIII Semester						
1	Innovations in Accounting	Corporate Valuation	e-Banking	E - Commerce	International HRM	Web & Social Intelligence
2	Accounting Information System	Analysis of Financial Statements	Insurance Planning & Management	Services Marketing	Employee Welfare & Social Security	Artificial Intelligence & Machine Learning in Business

NOTE: Student shall continue with the same elective group in V and VI semesters, however, he/she may change the elective group in VII semester, but shall continue in the same group in VIII semester.

Scheme of Assessment for Theory Examination

Duration: 3 Hrs

Max Marks: 60

Question Pattern		Marks
Part – A		
1. Answer any SIX sub-questions (6×2=12)		12
Sub-question	Unit	
a, b	1	
c, d	2	
e, f	3	
g, h	4	
Part – B		
(Answer any ONE full question from each unit – 12 marks each)		
(Combinations of sub-questions of 3 to 6 marks)		
Unit-1		12
2.		
3.		
Unit-2		12
4.		
5.		
Unit-3		12
6.		
7.		
Unit-4		12
8.		
9.		
Total		60

SEMESTER - 1

Name of the Program: Bachelor of Commerce (B.Com.- Computer Applications) Course Code: B.Com.1.2 Name of the Course: Information Technology.		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs	42 Hrs
Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & Computer lab.		
Course Outcomes: On successful completion of the course, the Students will be able to a) Be able to apply knowledge of computing analyze a problem, and identify and define the computing requirements appropriate to its solution b) Be able to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs c) Be able to effectively integrate IT based solutions into the user environment		
Syllabus:		Hours
Unit- 1		12
Introduction to Computers: Introduction, Characteristics computers, Evolution computers, Generation of Computers, Classification of computers, the computer system, Application of computers. Number system: Introduction, Number system, Conversion between Decimal to Binary and vice versa Computer Architecture: Introduction, Central processing unit, main memory unit, interconnection of units, cache, communication between various units of a computer system. Primary memory: Introduction, memory representation, memory hierarchy, Random access memory: Types of RAM, Read-only memory, Types of ROM.		
Unit- 2		10
Secondary Storage: Introduction, classification, magnetic tape, magnetic disk, Optical disk Storage organization and the types (CD ,DVD , Blue-ray), Memory stick, Universal serial bus, Mass storage devices. Input devices: Introduction, Types of input devices - keyboard, mouse, joystick, Touch screen, scanner, Optical character recognition, Optical Mark Recognition, Magnetic ink character recognition, Bar code reader Output devices: Introduction, Types of output, Classification of output devices- printer, plotter, Monitor, Terminals		
Unit- 3		10
Computer Program: Introduction, algorithm, flowchart. Computer languages: Introduction, Evolution of programming languages, classification of programming languages, generation of programming languages, Features of a good programming language, selection of a programming language. Computer software: Introduction, software definition, relationship between software and hardware, software categories, terminology software Network basics: Computer networks, Network topologies, Network devices.		

Unit- 4	10
Internet basics: Introduction, Evolution, Basic internet terms, getting connected to internet, internet Applications. Working with Application Software, Productivity software: Word processing software, Spreadsheet software (excel) Presentation software: Introduction, , PowerPoint environment, creating a new presentation, working with different views, using masters, adding animation, adding transition, running slides.	
Skill Development Activities: 1. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs. 2. Integrate IT based solutions into the user environment. 3. Working with database, RDBMS. 4. Any other activities, which are relevant to the course.	
Text Books: 1. ITL Education Solutions Limited, Introduction to Information Technology, Pearson Education India; 2nd edition, 2012. 2. Peter Norton, Introduction to Computers, 7th Edition, Tata McGraw Hill Publication, 2017 (Unit - IV).	

Name of the Program: Bachelor of Commerce (B.Com.- Computer Applications)

Course Code:B.Com.1.3

Name of the Course: Problem Solving with C

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs	42 Hrs

Pedagogy:

Classrooms lecture, Case studies, Group discussion, Seminar & computer lab.

Course Outcomes: On successful completion of the course, the Students will be able to

- a) To apply programming knowledge to create solutions to challenging problems, including specifying, designing, implementing and validating solutions for new problems.

Syllabus:	Hours
Unit - 1	12

Overview of C : History of C , Importance of C Program, Basic structure of a C-program, Execution of C Program.

C Programming Basic Concepts: Character set, C token, Keywords and identifiers, Constants, Variables, data types, Declaration of variables, assigning values to variables, defining 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.

Unit - 2	10

Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associativity; Evaluation of arithmetic expressions; Type conversion.

Control Structures: Decision Making and Branching -Decision making with if statement, simple if statement, the if else statement, nesting of if ... else statements, the else if ladder, the switch statement, the ?: operator, the go to statement.

Decision making and looping - The while statement, the do statement, for statement, nested loops, exit, break, jumps in loops.

Unit - 3	10

Derived data types in C: Arrays - declaration, initialization and access of one-dimensional and two dimensional arrays. Programs using one- and two-dimensional arrays, sorting and searching arrays.

Handling of Strings: Declaring and initializing string variables, reading strings from terminal, writing strings to screen, Arithmetic operations on characters, String handling functions - strlen, strcmp, strcpy, strstr and strcat; Character handling functions - toascii, toupper, tolower, isalpha, isnumeric etc

Unit - 4	10

User-defined functions: Need for user-defined functions, Declaring, defining and calling C functions, return values and their types, Categories of functions: With/without arguments, with/without return values. Nesting of functions.

Recursion: Definition, example programs.

Structures and unions: Structure definition, giving values to members, structure initialization, comparison of structure variables, arrays of structures, arrays within structures, Structure and functions, structures within structures. Unions

Skill Development Activities:

1. Functional, logic and also learn skills of problem solving and implementation of solution
2. Specifying, designing, implementing and validating solutions for new problems.
3. Any other activities, which are relevant to the course.

Reference Materials:

1. E. Balagurusamy, **Programming in ANSI C**, McGraw Hill Education India Private Limited; Seventh edition, (2017)
2. .M. T. Somashekara, D. S. Guru, K. S. Manjunatha, **Problem Solving with C**, PHI Learning Pvt. Ltd.; Second edition, 2018
3. Hanly, **Problem Solving and Program Design in C**, Pearson Education India;7 edition, 2013
4. Satish Jain, **Programming & Problem Solving Through C Language**, BPB Publications, 2012

Note: Latest edition of text books may be used.

Course Code: B.Com.1.4	Course Title: IT & C Lab
Course Credits:2	Hours/Week:04
Total Contact Hours:52	Formative Assessment Marks:25
Exam Marks:25	Exam Duration:3 hrs

PRACTICAL EXERCISES

PART-A

WORD

1. Prepare a word document that includes the following features inserting picture, bulleting and numbering, formatting (size, bold, underline, italic, superscript, subscript, color etc), border and shading, paragraph and line alignment.
2. Prepare a word document with a table to insert Roll No, name, class, and marks in three subjects. Find total and average.
3. Prepare a interview call letters for five candidates. The letter shall contain information about company, job profile and instructions about the interview. Using mail merge features.

POWER POINT

Prepare a Power point presentation with at least four slides (in each exercise) including picture, chart and other contents. Apply various transition and animations.

Exercise No. 1: About your college.

Exercise No. 2: Indian Banking System

PART-B

EXCEL

1. Create an EMPLOYEE data having employees name, designation and basic pay of 5 employees. Calculate DA, HRA, Gross Pay, Income tax, Net pay, Provident fund as per the following rule
 DA=10% of basic pay
 HRA= if basic pay is< 2500, 10% of basic pay else 25% of basic pay
 Gross=DA+HRA+Basic pay
 Provident fund=12% of Basic pay
 Professional tax=Rs 100 if gross is<10000 else 200
 Net Pay=Gross- Professional tax - Provident Fund
2. Prepare a STUDENT table. Insert following information such as RollNo, Name, Class and Marks in three subjects. The insert details of 5 students. Calculate total marks, percentage, result (pass or fail), and Grade (distinction, first class, second class, pass class) as per usual rules. Draw a column chart showing the RollNo versus Percentage scored.

3. Create a table containing Zones and percentage of commission to be given to a sales man

<u>Zone</u>	<u>Percentage</u>
South	10%
North	12.5%
East	14%
West	13%

Create another table in the same worksheet to store salesman names, zone names, places, names of items sold, rate per unit, quantity sold. Calculate total sales amount for each salesman. For the above table write the formula to compute the commission to be given.

- Show the records of various zones separately.
- Show the records of only East and West zones.
- Display the details of the items which are sold more than 50 no.s in South or North zones.

PART-C

C PROGRAMS

1. Write a program to read radius of a circle and find area and circumference of the circle.
2. Write a program to read three numbers and find the largest of three numbers using nested if statement.
3. Write a program to generate n Fibonacci numbers.
4. Write a program to read a multi-digit number find the sum of the digits, reverse the number and check it for palindrome
5. Program to read marks scored by n students and find the average of marks (Demonstration of single dimensional array).
6. Write a program to add two matrices (Demonstration of two dimensional arrays).
7. Write a program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
8. Write a program to find the ${}^nC_r$ of a given number using factorial function.
9. Write a program using structure, read N students RollNo, Name and Marks in three subjects. Calculate Total, Percentage and Grade for N students.

Assessment Criteria		Marks
Activity-1 from Part A	Word/ PowerPoint	06
Activity-2 from Part B	Excel	07
Activity-3 from Part C	C Program	07
Practical Record		05
Total		25

SEMESTER - II

Name of the Program: Bachelor of Commerce (B.Com.- Computer Applications)

Course Code: B.Com. 2.2

Name of the Course: Operating System

Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	3 Hrs	42 Hrs

Pedagogy:

Classrooms lecture, Case studies, Tutorial classes, Group discussion, Seminar & computer lab.

Course Outcomes: On successful completion of the course, the Students will be able to

- a) Analyze the structure of OS and basic architectural components involved in design
- b) Analyze the various resource management techniques
- c) Interpret the mechanisms adopted for file sharing
- d) conceptualize the components involved in designing a contemporary OS
- e) To be familiar with various types of operating systems

Syllabus:	Hours
UNIT I	12
Introduction: Operating system, Mainframe systems (Batch systems, Multiprogrammed systems, Time sharing systems) Operating System Structures: System Components, Operating System Services Process Management: Process concept, Process Scheduling, Operations on process, Cooperative Process Threads: Overview, Multithreading Models.	
UNIT II	10
CPU Scheduling: Basic concepts, Scheduling criteria, Scheduling algorithms. Process Synchronization: Background, the critical section Problems, Synchronization, Semaphore, Classic problems synchronization Deadlocks: System model, deadlock characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection	
UNIT III	10
Memory Management: Background, Swapping, contiguous Memory allocations, Paging, segmentation Virtual Memory: Background, demand paging, process creation, page replacement, allocation of frames and thrashing. File Management: File concept, Access methods, Directory structure, Protection.	

UNIT IV	10
Linux: An introduction, reason for its popularity, Linux file system, login and logout. Linux commands: Command format, Wild card characters Directory oriented commands – ls, mkdir, rmdir, cd, pwd Fileoriented commands – cat, cp,rm, mv, wc File Access Permissions , chmod command Communication oriented commands – write, mail, wall General purpose commands – date, who, who am i, man, cal, expr Pipe and Filters related commands - Redirection, pipe, sort, grep vi editor, Shell programming	
Skill Developments Activities: 1. Study structure of OS and basic architectural components involved in designing operatingsystem of a company. 2. Visit any information technology company in your area and collect the informationabout File system Mounting, File sharing, Protection etc. 2. Any other activities, which are relevant to the course.	
Text Books: 1. Silberschartz, Galvin and Gagne, Operating Systems Concepts, 8th Edition, JohnWiley & sons, Pvt. Ltd.2008 2. B Mohamed Ibrahim, Linux: A Practical Approach, Laxmi Publications; First edition, ,2016 Reference Books: 1. Pramod Chandra P. Bhatt, An Introduction to Operating Systems: Concepts and Practice(GNU/Linux), Prentice Hall India Learning Private Limited; Fourth edition, 2013 2. Richard Blum, Christine Bresnahan, Linux Command Line and Shell Scripting Bible, Thirddedition, Wiley, 2015. 3. Sobell, Practical Guide to Linux Commands Editor, Pearson Education India; 3 edition, 2013. Note: Latest edition of text books may be used.	

Name of the Program: Bachelor of Commerce (B.Com.- Computer Applications)		
Course Code: B.Com.2.3		
Name of the Course: Desktop Publishing		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	4 Hrs	48 Hrs
Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc.,		
Course Outcomes: On successful completion of the course, the Students will be able to - Gain basic understanding of the field of desktop publishing - Acquire skills of preparing projects for publication which include layout and design - Learn both the technical and aesthetic aspects of text, image manipulation and integration - Learn using design as a means of communication, along with using tools to implement effective design strategies		
Syllabus:		Hours
UNIT - I		12
Introducing InDesign CS4: Getting started with InDesign CS4, Exploring the InDesign CS4 workspace, working with custom workspace, creating a new document, saving a document, closing the document and quitting the application. Working with Documents: Opening an existing document, Introducing master page, working with text, working with the type on a path tool, performing basic formatting tasks, performing advance formatting tasks, working with paragraph styles. Working with drawing tools and objects: Using shape tools, using pencil tool, using pen tool, transforming objects. Publishing the document : Creating a table of contents, creating and applying styles in TOC, importing styles, printing a document, exploring the types of print options, saving the document as a PDF file		
UNIT - II		10
Introduction to Corel DRAW graphics suit x4: New and enhanced features in Coreldraw graphics suit X4. Getting started with Coreldraw X4, Exploring the workspace of Coreldraw X4, drawing basic geometric figures, saving the drawing, opening an existing document, previewing with the drawing, working with page layout, closing the drawing and quitting Coreldraw. Working with lines: About lines in Coreldraw: Drawing a curve, drawing calligraphic lines, About outline tool: defining lines and outlines setting, creating a calligraphic outline, adding an arrowhead. Working with objects: Selecting and deselecting objects, deleting objects, sizing objects, rotating objects, combining objects, grouping in Coreldraw: grouping object, ungrouping objects. Selecting color for an object, filling objects. Working with text: Types of text: preparing a layout for using the text, creating artistic text, creating paragraph text, converting text from one type to another, changing the appearances of text, changing a font, changing the font size and color of the text, changing the alignment, applying effects to the text, wrapping paragraph text around objects, fitting text to an object using curve command.		

