M E S COLLEGE OF ARTS, COMMERCE AND SCIENCE

'Vidyasagara', Prof. M P L Sastry Road, Malleswaram, Bengaluru 560003

A booklet on Course Outcome

An IQAC Initiative

2023 – 24

TABLE OF CONTENTS

BIOTECHNOLOGY

PAPER	COURSE NAME	COURSE OUTCOME
DSC-66T1BTC101	**CELL BIOLOGY AND GENETICS**	● Understand concepts in Biotechnology and demonstrate knowledge acquired m interdisciplinary skills in cell biology and genetics ●Comprehend the structure of a cell with its organelles ●Understand the chromatin structure and its location ●Understand the basic principles of life, and how a cell divides ●Explain the organization of genes and chromosomes, chromosome morphology and its aberrations
DSC-T2BTC102	**MICROBIOLOGICAL METHODS**	• How the cell was discovered and role of various scientists • Microscopic techniques • Sterilization techniques • Staining techniques for various microbes • Classification of microorganism in microbial taxonomy • Structure and properties of Viruses, Bacteria, Fungus and algae • Pathogenic organisms causing tetanus, tuberculosis, typhoid, cholera, AIDS • Metabolism in microorganisms –EMP, HMP &ED pathway, TCA cycle • Bacterial photosynthesis- light and dark reaction, oxidative and non-oxidative photophosphorylation
DCS -3T	**BIOMOLECULES**	● Acquire knowledge about types of biomolecules, structure, and their functions ● Will be able to demonstrate the skills to perform bio analytical techniques ● Apply comprehensive innovations and skills of biomolecules to biotechnology field
DCS -4T	**MOLECULARBIOLOGY**	● Study the advancements in molecular biology with latest trends. ● Will acquire the knowledge of structure, functional relationship of protein sand nucleic acids. ● Aware about the basic cellular processes such as transcription, translation ,DNA replication and repair mechanisms.
DSC –A9 (T)	**Genetic Engineering**	• Apply the knowledge of genetic engineering to diverse applications in agriculture, medicine, biotechnology, and environmental science. • Explain gene expression regulation mechanisms and apply genetic modification methods effectively. • Evaluate genetic engineering's ethical, social, and legal implications and propose responsible solutions. • Stay updated with recent advancements in genetic engineering, critically evaluate emerging trends, and assess their potential impact on various fields.

DSC-A11(T)	**Plant and Animal Biotechnology (Theory**	• Apply biotechnological tools and techniques used in plant research and agriculture, such as plant tissue culture, genetic engineering and transgenics. • Execute plant tissue culture techniques for callus induction, somatic embryogenesis, and micropropagation, and apply them in plant breeding and propagation. • Apply knowledge about ethical considerations and regulatory frameworks associated with plant biotechnology and genetically modified crops. • Understand the biology and characterization of cultured cells, including their adhesion, proliferation, differentiation, morphology, and identification. • Gain practical skills in basic mammalian cell culture techniques, measuring growth parameters, assessing cell viability, and understanding cytotoxicity. • Learn about germplasm conservation techniques and the establishment of gene banks, along with large-scale culture methods for cell lines. • Explore organ and histotypic culture techniques, biotransformation, 3Dcultures, whole embryo culture, somatic cell cloning, and the ethical considerations surrounding stem cells and their applications.
DSC–A10 (P)	**Genetic Engineering**	• Demonstrate a thorough understanding of the fundamental principles and • Perform laboratory procedures and develop practical skills in genetic engineering techniques.
DSC-A-12 (P)	**Plant and Animal Biotechnology**	• Demonstrate a comprehensive understanding of plant biology, physiology genetics, and molecular biology. • Perform plant transformation methods and demonstrate the ability to introduce foreign genes into plants using different techniques.

DSC-A13(T)	**Immunology**	• Apply the domain-specific knowledge and skills acquired in • immunology for innovative therapies and Immunotechnologies • Understand the fundamental concepts of immunity, and the • contributions of the organs and cells in immune responses. • Realize how the MHC molecule's function and host encounters an immune insult. • Understand the antibodies and complement system • Understand the mechanisms involved in the initiation of specific immune responses • Differentiate the humoral and cell-mediated immune mechanisms • Comprehend the overreaction by our immune system leading to hypersensitive conditions and its consequences • Understand unique properties of cancer cells, immune recognition of tumors, immune evasion of cancers
DSC-A14 (P)	**Immunology (Practical)**	• Demonstrate comprehension of the underlying structure and • function of the immune system and related disorders. • Demonstrate an understanding of the role of cells and molecules in immune reactions and responses • Demonstrate technical skills in immunological tools and techniques
DSC-A16 (T)	**Bioprocess and Environmental Biotechnology**	• Exploitation of microorganisms for industrial use and their improvement, and formulation of media for efficient growth and production of microbial or cell-based products. • The design, operation, and specific applications of various bioreactors. • Apply knowledge of biotechnological techniques to address

		• environmental challenges, such as pollution control and waste management. • Design and implement biotechnological approaches for • environmental remediation, utilizing microbial processes and biodegradation principles. • Communicate scientific concepts and research findings related to environmental biotechnology effectively, both in written and oral forms, to diverse audiences.
DSC-A15 (P)	**Bioprocess and Environmental Biotechnology**	• Demonstrate a comprehensive understanding of the fundamental concepts and principles of environmental biotechnology. • Analyze and evaluate environmental biotechnology case studies, research findings, and real-world applications. • Evaluate the ethical and sustainable aspects of environmental biotechnology practices and make informed decisions regarding their application in environmental conservation.

BOTANY		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
BOT A1	**MICROBIAL DIVERSITY AND TECHNOLOGY**	• Understand the fascinating diversity, evolution, and significance of microorganisms • Comprehend the systematic position, structure, physiology and life cycles of microbes and their impact on humans and environment. • Gain laboratory skills such as microscopy, microbial cultures, staining, identification, preservation of microbes for their applications in research and industry.
BOT A2	**DIVERSITY OF NON-FLOWERING PLANTS**	Understand the diversity and affinities among Algae, Bryophytes, Pteridophytes and Gymnosperms. ● Understand the morphology, anatomy, reproduction and life cycle across Algae, Bryophytes, Pteridophytes and Gymnosperms, and their ecological and evolutionary significance. ● Obtain laboratory skills/explore non-flowering plants for their commercial applications.
BOT-A-3.1	**PLANT ANATOMY AND DEVELOPMENTAL BIOLOGY**	The students will be able to: ● Observation of variations that exist in internal structure of various parts of a plant and as well as among different plant groups in support for the evolutionary concept. ● Skill development for the proper description of internal structure using botanical terms, their identification and further classification. ● Induction of the enthusiasm on internal structure of locally available plants. ● Understanding various levels of organization in a plant body with an outlook in the relationship between the structure and function through comparative studies. ● Observation and classification of the floral variations from the premises of college and house. ● Understanding the various reproductive methods sub-stages in the life cycle of plants ● Observation and classification of the embryological variations in angiosperms. ● Enthusiasm to understand evolution based on the variations in reproduction among plants.
DSC – BOT-C9 – T	**Plant Morphology and Taxonomy**	• Understanding the main features in Angiosperm evolution • Ability to identify, classify and describe a plant in scientific terms, thereby, Identification of plants using dichotomous keys. Skill development in identification and classification of flowering plants. • Interpret the rules of ICN in botanical nomenclature.

DSC – BOT-C10 – P	**Plant Morphology and Taxonomy**	• Classify Plant Systematic and recognize the importance of herbarium and Virtual Herbarium,Evaluate the Important herbaria and botanical gardens • Recognition of locally available angiosperm families and plants and economically important plants. Appreciation of human activities in conservation of useful plants from the past to the present.
DSC – BOT-C11 – T	**Genetics and Plant Breeding**	• Understanding the basics of genetics and plant breeding • Ability to identify, calculate and describe crossing over, allelic generations and frequencies of recombination. • Interpret the results of mating and pollinations.
DSC – BOT-C12 – P	**Genetics and Plant Breeding**	• Classify Plant pollination methods • Recognition of modes of inheritance of traits/ phenotypes and Phenotype-genotypen correlation.
DSC-BOT-C13-T	**Cell and Molecular Biology**	• Understanding of Cell metabolism, chemical composition, physiochemical and functional organization of organelles. • Contemporary approaches in modern cell and molecular biology. • To study the organization of the cell, cell organelles and biomolecules (i.e. Protein, carbohydrate, lipid and nucleic acid).
DSC-BOT -C14-P	**Cell and Molecular Biology**	• To gain knowledge on the activities in which the diverse macromolecule and microscopic Structures inhibiting the cellular world of life are engaged. • To understand the various metabolic processes such as respiration, photosynthesis etc., which are important for life.
DSC-BOT-C15-T	**Plant Physiology and Plant Biochemistry**	• Importance of water and the mechanism of transport. • To understand biosynthesis and breakdown of biomolecules. • Role of plant hormones in plant development and about secondary metabolites.
DSC-BOT-C16-P	**Plant Physiology and Plant Biochemistry**	• Preliminary understanding of the basic functions and metabolism in a plant body. • To understand the importance of nutrients in plant metabolism and crop yield.

CHEMISTRY		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
DSC – 1	**ANALYTICAL / INORGANIC AND ORGANIC CHEMISTRY**	At the end of the course the student should be able to: ● Explain basic laboratory practices like calibration of glassware, sampling, handling acids and safety precautions. ● Prepare the solutions after calculating the required quantity of salts in preparing the reagents / solutions and dilution of stock solution ● Describe the limitations of Classical Mechanics which necessitated the development of Quantum Mechanics. ● Solve the Schrodinger's equation to obtain wave function for a basic type of Potential in one dimension and predict the shapes of orbitals as well as probability distributions ● To justify the need for quantum mechanical structure of atoms ● Describe the periodicity in physical and chemical properties of elements in periodic table. ● Explain the nature of bonding in organic compounds using concepts such as conjugation, resonance, etc. ● Learn methods of syntheses of alkanes, alkenes and alkynes along with their reactions.
DSC – 2	**ANALYTICAL / PHYSICAL AND ORGANIC CHEMISTRY**	At the end of the course the student should be able to: ● Explain the principles and concepts related to titrimetric analysis with reference to acid-base, precipitation and complexometric titrations. ● Handling of toxic chemicals, concentrated acids and organic solvents and practice safety procedures. ● Write the mechanisms of SN2 and SN2 reactions taking suitable examples. ● Illustrate types of aromatic electrophilic and nuclephilic substitution reactions with examples. ● Give a comprehensive description of the gaseous state in terms of molecular velocity, their distribution based on Maxwell-Boltzmann law, types of molecular velocities, molecular collision parameters, critical phenomena and liquefaction of gases. ● Explain important properties of liquid state such as viscosity, surface tension, refraction and parachor by defining them and elaborating on their experimental determination. ● Learn methods of determining molecular weights of solutes by measuring colligative properties and the concepts of distribution law along with its applications. ● Describe the crystalline state in detail using terms unit cell, Bravias lattices, Miller indices, Crystal systems, symmetry elements and lattice planes.

DSC-3	**ANALYTICAL AND ORGANIC CHEMISTRY-II**	The student would be able to ● Understand the importance of fundamental law and validation parameters in chemical analysis ● Know how different analytes in different matrices (water and real samples) can be determined by spectrophotometric, nephelometric and turbidimetric methods. ● Understand the requirement for chemical analysis by paper, thin layer and column chromatography. ● Apply solvent extraction method for quantitative determination of metal ions in different samples ● Utilize the ion-exchange chromatography for domestic and industrial applications ● Explain mechanism for a given reaction. ● Predict the probable mechanism for a reaction. Explain the importance of reactive intermediates role and techniques of generating such intermediates ● Explain the importance of Stereochemistry in predicting the structure and property of organic molecules. ● Predict configuration of an organic molecule and able to designate it. ● Identify the chiral molecules and predict its actual configuration
DSC-4	**INORGANIC AND PHYSICAL CHEMISTRY-II**	The student would be able to ● Predict the nature of the bond formed between different elements ● Identify the possible type of arrangements of ions in ionic compounds ● Write Born - Haber cycle for different ionic compounds ● Relate different energy parameters like, lattice energy, entropy, enthalpy and solvation energy in the dissolution of ionic solids ● Explain covalent nature in ionic compounds ● Write the M.O. energy diagrams for simple molecules ● Differentiate bonding in metals from their compounds ● Learn important laws of thermodynamics and their applications to various thermodynamic systems ● Understand adsorption processes and their mechanisms and the function and purpose of a catalyst ● Apply adsorption as a versatile method for waste water purification. ● 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 ● Know different types of electrolytes, usefulness of conductance and ionic mobility measurements Determine the transport numbers

DSC 5	**INORGANIC CHEMISTRY – III and ORGANIC CHEMISTRY – III**	• Distinguish based on composition and behavior. Example: Mohr's Salt (double salt) vs $[Cu(NH_3)_4]^{2+}$ (complex salt). • Understand condensation, acetal formation, and reduction mechanisms • Nomenclature, reactions with reagents, and chemical behavior • Reactions, basicity, nucleophilic substitution, and acylation
DSC 6	**PHYSICAL CHEMISTRY - III**	• Understand laws of thermodynamics and their application to chemical systems. • Study reaction rates, rate laws, and mechanisms of chemical reactions • Understand the principles of electrochemical cells, including Nernst equation, standard electrode potential, and its applications • Study adsorption, catalysis, and surface area measurements.
DSC 7	**INORGANIC CHEMISTRY – IV and PHYSICAL CHEMISTRY – IV**	• Explain properties, types, and manufacturing processes of industrial materials like refractories, abrasives, glass, ceramics, and cement. • Knowledge on the classification and manufacturing methods of fertilizers (urea, ammonium nitrate, superphosphate). • Understand principles of potentiometry, coulometry, voltammetry, and their applications in titrations and pKa determination. • Learn about Gibbs-Helmholtz equation, fugacity, activity coefficients, and Clausius-Clapeyron equation applications
DSC 8	**ORGANIC CHEMISTRY – IV and SPECTROSCOPY – II**	• Structure, reactivity, synthesis, and importance in medicinal chemistry • Study carbohydrates, terpenes, alkaloids, and their synthesis, structural elucidation, and significance. • Preparation, structure, and applications of synthetic and natural polymers. • Principles of UV-Visible spectroscopy, electronic transitions, chromophores, auxochromes, and conjugation effects. • Understanding IR spectroscopy, functional group and fingerprint regions, identification of functional groups.

COMMERCE		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
		I SEMESTER
B.COM. 1.1	**FINANCIAL ACCOUNTING**	The Students will be able to ● Understand the theoretical framework of accounting as well accounting standards. ● Demonstrate the preparation of financial statement of manufacturing and nonmanufacturing entities of sole proprietors. ● Exercise the accounting treatments for consignment transactions & events in the books of consignor and consignee. ● Understand the accounting treatment for royalty transactions & articulate the Royalty agreements. ● Outline the emerging trends in the field of accounting.
B.COM. 1.2	**MANAGEMENT PRINCIPLES AND APPLICATIONS**	The Students will be able to ● Understand and identify the different theories of organisations, which are relevant in the present context. ● Design and demonstrate the strategic plan for the attainment of organisational goals. ● Differentiate the different types of authority and chose the best one in the present context. ● Compare and chose the different types of motivation factors and leadership styles. ● Choose the best controlling techniques for better productivity of an organisation.
B.COM. 1.3	**PRINCIPLES OF MARKETING**	The Students will be able to ● Understand the basic concepts of marketing and asses the marketing environment. ● Analyze the consumer behavior in the present scenario and marketing segmentation. ● Discover the new product development & identify the factors affecting the price of a Product in the present context. ● d. Judge the impact of promotional techniques on the customers & importance of channels of distribution.
		II SEMESTER
B.COM. 2.1	**ADVANCED FINANCIALACCOUNTING**	The Students will be able to ● Understand & compute the amount of claims for loss of stock & loss of Profit. ● Learn various methods of accounting for hire purchase transactions. ● Deal with the inter-departmental transfers and their accounting treatment. ● Demonstrate various accounting treatments for dependent & independent branches. ● Prepare financial statements from incomplete records.
B.COM. 2.2	**BUSINESS MATHEMATICS**	Student will demonstrate: ● The application of equations to solve business problems. ● The Application AP and GP in solving business problems. ● The calculation of simple, compound interest and discounting of Bills of Exchange. ● The use of matrices in business. ● The Application of ratios and proportions to business
B.COM. 2.2	**CORPORATE ADMINISTRATION**	The Students will be able to ● Understand the framework of Companies Act of 2013 and different kind of companies. ● Identify the stages and documents involved in the formation of companies in India.

		● Analyse the role, responsibilities and functions of Key management Personnel in Corporate Administration. ● Examine the procedure involved in the corporate meeting and the role of company secretary in the meeting. ● Evaluate the role of liquidator in the process of winding up of the company.
B.COM. 2.3	**LAW AND PRACTICE OF BANKING**	The Students will be able to ● Summarize the relationship between Banker & customer and different types of functions of banker. ● Analyse the role, functions and duties of paying and collecting banker. ● Make use of the procedure involved in opening and operating different accounts. ● Examine the different types of negotiable instrument & their relevance in the present context. ● Estimate possible developments in the banking sector in the upcoming days.
		III SEMESTER
B.COM. 3.1	**CORPORATE ACCOUNTING**	The students will be able to ● Understand the treatment of underwriting of corporate Securities. ● Comprehend the computation of profit prior to incorporation. ● Know the valuation of Goodwill. ● Know the valuation corporate Securities. ● Prepare the financial statements of companies as per the Companies Act 2013
B.COM. 3.2	**BUSINESS STATISTICS**	The students will be able to ● Understand statistical data and descriptive statistics for business data Analysis. ● Comprehend the measures of Central Tendency, Dispersion and Skewness. ● Validate the application of Correlation Analysis in business decisions. ● Apply the Regression Analysis Technique for business decisions.
B.COM. 3.3	**COST ACCOUNTING**	The students will be able to ● Demonstrate an understanding of the concepts of costing and cost accounting. ● Classify, allocate apportion overheads and calculate overhead absorption rates. ● Demonstrate the ability to calculate labour cost ● Demonstrate the ability to prepare a cost sheet. ● Prepare material related documents, understand the management of stores and issue procedures.
		IV SEMESTER
B.COM. 4.1	**ADVANCED CORPORATE ACCOUNTING**	The students will be able to ● Know the procedure of redemption of Preference Shares and Debentures. ● Comprehend the different methods of Amalgamation and Acquisition of Companies ● Understand the process of Internal reconstruction. ● Prepare the liquidators Final statement of accounts. ● Understand the process of Liquidation of Companies in India
B.COM. 4.2	**COSTING METHODS AND TECHNIQUES**	The students will be able to ● Understand the various methods of costing applicable to different industries. ● Determine the cost under different methods of costing. ● Analyze the processes involved in standard costing and variance analysis. ● Apply the knowledge gained for decision making
B.COM. 4.3	**BUSINESS REGULATORY FRAMEWORK**	The students will be able to ● Comprehend the laws relating to Contracts and its application in business activities. ● Comprehend the rules for Sale of Goods and rights and duties of a buyer and a seller. ● Understand the importance of Negotiable Instrument Act and its provisions

		relating to Cheque and other Negotiable Instruments. ● Understand the significance of Consumer Protection Act and its features ● Understand the need for Environment Protection.
		V SEMESTER
COM.5.1	**Financial Management**	• Understand the Role of Financial Managers effectively in an organization. • Apply the compounding & discounting techniques for time value of money. • Take investment decision with appropriate capital budgeting techniques for investment proposals. • Understand the factors influencing the capital structure of an organization. • Understand the factors influencing the working capital requirements of an organization
COM 5.2	**Income Tax Law and Practice – I**	• Understand the basic concepts of Income Tax as per Income Tax Act 1961 • Understand the provisions for determining the residential status of an Individual. • Comprehend the meaning of Salary, Perquisites, allowances and Profit in lieu of salary, and various retirement benefits. • Compute the income house property for different categories of house property. • Comprehend the assessment procedure and to know the power of income tax authorities.
COM 5.3	**Principles and Practice of Auditing**	• Understand the conceptual framework of auditing. • Exam in etheriskassessmentandinternalcontrolinauditing • ComprehendtherelevanceofITinauditandauditsamplingforteigExaminethecompanyauditandtheprocedureinvolvedintheauditofdifferententities. • Gain knowledge on different aspect of audit reporting and conceptual frame work applicable on professional accountants.
COM A1	**Advanced Accounting**	• Understand the key principles and theories of Advanced Accounting. • Learn various valuation methods and techniques used in practice. • Develop skills in Advanced Accounting. • Explore the challenges and considerations involved in preparation of financial statements of Banking & Insurance companies. • Gain knowledge of Advanced Accounting and their impact on business.