Working with bitmaps: About vector and bitmap image, change vector images into bitmap images, importing a bitmap into a drawing, cropping, resampling and resizing a bitmap.

UNIT - III

10

Getting Familiar with CS4: Introducing and launching Photoshop CS4, Exploring the new interface. Move tool, eyedropper tool, zoom tool, type tool. The layer palette, the channels palette, the color palette, the history palette, the brush palette, clone source palette, the actions palette. Opening an existing file or Photoshop document, creating a new document, saving files, reverting files, closing files.

Working with images and selections: Changing the resolution of an image, changing the size of a document Editing images: rotating an image, cropping an image, trim command. Working with selections tool: Marquee tool, working with selections. Lasso tools(3 types of tools only meaning) Magic wand tool(only meaning exclude different options)

Drawing painting and retouching tools: Setting the current foreground and background colors, Exploring color picker dialog box (only meaning exclude different components), using eyedropper tool. Using retouching tool, healing brush tool, patch tool, clone stamp tool, eraser tool, background eraser tool, magic eraser tool.

Master layers in Photoshop: Working with layers, creating a new layer, hiding and showing layers, deleting layers, Applying blend modes.

UNIT - IV

10

Getting Started with Flash Professional CS6: Starting Flash Professional CS6, Creating new flash File, Exploring the Flash Professional Cs6 workshop (The application Bar, Stage, panels, using tool panels, properties inspector). Transform Panel, swatches panel, color panel, scene panel. Understanding Timeline and layers, Motion Editor, Creating or choosing a new workspace, Saving Flash Files.

Working with Graphics: Bitmap and vector graphics, Merge Drawing mode, Object drawing mode, Primitive drawing mode, Creating graphics in flash professional CS6, Selecting Objects(Using selection tool, Subselection tool, lasso tool, selection using lasso tool, Lasso tool with polygon modifier, line tool), Drawing rectangles and ovals, Rectangles and shapes, ovals and circles, polygon and stars, pencil tool, pen tool. Draw straight line with the pen tool, creating a curved path using pen tool, Adding anchor points on paths, deleting corner and curve points, painting with the brush tool, spray brush tool, Drawing patterns with the deco tool. Paint bucket tool, In bottle tool, eyedropper tool, using eraser tool, Transforming objects, Distorting objects, rotating and skewing objects. Using gradient and bitmap fills(All)

Working with symbols and instances: Using symbols, creating symbols, duplicate symbols, create instances, editing instance properties, break apart a symbol instance, editing symbols

Timeline with timeline: Working with timeline, about layer, create a layer, rename layer, outline layer, viewing layer, guide layer. Creating animation, types of animation, Classification of animation in the timeline. Understanding motion tweens, Easing tween animation, orienting objects to the path, swapping targets, motion presets.

Skill Development Activities:

- a) Identify the tasks and use appropriate software and documentation to create specific projects in desktop publishing house in the local area.
- b) Create and present publication project using and describing the principles and skills necessary for its creation.
- c) Evaluate projects according to criteria defined in technology application standards for desktop publishing
- c) Any other activities, which are relevant to the course.

Text Books:

1. Ramesh Bangia, **Learning Desk Top Publishing (DTP)**, Khanna Book Publishing Co. (P)Ltd.; 1 edition, 2016.
2. Satish Jain, **BPB DTP Course**, BPB, 2014
3. Satish Jain, Adobe Flash Professional CS6 Training Guide Paperback, First edition, BPB Publications, 2016

Reference Books:

1. Kogent Learning Solutions Inc., **InDesign CS6 in Simple Steps**, Dreamtech Press, 2012
2. Kogent Learning Solutions Inc., **Photoshop CS6 in Simple Steps**, Dreamtech Press, 2012
3. Kogent Learning Solutions Inc., **"Flash CS6 in Simple Steps", First Edition, Dreamtech Press, 2013.**
4. Kogent Learning Solutions Inc., **CorelDRAW X7 in Simple Steps**, Dreamtech Press, 2014.

Note: Latest edition of text books may be used.

Course Code: B.Com.2.4	Course Title: Linux & DTP lab
Course Credits:2	Hours/Week:04
Total Contact Hours:52	Formative Assessment Marks:25
Exam Marks:25	Exam Duration:3 hrs

PRACTICAL EXERCISES

PART-A

Linux

1. Write a shell script to accept 'n' integers and count +ves, -ves and zeros separately. Also find the sum of +ves, and -ves.
2. Write a shell script to accept student name and marks in 3 subjects. Find the total marks and grade (depending on the total marks).
3. Write a shell script program to copy the content of one file1 to file2 and display the content of both the files.
4. Write a menu driven shell script for the following.
 - a) To list files and directories.
 - b) Renaming a file (check for the existence of the source file).
 - c) To display the current working directory
 - d) To list the users logged in
 - e) Exit

PART-B

Adobe InDesign

1. Design College day invitation by using InDesign tools.
2. Design a Newspaper cutting.

Adobe Coreldraw X4

1. Create any banner in Corel Draw using different tools.
2. Create Business card (visiting card) in CorelDraw using different tools.

PART-C

Adobe Photoshop

1. Create image in Photoshop painting tools or use existing images copy the portions of one image to another image. Use Toolbox options. Marquee Tool (Rectangular Marquee, elliptical Marquee), Move, Lasso Tool, Magic wand and Crop Tools.
2. Create images of artistic architectures using Photoshop painting tools (brush, pencil, color, paint bucket tools), Drawing tools and retouching tools.
3. Create image or use existing images to create a new layer, delete layer, show and hide layers and apply different blend modes.

Adobe Flash

1. Create a moving butterfly using simple motion tween animation in Adobe Flash.
2. Using Adobe Flash, design a building in background using different tools and simple motion tween animation for moving the bus.

Assessment Criteria		Marks
Activity-1 from Part A	Linux	06
Activity-2 from Part B	Adobe InDesign/ Adobe Coreldraw X4	07
Activity-3 from Part C	Adobe Photoshop/ Adobe Flash	07
Practical Record		05
Total		25

MANGALORE UNIVERSITY



National Education Policy – 2020 [NEP-2020]

Curriculum Structure for

Bachelor of Computer Application (B.C.A) Programme

Syllabus for III and IV semesters

And

Open Elective Courses

Curriculum for BCA

Sem	Core Courses	Hour / Week		DS Elective Courses	Hours/ Week
		Theory	Lab		
III	Database Management Systems	3			
	C# and DOT NET Framework	3			
	Computer Communication and Networks	3			
	LAB: DBMS		4		
	LAB: C# and DOT NET Framework		4		
IV	Python Programming	3			
	Computer Multimedia and Animation	3			
	Operating System Concepts	3			
	LAB: Multimedia and Animation		4		
	LAB: Python Programming		4		

Course Content for BCA: III and IV Semesters

Semester: III

Course Title: Database Management System	Course code: 21BCA3C7L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Understand the various database concepts and the need for database systems.
- Identify and define database objects, enforce integrity constraints on a database using DBMS.
- Demonstrate a Data model and Schemas in RDBMS.
- Identify entities and relationships and design ER diagrams for given real-world problems.
- Represent ER model to relational model and its implementation through SQL.
- Formulate queries in Relational Algebra, Structured Query Language (SQL) for database manipulation.
- Understand the transaction processing and concurrency control techniques.

DSC7: Database Management System (DBMS)

Contents	Hours
Unit-1	
Database Architecture: Introduction to Database system applications. Characteristics, Data models, Database schema, Database architecture, Data independence, Database languages, GUIs, and Classification of DBMS. E-R Model: 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.	11
Unit-2	
Relational Data Model: Relational model concepts. Characteristics of relations. Relational model constraints: Domain constraints, key constraints, primary & foreign key constraints, integrity constraints and null values. Data Normalization: Functional dependencies. Normalization. First normal form, Second normal form, Third normal form. Boyce-Codd normal form.	11
Unit-3	
INTERACTIVE SQL: Table fundamentals, oracle data types, CREATE TABLE command, Inserting data into table, Viewing Data in the table, sorting data in a table, Creating a table from a table, Inserting data into a table from another table, Delete operations, Updating the contents of a table, Modifying the structure of tables, Renaming tables, destroying tables, displaying table structure. DATA CONSTRAINTS : Types of data constraints, IO constraints-The PRIMARY KEY constraint, The FOREIGN KEY constraint, The UNIQUE KEY constraint, Business Rule Constraints- NULL value concepts NOT NULL constraints, CHECK constraint, DEFAULT VALUE concepts. COMPUTATIONS ON TABLE DATA: Arithmetic Operators, Logical Operators, Range Searching, Pattern Matching, Oracle Table – DUAL, Oracle Function- Types, Aggregate Function, Date Conversion Function. GROUPING DATA FROM TABLES IN SQL, Group By clause, Having clause, subqueries, JOINS, Using the UNION, INTERSECTION, MINUS clause	10
Unit-4	
INTRODUCTION TO PL/SQL: Advantages of PL/SQL, The Generic PL/SQL Block, PL/SQL- The character set, Literals, PL/SQL datatypes, variables, Logical comparisons, Displaying User Messages on The VDU Screen, comments. Control Structure - Conditional Control, Iterative Control PL/SQL Transactions: Cursor-Types of Cursor, Cursor Attributes.Explicit cursor- Explicit cursor Management, cursor for loop PL/SQL Database Objects: Procedures and Functions, Oracle Packages, Error Handling in PL/SQL.	10

Text Book:

1. Fundamentals of Database Systems, Ramez Elamassri, Shankant B. Navathe, 7th Edition, Pearson, 2015

Reference Books:

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 Johannes Gehrke, 3rd Edition, McGraw Hill, 2002

Course Title: C# and Dot Net Framework	Course code: 21BCA3C8L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Understand Object Oriented Programming concepts like Inheritance and Polymorphism in C# programming language.
- Interpret and Develop Interfaces for real-time applications.
- Build custom collections and generics in C#.

DSC8: C# and Dot Net Framework

Contents	Hours
Unit-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	11
Unit-2	
OOPS with C#: Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading Delegates, Events, Errors and Exceptions. Introduction to VB.NET: Introduction, VB.NET -IDE – Start page, menu system, tool bars, New project dialog box, graphical designers, code designers, Intellisense, object browser, Toolbox, Solution explorer, property window, dynamic help window, component tray, server explorer, output window, task list, command window	11
Unit-3	
VB.NET Language: 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. Subroutines and Functions in VB.NET. Application Development on .NET: Vb.NET: Windows Forms. Working with Controls- Textbox, Label, Button Timer, Picture-box, Group-box, Listbox , Combo-box, Horizontal and Vertical Scrollbar, Numeric-up-down, Track-bar, and Progress-bar. Building Windows Applications using C#	10
Unit-4	
Data Access Connectivity: ADO.NET: Introduction to ADO.NET, ADO vs ADO.NET Architecture: Data reader, Data adapter, Accessing Data with ADO.NET. Binding Controls to Databases: Various ways to bind the data, simple binding, complex binding, binding data to control. Programming Web Applications with Web Forms. Web Controls in C#, ASP.NET applications with ADO.NET.	10

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 & Bartlett Publishers, 2011

Course Title: Computer Communication and Networks	Course code: 21BCA3C9L
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Explain the transmission technique of digital data between two or more computers and a computer network that allows computers to exchange data.
- Apply the basics of data communication and various types of computer networks in real world applications.
- Compare the different layers of protocols.
- Compare the key networking protocols and their hierarchical relationship in the conceptual model like TCP/IP and OSI.

DSC9: Computer Communication and Networks

Contents	Hours
Unit-1	
Introduction: Uses of Computer Networks and its Applications: Business Applications, Home Applications, Mobile Users, Social Issues. Network Hardware -Local Area Networks, Metropolitan Area Networks, Wide Area Networks, Internetworks. Reference Models -The OSI Reference Model, The TCP/IP Reference Model, A Comparison of the OSI and TCP Reference Models.	11
Unit-2	
The Physical Layer: Transmission Media - Twisted Pair, Coaxial Cable, and Fiber Optics. Wireless Transmission - Radio Transmission, Microwave Transmission, Infrared, Light Transmission. Multiplexing-Frequency division, time division, code division, Switching. The Data Link Layer: Data link layer design issues-Services Provided to the Network Layer, Framing, Error Control, and Flow Control. Error Detection and Correction-Error-Correcting Codes, Error -Detecting Codes. Elementary Data Link Protocols-An Unrestricted Simplex Protocol, A Simplex Stop-and-Wait Protocol for an Error-Free Channel, A Simplex Protocol for a Noisy Channel. Sliding Window Protocols -A One Bit Sliding Window Protocol, A Protocol Using Go back n, A Protocol using Selective Repeat.	11
Unit-3	
The Network Layer: Network layer design issues-Store-and-Forward Packet Switching, Services Provided to the Transport Layer, Implementation of Connectionless Service, Implementation of Connection-Oriented Service, Comparison of Virtual Circuit and Datagram Networks. Routing Algorithms-Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing, Anycast Routing. Congestion Control Algorithms-Approaches to Congestion Control, Approaches to Congestion	10

Control, Admission Control. The network layer in the Internet-The IP Version 4 Protocol, IP Address, IP Version 6, Internet Control Protocol, The Interior Gateway Routing Protocol: OSPF, The Exterior Gateway Routing Protocol: BGP.	
Unit-4	
The Transport Layer: The Transport Service-Services Provided to the Upper Layers. Elements of Transport Protocols-Addressing, Connection Establishment, connection Release, Error control and Flow Control. The Internet Transport Protocols-(TCP and UDP)-UDP- Introduction to UDP, Remote Procedure Call, Real-Time Transport Protocols, TCP- Introduction to TCP, The TCP Service Model, The TCP Protocol, The TCP Segment Header, TCP Connection Establishment, TCP Connection Release, TCP Connection Management Modeling, TCP Sliding Window, The Application Layer: DNS – Domain Name System-The DNS Name Space, Domain Resource Records, Name Servers. Electronic Mail-Architecture and Services, The User Agent, Message Formats, Message Transfer, Final Delivery, The World Wide Web- Architectural Overview,Static Web Pages, Dynamic Web Pages and Web Applications, HTTP–The HyperText Transfer Protocol	10

Text Book:

1. Computer Networks, Andrew S. Tanenbaum, 5th Edition, Pearson Education, 2010.

Reference Books:

1. Data Communication & Networking, Behrouza A Forouzan, 3rd Edition, Tata McGraw Hill, 2001.
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.
5. <http://highered.mheducation.com/sites/0072967757/index.htmls>

Semester: IV

Course Title: Python Programming	Course code: 21BCA3C10L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Explain the basic concepts of Python Programming.
- Demonstrate proficiency in the handling of loops and creation of functions.
- Identify the methods to create and manipulate lists, tuples and dictionaries.
- Discover the commonly used operations involving file handling.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Develop the emerging applications of relevant fields using Python.

DSC10: Python Programming

Contents	Hours
Unit-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	11
Unit-2	
Strings: Creating and Storing Strings; Accessing String Characters; the str() 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	11

Functions on Tuples; Tuple Methods; Creating Sets; Operations on Sets; Built-in Functions on Sets; Set Methods.	
Unit-3	
File Handling: File Types; Operations on Files– Create, Open, Read, Write, Close Files; File Names and Paths; Format Operator. Object Oriented Programming: Classes and Objects; Creating Classes and Objects; Constructor Method; Classes with Multiple Objects; Objects as Arguments; Objects as Return Values; Inheritance- Single and Multiple Inheritance, Multilevel and Multipath Inheritance; Encapsulation- Definition, Private Instance Variables; Polymorphism- Definition, Operator Overloading. GU Interface: The tkinter Module; Window and Widgets; Layout Management- pack, grid and place	10
Unit-4	
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	10

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.
8. <http://www.ibiblio.org/g2swap/byteofpython/read/>
9. <https://docs.python.org/3/tutorial/index.html>

Course Title: Computer Multimedia & Animation	Course code: 21BCA3C11L
Total Contact Hours: 42	Course Credits: 03+02
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Write a well-designed, interactive Web site with respect to current standards and practices.
- Demonstrate in-depth knowledge of an industry-standard multimedia development tool and its associated scripting language.
- Determine the appropriate use of interactive versus standalone Web applications.

DSC11: Computer Multimedia & Animation

Contents	Hours
Unit-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; Overview and features of CSS3. JavaScript: Object orientation and JavaScript; General syntactic characteristics; Primitives, operations, and expressions; Screen output and keyboard input.	11
Unit-2	
Animation: Introduction, Start and End States, Interpolation, Animations in HTML. All About CSS Animations, Creating a Simple Animation, Detailed Look at the CSS Animation Property, Keyframes, Declaring Multiple Animations, Wrap-up. All About CSS Transitions, Adding a Transition, Looking at Transitions in Detail, The Longhand Properties, Longhand Properties vs. Shorthand Properties, Working with Multiple Transitions.	11
Unit-3	
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	10
Unit-4	
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 - Pattern and Shadow, Canvas - Save and Restore States, Canvas - Translation, Canvas - Rotation, Canvas - Scaling, Canvas - Transforms, HTML5 Canvas - Composition, Canvas – Animations.	10

References:

1. The Complete Reference HTML and CSS, 5th Edition, Thomas A Powell, 2017.
2. Animation in HTML, CSS, and JavaScript, KirupaChinnathambi, 1st Edition, Createspace Independent Pub, 2013.
3. <https://www.w3.org/Style/CSS/current-work#CSS3>
4. <http://bedford-computing.co.uk/learning/cascading-style-sheets-css/>

Course Title: Operating System Concepts	Course code: 21BCA3C12L
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

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

- Understand the fundamentals of the operating system.
- Comprehend multithreaded programming, process management, process synchronization, memory management and storage management.
- Compare the performance of Scheduling Algorithms
- Identify the features of I/O and File handling methods.

DSC12: Operating System Concepts

Contents	Hours
Unit-1	
Introduction to Operating System: Definition, History and Examples of Operating System; Types of Operating Systems; Functions of Operating System; Systems Calls; Operating System Structure. 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.	10
Unit-2	
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 Disk Scheduling (I/O Management): Introduction and Scheduling Algorithm	10
Unit-3	
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)- 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	11
Unit-4	
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. Multithreaded Programming: Introduction to Threads; Types of Threads; Multithreading- Definition, Advantages; Multithreading Models; Thread Libraries; Threading Issues.	11

Text Book:

1. Operating System Concepts, Silberschatz' et al., 10th Edition, Wiley, 2018.

Reference Books:

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, McGraw Hill Education India.
6. Modern Operating Systems, Andrew S Tanenbaum, 4th Edition, Pearson

Skill Enhancement Course: SEC for other Programmes

Semester: III

Course Title: Artificial Intelligence	Course Credits: 2
Total Contact Hours: 13 hours of theory and 26 hours of practical	Duration of SEE: 01 Hour
Formative Assessment Marks: 20 marks	Summative Assessment Marks: 30 marks

Course Outcomes (COs):

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

- Appraise the theory of Artificial intelligence and list the significance of AI.
- Discuss the various components that are involved in solving an AI problem.
- Illustrate the working of AI Algorithms in the given contrast.
- Analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.
- Apply the AI concepts to build an expert system to solve the real-world problems.

Course Content

Contents	Hours
Unit-1	
Overview of AI: Definition of Artificial Intelligence, Philosophy of AI, Goals of AI, Elements of AI system, Programming a computer without and with AI, AI Techniques, History of AI. Intelligent Systems: Definition and understanding of Intelligence, Types of Intelligence, Human Intelligence vs Machine Intelligence.	05
Unit-2	
AI Applications: Virtual assistance, Travel and Navigation, Education and Healthcare, Optical character recognition, E-commerce and mobile payment systems, Image based search and photo editing. AI Examples in daily life: Installation of AI apps and instructions to use AI apps.	05
Unit-3	
Robotics: Introduction to Robotics, Difference in Robot System and Other AI Program, Components of a Robot.	03

Laboratory Activities: • Amazon Alexa: https://play.google.com/store/apps/details?id=com.amazon.dee.app&hl=en&am p;gl=US • Google Lens: https://play.google.com/store/search?q=google+lens&c=apps&hl=en&gl=US • Image to Text to Speech ML OCR: https://play.google.com/store/apps/details?id=com.mlscanner.image.text.speech& hl=en_IN&gl=US • Google Pay: https://play.google.com/store/apps/details?id=com.google.android.apps.nb u.paisa .user&hl=en_IN&gl=US	26

•Grammarly: https://play.google.com/store/search?q=grammarly&c=apps&hl=en_IN&gl= • Google Map: https://play.google.com/store/search?q=google+maps&c=apps&hl=en&gl=US •FaceApp: https://play.google.com/store/apps/details?id=io.faceapp&hl=en_IN&gl=US • Socratic: https://play.google.com/store/apps/details?id=com.google.socratic&hl=en_IN&gl=US • Google Fit: Activity Tracking: https://play.google.com/store/apps/details?id=com.google.android.apps.fitness&hl=en_IN&gl=US • SwiftKey Keyboard: https://swiftkey-keyboard.en.uptodown.com/android • E-commerce App: https://play.google.com/store/apps/details?id=com.jpl.jiomart&hl=en_IN&gl=US	

Text Book:

1. Wolfgang Ertel, "Introduction to Artificial Intelligence", 2nd Edition, Springer International Publishing 2017.
2. Michael Negnevitsky, "Artificial Intelligence A Guide to Intelligent Systems", 2nd Edition, Pearson Education Limited 2005.

Reference Books:

1. https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_tutorial.pdf
2. Kevin Knight, Elaine Rich, Shivashankar B. Nair, "Artificial Intelligence", 3rd Edition, July 2017.

Reference Links:

1. Voice Assistant: <https://alan.app/blog/voiceassistant-2/>
2. Browse with image: <https://www.pocket-lint.com/apps/news/google/141075-what-is-google-lens-and-how-does-it-work-and-which-devices-have-it>
3. OCR: <https://aws.amazon.com/what-is/ocr/>
4. Mobile Payment system: <https://gocardless.com/en-us/guides/posts/how-do-mobilepayment-systems-work/>
5. Grammarly: <https://techjury.net/blog/how-to-use-grammarly/#gref>
6. Travel & Navigation: <https://blog.google/products/maps/google-maps-101-ai-powernew-features-io-2021/>
7. AI in photo editing: <https://digital-photography-school.com/artificial-intelligencechanged-photo-editing/>
8. AI in education: <https://www.makeuseof.com/what-is-google-socratic-how-does-itwork/>
9. AI in health and fitness: <https://cubettech.com/resources/blog/implementing-machinelearning-and-ai-in-health-and-fitness/>
10. E-commerce and online shopping: <https://medium.com/@nyxonedigital/importanceof-e-commerce-and-online-shopping-and-why-to-sell-online-5a3fd8e6f416>

Open Source Tools

(Skill Enhancement Course: SEC for BCA Course)

Semester: III

Course Title: Open Source Tools	Course Credits: 2 (1L+0T+2P)
Semester: III	Duration of SEE: 01 Hour
Total Contact Hours: 13 hours of theory and 26-28 hours of practicals	SEE: 30 Marks IA: 20 Marks

Course Outcomes (COs):

- Recognize the benefits and features of Open Source Technology and to interpret, contrast and compare open source products among themselves
- Use appropriate open source tools based on the nature of the problem
- Write code and compile different open-source software.

Course Content: Open Source Tools

Module	Details	Duration
Module 1: Open Source Softwares	• Introduction to Open sources, Need of Open Sources, Open Source –Principles, Standard Requirements, Advantages of Open Sources – • Free Software – FOSS • Licenses – GPL, LGPL, Copyrights, Patents, Contracts & Licenses and Related Issues • Application of Open Sources. Open Source Operating Systems : FEDORA, UBUNTU	05 hours
Module 2: Programming Tools And Techniques	• Usage of design Tools like Argo UML or equivalent • Version Control Systems like Git or equivalent • Bug Tracking Systems (Trac, BugZilla) • BootStrap	04hours
Module 3: Case Studies	• Apache • Berkeley Software Distribution • Mozilla (Firefox) • Wikipedia • Joomla • GNU Compiler Collection • Libre Office	04 hours

Text Book:

1. KailashVadera, Bhavyesh Gandhi, “Open Source Technology”, Laxmi Publications Pvt. Ltd 2012, 1st Edition.

Reference Book:

1. Fadi P. Deek and James A. M. McHugh, “Open Source: Technology and Policy”, Cambridge Universities Press 2007.

Question Paper Pattern for Skill Enhancement Course

Artificial Intelligence and Open Source Tools

Duration: 1 Hour

Max. Marks: 30

Part-A

(This section shall contain four questions from each module. Each question carries one mark)

Module-1:

- 1.
- 2.
- 3.
- 4.

Module-2:

- 5.
- 6.
- 7.
- 8.

Module-3:

- 9.
- 10.
- 11.
- 12.

Part-B

(This section shall contain two full questions from each module having an internal choice. Each full question carries six marks)

Module-1:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

Module-2:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

Module-3:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

Open Elective for III Semester: Programming in C

Course Title: Programming in C Concepts	Course Credits: 3 (3L+0T+0P)
Semester: III	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays
- Understand functions and file concepts of C language

Course Contents:

Contents	Hours
Unit-1	
Overview of C: Importance of C Program, Basic structure of a C-program, Execution of a C Program. C Programming Basic Concepts: Character set, Tokens, Keywords, Constants, Symbolic constants, Variables, Data types, Input and output with C: Formatted I/O functions – <i>printf</i> and <i>scanf</i> , control stings and escape sequences, output specifications with <i>printf</i> functions; Unformatted I/O functions to read and display single character and astring- <i>getchar</i> , <i>putchar</i> , <i>gets</i> and <i>puts</i> functions.	11
Unit-2	
Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Operator Precedence and Associativity; Evaluation of arithmetic expressions; Control Structures: Decision Making and Branching -Decision making with if statement, simple if statement, the if else statement, nesting of if...else statements, the else if ladder, the switch statement, ?: operator, the go to statement.	11
Unit-3	
Looping Structures: Decision making and looping - The while statement, the do statement, for statement, nested loops, exit, break, Jumps in loops. Derived data types in C: Arrays-declaration, initialization and access of one-dimensional and two-dimensional arrays.	10

Unit -4	
Handling of Strings: Declaring and initializing string variables, reading strings from terminal, writing strings to screen, String handling functions - <i>strlen</i>, <i>strcmp</i>, <i>strcpy</i>, <i>strstr</i> and <i>strcat</i>; Character handling functions - <i>tolower</i>, <i>toupper</i>, <i>isalpha</i>, <i>isnumeric</i>. Functions: Basics of functions, Parameter Passing, Simple functions File handling: Basics of file programming concepts- <i>fprintf</i> and <i>fscanf</i>, and example programs	10

Text Book:

1. E.Balagurusamy, Programming in ANSI C ,7th Edition, Tata McGraw Hill

Reference Books:

2. Herbert Schildt, C: The Complete Reference, 4th Edition.
3. Brian W. Kernighan and Dennis Ritchie, The C Programming Language, Second Edition.

Open Elective for III Semester: R Programming

Course Title: R PROGRAMMING	Course Credits: 3 (3L+0T+0P)
Semester: III	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

- Understand the basics of Fundamentals of R.
- Understands the loading, retrieval techniques of data.
- Understand how data is analyzed and visualized using statistic functions.