COM M1	**Consumer Behaviour and Market Research**	• Understanding of Consumer Behavior towards products, brands and services. • Establish the relevance of consumer behavior theories and concepts to marketing decisions. • Implement appropriate combinations of theories and concepts. • Understanding of market research process • Understanding of Data Analysis and reporting in market research.
COM HR 1	**Human Resources Management**	• Describe the role and responsibility of Human resources management functions on business • Describe HRP, Recruitment and Selection process • Describe to induction, training, and compensation aspects. • Explain performance appraisal and its process. • Demonstrate Employee Engagement and Psychological Contract.
COM. BD 1	Business Analytics	• Analyze and model financial data. • Access the different open-source domains. • Evaluate and build model on time series data. • Understand tools used in statistical analysis.
COM 5.6 (a) (Vocational Course-1)	**GST - LAW & PRACTICE**	• Comprehend the concepts of Goods and Services tax. • Understand the fundamentals of GST. • Understand the GST Registration Process. • Analyze the GST Procedures in Business. • Know the GST Assessment and it computation
5.6 (b) (Vocational Course-1)	**DIGITAL MARKETING**	• Gain knowledge on Digital Marketing, Email marketing and Content marketing • Understand Search Engine Optimization tools and techniques • Gain skills on creation of Google AdWords& Google AdSense • Gain knowledge on Social Media Marketing and Web Analytics • Gain knowledge on YouTube Advertising & Conversions
COM **5.7**	**Employability Skills**	• Solve the problems on quantitative aptitude, logical reasoning and analytical ability. • Exhibit the communication and leadership skills. • Face interviews and write resumes • Conduct self SWOC analysis and set his career goals.

		VI SEMESTER
COM 6.1	**Management Accounting**	• Demonstrate the significance of management accounting in decision making. • Analyze and interpret the corporate financial statements by using various techniques. • Compare the financial performance of corporate through ratio analysis. • Understand the latest provisions in preparing cash flow statement. • Understand the concepts of Budgetary Control.
COM 6.2	**Income Tax Law & Practice – II**	• Understand the procedure for computation of income from business and other Profession. • Understand the provisions for computation of capital gains. • Learn to compute the taxable income from other sources. • Learn the computation of total income of an Individual. • Understand the provisions relating to Set Off and Carry Forward of Losses
COM 6.3	**Advanced Financial Management**	• Understand Weighted Average Cost of Capital and its significance • Comprehend the different advanced capital budgeting techniques. • Understand different capital structure theories and its application in financing decisions. • Evaluate different dividend decisions and its impact on the security valuation. • Understand the important components of Working capital and its management.
COM A2	**Indian Accounting Standards**	• Understand the need and benefits of accounting standards. • Prepare the financial statements as Indian Accounting standards. • Comprehend the requirements of Indian Accounting Standards for recognition, measurement and disclosures of certain items appear in financial statements • Understand the Accounting Standards for Items that do not Appear in Financial Statements • Understand the preparation of calculation of NCI & Cost of control

COM F2	**Investment Management**	• Understand the concept of investments and various investments avenues available. • Comprehend the functioning of secondary market in India. • Underline the concept of risk and return and their relevance in trading in securities. • Illustrate the valuation of securities and finding out the values for trading in securities. • Demonstrate the fundamental analysis and technical analysis for trading in shares in the share market.
COM. M2	**Customer Relationship Management**	• To be aware of the concept of customer relationship. • To analyze the CRM link with the other aspects of marketing. • To impart the basic knowledge of the Role of CRM in increasing the sales of the company. • To make the students aware of the different CRM models in service industry. • To make the students aware and analyze the different issues in CRM
COM HR-2	**Human Resources Development**	• Understand the need of HRD. • Comprehend the framework of HRD. • Know the models for evaluating the HRD programs. • Comprehend the need for employee counselling. • Apprehend the HR performance
COM. BD 2	Business Analytics – II	• Understand the evolution of HR analytics and its significance in modern organizations. • Evaluate the reliability and validity of selection models used in recruitment. • Recognize the characteristics, sources, and value of big data in marketing analytics. • Evaluate the financial health of an organization by considering liquidity, leverage, and profitability. • Understand the sources and types of financial data used in modeling
COM 6.6 (a) (Vocational Course-2)	**Assessment of Persons other than Individuals and Filing of ITRs**	• Understand the calculation of Depreciation • Comprehend the assessment of partnership Firms and determine the tax liability. • Comprehend the assessment of corporate entities and determine the taxliability. • d) Understand the rate of TDS for different sources of

		income. • e) Understand the procedure of filing ITR's
COM 6.6 (b) (Vocational Course-2)	**E-Commerce**	• Comprehend the concepts of E-commerce • Understand the e-retailing benefit sand key success factors • Analyze the benefits of EDI • To understand Cyber security • Know the Issues in E-commerce.

COMPUTER SCIENCE

PAPER	COURSE NAME	COURSE OUTCOME
CS-C1T	**PROBLEM SOLVING TECHNIQUES**	After completing this course, the students will be able to: ● Understand the logic for a given problem. ● Write the algorithm of a given problem. ● Recognize and understand the syntax and construction of C programming code, ● Gain experience of procedural language programming. ● Know the steps involved in compiling, linking and debugging C code. ● Understand using header files. ● Learn the methods of iteration or looping and branching. ● Make use of different data-structures like arrays, pointers, structures and files. ● Understand how to access and use library functions. ● Understand function declaration and definition. ● Understand proper use of user defined functions. ● Write programs to print output on the screen as well as in the files. ● Apply all the concepts that have been covered in the theory course. ● Know the alternative ways of providing solution to a given problem.
CS-C3T	**DATA STRUCTURE**	After completing this course, the students will be able to: ● Understand the concept of elementary, derived and user-defined data structures ● Analyse the problem domain and decide which data structure to be used. ● Analyse the Time and Space Complexity of algorithm and hence decide the best algorithm for a given problem.
CS-C5T	**OBJECT ORIENTED PROGRAMMING USIN JAVA**	● Understand the OOPS concept ● Understand the packages and threads concept. ● To understand the exception handling in detail. ● Understand the concept of Applet, Files.
CS-C7T	**OPERATING SYSTEMS**	● Understand the structure of an Operating System. ● Understand the function of an Operating System. ● Understand the various process management concepts including scheduling, synchronization, deadlocks of an Operating System ● Be familiar with multithreading. ● Be familiar with memory management including virtual memory. ● Be familiar with system resources sharing among the users. ● Be familiar with protection and security mechanisms.
CA-C9T	**DATABASE MANAGEMENT SYSTEMS**	• Demonstrate the various Database concepts ,architecture ,components and characteristics of DBMS. • Identify and define database objects ,enforce integrity constraints on a database using DBMS • Demonstrate data models and schemas in RDBMS with normalization • Formulate queries in relational algebra , SQL for data manipulation , Triggers, Assertions • Demonstrate transaction processing and its properties, Explore concurrency control and recovery techniques. • Explore the file organization ,storage and Indexing

CA- C11P	**DATABASE MANAGEMENT SYSTEMS LAB**	• Apply different data modeling methods to requirement analysis, design, and implementation of database systems. • Make use of SQL commands and relational algebraic expressions for query processing • Model the real-world systems using Entity Relationship Diagrams and convert the ER model into a relational logical schema using various mapping algorithms • Deduce normalized forms for efficient relational database design. • Use techniques for transaction management, concurrency control and recovery.
CA-C10T	**ARTIFICIAL INTELLIGENCE**	• Understand the various characteristics of problem solving agents and apply problem solving through search for AI applications. • Appreciate the concepts of knowledge representation using Propositional logic and Predicate calculus and apply them for inference/reasoning. • Obtain insights about Planning and handling uncertainty through probabilistic reasoning andfuzzy systems. • Understand basics of computer vision and Natural Language Processing and understand their relevance in AI applications. • Obtain insights about machine learning, neural networks, deep learning networks and their significance.
CS-C12P	**ARTIFICIAL INTELLIGENCE LAB**	• Solve search problems including heuristic search and constraint satisfaction search. • Understand and apply image processing techniques for image enhancement, image detection and recognition. • Understand and implement supervised machine learning and probabilistic machine learning algorithms. • Implement unsupervised learning through clustering. • Obtain insights about working of neural networks and neural network based learning. • Perform NLP operations to gain understanding of text processing and analytics.
CA-C13T	**PYTHON PROGRAMMING**	• Master the fundamentals of Python programming, including syntax and control flow, variables, operators, and control flow statements. • Understand functions, string manipulation and input/output operations in python
CA-C15P	**PYTHON PROGRAMMING LAB**	• Develop, document, and debug modular Python programs. • Apply suitable programming constructs and built-in data structures to solve a problem. • Use and apply various data objects in Python.