Course Contents:

Contents	Hours
Unit-1	
Introduction to R: Basics, Advantages of R over Other Programming Languages - R Studio: R command Prompt, R script file, Comments – Handling Packages in R: Installing R Package, Commands: installed.packages(), package Description(), help(), find. Package (), library() - Input and Output – Entering Data from keyboard – Printing fewer digits or more digits – Special Values functions : NA, Inf and –inf. R Data Types: Vectors, Lists, Matrices, Arrays, Factors, Data Frame R - Variables: Variable assignment, Data types of Variable, Finding Variable ls(), Deleting Variables.	11
Unit-2	
R Operators: Arithmetic Operators, Relational Operators, Logical Operator, Assignment Operators, Miscellaneous Operators R Decision Making: if statement, if – else statement, if – else if statement, switch statement R Loops: repeat loop, while loop, for loop - Loop control statement: break statement, next statement. R-Functions : function definition, Built in functions: mean(), paste(), sum(), min(), max(), seq(), user-defined function, calling a function, calling a function without an argument, calling a function with argument values R-Strings – Manipulating Text in Data: substr(), strsplit(), paste(), grep(), toupper(), tolower() R Vectors – Sequence vector, rep function, vector access, vector names, vector math, vector recycling, vector element sorting R List - Creating a List, List Tags and Values, Add/Delete Element to or from a List, Size of List, Merging Lists, Converting List to Vector R Matrices – Accessing Elements of a Matrix, Matrix Computations: Addition, subtraction, Multiplication and Division	11

Unit-3	
R Arrays: Naming Columns and Rows, Accessing Array Elements, Manipulating Array Elements, Calculation Across Array Elements R Factors –creating factors, generating factor levels gl(). Data Frames –Create Data Frame, Data Frame Access, Understanding Data in Data Frames: dim(), nrow(), ncol(), str(), Summary(), names(), head(), tail(), edit() functions - Extract Data from Data Frame Expand Data Frame: Add Column, Add Row - Joining columns and rows in a Data frame rbind() and cbind() – Merging Data frames merge() – Melting and Casting data melt(), cast().	10
Unit-4	
Loading and handling Data in R: Getting and Setting the Working Directory – getwd(), setwd(), dir() R-CSV Files - Input as a CSV file, Reading a CSV File, Analyzing the CSV File: summary(), min(), max(), range(), mean(), median(), apply() - Writing into a CSV File R -Excel File – Reading the Excel file.	10

Text Book:

1. Sandip Rakshit, R Programming for Beginners, McGraw Hill Education (India), 2017, ISBN : 978-93-5260-455-5.

Reference Books:

2. Seema Acharya, Data Analytics using R, McGrawHill Education (India), 2018, ISBN: 978-93-5260-524-8.
3. Tutorials Point (I) simply easy learning, Online Tutorial Library (2018), R Programming, Retrieved from https://www.tutorialspoint.com/r/r_tutorial.pdf.
4. Andrie de Vries, JorisMeys, R for Dummies A Wiley Brand, 2nd Edition, John Wiley and Sons, Inc, 2015, ISBN: 978-1-119-05580-8.

Open Elective for IV Semester: Python Programming Concepts

Course Title: Python Programming Concepts	Course Credits: 3 (3L+0T+0P)
Semester: IV	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

- Explain the basic concepts of Python Programming.
- Demonstrate proficiency in handling of loops and the creation of functions.
- Identify the methods to create and manipulate string data types.
- Understand the notion of arrays, lists, tuples and their applications

Course contents:

Contents	Hours
Unit-1	
Introduction to Features and Applications of Python; Python Versions; Installation of Python; Python Command Line mode and Python IDEs; Simple Python Program. Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments;	10
Unit-2	
Built-in Functions- Console Input and Console Output, Type Conversions; Python Libraries; Importing Libraries with Examples; Illustrative programs; Libraries for graphics and image handling. 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; Illustrative programs.	10
Unit-3	
Strings: Creating and Storing Strings; Accessing Sting Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifiers; Escape Sequences; Raw and Unicode Strings; Python String Methods; Illustrative programs. Other data types: Basics of arrays, lists, tuples and related functions	11
Unit-4	
Python Functions: Types of Functions; Function Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Default Parameters; Command line Arguments; Key Word Arguments; Illustrative programs	11

Text Book:

1. Python Programming: Using Problem Solving Approach, Reema Thareja, June 2017.

Reference Books:

1. Learning with Python, Allen Downey, Jeffrey Elkner, Chris Meyers, 2015
(Freely available online 2015.
@<https://www.greenteapress.com/thinkpython/thinkCSpy.pdf>)
2. Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.
3. <http://www.ibiblio.org/g2swap/byteofpython/read/>
4. http://scipy-lectures.org/intro/language/python_language.html
5. <https://docs.python.org/3/tutorial/index.html>

Open Elective for IV Semester: E-COMMERCE

Course Title: E-Commerce	Course Credits: 3 (3L+0T+0P)
Semester: IV	Duration of SEE: 02 Hours
Total Contact Hours: 42	SEE: 60 Marks IA: 40 Marks

Course Outcomes (COs):

- Compare how internet and other information technologies support business processes.
- Demonstrate an overall perspective of the importance of application of internet technologies in business administration
- Explain the basic business management concepts.
- Demonstrate the basic technical concepts relating to E-Commerce.
- Identify the security issues, threats and challenges of E-Commerce.

Course Contents:

Contents	Hours
Unit-1	
Introduction to E-Commerce and Technology Infrastructure Working of Web - HTML Markup for Structure - Creating simple page - Marking up text - Adding Links - Adding Images - Table Markup - Forms - HTML5, Building an E-Commerce Website, Mobile Site and Apps Systematic approach to build an E-Commerce: Planning, System Analysis, System Design, Building the system, Testing the system, Implementation and Maintenance, Optimize Web Performance – Choosing hardware and software – Other E-Commerce Site tools – Developing a Mobile Website and Mobile App	11
Unit-2	
E-Commerce Security and Payment Systems E-Commerce Security Environment – Security threats in E-Commerce – Technology Solutions: Encryption, Securing Channels of Communication, Protecting Networks, Protecting Servers and Clients – Management Policies, Business Procedure and Public Laws - Payment Systems	11
Unit-3	
Business Concepts in E-Commerce Digital Commerce Marketing and Advertising strategies and tools – Internet Marketing Technologies – Social Marketing – Mobile Marketing – Location based Marketing – Ethical, Social, Political Issues in E-Commerce	10
Unit-4	
Project Case Study Case Study: Identify Key components, strategy, B2B, B2C Models of E-commerce Business model of any e-commerce website - Mini Project : Develop E-Commerce project in any one of Platforms like Woo-Commerce, Magento or Opencart	10

Text Book:

1. Kenneth C. Laudon, Carol Guercio Traver - E-Commerce, Pearson, 10th Edition, 2016

Reference Books:

1. <http://docs.opencart.com/>
2. <http://devdocs.magento.com/>
3. <http://doc.prestashop.com/display/PS15/Developer+tutorials>
4. RobbertRavensbergen, —Building E-Commerce Solutions with Woo Commercell, PACKT, 2nd Edition.

AECC-1: ENVIRONMENTAL STUDIES
Ability Enhancement Compulsory Course (AECC)

Course Title: ENVIRONMENTAL STUDIES	
Course Code: AECC-1	Course Credits: 2
No. of Teaching Hours/Week: 2	Duration of End Sem. Exam: 2 Hours
Total Contact Hours: 28	Assessment (Marks): 30 (Theory) + 20 (IA) =50

Course Objectives:

1. To make students realize the importance and their role in the protection and maintenance of a healthy environment for sustainable development.
2. To enable students to grasp the significance and issues related to ecosystems, biodiversity and natural resources, and ways of managing/ protecting them.
3. To enable students to have a nuanced understanding of environmental pollution, solid waste management and climate change and to act with concern on environmental issues.
4. To make students aware of the environmental policies and movements, and the role of individuals and communities in environmental protection for educating and inspiring the young minds.

Learning Outcomes:

At the end of the course, students will –

1. Understand the importance and dimension of a healthy environment, become environmentally conscious, skilled and responsible in all their actions with a concern for sustainable development.
2. Comprehend the significance and issues related to ecosystems, natural resources and biodiversity and become aware of the need and ways to protect/ preserve them.
3. Grasp the issues related to environmental pollution, solid waste management and climate change, and become conscious and proactive in the discharge of their responsibilities towards the environment.
4. Become aware and appreciate the values and concerns of environmental movements and policies and the role of communities, and act responsibly on environment-related issues.

Pedagogy: Lectures/Tutorials/Interactive Sessions/Open Educational Resources (as reference materials), practical exercises/Assignments/ Seminars/Group discussions and Counselling.

AECC-1: ENVIRONMENTAL STUDIES

UNIT 1: Introduction

7 hours

- 1.1: Environmental Studies – Importance and scope, multidisciplinary nature; Concept of sustainability and sustainable development
- 1.2: Ecosystems –Concept, structure and function; Pond ecosystem, Forest ecosystem; Food chains, Food webs; Concept of ecological succession
- 1.3: Bio-geographical zones of India; Levels of biological diversity- Genetic, Species and ecosystem; Biodiversity Hotspots with special reference to India; Threats to biodiversity
- 1.4: Conservation of biodiversity: In-situ and Ex-situ; Endangered and endemic species – Concept; Afforestation – Social forestry, Agroforestry, Green belt

UNIT 2: Environmental pollution and its management

7 hours

- 2.1: Air pollution, water pollution, noise pollution, - Causes, effect and control measures.
- 2.2: Climate change, global warming, ozone layer depletion, acid rain and its impact on human communities and agriculture
- 2.3: Solid waste management - biodegradable and non-biodegradable waste; Segregation of domestic waste at source
- 2.4: Impact of plastic on human and animal health

UNIT 3: Natural resources and management

7 hours

- 3.1: Land resources and land-use changes; Land degradation, soil erosion and desertification
- 3.2: Water: Use and over-exploitation of surface and groundwater; Water conservation - rainwater harvesting; Watershed management – Meaning and importance
- 3.3: Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources
- 3.4: Disaster management– Definition and types (Natural and Man-made); Self-protection during disasters (Fire, Floods, Earthquakes, landslides)

UNIT 4: Environmental Policies and Practices

7 hours

- 4.1: Human population growth: Impact on environment, human health and welfare; Environmental ethics– Role of religion and cultures
- 4.2: Environment movements – Chipko, Narmada Bachao Andolan, Silent valley, Bishnois of Rajasthan
- 4.3: Individual and community initiatives – *Salu Marada Thimmakka*; Concept of Sacred Groves (*Devarakadu*)
- 4.4: Environment Protection Act; Biodiversity Act (2002); National Environmental Policy, 2006 – Provisions and importance; Environmental Impact Assessment – Concept; *Swachh Bharat Mission*– Objectives; International agreements – Montreal and Kyoto protocols

Suggested Reading:

1. Agarwal, K.C. (2001) *Environmental Biology*, Bikaner, Nidhi Pub.
2. Basker, Sushmitha & Bhasker, R. (2007) *Environmental Studies for Undergraduate Courses*, New Delhi, Unicorn Books.
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5. Carson, R. (2002) *Silent Spring*. Houghton Mifflin Harcourt.
6. Coenraads, Robert (2010) *Natural disasters and how we cope* Millennium House.
7. Hebbar, Aravinda, (2003) *Parisara Vijnana*, Udupi, Lathangi Prakashana.
8. Gadgil, M., & Guha, R. (1993). *This Fissured Land: An Ecological History of India*, Univ. of California Press.
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14. Nandini, N. (2019). *A textbook on Environmental Studies (AECC)*. Sapna Book House, Bengaluru.
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19. Roy, Pashupati Kumar and Kumar, Arvind (2008) *Environmental Resource Management*. Daya Pub.
20. Pepper, I.L, Gerba, C.P. & Brusseau, M.L. (2011). *Environmental and Pollution Science*. Academic Press.
21. Rao, M.N. & Datta, A.K. (1987). *Waste Water Treatment*. Oxford and IBH Pub.
22. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. (2012). *Environment*. 8th edition. John Wiley & Sons.
23. Rosencranz, A., Divan, S., & Noble, M. L. (2001). *Environmental law and policy in India*. Tripathi 1992.
24. Sengupta, R. (2003). *Ecology and economics: An approach to sustainable development* OUP.
25. Sharma, P.D. (2011) *Ecology and Environment*, Rastogi Publications.

26. Singh, Harimohan (2010) *Waste Water Treatment Technology*, Alfa Publications, New Delhi,
27. Singh, Janamjit (2006) *Biodiversity - planning for sustainable development*, New Delhi, Deep and Deep Pub.
28. Singh, R.B. and Mal, Suraj (2009) *Environmental change and bio-diversity*. Jaipur, Rawat,
29. Singh, J.S., Singh, S.P. and Gupta, S.R. (2014). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
30. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). (2013). *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
31. Thapar, V. (1998) *Land of the Tiger: A Natural History of the Indian Subcontinent*, Warren, C. E. (1971). *Biology and Water Pollution Control*. WB Saunders.
32. Wilson, E. O. (2006). *The Creation: An appeal to save life on earth*. New York: Norton.
33. World Commission on Environment and Development. (1987). *Our Common Future*. Oxford University Press.



ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR.8/2022-23/A8

ಕುಲಸಚಿವರ ಕಛೇರಿ

ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199

Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date: 01/10/2022

NOTIFICATION

Sub: Syllabus of NCC as a value based skill Enhancement course for
UG Degree Programmes under NEP 2020 reg.

Ref: Decision of the Academic Council meeting held on Dtd:
06.09.2022 vide Agenda No: 1:4 (2022-23).

Pursuant to the above, the syllabus of NCC as a value based skill enhancement course for U.G Degree Programmes under NEP 2020 which was approved by the Academic Council meeting held on dated 06.09.2022 is hereby notified for implementation with effect from the academic year 2022-23.

Copy of the Syllabus shall be downloaded from the Mangalore University website. www.mangaloreuniversity.ac.in


REGISTRAR.

To:

- 1) The Principals of the all the colleges concerned. - **with a instruction to implement this course only in those colleges where there is a directorate General approved & established NCC unit.**
- 2) The Registrar (Evaluation), Mangalore University.
- 3) Dr. Gerald Santhosh D'Souza, Chairman, Committee constituted to frame syllabus of NCC, Professor, Dept. of Physical Education Mangalore University.
- 4) The Assistant Registrar/The Superintendent, Academic Section, O/o the Registrar, Mangalore University.
- 5) The Director, DUIMS, Mangalore University - with a request to publish in the Website.
- 6) Guard File

Semester II
SKILL ENHANCEMENT COURSES (SEC-2)

Title of the Course:

NATIONAL CADET CORPS

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will:

- Know the historical background of NCC
- Learn the aims and objectives of NCC
- Learn to practice physical fitness drills required for NCC
- Learn to execute basic drill and marching.

Number of Credits	Number of lecture hours/ semester	
1	28	
Contents of the Course 0 – 0 – 1		28 Hrs
Practical • History of NCC • Aim and Objectives of NCC • Drill and Marching		28

Formative Assessment		
Assessment Type	Internal Assessment	Total
Practical	Test 10	25
	Assignment 10	
	Seminar 5	
Total		25

Assignments can be in the form of field work, projects, written tasks, practical tasks etc.

ಮಂಗಳೂರು
MANGALORE



ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
UNIVERSITY

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR 22 /2022-23/A8

ಕುಲಸಚಿವರ ಕಛೇರಿ

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Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date: 07/12/2022

NOTIFICATION

Sub : Syllabus of Physical Education ,Sports & Yoga for I-IV semesters

B.A/B.Sc Degree Programmes (I-II sem Revised)under NEP 2020-reg.

Ref: Vice Chancellors approval Dated: 05/12/2022

Pursuant to the above, the syllabus of Physical Education ,Sports & Yoga as a core course for I-IV semesters B.A/B.Sc Degree Programmes (I-II sem Revised) under NEP 2020 is hereby notified for implementation with effect from the Academic year 2022-23 Onwards , subject to the ratification of the Academic council.

Copy of the Syllabus should be downloaded from the Mangalore University website. www.mangaloreuniversity.ac.in

FOR REGISTRAR 07/12/22

To:

- 1) The Principals of all the colleges affiliated to Mangalore University.
- 2) The Registrar (Evaluation), Mangalore University.
- 3) Dr. Gerald Santhosh D'Souza, Chairman, Composite BOS in U.G & P.G Physical Education & Sports, & Chairman, Dept. of Physical Education, Mangalore University.
- 4) The Assistant Registrar/The Superintendent, Academic Section, O/o the Registrar, Mangalore University.
- 5) The Director, DUIMS, Mangalore University - with a request to publish in the Website.
- 6) Guard File



MANGALORE UNIVERSITY

**NEP 2020 BASED CURRICULUM
FOR PHYSICAL EDUCATION, SPORTS AND YOGA
OCTOBER 2022
(SEMESTERS I TO IV)**

FACULTY OF EDUCATION

**SYLLABUS FOR
PHYSICAL EDUCATION, SPORTS AND YOGA**

**IN ACCORDANCE WITH
NEP REGULATIONS 2021**

Name of the Degree Program	: BA/BCom/BBA/BCA & all other UG Courses
Discipline Core	: Physical Education, Sports and Yoga – BA/BSc
Total Credits for the Program (I to IV Semesters)	:
Discipline Core	: 24 Credits
Open Electives	: 12 Credits (BA/BSc/BCom/BBA/BCA & all other UG Courses)
Skill Enhancement Courses	: 08 Credits (BA/BSc/BCom/BBA/BCA & all other UG Courses)
Starting Year of Implementation	: 2021-22

PROGRAM OUTCOMES

By the end of the program the students will be able to:

1. Be an entrepreneur (to start their own fitness center, gym, etc) and devise appropriate fitness program for different genders and age groups at all level
2. Officiate, supervise various sports events and organize sports events
3. Acquire the knowledge of Physical Education, Sports and Yoga and understand the purpose and its development
4. Learn theoretical and practical aspects of game of his choice to apply at various levels for teaching, learning and coaching purposes.
5. Learn to apply knowledge of Physical fitness and exercise management to lead a better lifestyle.
6. Gain knowledge of professional preparation in Physical Education, Sports and Yoga
7. Assess Physical Fitness in a scientific manner.
8. Continue professional courses and research in Physical Education, sports and yoga.

SEMESTER-I

Discipline Specific Core-1 (BA/BSc programmes)									
Course	Title of the Course	Theory			Practical			Total Hours/ Credits	Total Marks
		Credits	No. of Teaching Hours/Week	Total Marks/ Assessment	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment		
DSC-1 Theory	Introduction to Physical Education, Sports and Yoga	4	4	100 (60+40 IA)	---	---	---	6 / 8	150
DSC-1 Practical	Basic Fitness, Track and Field, Major Games and Yoga	---	---	---	2	4	50 (25+25 IA)		
Open Electives (BA/BSc/BCom/BBA/BCA & all other UG Courses)									
OE-1	Self Defense	2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
OE-2	Sports Event Management	2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
<i>Note: For Open Electives the No. of Credits for Practical & Theory shall be altered as per requirement. (1 Theory + 2 Practical or 2 Theory + 1 Practical)</i>									
Skill Enhancement Courses (SEC) (BA/BSc/BCom/BBA/BCA & all other UG programmes)									
SEC-1	Health, Wellness and Yoga	1	1	---	1	2	---	2 / 3	50 (Internal Assessment)
* SEC - Activity cum Theory based Practical paper									

SEMESTER-II									
Discipline Specific Core-2 (BA/BSc programmes)									
Course	Title of the Course	Theory			Practical			Total Hours/ Credits	Total Marks
		Credits	No. of Teaching Hours/Week	Total Marks/ Assessment	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment		
DSC-2	Life Style Management	4	4	100 (60+40 IA)	---	---	---	6 / 8	150
DSC-2 Practical	Advanced Fitness, Asanas, Track & Field, Major Games	---	---	---	2	4	50 (25+25 IA)		
Open Electives (BA/BSc/BCom/BBA/BCA & all other UG Courses)									
OE-3	Yoga and Fitness	2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
OE-4	Adventure Sports	2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
Note: For Open Electives the No. of Credits for Practical & Theory shall be altered as per requirement. (1 Theory + 2 Practical or 2 Theory + 1 Practical)									
Skill Enhancement Courses (SEC) (BA/BSc/BCom/BBA/BCA & all other UG programmes)									
SEC-2	Sports – I	1	1	---	1	2	---	2 / 3	50 (Internal Assessment)
* SEC - Activity cum Theory based Practical paper									

SEMESTER-III									
Discipline Specific Core-3 (BA/BSc programmes)									
Course	Title of the Course	Theory			Practical			Total Credits / Hours	Total Marks
		Credits	No. of Teaching Hours/Week	Total Marks/ Assessment	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment		
DSC-3 Theory	Sports Training and Coaching	4	4	100 (60+40 IA)	---	---	---	6 / 8	150
DSC-3 Practical	Sports Proficiency	---	---	---	2	4	50 (25+25 IA)		
Open Electives (BA/BSc/BCom/BBA/BCA & all other UG Courses)									
OE-5	Physical Fitness for Careers	2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
OE-6	Sports and Recreation	2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
Note: For Open Electives the No. of Credits for Practical & Theory shall be altered as per requirement. (1 Theory + 2 Practical or 2 Theory + 1 Practical)									
*Skill Enhancement Courses (SEC) (BA/BSc/BCom/BBA/BCA & all other UG programmes)									
SEC-3	Sports - II	1	1	---	1	2	---	2 / 3	50 (Internal Assessment)
* SEC - Activity cum Theory based Practical paper									

SEMESTER-IV									
Discipline Specific Core-4 (BA/BSc programmes)									
Course	Title of the Course	Theory			Practical			Total Credits / Hours	Total Marks
		Credits	No. of Teaching Hours/Week	Total Marks/ Assessment	Credits	No. of Teaching Hours/Week	Total Marks/ Assessment		
DSC-4 Theory	Sports Injuries and Management	4	4	100 (60+40 IA)	---	---	---	6 / 8	150
DSC-4 Practical	First Aid and Athletic Care	---	---	---	2	4	50 (25+25 IA)		
Open Electives (BA/BSc/BCom/BBA/BCA & all other UG Courses)									
OE-7		2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
OE-8		2	2	60	1	2	40 (20 Prac+20 IA)	3 / 4	100
Note: For Open Electives the No. of Credits for Practical & Theory shall be altered as per requirement. (1 Theory + 2 Practical or 2 Theory + 1 Practical)									
*Skill Enhancement Courses (SEC) (BA/BSc/BCom/BBA/BCA & all other UG programmes)									
SEC-4	Sports - III	1	1	---	1	2	---	2 / 3	50 (Internal Assessment)
* SEC - Activity cum Theory based Practical paper									

PHYSICAL EDUCATION, SPORTS AND YOGA

BA/BSC SEMESTER I to IV

Aim of the Course

The course aims at creating awareness about the fundamentals of Physical Education, Sports and Yoga and promote Health and wellness through Healthy Lifestyle.

Objectives of the Course

1. To impart the students with basic concepts of Physical Education, Sports and Yoga for health and wellness.
2. To familiarize the students with health-related Exercise, Sports and Yoga for Overall growth & development
3. To create a foundation for the professionals in Physical Education, Sports and Yoga.
4. To impart the basic knowledge and skills to teach Physical Education, Sports & Yoga activities.
5. To create awareness about the career opportunities through Physical Education and Yoga

Learning Outcome/ Skills:

- Students will be able to understand the basic principles and practices of Physical Education, Sports and Yoga.
- Students will be able to instruct the Physical Activities, Sports and Yoga practices for Healthy Living.
- To develop professionalism among students, to conduct, organize & officiate Physical Education, Sports and Yoga events at schools and community level.

Employability/ Entrepreneurship abilities:

- The candidate will be able to work as Physical Education, Sports and Yoga instructor.
- The Candidate will be able to instruct, organize & officiate Physical Education, Sports and Yoga.
- The candidate will be able to establish fitness, sports and yoga centers.
- The candidate will be able to conduct Traditional games, Sports and General Yoga classes for rural and community level.
- The candidate will be able to guide aspirants to achieve various physical fitness standards required for related professions.

Curriculum Structure for Undergraduate Degree Program

BA / BSc Courses in Physical Education, Sports & Yoga

Total Credits for the Program (I to IV Semester): 6+6+6+6=24 Credits

Starting year of implementation: 2021-22

Name of the Degree Program: BA/B.Sc

Discipline/Subject: Physical Education, Sports & Yoga Program

Articulation Matrix:

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be listed separately

Semester	Title /Name Of the course	Program outcomes that the course addresses (not more than 3 per course)	Pre-requisite course(s)	Pedagogy	Assessment
1	Introduction to Physical Education, Sports & Yoga (6 Credits)	- To understand the basic principles and practices of Physical Education, Sports and Yoga. - To understand the career options by taking up physical education, sports and yoga - To understand and be able to practice fitness activities, games, athletics and yoga.	Students with Arts/Science/Commerce streams at 12 th / +2 level preferable with Sports Background	The course shall be taught through Lecture, Practical, Interactive Sessions, Materials, Assignments Seminars, Intramural & Extramurals	Theory 100 (60+40) Practical 50 (25+25)
2	Life Style Management (6 Credits)	- To understand the fitness types to be adapted in ones lifestyle. - To understand the yogic principles of healthy lifestyle. - To understand and apply the knowledge of Physical fitness and exercise management to lead better quality life. - To be able to practice physical activities and yoga and assess the fitness.		The course shall be taught through Lecture, Practicals, Interactive Sessions, Materials, Assignments Seminars, Intramural & Extramurals	Theory 100 (60+40) Practicals 50 (25+25)

3	Sports Training and Coaching (6 Credits)	• To understand the basic principles of training. • To know about the various performing influencing motor abilities and the methods of developing them. • To understand the meaning and philosophy of coaching and its requirements. • To know about periodization and how to improve performance through various training cycles. • To be able to practice methods to improve motor abilities.	Students with Arts/Science/Commerce streams at 12 th / +2 level preferable with Sports Background	The course shall be taught through Lecture, Practical, Interactive Sessions, Materials, Assignments Seminars, Intramural & Extramurals	Theory 100 (60+40) Practical 50 (25+25)
4	Sports Injuries and Management (6 Credits)	• To know the various common sports injuries and their cause. • To know the various first aid measures and prevention of sports injuries. • To know the various procedures of treating injuries. • To know the rehabilitative techniques through various modalities. • To be able to practice first aid techniques and rehabilitative measures while treating sports injuries.		The course shall be taught through Lecture, Practicals, Interactive Sessions, Materials, Assignments Seminars, Intramural & Extramurals	Theory 100 (60+40) Practicals 50 (25+25)

I SEMESTER

Semester I
DISCIPLINE SPECIFIC CORE - 1

Title of the Course:

Introduction to Physical Education, Sports and Yoga

Course outcomes

On completion of the Course the student will be able to:

- Understand the historical concepts and significance of Physical Education and Yoga.
- Learn the modern trends in sports and yoga and its relation to education.
- Learn the Principles of implementing fitness activities and yoga.
- Understand the biological principles on which physical education, yoga and sports is based.
- Learn the basic yoga practices.
- Be aware of the career opportunities arising out of undergoing courses in physical education, sports and yoga.
- Understand and perform warm up and conditioning activities.
- Assess the health-related fitness parameters and evaluate the same.
- Perform basic skills in a game and athletic event.
- Perform basic asanas and pranayama.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/ semester	Number of practical Credits	Number of practical hours/ semester
4	56	2	56
Contents of the Course 4 – 0 – 2			
Unit- I Introduction • Meaning and definition of Physical Education, Sports and Yoga. • Aim and Objectives of Physical Education, Sports and Yoga. • History of Physical Education, Sports and Yoga. - o Ancient Greece - o Ancient and Modern Olympics - o Asian Games and Commonwealth Games - o Post-Independence Period – Various Policies, Institutions, SAI, Khelo India, Fit India Movement. • Modern trends of Physical Education, Sports and Yoga (brief concepts.) - o Exercise using various equipment like Swiss ball etc. - o Activities like Aerobics, Pilates, Power yoga, Yoga for sports preparation, Varies careers • Brief concept of Education in relation to Physical Education, Sports and Yoga. - o Applications in Education: Pedagogy, Research - o Relationship of Education with Physical Education and Yoga			14

Unit- II Yoga & Fitness Training • Importance of Fitness • Fundamentals Principles of Yoga & Fitness Training - o Yoga: Principles, Essentials of Yoga Practice - o Fitness: FITT principle • Components of Fitness - o Health related fitness components - o Skill related fitness components • Types of Yoga practices (concepts) - o Asanas - o Pranayama - o Kriyas - o Bandhas • Considerations for practice of Yoga and Fitness	14
Unit- III Biological Foundations of Physical Education and Yoga • Growth and Development: Meaning, Principles and Stages • Heredity and Environment: Meaning, principles and influence on growth and development • Concepts: Athletic Heart, Types of Ages, Types of load, Physical and Physiological differences between males and females • Body Types: Meaning, Types, Characteristics, and implications in Physical Education and sports.	14
Unit- IV Career Opportunities in Physical Education, Sports and Yoga • Physical Education, Sports and Yoga professionals at various levels of educational institutions- Qualities and Qualifications for a physical education and sports professional. • Professions: Sports Trainer, Yoga Instructor, Coach, Sports Manager, Sports Scientist, Event manager, Technical Official, Entrepreneurs. • Applications of benefits of sports and yoga in different professions: Teaching, Business Executives, Police department, Defense personnel, Government employees. • Sports and Yoga Institutions: Health Clubs, Fitness centers, Dance and yoga studios, Recreational clubs: Characteristics, Facilities and Infrastructure and Management. • Specialised professions: Sports Journalists, sports Commentators, Photo and Video Analyst, Sports Marketing and Equipment/Props manufacturers.	14

Content of Practical Course 1: Practical (2 credits/56 hours)	56 Hrs
A. Basic Fitness, Training and Assessment • General and specific warm-up, limbering down – Meaning, types and benefits • Body Composition (BMI) • Training and Assessment for Health-related fitness - Muscular Endurance, Muscular Strength, Flexibility, Cardio-respiratory Endurance, Body Composition.	56
• Major/Minor Outdoor Games / Track & Field • One Game (Among the list of IOA, AIU, SGFI) • Athletics: Running, Jumping and Throwing Event – One event from each.	