		• Use classes and objects in application programs and handle files
CA-C14T	**COMPUTER NETWORKS**	• Understand the fundamentals of data communication and networking concepts. • Analyze and design network architectures and topologies. • Understand emerging trends and technologies in data communication and networks. Familiarity with the essential protocols of computer networks in terms of design, implementation & operations. • Identifying various design parameters such as latency, bandwidth, error rate, throughput, and their influence on node/link utilization and performance.
CA-C16P	**COMPUTER NETWORKS LAB**	• Configure and troubleshoot network devices and protocols. • Apply network security measures to protect data transmission. • Study network IP configuration, network devices • Identifying and configuring different networking equipment

ECONOMICS		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
DSC 1.1	**ECONOMIC ANALYSIS -I**	By the end of the course the student will be able to: ● Identify the facets of an economic problem. ● Learn basic economic concepts and terms. ● Explain the operation of a market system; ● Analyse the production and cost relationships of a business firm; ● Evaluate the pricing decisions under different market structures; ● Use basic cost-benefit calculations as a means of decision making
DSC 1.2	**CONTEMPORARY INDIAN ECONOMY**	At the end of the course the student should be able to: ● Understand the current problems of Indian Economy ● Identify the factors contributing to the recent growth of the Indian economy ● Evaluate impact of LPG policies on economic growth in India ● Analyze the sector specific policies adopted for achieving the aspirational goals ● Review various economic policies adopted
DSC 2.1	**ECONOMIC ANALYSIS - II**	At the end of the course the student should be able to: ● Understand the operation of the overall economic system; ● Calculate national income and related aggregates ● Explain the relationship between macroeconomic aggregates; ● Analyse the nature of business cycles and policies towards controlling them; ● Evaluate the macroeconomic policies for solving major problems like poverty and unemployment
DSC 2.2	**KARNATAKA ECONOMY**	At the end of the course the student should be able to: ● Understand the nature of economic growth and problems of Karnataka state. ● Explain the process of structural growth in Karnataka economy; ● Evaluate the policies and programmes undertaken by the Govt. of Karnataka for bringing about socio-economic development
DSC-3.1	**MICROECONOMICS**	After successfully completing the course, the student will be able to: ● Understand introductory economic concepts. ● Recognize basic supply and demand analysis. ● Recognize the structure and the role of costs in the economy. ● Describe, using graphs, the various market models: perfect competition, monopoly, monopolistic competition, and oligopoly. ● Explain how equilibrium is achieved in the various market models. ● Identify problem areas in the economy, and possible solutions, using the analytical tools developed in the course.
DSC-3.2.1	**MATHEMATICS FOR ECONOMICS**	After the successful completion of the course, the student will be able to: ● Perform basic operations in Sets and functions and Matrix algebra. ● Calculate limits, derivatives of Economic functions and identify the nature of the relationship. ● Calculate the maxima and minima of function
DSC-3.2.2	**AGRICULTURE ECONOMICS**	After completing the course, the student will be able to: ● Acquire knowledge of the role of agriculture in economic development ● Acquire the theoretical and application knowledge of agricultural

		growth and development • To enable the students to understand the Strategy of Agricultural Development in India, • To make the students aware of institutional and non-institutional sources of agricultural Finance
ECO C9	**Public Economics**	• Understand introductory Public Finance concepts. • Study the causes of market failure and corrective actions • Understand the impact, incidence and shifting of tax • Study the Economic Effects of tax on production, distribution and other effects • Enable the students to know the Principles and Effects of Public Expenditure • Understand the Economic and functional classification of the budget; Balanced and Unbalanced budget • Understand the Burden of Public debt and know the Classical/ Ricardian views, Keynesian and post-Keynesian views • To acquaint with the advantages and disadvantages of Deficit Financing
ECO C10	**Development Economics**	• Understand the basic concepts and measurements of Development. • Learn some classical and partial theories of Development economics and identify the difference. • Identify the difference between Developed and Developing Countries. • Analyse and tackle the Development issues effectively.
ECO C11	**Economics of Human Resource Management**	• Understand the meaning, nature, scope and value of the contemporary approach to human resource management with reference to Economics. • To describe an organisation of a human resource management functionary in anbestablishment, and to identify attributes of a successful personnel manager. • To impart knowledge and techniques in human resource planning, Job-Analysis, and Job-Design. • To explain various methods of recruitment, selection, induction and placement. • To develop the importance and methods adopted for training and development of employees in two days environment in the workplace.
ECO C12	**Indian Banking and Finance**	• Understand the structure of Indian banking and the role of banks in monetary policy. • Analyze the functioning of banks and different types of accounts and other services offered by banks. • Evaluate recent developments in the Indian banking sector, including digital banking, payment banks, and non-performing assets. • Describe the overview of the Indian financial system, including financial markets, financial instruments, and

		financial regulation. • Analyze the challenges faced by Indian banks and the implications of banking reforms for the Indian economy. • Develop critical thinking and analytical skills in evaluating various financial products and services banks and capital markets offer.
ECO E1A	**Economics of GST**	• Understand the indirect tax structure in India and challenges • Develop an informed view on the rationale of choosing Goods and Services Tax. • Understand the GST laws, tax slabs, GST council and the framework of implementation • Demonstrate ability to explain time of supply, place of supply and value of supply • Analyze the concept of input tax credit and valuation of supply with examples • Explain the GST registration process and GST filing procedure
ECO E1B	**Economics of Insurance**	• Gain knowledge on economics of insurance • Understand the Insurance Planning • Understand the essential and fundamentals of Life and Health Insurance
ECO E1C	**Rural Economics**	• Understand the meaning, concepts, objectives, nature, feature and scope of Rural Economics • Know the various indicators and their Measurement of Rural development. • Understand the policies and strategies of rural development. • Understand the rural Natural Resources, Rural income and Rural poverty and indebtedness
ECO E1D	**Economics of Marketing**	• To understand the basics concepts of marketing and asses the marketing environment. • Analyze the issues in rural markets. • To study rural consumers behaviors. • Outline the recent development in the field of marketing
ECO V1A	**Entrepreneurial Economics**	• Acquire the operational procedures knowledge of entrepreneurship • To know how to Start your own business as a young Entrepreneur • Enabling the students to find various procedures of operations of the business
ECO V1B	**Digital Economics**	• To be able to apply the concepts of business models to digital economy and underst and distinguishing features of the digital economy • To link the specific distinguishing characteristics of digital economy to market structures and market outcomes

		● To understand implications of business models and behaviors in the digital economy ● To analyze the structural incentives of digital economy
ECO V1C	**Economics of Dairy Farming**	● Know the animal husbandry and significance, employment opportunities in dairy farming ● Acquire the knowledge about dairy farm management. ● Understand the facilities of dairy farming. ● Start the self-dairy farm business
ECO C13	**International Economics**	● Understand the international trade theories and their application in international trade ● Explain the concept of terms of trade and demonstrate the effect of trade barriers; and display the ability to analyse the stages of economic integration ● Understand the concept of BoP and assess the BoP position and examine the changes in forex rate ● Analyse the role of International trade and financial institutions ● Demonstrate good inter-personal and communication skills through class participation and contributing to critical discussion on trade issues
ECO C14	**Indian Public Finance**	● Understand the structure of Indian Public Finance ● Enable the students to know the Source and nature of public revenue and expenditure ● Understand the Budget and different concept of deficits ● Know the Public debt and its management ● Understand the fiscal and monetary policy and their tools and importance ● To enable the students to know the Indian federal financing system and Financial Commissions
ECO C15	**Economic Thoughts of Dr.B.R Ambedkar**	● derive inspiration from the life and works of B R Ambedkar ● Appreciate the socio-economic scenario during Ambedkar‟ period and compare it with present day ● Comprehend the contributions of Ambedkar on various economic aspects ● Assess the economic views of Ambedkar in the light of present-day socio-economic problems ● develop the traits of critical thinking and critiquing
ECO C16	**Environmental Economics**	● Understand how economic methods can be applied to environmental issues facing society ● Examine the linkages between Environmental Degradation and Economic Development ● Develop an informed view regarding the potential of economics to help societies achieve their environmental goals ● Demonstrate good inter-personal and communication skills through writing an essay and contributing to critical

		discussion ● Analyze environmental problems and to assess environmental policies
ECO E2A	**Industrial Economics**	● Understand Industrial Economics in the Indian context. ● Critically examine and summarize the theories of industrial location. ● Describe the working of different industrial finance institutions. ● Identify the major issues involved in Indian industry and Government policies
ECO E2B	**Labour Economics**	● Understand the basic concepts of Labour Economics. ● analyze and tackle the labour issues effective ● Understand the theories of wages as well as wage policy
ECO E2C	**Factor Pricing and Welfare Economics**	● Understand the concepts of Welfare Economics ● The students can be able to analyze and theories of welfare economics effectively. ● To understand the importance of the theories and models that can be used to improve the economic and social welfare of people
ECO E2D	**Economics of Non-Farm Sector**	● Understand the Meaning, Concepts, objectives, Nature and scope of Economics of Non-Farm Sector. ● To know the sustainable development of non-farm sector ● To understand the importance of non-farm sector in the Indian economy ● To study the Government programmes and policies for non-farm sector.
ECO V2A	**Micro Entrepreneurs Development**	● To know how to start own Micro Entrepreneur Unit. ● To enable the students to find out various procedure of operations of Micro Entrepreneurship. ● To enable the students to gain knowledge and skills needed to run micro enterprises successfully.
ECO V2B	**Project Planning and Management**	● formulate and present a practicable project idea ● prepare a realistic economic plan ● describe models and methods to lead, carry out, document and evaluate project ● describe an intended project in a complete project plan ● review and evaluate own and others' project plans critically. ● Understand the content for preparing a Project Report for new projects and differentiate between financial, technical analysis and business feasibility.