B. Basic Asanas & Surya Namaskara (as per the reference books) • Shithilikarana Vyayama (Dynamic) • Surya Namaskara • Standing & Sitting Asanas (2 asanas from each) • Prone & Supine Asanas (2 asanas from each)	
C. Basic Pranayamas • Sukha Pranayama (Breath awareness) • Kapalabhati/Basthrika • Anuloma Viloma/Nadi Shuddhi	
D. Preparation of Records and Reports	

* The practical classes shall be adapted to the physically challenged students as per requirement.

Pedagogy: The course shall be taught through Lecture, Practical's, Interactive, Sessions, Materials, Assignments, Seminars, Intramural & Extramural activities.

Formative Assessment				
Assessment Type	Internal Assessment		Semester Exam	Total
Theory	Test	20	60	100
	Assignment	10		
	Seminar	10		
Practical	Test	15	25	50
	Assignment	10		
Total				150

Assignments can be in the form of field work, projects, written tasks, practical tasks etc.

Reference Books

- Bucher, C. A. (n.d.) Foundation of physical education. St. Louis: The
- C.V. Mosby Co. Deshpande, S. H. (2014). Physical Education in Ancient India. Amravati: Degree college of Physical education.
- Mohan, V. M. (1969). Principles of physical education. Delhi: Metropolitan Book Dep.
- Nixon, E. E. & Cozen, F.W. (1969). An introduction to physical education. Philadelphia: W.B. Saunders Co.
- William, J. F. (1964). The principles of physical education. Philadelphia:
- W.B. Saunders Co.
- Coalter, F. (2013) Sport for Development: What game are we playing?. Routledge.
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- Uppal, A.K. (1992). Physical Fitness. New Delhi : Friends Publication.
- Nagendra, H. R. & Nagarathna, R. (2002). Samagra Yoga Chikitse. Bengaluru: Swami Vivekananda Yoga Prakasana.
- Kumar, Ajith (1984) Yoga Pravesha. Bengaluru: Rashthrothanna Prakashana.
- D.M Jyoti, Yoga and Physical Activities (2015) lulu.com3101, Hills borough, NC27609, United States
- D.M Jyoti, Athletics (2015) lulu.com3101, Hills borough, NC27609, United States

- Gharote, M. L. & Ganguly, H. (1988). Teaching methods for yogic practices. Lonawala: Kaivalyadhama.
- Pinto John and Roshan Kumar Shetty (2021) Introduction to Physical Education, Louis Publications, Mangalore
- Shekar, K. C. (2003). Yoga for health. Delhi: Khel Sahitya Kendra..
- Amit Arjun Budhe, (2015) Career aspects and Management in Physical Education, Sports Publication, New Delhi
- Pinto John and Ramachandra K (2021) Kannada Version, Daihika Shikshanada Parichaya, Louis Publications, Mangalore
- IAAF Manual
- Officiating and Coaching, Dr. Anil Kumar Vanaik, 2017, Friends Publications(India), Ist Edition, Daryaganj, New Delhi
- Officiating, Coaching, Training Methods and Recreation in Physical Education,
- Dr. Md. Attaullah Jagirdar, 2015, Khel Sahitya Kendra, Daryaganj, New Delhi.

Semester I OPEN ELECTIVE PAPER - 1

Title of the Course:

Self Defense

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will be able to:

- Understand the meaning and need of self-defense.
- Understand the fitness requirements to implement self-defense.
- Learn the basic techniques of selected combative sports.
- Learn the defensive techniques applied from combative sports.
- Implement survival techniques during emergencies.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
Theory • Meaning and Importance of Self Defense • Principles of Self Defense • Meaning and Characteristics of combative sports – Karate, Kick boxing, Judo, Wrestling • Fitness requirements for self defense • Ethical considerations of applications of self-defensive skills			28
Practical • General conditioning and self-defense specific conditioning • Basic techniques of karate, kickboxing, judo and wrestling • Applications of techniques of combative sports for self-defense. • Self-defense techniques for specific situations: chain snatching, knife or stick attack, holding from back or front etc. • Self-defense using equipment such as stick (lathi), nanchaku etc. • Record and report preparation.			28

* The practical classes shall be adapted to the physically challenged students as per requirement.

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- “Darren Levine has my unqualified support and gratitude for his contributions to Krav Maga.” –ImiLichtenfeld, founder of Krav Maga
- In the Name of Self-Defense:: What it costs. When it's worth it, 603 pages, Kindle Edition, first published July 2, 2014
- Self Defense: The Ultimate Guide To Beginner Martial Arts Training Techniques (Martial Arts, Self Defense For Women, Self Defense Techniques Book 1) Kindle Edition
- Taekwondo: A Step-by-Step Guide to the Korean Art of Self-Defense Paperback – 15 Jan 2003
- The Self-Defense Handbook (English, Paperback, Fury Sam)
- The Walking Stick Method of Self Defence Paperback – Import, 14 August 2018

Semester I
OPEN ELECTIVE PAPER - 2

Title of the Course:

Sport Event Management

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will be able to:

- Understand the meaning and salient features of sport event management.
- Learn the various sports related events and the required skills for their management.
- Learn the application of financial and human resource management in organizing sports events.
- Know the various gadgets, implements, equipment used in conducting sports events.
- Undergo practical exercise in conducting various sports related events.
- Get the opportunity to practically visit and learn the nuances of sports event management from actual sports events.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
Theory • Meaning, Definition and importance of Sports Event Management • Scope of Sports Event Management • Types of Sports Events and Principles of Sports Event Management • Financial and Human resources Planning in Sports Event Management • Types of Sports Events, modalities of organization, event specific equipment and gadgets utilised – Major sports such as athletic events and games, Road races and marathons, traditional and folk events, Sports Conferences and workshops. • Sponsorship and sports event management.			28
Practical • Organising project athletic meets. • Organising project competitions in games. • Organising project road races etc. • Participation and visit to various sports events and preparation of reports: Financial outlay, sponsorship usage, marketing and media, Human resources management, competitions rules and regulations, equipment and gadgets used, Usage of volunteers etc. • Preparation of records and reports			28 56

* The practical classes shall be adapted to the physically challenged students as per requirement.

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- Bachelor of Sports Management Syllabus (Revised)'2008
- Chandan, JS : Management – Concepts and Strategies, Vikas Publishing
- Daft, RL : Management, Thomson
- Harold Koontz & Heinz Weihrich, Essentials of Management, Tata McGraw Hill, 201,
- Reference Book: 1. Stoner, Freeman, Gilbert Jr., Management.
- Ramaswami T; Principles of Mgmt., Himalaya Publishing
- Robbins, SP : Management, Prentice Hall
- Sports Marketing – A strategic perspective by Matthew D. Shank, Prentice Hall.
- Stoner J and Freeman RE: Management; Prentice-Hall
- V.S.P Rao & Hari Krishna: Management-Text & Cases, Excel Books.
- Weihrich and Koontz, et al: Essentials of Management; Tata McGraw Hill.

II SEMESTER

Semester II
DISCIPLINE SPECIFIC CORE - 2

Title of the Course:

Lifestyle Management

Course outcomes

On completion of the Course the student will be able to:

- Understand the meaning of lifestyle management and its significance.
- Understand the types of fitness and their significance and methods of developing them.
- Understand the yogic principles and their applications in improving lifestyle.
- Know the importance diet, the applications of a proper diet plan to improve lifestyle.
- Know the meaning of physical literacy and the movement patterns.
- Understand the role of physical activity in improving health and fitness.
- Understand and perform warm up and conditioning activities.
- Assess the skill-related fitness parameters and evaluate the same.
- Perform basic skills in a game and athletic event.
- Perform basic asanas and pranayama.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/ semester
4	56	2	56
Contents of the Course 4 – 0 – 2			
Unit – 1 INTRODUCTION TO LIFE STYLE & PHYSICAL FITNESS • Meaning and Definitions of Physical Fitness and Life Style • Need and Benefits of Physical Fitness • Health Related Fitness Components: - Cardiovascular Endurance, Muscular Strength, Muscular Endurance, Flexibility, Body Composition • Skill Related Physical Fitness Components: - Agility, Balance, Co- ordination, Power, Reaction Time, Speed			12
Unit – 2 YOGIC PRINCIPLES AND LIFESTYLE MANAGEMENT • Yogic principles and lifestyle management - o Jnana Yoga - o Karma Yoga - o Bhakthi Yoga - o Raja Yoga / Astanga Yoga • Yogic Life Style: Ahara, Vihara, Vichara, Achara, Vyavahara			14
Unit - 3 NUTRITION AND LIFE STYLE MANAGEMENT • Nutrition and Diet: Meaning, Balanced diet. • Components of Balance Diet and its importance – Macro nutrients: Carbohydrates, Protein, Fat Micro nutrients: Vitamins & Minerals, Water • Healthy Lifestyle through Diet and Fitness			16

Unit - 4 PHYSICAL LITERACY • Meaning, Definition and Importance of Physical Literacy. • Core Elements of Physical Literacy • Fundamental Movements - Art of Walking, Running, Jumping and Throwing. • Contribution of physical activity towards adopting Healthy lifestyle	14
CONTENT OF PRACTICAL COURSE 2: Practical (2 credits/56 hours)	56 Hrs
A. Specific warm-up / Lead up Activities. Training and Assessment of Skill related fitness: Agility, Balance, Speed, Co-ordination, Power, Reaction Time.	
B. Advanced Asanas (as per the reference books)- 2 asanas from each. • Standing Asanas • Sitting Asanas • Prone Asanas • Supine Asanas	
C. Advanced Pranayamas (Any two) • Surya Anuloma Viloma/Surya Bhedana Pranayama • Chandra Anuloma Viloma/Chandra Bhedana Pranayama • Ujjayi Pranayama • Kumbhaka Pranayama	
D. GAMES /TRACK & FIELD • One Game: Rules and Regulations of the Game and Officiating. • Introduction to Track and Field Events. Athletic Rules as recognized by the Athletics Federation. Marking of Track and Field. Officiating. • Records and Report Preparation	
E. Preparation of Records and Reports	

* The practical classes shall be adapted to the physically challenged students as per requirement.

Pedagogy: The course shall be taught through Lecture, Practicals, Interactive Sessions, Materials, Assignments, Seminars, Intramural & Extramurals

Formative Assessment				
Assessment Type	Internal Assessment		Semester Exam	Total
Theory	Test	20	40	60
	Assignment	10		
	Seminar	10		
Practical	Test	15	25	50
	Assignment	10		
Total				150

Assignments can be in the form of field work, projects, written tasks, practical tasks etc.

Reference Books:

- Fitness and Wellness, Werner. W.K. Hoegar, Sharon.A. Hoegar, 1990, Morton Publishing Company, Englewood, Colorado
- Fit to be Well, Alton L.Thygerson, Karl L.Larson, Jones and Bartlett Publishers, Sudbury
- Fitness Education, Teaching Concepts – Based Fitness in Schools, 1997, Garsuch scaris brick Publishers, Arizona
- Health, Exercise and Fitness, Dr.Briz, Mohan.T.Raman, Sports Publications, Darya Ganj, New Delhi
- Introduction to Physical Education, Fitness and Sport, 5th Edition, Dary Sidentop, Mc Graw Hill 007-123271-0ISBN
- Physical Fitness and Wellness, Dr. Sanjay R.Agashe, Khel Sahithya Kendra, 7/26 Ansari Road, Darya Ganj, New Delhi
- Fit & Well, 4th Edition, Thomas D.Fahey, Paul M.Insel, Walton T.Roth, Mayfield Publishing company, Mayfield Publishing Company, London
- Pinto John and Ramachandra K (2021) Kannada Version, Daihika Shikshanada Parichaya, Louis Publications, Mangalore
- Track & Field Training & Movement science-Theory and Practice for all Disciplines, Dr.Henko.K,Struder, 2021, Meyer & Meyer Sport(UK) publishers, Germany
- Pinto John and Roshan Kumar Shetty (2021) Introduction to Physical Education, Louis Publications, Mangalore
- “Nutrition Education”, Anjali Pattanaik, (2004), Published by Chaman Enterprises, Patoudi House, New Delhi
- A Practical Approach to Measurement in Physical Education, 1979, 3rd Edition,Barrow.M.Harold, Rosemary.Mc.Gee, Lea & Febiger, Phildelphia
- Abels, K. & Bridges, J. M. (2010) Teaching Movement Education: Foundations for active lifestyles. Human Kinetics
- Graham, G., Holt, Shirley & Parker, Melissa (1993) Children Moving. A Reflective Approach to Teaching Physical Education with Movement Analysis, Wheel 3rdEdition, Mayfield Publishing Company.
- Yoga for Promotion of Positive Health, 2011. Dr.H.R.Nagendra and Dr.R.Nagarathna, Swamy Vivekananda Yoga Prakashna, Bangalore
- “Asana, Pranayama, Mudra, Bandha”, 1969, Swamy Sathyananda Saraswati, Bihar Yoga Bharati, Munger
- “Four Yoga of Swamy Vivekananda”, 1979, Swamy Tapasyananda, Adwaita Prakashana, Ramakrishna Ashrama, Calcutta
- New Perspectives in Stress Management, 2014, Dr.H.R.Nagendra, Swamy Vivekananda Yoga Prakashna, Bangalore
- Pranic Energization Technique, 2005, Dr. H. R. Nagendra, Swamy Vivekananda Yoga Prakashna, Bangalore
- Mind, Sound, Resonance Technique, 2005, Dr.H.R.Nagendra, Swamy Vivekananda Yoga Prakashna, Bangalore.