ELECTRONICS		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
ELE - CT1	**ELECTRONIC DEVICES AND CIRCUITS**	At the end of the course the student should be able to: ● Aptitude to apply Logic thinking and Basic Science knowledge for problem solving in various fields of electronics both in industries and research. ● Acquire experimental skills, analysing the results and interpret data. ● Ability to design / develop / manage / operation and maintenance of sophisticated electronic gadgets / systems / processes that conforms to a given specification within ethical and economic constraints. ● Capacity to identify and implementation of the formulate to solve the electronic related issues and analyze the problems in various sub disciplines of electronics. ● Capability to understand the working principles of the electronic devices and their applications.
ELE-CP1	**ELECTRONIC DEVICES AND CIRCUITS – Lab**	At the end of the course the student should be able to: ● Aptitude to apply Logic thinking and Basic Science knowledge for problem solving in various fields of electronics both in industries and research. ● To acquire experimental skills, analysing the results and interpret data. ● Ability to design / develop / manage / operation and maintenance of sophisticated electronic gadgets / systems / processes that conforms to a given specification within ethical and economic constraints. ● Capacity to identify and implementation of the formulate to solve the electronic related issues and analyze the problems in various sub disciplines of electronics. ● Capability to use the Modern Tools / Techniques.
ELE - CT2	**ANALOG AND DIGITAL ELECTRONICS**	At the end of the course the student should be able to: ● Understand and study the behaviour of the semiconductor devices ie., I-V characteristics of various MOSFET devices the knowledge can be extended for understanding the behaviour /characteristics/ response of unknown / novel devices. ● Applying the standard device models to explain/calculate critical internal parameters of semiconductor devices. ● Understanding and characterizing the behaviour of known/unknown/novel power electronic devices such as UJT, SCR, Diac, Triac etc. ● Acquainting and familiarization of the experimental skills to determine the behaviour of semiconductor devices. ● Capable of analyzing the device characteristics and responses. ● Understanding the working of basic logic gates, concepts of Boolean algebra and techniques to reduce/simplify Boolean expressions and their applications. ● Synthesizing and Analyzing combinatorial and sequential circuits and their applications in electronics

ELE-CP2	**ANALOG AND DIGITAL ELECTRONICS - Lab**	At the end of the course the student should be able to: ● Aptitude to apply Logic thinking and Basic Science knowledge for problem solving in various fields of electronics both in industries and research. ● To acquire experimental skills, analysing the results and interpret data. ● Ability to design / develop / manage / operation and maintenance of sophisticated electronic gadgets / systems / processes that conforms to a given specification within ethical and economic constraints. ● Capacity to identify and implementation of the formulate to solve the electronic related issues and analyze the problems in various sub disciplines of electronics. ● Capability to use the Modern Tools / Techniques.
ELE-CT3	**PROGRAMMING IN C AND DIGITAL DESIGN USING VERILOG**	After the successful completion of the course, the student will be able to: ● Write and execute and debug C codes for solving problems. ● Apply the acquired knowledge of digital circuits in differentlevels of modeling using Verilog HDL. ● Apply the acquired knowledge of digital circuits in different levels of modeling using Verilog HDL. ● Design and verify the functionality of digital circuit/system using test benches. ● Develop the programs more effectively using directives, Verilog tasks and constructs. ● Design and analyse algorithms for solving simple problems.
ELE CT 4	**ELECTRONIC COMMUNICATION-I**	After the successful completion of the course, the student will be able to: ● Know the basic concept of Analog Communication, means and medium of ● communication. ● Understand the principle of Analog and digital modulation.CO3. Familiar with―AM‖ and ―FM ―techniques. ● Understand the basic concept of Pulse Modulation, Carrier Modulation for digital ● transmission andable to construct simple pulse modulation. ● Understand the basic concept of Satellite Communication ● Understand the basic concept of Optical Fibre Communication
DSCEL501	**Communication II**	• Know the various microwave devices, their working and applications. • Familiar with ASK, FSK, PSK, BPSK, QPSK digital modulation techniques.
DSCELP 501	**Communication II Lab**	• Understand the basic concept of cell phone handset, working principle of cellular communication and wireless technologies. • Understand different Computer Networks, OSI layers, Ethernet and IEEE 802.11 a/b/g/n standards.

DSCEL502	**Embedded Controllers**	• Identify and understand function of different blocks of 8051 microcontrollers. • Develop program for I/O port operations, Timers, Serial port and Interrupts using C. .
DSCELP502	**Embedded Controllers Lab**	• Gain the knowledge to interface LCD, Keyboard, ADC, DAC, DC motor, etc. • Design and develop small scale embedded systems
DSCEL601	**Electronic Instrumentation and Biomedical Instruments**	• Able to calibrate the instruments to minimize measurement errors. • Use different data acquisition systems to acquire real-time data
DSCELP601	**Instrumentation and IoT Lab**	• Set up testing strategies to evaluate performance characteristics of different types of dataacquisition system and develop professional skills in acquiring and applying the knowledge outside the classroom through design of a real-life instrumentation system.
DSCEL602	**Internet of Things and Robotics**	• Understand the basic concepts and principles of the Internet of Things. • Gain knowledge of different IoT technologies and protocols. • Acquire practical skills in designing and implementing IoT applications. • Develop an understanding of IoT security and privacy considerations. • Design an embedded system for the working of a robot. • Select the robot type depending on the application requirements. • Acquire the basic robot programming skills

GENERAL ENGLISH COURSES		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
I SEM BA	**GENERIC ENGLISH RESONANCE - I**	By the end of the program the students will 1. Acquire the LSRW (Listening, Speaking, Reading, Writing) skills 2. Learn to appreciate literary art 3. Obtain the knowledge of literary devices and genres 4. Acquire the skills of creativity to express one's experiences 5. Know how to use digital learning tools 6. Be aware of their social responsibilities 7. Develop their ability as critical readers and writers 8. Increase their reading speed 9. Be able to give presentations 10. Increase their analytical skills
II SEM BA	**RESONANCE - II**	
I SEM BSC	**IMPRINTS I**	
II SEM BSC	**IMPRINTS II**	
I SEM BCOM	**INSIGHTS I**	
II SEM BCOM	**INSIGHTS II**	
III SEM BA	**GENERIC ENGLISH - L2**	At the end of the course the students will have 1. Acquired enhanced LSRW skills 2. Equipped themselves with interpersonal communication skills 3. Augmented presentation and analytical skills 4. Ability to critically analyse, interpret and appreciate literary texts 5. An awareness of social, cultural, religious and ethnic diversities 6. Facilitated employability in emerging sectors such as – content writers, interpreters, translators, transcribers 7. Acquired language skills for competitive examinations
IV SEM BA	**GENERIC ENGLISH L2**	By the end of the course the students will have 1) Acquired creative, interpretative and critical thinking 2) Skills to communicate confidently and effectively 3) Obtained persuasive and creative social media writing skills 4) Developed analytical and evaluative skills 5) Learnt to identify and understand social contexts and ethical frameworks in the texts 6) Ability to articulate their views with clarity and confidence 7) Eligibility to take up jobs such as content writing, journalism and such other jobs with proficiency in English
III SEM BSC	**GENERIC ENGLISH L2**	At the end of the course the students will have 1. Acquired enhanced LSRWskills 2. Equipped themselves with interpersonal communication skills 3. Augmented presentation and analytical skills 4. Ability to critically analyze, interpret and appreciate literary texts 5. An awareness of social, cultural, religious and ethnic diversities 6. Facilitated employability in emerging sectors such as – content writers, interpreters, translators, transcribers 7. Acquired language skills for competitive examinations
IV SEM BSC	**GENERIC ENGLISH L2**	By the end of the course the students will have 1) Acquired creative, interpretative and critical thinking 2) Skills to communicate confidently and effectively 3) Obtained persuasive and creative social media writing skills 4) Developed analytical and evaluative skills 5) Learnt to identify and understand social contexts and ethical frameworks in the texts 6) Ability to articulate their views with clarity and confidence 7) Eligibility to take up jobs such as content writing, journalism and such other jobs with proficiency in English

III SEM BCOM	**GENERIC ENGLISH L2**	At the end of the course the students will have 1. Acquired enhanced LSRW (Listening, Speaking, Reading, Writing) skills 2. Equipped themselves with interpersonal communication skills 3. Augmented presentation and analytical skills 4. Ability to critically analyse, interpret and appreciate literary texts 5. An awareness ofsocial, cultural, religious and ethnic diversities 6. Facilitated employability in emerging sectors such as – content writers, interpreters, translators, transcribers 7. Acquired language skills for competitive examinations
IV SEM BCOM	**GENERIC ENGLISH L2**	By the end of the course the students will have 1) Acquired creative, interpretative and critical thinking 2) Skills to communicate confidently and effectively 3) Obtained persuasive and creative social media writing skills 4) Developed analytical and evaluative skills 5) Learnt to identify and understand social contexts and ethical frameworks in the texts 6) Ability to articulate their views with clarity and confidence 7) Eligibility to take up jobs such as content writing, journalism and such other jobs with proficiency in English

OPTIONAL ENGLISH		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
DSC PAPER A1	**INTRODUCTION TO LITERATURE**	The students develop awareness about the plurality and diversity of life in the world. The students are sensitized to the human condition across the world. They are transposed to the world of imagination, beauty and joy in nature and life They learn to think, interpret and rationalize on issues of life They cultivate analytical bent of mind Their sense of belonging to the world around them is enhanced They are equipped with the skill of critical thinking. They show improved self-expression and communicative competence Their employability scores higher as English is a global language. They learn to expand their horizon of thinking, cutting across barriers of language, caste, nationality etc. Enriched and equipped to enter foreign universities to pursue further studies Enhanced ability to comprehend, analyses, criticize and interpret literary texts. Language ability and literary sensibility mould them into global citizens Improved social mobility
DSC PAPER 2	**INDIAN WRITING IN ENGLISH PART I**	
DSC PAPER A3	**INTRODUCTION TO PHONETICS AND LINGUISTICS**	
DSC PAPER A4	**INDIAN WRITING IN ENGLISH PART II**	
DSCC COURSE 5	**ENGLISH LITERATURE**	After completion of course, students will be able to: 1) Learn the important trends and movements in the British literature of the prescribed period 2) Identify and understand the canonical literature of England 3) Distinguish the poets, playwrights and novelists of different periods 4) Appreciate some representative texts of the prescribed period
DSCC COURSE 6	**INDIAN LITERATURE IN TRANSLATION**	After completion of course, students will be able to: 1) Understand the meaning and methods of translation 2) Comprehend the scope of translation in the modern age 3) Have the knowledge of Indian writers and literature in general 4) Appreciate the translated text
DSCC COURSE 7	**BRITISH LITERATURE (19TH AND 20TH CENTURY) (PART 2)**	After completion of course, students will be able to: 1) Learn the important trends and movements in the British literature of prescribed period 2) Identify and understand canonical literature of England 3) Distinguish the poets, playwrights and novelists of different periods 4) Appreciate some representative texts of the prescribed period
DSCC COURSE 8	**GENDER STUDIES (PART 1)**	After completion of the course, students will be able to: 1. Understand the concept of gender studies 2. Learn the basics of patriarchy, sex and gender and gynocentrism 3. Understand the significance of Gender as a discourse 4. Appreciate literature by women writers