Semester II
OPEN ELECTIVE PAPER - 3

Title of the Course:

Yoga and Fitness

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will be able to:

- Understand the principles of practicing asanas and fitness activities.
- Learn the various concepts of fitness and general and specific conditioning for the same.
- Practically learn the principles of implementing fitness activities and yoga.
- Perform specific activities to develop motor abilities.
- Perform fitness activities to improve fitness.
- Perform prescribed asanas.
- Learn and practice recreational activities to develop fitness.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
Theory • Meaning and Importance of Yoga and Fitness • Types and Principles of Asanas • Types of Fitness and their components • General and Specific Conditioning and their importance • Methods of developing Strength, Speed, Agility, Flexibility, coordinative abilities • Nutrition for Fitness			28
Practical • General and Specific Warm up • Specific Exercises for Strength, Speed, Agility, Flexibility, Coordinative abilities • Aerobics/Zumba/Dance/Pilates/Resistance training/Swiss balls/Fitness activities using varied equipment • Yogasanas – Sitting, standing, supine and prone position • Fitness through recreational activities • Preparation of records and reports			28

* The practical classes shall be adapted to the physically challenged students as per requirement.

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- Ajith ‘Yoga pravesha’’ Rashtrotana parishad Bangalore
- B K S Iyengar ‘Light on Yoga’ Rashtrotana parishad Bangalore
- B.K.S.Iyengar ‘Yoga the path to holistic Health’, Dorling Kindersley Delhi 2001
- Leslie Kaminoff, Amy Matthews ‘Yoga Anatomy’ Human Kinetics U.S.A. 2007
- Muller, J. P.(2000). Health, Exercise and Fitness. Delhi: Sports
- Swami Sachidananda ‘the yoga sutras of Pathanjali Integral yoga Publications 2012.

Semester II

OPEN ELECTIVE PAPER - 4

Title of the Course:

Adventure Sports

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will be able to:

- Understand the meaning and importance of Adventure sports.
- Learn the various types of adventure sports, the equipment and resources required to practice these sports.
- Learn the safety measures to be taken while practicing adventure sports.
- Be aware of the job opportunities in this area of sports.
- Practically perform selected adventure sports.
- Teach, plan and organize various adventure sports.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
Theory • Definition, Meaning and Importance of Adventure Sports • History- Development, Scope, and Objectives • Water sports – Canoeing, rafting, kayaking, scuba diving, snorkeling, surfing, paddling. • Aero sports: Ballooning, Hang gliding, Paragliding, Parasailing, skydiving • Mountaineering – Trekking, Rock Climbing, Wall climbing, Bouldering. • Safety measures and first aid • Recent Trends in Adventure Sports • Job Opportunities in Adventure Sports			28
Practical • Fitness, Conditioning, Warming Up, Specific Exercises, Cooling Down • Practical, teaching, demonstration, training, technical training. • Planning and Organising-Mountaineering, Trekking, Rock Climbing, Para Sailing, Water Sports, etc. • Records and Report Preparation			28

** The practical classes shall be adapted to the physically challenged students as per requirement.*

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- Adventure Sports: World's Most Popular 89 Adventure Sports Paperback Import, 13 February 2020, by Mahesh Sharma (Author)
- Adventure Tourism and Sports 1st Edition (English, Hardcover, Negi Jagmohan)
- The world of adventure sports, By:Berne, Emma Carlson, Lonely Planet
- Kids, Jepson, Ian(Illustrated by) Part of the Lonely Planet Kids series
- Sports, Games and Adventure Sports (English, Hardcover, Ghosh C N)

III SEMESTER

Semester III**DISCIPLINE SPECIFIC CORE - 3**

Title of the Course:

Sports Training and Coaching**Course outcomes**

On completion of the Course the student will be able to:

- Learn the meaning and principles of Sports Training
- Understand the components of fitness and methods of training.
- Learn the meaning of Periodization and the characteristics of training plans.
- Implement basic training plans for fitness and performance.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/ semester
4	56	2	56
Contents of the Course 4 – 0 – 2			
Unit – 1 INTRODUCTION • Introduction to Sports Training • Meaning, Definition, Aims and Objectives of Sports Training • Need and Importance of Sports Training • Principles of Sports Training			12
Unit – 2 MOTOR ABILITIES AND METHODS OF TRAINING Motor Abilities and their Development • Strength • Speed • Endurance • Flexibility • Agility & Coordinative abilities Methods of Sports Training • Continuous Training • Interval Training • Fartlek Training • Circuit Training • Weight Training			14
Unit - 3 COACHING • Meaning, Definition and Importance of Coaching • Principles of Coaching			16

- Qualities and Qualifications of a Coach - Responsibilities and Duties of a Coach	
Unit - 4 TRAINING PROGRAMME AND PLANNING - Periodization- Meaning, Importance and types - Phases of Periodisation – Preparation phase, Competition phase, Transition phase - Cycles of Training- Micro, Meso and Macro	14
CONTENT OF PRACTICAL COURSE: SPORTS PROFICIENCY Practical (2 credits/56 hours)	56 Hrs
1. Brief Introduction of Particular Sport/Game (Among the list of IOA, AIU, SGFI) 2. Play Field Technology- Construction, Marking and Equipment 3. Specific Fitness for specific Sport/Game 4. Basic Skill, Drills and Techniques of the Game 5. Officiating of the Specific Game 6. Preparation of Records and Reports	

Practical classes will be conducted in any two games depending on the facilities available in the college.

** The practical classes shall be adapted to the physically challenged students as per requirement.*

Pedagogy: The course shall be taught through Lecture, Practicals, Interactive Sessions, Materials, Assignments, Seminars, Intramural & Extramurals

Formative Assessment					
Assessment Type	Internal Assessment		Semester Exam	Total	
Theory	Test	20	40	60	100
	Assignment	10			
	Seminar	10			
Practical	Test	15	25	25	50
	Assignment	10			
Total					150

Assignments can be in the form of field work, projects, written tasks, practical tasks etc.

Reference Books:

- Bunn, J.N. (1998) Scientific Principles of Coaching, New Jersey Engle Wood Cliffs, Prentice Hall Inc.
- Cart, E. Klafs & Daniel, D. Arnheim (1999) Modern Principles of Athletic Training St. Louis C.V. Mosby Company

- Daniel, D. Arnheim (1991) Principles of Athletic Training, St. Luis, Mosby Year Book
- David R. Mottram (1996) Drugs in Sport, School of Pharmacy, Liverpool: John Moore University
- Gary, T. Moran (1997) – Cross Training for Sports, Canada : Human Kinetics.
- Hardayal Singh (1991) Science of Sports Training, New Delhi, DVS Publications.
- Jensen, C.R. & Fisher A.G. (2000) Scientific Basic of Athletic Conditioning, Philadelphia.
- Ronald, P. Pfeiffer (1998) Concepts of Athletics Training 2nd Edition, London: Jones and Bartlett Publications
- YograjThani (2003), Sports Training, Delhi : Sports Publications.
- Thomas Kurz Science of Sports Training: How to Plan and Control Training for Peak Performance.

Semester III**OPEN ELECTIVE PAPER - 5**

Title of the Course:

Physical Fitness for Careers*(BA/BSc/BCom/BBA/BCA & all other UG Courses)***Course outcomes**

On completion of the Course the student will be able to:

- Be aware of various professions which require physical fitness and abilities.
- Learn the specific physical requirements of various professions.
- Learn about the various tests to be conducted to evaluate physical fitness.
- Learn the mode of selections and fitness standards required for related careers.
- Practice the motor abilities required by related professions.
- Assess and prepare themselves for passing in the physical fitness tests of these professions.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
Theory • Meaning, Types and Importance of careers requiring physical fitness. • Physical Fitness Standards for Men and Women: Tests for Speed, Endurance, Strength, Agility and Flexibility. • Career specific Fitness Tests: Fitness Tests for Defense Forces, PSI, Police Constable, Fire Force, Forest Department, Professional Courses-Sports & Physical Education • General and Specific Conditioning and its importance • Specific Tests for Strength Test, Speed Test, Agility Test, Flexibility Test, Coordinative abilities, etc • Mode of Selections and Qualifying Standards			28
Practical • General and Specific conditioning exercises • Training for Endurance, Speed, Strength, Agility, Flexibility. • Assessment of career specific fitness abilities (fitness tests): Defense Forces, PSI, Police Constable, Fire Force, Forest Department, Professional Courses-Sports & Physical Education • Records and Report Preparation			28

** The practical classes shall be adapted to the physically challenged students as per requirement.*

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- A Practical Approach to Measurement in Physical Education, 1979, 3rd Edition, Barrow.M. Harold, Rosemary.Mc.Gee, Lea &Febiger, Phildelphia
- AAPHERD “Health related Physical Fitness Test Manual.” 1980 Published by Association drive Reston Virginia
- Muller, J. P.(2000). Health, Exercise and Fitness. Delhi: Sports.
- Russell, R.P.(1994). Health and Fitness through Physical Education. USA: Human Kinetics
- Singh Hardayal (1991), Science of Sports Training, DVS Publication, New Delhi
- Uppal, A.K. (1992). Physical Fitness. New Delhi : Friends Publication.

Semester III
OPEN ELECTIVE PAPER - 6

Title of the Course:

Sports and Recreation

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will be able to:

- Know the role of recreational activities in improving health and fitness.
- Learn the different types of sports and recreational activities.
- Understand the educational values of practicing recreational and sports activities.
- Get a hands-on experience in sports recreational activities.
- Get a hands-on experience in organizing sports recreational activities.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
Theory • Meaning, Definition and Concept of Recreation • Objectives, Characteristics and Principles of Recreation • Importance, Purpose, Benefits of Recreation • Types of Recreation • Recreation through Sports and Games • Use of Leisure Time Activities and their educational values			28
Practical • Traditional, Folk and Indigenous Games • Outdoor camp activities • Cycling, hiking, trekking activities • Organisation of Recreational activities • Records and Report Preparation			28

** The practical classes shall be adapted to the physically challenged students as per requirement.*

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- Bucher. C. A (1979) Foundations of Physical Education (5th edition Missouri CV Mosby Co.)
- Coalter, F. (2013) Sport for Development: What game are we playing? Routledge.
- Puri .k. Chandra S.S (2005) “Health and Physical Education” New Delhi : Surjeet Publications.
- Thomas D Fahey and others. Fit and well: 6th Edition New York : McGraw Hill Publishers, 2005

IV SEMESTER

Semester IV**DISCIPLINE SPECIFIC CORE - 4**

Title of the Course:

Sports Injuries and Management**Course outcomes**

On completion of the Course the student will be able to:

- Understand the meaning of Sports Injuries.
- Understand the common injuries occurring in sports and their immediate management.
- Know the causes of sports injuries and methods to treat them.
- Understand the methods of Rehabilitation of sports injuries
- Get an insight into the first aid measures to treat sports injuries
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of practical Credits	Number of practical hours/ semester
4	52 - 56	2	52 - 56
Contents of the Course 4 – 0 – 2			
Unit – 1 INTRODUCTION TO SPORTS INJURIES • Meaning, Definition & Concept of Sports Injuries • Classification of Sports Injuries - - o Acute Injuries and - o Over Use Injuries • Common Sports Injuries: - o Sprain, Strain and Cramps - o Fractures and Dislocation - o Abrasion and Contusion - o Cuts and Bruise			12
Unit – 2 CAUSES AND PREVENTION OF SPORTS INJURIES Causes • Accident • Poor Training Practice • Improper Equipments and Surfaces • Lack of Conditioning • Use of Supplements for Sports Performance Prevention • Good Conditioning • Scientific and Systematic Training • Specified Equipment, Surfaces and Sports Wears • Misconceptions of Sports Injuries			14

Unit - 3 MANAGEMENT OF SPORTS INJURIES		16
• First Aid - Meaning and Definition First Aid • Principles of First Aid, • First Aid Kit and its Importance • Diagnosis and Treatment • CPR for Sudden Cardiac Arrest in Sports • RICE Treatment – Rest, Ice, Compression and Elevation		
Unit - 4 REHABILITATION OF SPORTS INJURIES		
• Physical and Psychological Preparation • Sports Therapy, Yoga, Pranayama, Meditation • Massage and Relaxation Techniques • Appropriate Measures to restart sports activities		
CONTENT OF PRACTICAL COURSE: FIRST AID AND ATHLETIC CARE		56 Hrs
Practical (2 credits/56 hours)		
1.	Usage of First Aid Kit	
2.	Management Techniques of Injuries	
	• Taping and Wrapping • Bandages	
3.	Rehabilitation Exercises	
	• Active and Passive Exercises • Resistance and Assisted Exercise • Asanas and Pranayama	
4.	CPR Training	
5.	Modalities of therapy	
	• Cryotherapy • Hydrotherapy • Electro therapy • Massage	
6.	Preparation of related records and reports	

* The practical classes shall be adapted to the physically challenged students as per requirement.

Pedagogy: The course shall be taught through Lecture, Practicals, Interactive Sessions, Materials, Assignments, Seminars, Intramural & Extramurals.

Formative Assessment				
Assessment Type	Internal Assessment		Semester Exam	Total
Theory	Test	20	60	100
	Assignment	10		
	Seminar	10		
Practical	Test	15	25	50
	Assignment	10		
Total				150

Assignments can be in the form of field work, projects, written tasks, practical tasks etc.