HINDI		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
I SEM	**BA, BSC, BCOM**	• Get familiar with various Disciplines that exist in Hindi Literature. • Communication Skill is enhanced. • Get Expertise in Business related Letters. • They become Creative.
II SEM	**BA, BSC, BCOM**	• They know different Dialects of Hindi Literature. • knowledge about Indian Mythology & rich heritage of India is enhanced. • Get Expertise in Official Letters.
III SEM	**BA, BSC, BCOM**	• They get in-depth Knowledge about the system in which the society/country works. • They learn to cope with different problems that exists in the society • It creates awareness among the students. • They become responsible citizens.
IV SEM	**BA, BSC, BCOM**	• They learn how to overcome unhealthy practices that prevail in the society. • They become good decision makers • They are sensitized about the gender equality and women empowerment • They become a better person with positive outlook.

HISTORY

PAPER	COURSE NAME	COURSE OUTCOME
DSC 1	**POLITICAL HISTORY OF KARNATAKA (BCE-300TOCE 1000)PART-1**	Student should be able to: ● Understand the continuity of Political developments and strategies. ● Analysis the importance of causes for the rise of regional political dynasties. ● Understand contextual necessities which influenced the era of political supremacy. ● Understand and describe the contemporary political history. ● Appreciate the confluence of diverse political elements.
DSC 2	**CULTURAL HERITAGE OF INDIA**	Student should be able to: ● Provide an insight about an extensive survey of heritage of India ● Familiarize Indian history and culture ● Expertise to analyse further development of culture of India ● Analyse the factor responsible for origin and decline of culture ● Provide the opportunity to understand the process of cultural development
DSC 3	**POLITICAL HISTORY OF KARNATAKA (1000CETO 1750CE)**	Student should be able to: ● Understand the rise and fall of Political dynasties in Karnataka. ● Familiarize with the patterns of administration. ● Analyze the traditional values andethos of political development. ● Understand the rise and fall of regional variations. ● Study the complexities involved in polity of the time.
DSC 4	**CULTURAL HERITAGE OF KARNATAKA**	Student should be able to: ● Understand the concept of cultural heritage of Karnataka ● Study various cultural factors which influence the flow of culture ● Familiarize the factors which influenced in influencing culture and society ● Analyze the factors responsible for formation of pluralistic society ● Understand the concept“ Unity in diversity”.
DSC 5	**POLITICAL HISTORY OF INDIA (FROM INDUS CULTURE UPTO 1206)**	Student should be able to: ● 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.
DSC 6	**BANGALORE IN TIME AND SPACE**	Student should be able to: ● Understand the history and culture of Bangalore in Time and Space region. ● Analyze the importance of causes for backwardness of this region. ● Understand the political, Social, Religious and Cultural history of the region. ● Appreciate the divergent cultural and communal harmony of this region.
DSC 7	**HISTORY OF MEDIEVAL INDIA**	Student should be able to: ● Understand the history and culture of Medieval India. ● Explore various aspects of political, diplomatic relations of the rulers of medieval times

		• Understand various dynasties, political diplomacy, results and impact wars and battles on people.
DSC 8	**CULTURAL HISTORY OF INDIA(FROM SARASWATI - INDUS CULTURE TO 1206CE)**	Student should be able to: • Understand the 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; • Trace the influence and significance of geographical features on Indian culture.
DSC-10	**Colonialism And Nationalism in Asia (1900 to1970)**	• Analyze the main theories and interpretations on colonialism and Nationalism. • Understand the emergence of the modern world system and its impact on Asia. • Analyze the dynamics and dimensions in the colonial perspectives and nationalist movements in the five countries of Asia. • Understand the concepts of decolonization and neo-colonialism in the context of Asia.
DSC-11	**History of Europe from 1789 to 1945 AD**	• Evaluate the contributions of great philosophers and leaders to the transformation of Society and economy of Europe. • To appreciate Europe of today this occupies a place of vital importance in world affairs. • To examine the impact of dictatorships on the events of Europe and the World.
DSC-12	**Contemporary History of India From 1947-1990s**	• Analyse the main theories and interpretations on Contemporary history of India from1947-1990s • Analyze the dynamics and dimensions in the contemporary history of India from 1947-1990s
DSC-13	**HISTORY OF FREEDOM MOVEMENT AND UNIFICATION OF KARNATAKA**	• To get familiarized with impact of the rebellion of 1857on Karnataka • To get acquainted with National Movement in Karnataka • To know about Belgaum Congress Session • To understand and about Origin and development of unification movement in Karnataka. • To know about Contributions of Various Kannada Organizations
DSC-14	**History of India(CE 1761-CE 1857**	• Be in opposition to understand and the Dynamics of expansion, with special reference to Bengal, Mysore, Awadh, and Punjab. • Be familiar with Land revenue systems-Permanent, Ryotwari and Mahalwari systems, Commercialization of Agriculture-Cons • Be in a position to understand the Drain of Wealth- causes and consequences ,Growth of modern industry.
DSC-16	**Process of Urbanization in India**	• Enable students to critically engage with the concept to furbanization through both texts and audio visual media. • Help to connect with the earliest planned urban settlements. • Enable students to understand that they are the engines of economic growth. • They should understand that they are centers of innovation, knowledge and political power.

JOURNALISM

PAPER	COURSE NAME	COURSE OUTCOME
PAPER 1	**INTRODUCTION TO JOURNALISM CONCEPTS AND PRACTICES**	Students will be able to 1. Understand and appreciative various dimensions of mass communication. 2. Develop an understanding of the fundamental concepts in journalism. 3. Analyze the scope / various dimensions in journalism. 4. Discuss the recent trends in mass media. 5. Analyze and review different newspapers.
2.1	**COMPUTER APPLICATIONS FOR MEDIA**	Students will be able to 1. Understand the basic concepts of computer. 2. Develop an understanding of the applications of computers in print and journalism. 3. Get acquainted with interned application. 4. Apply information technology skills in print and broadcast projects. 5. Demonstrate web based broadcasting skills.
DSC 3	**NEWS REPORTING AND ANALYSIS**	Students will be able to: 1. Organize and articulate news stories, understand the concepts, structure and types of news. 2. Formulate skills for news selection process, prioritize and finally, design the end product, identify the basic ethical issues confronting editors and how they can practice fair play.
DSC 4	**NEWS PROCESSING AND EDITING**	Students will be able to: 1. Understand the role of editors, Edit copy using correct grammar and right usage of words. 2. Be able to write clear and accurate headlinge, decks and captions. 3. Be able to design basic news pages. Understand the ethical issues confronting editors.
DCJM501	**INTRODUCTION TO COMMUNICATION**	• Build capacity of the students to do their assignments professionally • To have uniformity in assignment presentation • Continuous assessment of the students
DCJM502	**FUNDAMENTALS OF RADIO & TV**	• Build capacity of the students to do their assignments professionally • To have uniformity in assignment presentation • Continuous assessment of the students
DCJM601	**ADVERTISING AND CORPORATE COMMUNICATION**	• The objective is to gain an understanding of advertising and corporate communication concepts, as well as to identify and take advantage of the various opportunities available in the industry.

DCJM602	**INTRODUCTION TO DIGITAL MEDIA**	• Build capacity of the students to do their assignments professionally • To have uniformity in assignment presentation • Continuous assessment of the students

KANNADA		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
BA **PAPER I**	**POETRY, STORYTELLING, FOLKLORE, ARTICLE VARIETY**	Students Learn ● Introducing old poetry, reading poetry, and reading poetry in Hoshangada. In addition, they are taught to read and understand the text. The language differences found in these three language structures are addressed in this case. ● Stories of modern times are introduced in the context of Kannada storytelling traditions such as time, country, language, storytellers and movements. ● Kannada folk literature is limited to classic literature, where articles such as poetry, poetry and criticism are introduced. ● In this section, various thought-provoking articles are read for knowledge.
BA **PAPER II**	**POETRY, DRAMA, FOLKLORE, ESSAY LITERATURE, ARTICLE VARIETY.**	Students Learn ● Students will understand nadukannada poetry , hosakannada and folklore . from Ramayana they get to understand the various behaviours and emotions of women. ● They learn about today's corruption and problems everyone is facing from this drama ● They get to understand about the rest you need for the soul and mind, humanity should be given more importance in a man's life. ● Students understand about water problems, life is very precious, smartly how to lead your life
BA **PAPER III**	**OLD POETRY, BIOGRAPHY EXCERPT, TRAVEL LITERATURE EXCERPT, COMPLEX ARTICLES**	Students Learn ● Students learn halegannada poems, 2 scenes of mahabaratha of pampa, specialities of vachanas, kumaravyasa baratha, to understand man is not great. ● They learn life histories of great personalities like rabindranath tagore, Dr. B R Ambetkar , Dr. Visveswarya and musician P Kalingaraya . ● They learn about the travel literature first of America's Albert University then about pilgrimage place Kashi and andaman's life history
BA **PAPER IV**	**POETRY, PERSONALITY - THINKING, LANGUAGE SKILLS (REGIONAL- RACE ETC.), COMPLEX**	Students Learn ● Students learn one story of old poetry, specialties of keerthans and learn ragale poem ● By now they learn the grammer and good knowledge in writing skills of the language. ● They learn what each great scholars' opinions in different medium. ● They get to understand the different problems about humanity, gender discrimination etc .,
I SEM BSc	**PAPER 1**	● Read and understand ancient Kannada ● Way of Reading the poetry ● Understand the relation between Literature and Life ● Analyze the social and human values ● To understand the way of narration of the stories ● To appreciate the articles by different writers aboutsociety and modern thinking ● To understand the human values through Literature