REFERENCES:

1. Sports Injuries – Types, Prevention & Treatment, 2012, H.K.Koushik, Sublime Publications, Jaipur, ISBN:978-81-8192-209
2. Sports Injuries, 2013, Bhushan Kumar Mishra, Sports Publications, Darya Ganj, New Delhi, ISBN:978-81-7879-743-4
3. Sports Injuries and Rehabilitation, 2017, Dr.Sinku Kumar Singh, Khel Sahitya Kendra, Darya Ganj, New Delhi, ISBN:978-81-7524-590-5
4. Prevention And Treatment of Sports Injuries, 2000, Anju Ambast, Khel Sahitya Kendra, Shiv Market, Ashok Vihar, Delhi, ISBN: 81-7524-047-4
5. Sports Injuries, 2016, Khel Sahitya Kendra, Darya Ganj, New Delhi, ISBN:978-81- 7524-862-5
6. Sports Injuries and Athletic Problems, 1996, 2nd Edition, Morris B.Mellion, MD, Surjeet Publications, Kamalanagar, Delhi

Semester IV
OPEN ELECTIVE PAPER - 7

Title of the Course:

Sports Nutrition

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will be able to:

- Be Understand the meaning and importance of nutrition.
- Understand the principles and components of nutrition and its importance in weight management.
- Learn the specific physical nutritional requirements of sportspersons.
- Learn the practical requirements of fitness and weight management with respect to exercise.
- Learn to record and prepare reports.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
<u>THEORY</u>			
UNIT-1-INTRODUCTION • Meaning and definition of Sports Nutrition. • Role of Nutrition in health promotion and Sports • Concept of diet • Balanced Diet: Components, factors affecting Balanced Diet and Malnutrition			28
UNIT 2- NUTRIENTS • Meaning, Classification, Sources, functions of nutrients • Micro Nutrients: Vitamins, Minerals, Water • Macro Nutrients: Carbohydrates, Protein, Fat • Role of macro nutrients as fuel for muscular activities.			
UNIT 3-Nutrition in sports and Weight Management • Nutrients for Sportsmen - Calories and diet for Games, Sports, Sprints, Endurance and Power Events. • Nutritional intake before, during and after sports activity. • Meaning, Definition and Importance of Weight Management • Causes of Obesity and its prevention strategies			
Practical • Aerobic and resistance training activities.			28

• Calculation of BMI and Body composition • Physical Activities for Weight Loss • Assessment of Energy expenditure and caloric values of common food. • Prescription of exercise for weight reduction. • Records and Report Preparation	

* The practical classes shall be adapted to the physically challenged students as per requirement.

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- Bessesen, D. H. (2008). Update on obesity. *J ClinEndocrinolMetab*.93(6), 2027-2034.
- Butryn, M.L., Phelan, S., & Hill, J. O. (2007). Consistent self-monitoring of weight: a key component of successful weight loss maintenance. *Obesity(Silver Spring)*. 15(12), 3091-3096.
- Scott K. Powers and Stephen L. Dodd. Total Fitness: Exercise, Nutrition and wellness, Boston: Allyn and Bacon, 1999.
- Bamji, M. S., Krishnaswamy, K., & Brahman, G. N. V. (Eds.). (2009). Textbook of human nutrition. Oxford & IBH. 2. Gilchrist, J. M. (2003).
- Introduction to Human Nutrition. Blackwell Science Ltd, Oxford, United Kingdom.
- Driskell, J. A., & Wolinsky, I. (Eds.). (2016). Nutritional assessment of athletes. CRC press.
- ACSM's Health-Related Physical Fitness Assessment Manual
- Bamji, M. S., Krishnaswamy, K., & Brahman, G. N. V. (Eds.). (2009).
- Textbook of human nutrition. Oxford & IBH. Gilchrist, J. M. (2003).
- Introduction to Human Nutrition. Blackwell Science Ltd, Oxford, United Kingdom. Geissler, C., & Powers, H. (2009).
- Fundamentals of Human Nutrition E-Book: for Students and Practitioners in the Health Sciences. Elsevier Health Sciences.

Semester IV
OPEN ELECTIVE PAPER - 8

Title of the Course:

Health and Safety Education

(BA/BSc/BCom/BBA/BCA & all other UG Courses)

Course outcomes

On completion of the Course the student will be able to:

- Know the meaning of health and factors influencing it.
- Learn causes and prevention of communicable diseases.
- Learn the safety measures to be taken in playgrounds, schools and at home.

Number of Theory Credits	Number of lecture hours/semester	Number of Practical Credits	Number of Practical hours/ semester
2	28	1	28
Contents of the Course 2 – 0 – 1			
THEORY			
UNIT 1 - DEFINITION OF HEALTH • Factors influencing health: heredity, environment and habits • Physical and mental health- meaning and dimensions • Personal Hygiene – Skin, Mouth, Teeth, Nails, Clothing, Shoes, Food, Exercises, • Sleep and Relaxation			28
UNIT 2- COMMUNICABLE DISEASE • Meaning and Definition of Communicable Disease • Causes of Communicable diseases • Spread of Infections • Preventive measures of Malaria, Filariasis, Typhoid, Cholera, Dysentery, Small Pox, whooping Cough, Tuberculosis and AIDS.			
UNIT 3- PUBLIC HEALTH AND SAFETY • General methods of sanitation • Supply of drinking water and methods of water purification • Safety measures and precaution: at home, street, play ground			
Practical • First Aid • First aid requirements during Sports Competition • First aid during emergencies: SCA, Fractures, Breathlessness, Cramps, Sprains, Strain. • Preparation of reports			28

** The practical classes shall be adapted to the physically challenged students as per requirement.*

Formative Assessment			
Assessment Type	Internal Assessment	Semester Exam	Total
Theory	20	60	
Practical	20*	---	
Total	40	60	100

*Internal marks can be assigned for field work, projects, written tasks, practical tasks etc.

References

- Bucher. C. A (1979) Foundations of Physical Education (5th edition Missouri CV Mosby Co.)
- Coalter, F. (2013) Sport for Development: What game are we playing? Routledge.
- Puri. K. Chandra S.S (2005) “Health and Physical Education” New Delhi: Surjeet Publications.
- Thomas D Fahey and others. Fit and well: 6th Edition New York : McGraw Hill Publishers, 2005
- Wellgoose. (1977). Health Teaching in secondary Carl. E. Schools: W.B. Saunders.
- Wilson, Kathleen J. W. (1987). Anatomy and Physiology, Health and illness. 6th Edition. Churchill Livingstone Edinburgh.
- Anderson.T. Mc. Clerg, (1961). Human Kinetics and Analyzing Body Movements, London: William Heinman Medical Books Ltd.
- Frank, H. &Walter, H., (1976). Turners school health education. Saint Louis: The C.V. Mosby Company.
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SCHEME / PATTERN OF EXAMINATION**DISCIPLINE SPECIFIC CORE - THEORY****Max. marks: 60****Time: 02 Hours****Instructions:**

1. Answer all questions
2. Each answer shall not exceed three pages

1.	Essay Question from Unit 1 Or Essay Question from Unit 1	12 marks
2.	Essay Question from Unit 2 Or Essay Question from Unit 2	12 marks
3.	Essay Question from Unit 3 Or Essay Question from Unit 3	12 marks
4.	Essay Question from Unit 4 Or Essay Question from Unit 4	12 marks
5.	Write short notes on any Two of the following (one from each unit) (a) (b) (c) (d)	6 x 2 = 12 marks

DISCIPLINE SPECIFIC CORE – PRACTICAL**Max marks: 25**

1. Assessment of various practical activities/fitness tests (4 activities x 5 marks each)	20
2. Record Book	5

OPEN ELECTIVE - THEORY

Max. marks: 60

Time: 02 Hours

Instructions:

1. Answer all questions

I. Answer any five of the following questions in not exceeding one page 5 x 6 = 30 marks

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

II. Answer any three of the following questions in not exceeding two pages 3x10=30 marks

- 1.
- 2.
- 3.
- 4.

Mangalore University
Youth Red Cross Syllabus for Skill Enhancement Courses (SEC)
(BA/BSc/B.Com/BBA/BCA & all other UG programmes)

YOUTH RED CROSS- I Semester	
No of Credits	No of Practical hours/Semester
01	25

Course Objectives	Teaching Learning Process	Learning Outcomes	Course Evaluation
1. To foster the better understanding of various aspects of youths in India. 2. To comprehend the overall concept of Youth Red Cross, to be an effective part of it. 3. To understand the importance of community service, nurturing various service based skills among youth.	1. Lecture/PPT 2. Assignment/Projects 3. Online and Offline 4. Self and Referral Studies 5. Focused Group Discussion 6. Training 7. Internship 8. Residential/ Non Residential Camps 9. Case Studies 10. Survey	1. Develops a sense of responsibility in youth for the decisions and actions they take. 2. Better understanding of notion of YRC leads to greater involvement. 3. Youth are well equipped with the skills necessary for the community service as well as for the better tomorrow.	Formative Assessment for 25 marks. • Camp/Internship- internal Viva-Voce and Report Submission

Syllabus, Chapter and Input-wise Objectives:

1. To make student Volunteers to understand the segment of population which they belong to vis-a- vis the predicaments of the non-student youth of the country.
2. To make them understand their role as volunteers of Youth Red Cross
3. To impart them knowledge, skills and competencies needed for community work.

Outcomes:

1. Student Volunteers get sensitized on the needs and aspirations of the youth living in different conditions.
2. They perceive their role and role expectations of the organization they have joined to serve.
3. The Student Volunteers gain confidence and learn from their inter-face with the community.

Chapters	Subjects	Teaching Hours	Internal Marks
1	The Youths In India: Introduction – Concept of Youth-Meaning – Definition – Present Situation – Demographic Influence on Youth – Youth Organizations (Political / Social/ Cultural Organization) – Youth Policies and Promotion Schemes of State, National & International.	10	10
2	Objectives of Red Cross Society- Origin- Growth-Emblem-Fundamental Principles- Geneva Conferences- Activities- Administrative Structure –Programs & Guidelines for Youth Red Cross in College Level. YRC Song & YRC Claps	5	5
3	Community Service: Understanding Community through Knowledge & Skills: Meaning-Definition- Characteristics-Building up Community Network- Communication Skills-Competency Skills-Managerial Skills – Organizational Skills.	10	10
		25	25

References:

- Damon, P. Copola, (2006) Introduction to International Disaster Management, Butterworth
- Disaster Management Guidelines, GOI-UND Disaster Risk Program (2009-2012)
- Goel,Sathish.First Aid.New Delhi:Diamond Pocket Books.
- Henderson, Paul, and David N. Thomas, ed. Readings in Community Work. London: George Allen and Unwim Ltd., 1981.
- Herper, E.B., and A. Dunham. Community Organisation in Action. New York:Association Press, 1959.
- Sanders, Irvin. Making Good Communities Better. Bombay: Allied Pacific Private Limited, 1953.
- ಕೆ.ಭಟ್,ಬಿ.ಆರ್. ಪ್ರಥಮ ಚಿಕಿತ್ಸೆ, ಅಪಘಾತ ಮತ್ತು ಘಾತ ರೋಗದ ತುರ್ತು ಸ್ಥಿತಿಯಲ್ಲಿ ಈಶ್ವರಕ್ಷಣೆ. ಮಂಗಳೂರು: ಆಕೃತಿ ಆಶಯ ಪಬ್ಲಿಷಿಂಗ್ಸ್, 2016
- **E- References:**
- <https://www.indianredcross.org/ircs/index.php>
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Mangalore University
Youth Red Cross Draft Syllabus for Skill Enhancement Courses (SEC)
(BA/BSc/B.Com/BBA/BCA & all other UG programmes)

YOUTH RED CROSS- II Semester	
No of Credits	No of Practical hours/Semester
01	25

Course Objectives	Teaching Learning Process	Learning Outcomes	Course Evaluation
1. To promote values and volunteerism among students through systematic understanding of various aspects of values and essentials of volunteerism. 2. To nurture leadership qualities and to build habits influencing personality development. 3. To preserve life, prevent risk of death and promote speedy recovery.	1. Lecture/PPT 2. Assignment/Projects 3. Online and Offline 4. Self and Referral Studies 5. Focused Group discussion 6. Training 7. Internship 8. Residential/ Non Residential Camps 9. Case Study 10. Survey	1. Youth develop a will to volunteer for the welfare of the community. 2. Each student is equipped with the quality of leadership while owning a well-built personality. 3. Youth are well prepared to assess and act accordingly during emergency situations/accidents.	Formative Assessment for 25 marks. Camp/Internship- internal Viva-Voce and Report Submission

Syllabus, Chapter and Input-wise Objectives:

Objectives:

1. To make them understand the importance of value system in every area of social life for peaceful co-existence
2. To make them understand a set of skills that are necessary to function as leaders and also as useful members of the society
3. To equip them with knowledge and practice in meeting the emergency medical care and attendance

Outcomes:

1. Student Volunteers get clarity and develop respect and understanding of the values held by others in the community. Values guide their behavior and action.
2. This empowers them to lead themselves and also others.

3. This will build confidence in them in volunteering their services in medical emergencies.

4. They are encouraged to donate blood and persuade others to do so

Chapters	Subjects	Teaching Hours	Internal Marks
1	Values and Essentials of Volunteerism: Meaning & Definitions of Values/ Kinds of Values- Personal values/ Social values/National values/ Universal values/Professional values/ Spiritual values/ Ethical values (Mass Media). Volunteerism: Meaning/ Definitions/ Types of Volunteerism- Urban/Rural/Environmental/ Skill based/Welfare/ Community Volunteerism. – Proficiency in Volunteerism	10	10
2	Leadership and Personality Development: Meaning/ Definitions/Significance /Qualities of Effective leadership- Proficiency Skills on Simple Computing & Calculations/ Problem Solving/ Communication/ Lifesaving skills/ HR Skills.	10	10
3	Basics First Aid: Physical First Aid & Psychological First Aid- Emergency Care- Pediatric Care- Geriatric Care-Mass causality (Triage)- First Aid Box	05	05
		25	25

References:

- Amit, H.R. Participatory Approaches to Development. Mangalore: Institute for Social Development, 2000.
- Biddle, W.W., and Biddle L.J. The Community Development Process. New York: Holt, Rinehart and Winston, 1965.
- Dahama, O. P., and O. P. Bhatnagar. Education and Communication for Development. New Delhi: Oxford & IBH Publishing Co., 1985.
- Gupta A.K., Niar S.S and Chatterjee S. (2013) Disaster management and Risk Reduction,
- Samuel. Problem Solving in Families: Research and Practice. New Delhi: Sage Publications, 1999. Schwartz, Mary Ann, and Barbara Marliene Scott. Marriages and Families. 3rd ed. New Jersey: Prentice Hall, 2000.
- Murthy D.B.N. (2012) Disaster Management, Deep and Deep Publication PVT. Ltd. New Delhi.

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- Yudenich, V.V. Accident First Aid. Moscow: MIR Publishers, 1982.
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- **E- References:**
- <https://www.indianredcross.org/ircs/index.php>

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Along with the above syllabus all other YRC activities mentioned in the programme guidelines issued by the Government of Karnataka Department of Higher Education in their letter No: ED 38 Vividha 2016, dated: 17/06/2016, Bengaluru. Shall be scrupulously followed.