II SEM BSc	**PAPER 2**	● Growth of poetry through ages is understood ● To learn a feeling of oneness and equality through ● Literature ● Think rationally about the society and secular thinking ● To think about the cordial relationship between people in the society ● To adopt critical and scientific thinking in daily life
III SEM BSc	**PAPER 3**	● To identify the different metre adopted in kannada Literature ● Equality in society through Vachanas ● Learn to live cordially without differences through stories ● Accept critical, scientific thinking and social awareness. ● To understand the life through literature
IV SEM BSc	**PAPER 4**	● To appreciate the beauty of ancient Kannada. To live ● lust less life through vachanas ● To understand the Social, Economic & Cultural environment of other countries through 'Pravasa ● Kathana' ● Study of women empowerment ● Totally understand the life through Literature
I SEM BCom	**PAPER 1**	● Poetry from ancient times to modern days is introduced ● Enable students to think critically about the social evils through stories The importance and the beauty of the folklore is emphasized ● Get exposed to the difficulties of modern day business
II SEM BCom	**PAPER 2**	● To appreciate the growth of poetry from ancient times to modern days Play which throws light on modern day politics is learnt ● The difference between modern days and ancient times are known ● Introduction to a basic approach of MNC' s and the study of environment and its conservation
III SEM BCom	**PAPER 3**	● Trace the origin of poetry and its developments through ages Exposure to communicative skills in kannada ● Enabling students think seriously about the society ● Think seriously about social evils and try to overcome them
IV SEM BCom	**PAPER 4**	● Poems of different metre are introduced ● Communicative skills in kannada are enhanced ● These write-ups make students enjoy as well as think about life and society ● Critical thinking about the social evils and to lead a harmonious life.

MATHEMATICS		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
MATDSCT 1.1	**ALGEBRA - I AND CALCULUS - I**	Enable the students to • Learn to find rank of a matrix. • Solve the system of homogeneous and non-homogeneous linear system of ' m' equations in' n' variables by using concept of rank of matrix, finding eigenvalues and eigen vectors • be familiar with the techniques of finding nth derivatives of some standard functions • Identify and apply the intermediate value theorems and L'Hospital's rule. • learn partial differentiation, Jacobians and related properties. • learn expansion of Taylor's and Maclaurin's series of functions of 2 variables and maxima and minima of functions of 2 variables
MATDSCP 1.1	**PRACTICAL'S ON ALGEBRA - I AND CALCULUS – I**	Enable the students to • Learn Free and Open Source Software (FOSS) tools for computer programming Solve problem on algebra and calculus theory studied in MATDSCT 1.1 by using FOSS • Solve problem on algebra and calculus theory studied in MATDSCT 1.1 by using FOSS softwares • Acquire knowledge of applications of algebra and calculus through FOSS
MATDSCT 2.1	**ALGEBRA - II AND CALCULUS - II**	Enable the students to • Recognize the mathematical objects called Groups. • Link the fundamental concepts of groups and symmetries of geometrical objects. • Explain the significance of the notions of cosets, normal subgroups and factor groups. • Learn the quotient groups, concepts of homomorphism, isomorphism and properties related to isomorphism. • Learn solve problems related to angle between radius vector and tangent, angle between two curves. • Learn expressing the curves in pedal form, derivative of an arc • Learn the center of curvature, asymptotes, evolutes and envelops of the given curve • Learn the reduction formulae • Learn to find length of an arc, area of plane curves and surface area, volume of revolution
MATDSCP 2.1	**PRACTICAL'S ON ALGEBRA - II AND CALCULUS – II**	Enable the students to • Learn Free and Open Source Software (FOSS) tools for computer programming • Solve problems on algebra and calculus by using FOSS. • Acquire knowledge of applications of algebra and calculus through FOSSPractical/Lab Work to be performed in Computer Lab.
MATDSCT 3.1	**ORDINARY DIFFERENTIAL EQUATIONS AND REAL ANALYSIS – I**	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.
MATDSCP 3.1	**PRACTICALS ON ORDINARY DIFFERENTIAL EQUATIONS AND REAL ANALYSIS – I**	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
MATDSCT 4.1	**PARTIAL DIFFERENTIAL EQUATIONS AND INTEGRAL TRANSFORMS**	Enable the students to: • Formulate, classify and transform partial differential equations into canonical form. • Solve the partial differential equations of the first order and second order • 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.
MATDSCP 4.1	**PRACTICAL'S ON PARTIAL DIFFERENTIAL EQUATIONS AND INTEGRAL TRANSFORMS**	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
MATDSCT 5.1	**Real Analysis-II and Complex Analysis**	• Carry out certain computations such as improper integrals involving Beta and Gamma functions. • Exhibit certain properties of mathematical objects such as integrable functions, analytic functions, harmonic functions and so on. • Prove some statements related to complex integral as well as in complex analysis • Carry out the existing algorithms to construct mathematical structures such as analytic functions. • Evaluate the utility of complex analysis in solving real world problems.
MATDSCP	**Practical's on Real Analysis-II and**	• Learn *Free and Open Source Software (FOSS)* tools for computer programming

5.1	**Complex Analysis**	• Solve problem on Real Analysis and Complex Analysis studied in **MATDSCT 5.1 by** using FOSS software's. • Acquire knowledge of applications of Real Analysis and Complex Analysis through FOSS.
MATDSCT 5.2	**Vector Calculus and Analytical Geometry**	• Get introduced to the fundamentals of vector differential and integral calculus. • Get familiar with the various differential operators and their properties. • Get acquainted with the various techniques of vector integration. • Learn the applications of vector calculus. • Recollect the fundamentals of Analytical Geometry in 3D. • Interpret the geometrical aspects of planes and lines in 3D.
MATDSCP 5.2	**Practical's on Vector Calculus and Analytical Geometry**	• Learn *Free and Open Source Software (FOSS)* tools for computer programming • Solve problems related to Analytical Geometry and Vector Calculus using FOSS software.
MATDSCT 6.1	**Linear Algebra and Calculus of Variations**	• Identify and analyze the algebraic structures such as ring, field, and integral domain. • Understand the concepts of vector spaces, subspaces, bases dimension and their properties. • Understand the concept of linear transformation and eigenvalue analysis. • Understand the concept of functionals and applications. • Apply the knowledge gained to various situations inside and outside mathematics
MATDSCP 6.1	**Practical's on Linear Algebra and Calculus of Variation**	• Learn *Free and Open Source Software (FOSS)* tools for computer programming • Solve problem on Linear Algebra studied in **MATDSCT 6.1 by** using FOSS software's. • Acquire knowledge of applications of Linear Algebra through FOSS
MATDSCT 6.2	**Numerical Analysis**	• Describe various operators arising in numerical analysis such as difference operators, shift operators and so on. • Articulate the rationale behind various techniques of numerical analysis such as in finding roots, integrals and derivatives. • Reproduce the existing algorithms for various tasks as mentioned previously in numerical analysis. • Apply the rules of calculus and other areas of mathematics in justifying the techniques of numerical analysis. • Solve problems using suitable numerical technique • Appreciate the profound applicability of techniques of numerical analysis in solving real life problems and also appreciate the way the techniques are modified to improve the accuracy.

MATDSCP 6.2	**Practical's on Numerical Analysis**	• Learn *Free and Open Source Software (FOSS)* tools for computer programming • Solve problem on numerical Analysis studied in **MATDSCT 6.2 by** using FOSS software's. • Acquire knowledge of applications of Numerical Analysis through FOSS.

PHYSICS		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
PHY-DSCT1	**MECHANICS AND PROPERTIES OF MATTER**	1. Fixing units, tabulation of observations, analysis of data (graphical/analytical). 2. Accuracy of measurement and sources of errors, importance of significant figures. 3. Knowledge of how g can be determined experimentally and derive satisfaction. 4. Understanding the difference between simple and torsional pendulum and their use in the determination of various physical parameters. 5. Knowledge of how various elastic moduli can be determined. 6. Measuring surface tension and viscosity and appreciate the methods adopted. 7. Hands on experience of different equipments.
PHY-DSCT2	**ELECTRICITY AND MAGNETISM**	1. Demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges. 2. Explain and differentiate the vector (electric fields, Coulomb's law) and scalar (electric potential, electric potential energy) formalisms of electrostatics. 3. Apply Gauss's law of electrostatics to solve a variety of problems. 4. Describe the magnetic field produced by magnetic dipoles and electric currents. 5. Explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields. 6. Describe how magnetism is produced and list examples where its effects are observed. 7. Apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor. 8. Apply various network theorems such as Superposition, Thevenin, Norton, Reciprocity,• Maximum Power Transfer, etc. and their applications in electronics, electrical circuit analysis, and electrical machines
PHY-DSCT3	**WAVE MOTION AND OPTICS**	Students understand the following: ● Identify different types of waves by looking into their characteristics. ● Formulate a wave equation and obtain the expression for different parameters associated with waves. ● 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. ● 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. ● Give an analytical treatment of resonance in the case of open and closed pipes in general and Helmholtz resonators in particular. ● Describe the different parameters that affect the acoustics in a

		building, measure it and control it. ● 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. ● 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. ● Explain the polarization of light and obtain how the polarization occurs due to quarter wave plates, half wave plates, and through theoretical activity of a medium.
PHY-DSCT4	**THERMAL PHYSICS & ELECTRONICS**	Students will be able to: ● Apply the laws of thermodynamics and analyze the thermal system. ● Apply the laws of kinetic theory and radiation laws to the ideal and practical thermodynamics systems through derived thermodynamic relations. ● Use the concepts of semiconductors to describe different Semiconductor devices such as diode transistors, BJT, FET etc and explain their functioning. ● Explain the functioning of OP-AMPS and use them as the building blocks of logic gates. ● Give the use of logic gates using different theorems of Boolean Algebra followed by logic circuits.
PHY.DSCT5	**Classical Mechanics - I and Quantum Mechanics-I**	• Inertial and non-inertial frames of reference. • Apply the Lorentz transformations to transform velocities in special relativity. • Calculate the relativistic Doppler effect. • Limitations of classical physics. • Physical significance of wave function: expectation values and probability.
PHY.DSCP5	**Classical Mechanics and Quantum Mechanics-I (Practical)**	• Understanding uncertainty relation. • Examples of exactly solvable potentials. • Importance of commutation relations.
PHY.DSCT6	**Elements of Atomic, Molecular& Laser Physics (Theory)**	• Description of atomic properties using basic atomic models. • Interpretation of atomic spectra of elements using vector atom model. • Interpretation of molecular spectra of compounds using basics of molecular physics.
PHY.DSCP6	**Elements of Atomic, Molecular& Laser Physics (Practical)**	• Explanation of laser systems and their applications in various fields.
PHY.DSCT 7	**Elements of Condensed Matter & Nuclear Physics (Theory)**	• Elemental Crystallography. • Knowledge about X-rays and Diffraction of X-rays. • Discussion of Classical and Quantum free electron theory including their limitations. • Explanation the basic properties of nucleus.

		• Understanding the concepts of binding energy and binding energy per nucleon v/s mass number graph. .
PHY.DSCP7	**Elements of Condensed Matter & Nuclear Physics**	• Explanation of alpha, beta and gamma decays. • Study of interaction of gamma radiation with matter by photoelectric effect, Compton scattering and pair production. • Study of different nuclear detectors such as ionization chamber, Geiger-Mueller counter,Scintillation detectors, photo-multiplier tube and semiconductor detectors
PHY.DSCT8	**Electronic Instrumentation & Sensors (Theory)**	• Identify different types of tests and measuring instruments used in practice and understand their basic working principles. • Get hands on training in wiring a circuit, soldering, making a measurement using an electronic circuitused in instrumentation. • Have an understanding of the basic electronic components viz., resistors, capacitors, inductors, discrete • and integrated circuits, colour codes, values and pin diagram, their practical use. • Understanding of the measurement of voltage, current, resistance value, identification of the terminals of a transistor and ICs. • Develop basic hands-on skills in the usageof oscilloscopes, multimeters, rectifiers, amplifiers, oscillators and high voltage probes, generators and digital meters. • Servicing of simple faults of domestic appliances: Iron box, immersion heater, fan, hot plate, battery charger, emergency lamp and the like.
PHY.DSCP8	**Electronic Instrumentation & Sensors (Practical)**	• Identify and understand the different types of transducers and sensors used in robust and hand-held instruments. • Understand and give a mathematical treatment of the working of rectifiers, filter, data converters and different types of transducers. • Connect the concepts learnt in the course to their practical use in daily life.

PSYCHOLOGY

PAPER	COURSE NAME	COURSE OUTCOME
PAPER – I	**FOUNDATIONS OF PSYCHOLOGY – I**	1. Students will understand the genesis of Psychology and its importance 2. Students will gain basic knowledge about Psychology 3. Students will understand the fundamental mental processes which are base for behaviour 4. Students understand the Applications of Psychology in various fields
DSC2	**FOUNDATION OF BEHAVIOUR**	After successful completion of the course students will be able to: • evaluate and understand the different human emotions • critically evaluate and identify determinants of motivation • compare and contrast different theories of intelligence • differentiate the human personalities
PAPER – III	**CHILD DEVELOPMENT**	1. To understand the Physical, Cognitive and Language development 2. To know about the role Emotional and Moral development 3. To understand the genetic and chromosomal abnormalities 4. To understand the different disorders faced by children in their growth period
PAPER – IV	**DEVELOPMENTAL PSYCHOLOGY**	1. T understand and analyze the Physical, Cognitive and Psychosocial development. 2. To know about the vocational adjustment. 3. To understand the aging, the ageing process and facing the future.
PAPER V	**ABNORMAL PSYCHOLOGY**	• Understands the meaning of abnormality, is able to understand the difference between normal and abnormal behavior, identify deviant behaviors among people, also is able to attribute the behavior to various psychological underpinnings. • An insight about myths and misconceptions of abnormal behavior will make the student equipped to fight the stigma prevailing in the society about mental illness. • An overview of the classification system aims to provide them with knowledge about different types of mental disorders and also lays a foundation to the prospective clinical psychologists.
	COUNSELING PSYCHOLOGY	• Psychological models of Abnormality imparts knowledge about the causes behind the abnormal behavior through various theories. An understanding of the process behind the development of deviant behavior occurs. • Meaning of stress, different stressors, effective techniques in managing stress is understood, this facilitates the students to also manage mild amount of stress. • Meaning and types of Anxiety disorders, Somatoform Disorders and Dissociative Disorders is comprehended. Students are able to identify the symptoms of these among people and distinguish if it is indeed a disorder or not. • On a personal level, a student is able to help himself/herself by noticing changes in their pattern of behavior, the reason behind the behavior, the ways in which they can work on it and seek help when required. They also gain the capability of observing the same in others and directing them to professionals.

PAPER VI	**SOCIAL PSYCHOLOGY**	A student who has studied Social Psychology will be able to: ● View behavior of individuals in social situations from a scientific perspective. ● Analyze and interpret different types of communication in a social setting. ● Understand the process of causal attribution of social behavior of individuals. ● Gain insight into mechanisms underlying self-concept, self-esteem, efficacy and get a comprehensive picture of gender stereotypes and gender identity. ● Get an overview of formation and change in attitudes and prejudice.
	INDUSTRIAL PSYCHOLOGY	A student by the end of the semester must be able to: ● Understand the roots of Industrial Psychology, structure of an organization, and prospects in the field. ● Get to know various methods of Job Analysis such as Critical incident method and different techniques used under the process of Selection like Interviews. ● Understand the Employee attitude at workplace in various situations and study their effects on the organization. ● Evaluating the reward system, which consists of both financial and non- financial benefits to the employees. ● Know the various theories of motivation which will enable them to motivate employees to perform their best under various circumstances. A student after having completed this practical paper is able to ● Understand the meaning of aptitude test, types of aptitude tests and its applications. ● Administer aptitude tests, score and analyze the test results. ● Assist testing process in a career counseling setting or industrial setting. ● Understand one's aptitude, thereby helping the student to make future choices.
PSY C9-T	**Corporate Psychology**	• Understand the nuances of Corporate psychology • Apply the principles of leadership, training and teams in industrial and corporate sectors
PSY C9-P	**Corporate Psychology**	• Integrate principles of social Psychology and general psychology for enhancing efficiency in corporates • Formalise L & D and Training modules for corporates
PSY C11-T	**Health Psychology**	• Understand the subject matter of health psychology. • Have awareness about health enhancing and compromising lifestyles. • Attain and maintain one's health through coping strategies and interventions
PSY C12-P	**Health Psychology**	• Understand the correlates of pain, illness and its management. • Understand the impact of stress on health.
	Social Psychology	• Develop an understanding of the individual in relation to the social world. • Introduce students to realm of social influences on

		behaviour. • Understand the various social issues prevalent. • Know the significance of Interpersonal Relationship. • Sensitize the students about Social issues.
PSY E1.1-T	**Positive Psychology**	• Understand the fundamental concepts of positive psychology and happiness. • Understand health related branches and different perspectives with reasons and measurements. • Know about the bouncing back means in life when confronted with adversity in life. • Understand the importance of relationship to lead a happy life.
PSY E1.2-T	**Educational Psychology**	• Understand the skills of a teacher and to know the Indian contribution to the field of education. • Know the importance of ambiance and different aspects of education. • Understand importance and application of electronic media in teaching - learning process.
PSY V1.1-T	**Assessing Childhood Problems**	• Understand the different levels of intellectual disabilities. • Understand eating and behavioural disorders in childhood.
PSY V1.1-P	**Assessing Childhood Problems**	• Know the assessment of disorders in childhood.
PSY V1.2-T	**Child Therapeutic Techniques**	• Understand the approaches and interventions of psychotherapy. • Know the different types of play as therapy and other interventions.
PSY C14-T	**Abnormal Psychology**	• Impart knowledge about the difference between the concepts of normality and abnormality to dispel myths regarding abnormality. • Familiarize students with criteria and classification of psychological disorders. • Provide an overview of the symptoms and etiology of various psychological disorders.
PSY C15-P	**Abnormal Psychology**	• Introduce students to different perspectives regarding the causation of mental illnesses. • Familiarize students with a conceptual overview of abnormal behaviour.
PSY C16-T	**Human Resource Management**	• Understand the nature, objectives and functions of HRM. • Understand the processes of selection and tools of training. • Know the tools of performance appraisal in work setting. • Know the application of electronic in HR and management of international HR.

PSY C17-P	**Human Resource Management**	• Know the application of electronic in HR and management of international HR
PSY C18-T	**Organizational Psychology**	• Understand the nature of individual organizational behaviour towards oneself, organization and the contribution to society. • Understand differences in skills, stress and management of the skills. • Know the tools of training and performance appraisal in work setting. • Understand structure and design of organization.
PSY E2.1-T	**Sports Psychology**	• Know the nature, training and role of sport psychologist, personality and performance in sports. • Understand the anxiety and stress in relation to athletic performance. • Understand coping and intervention strategies to manage stress.
PSY E2.2-T	**Rehabilitation Psychology**	• Make the students aware of the concepts of rehabilitation. • Understand the skills of rehabilitation psychologist. • Understand different types of disabilities and reasons. • Know the importance of early intervention and the places where interventions can be applied.
PSY V2.1-T	**School Guidance and Counselling**	• The meaning and nature of school guidance program • The meaning, importance, and process of counselling. • How different tools and techniques can be used as a part of school guidance program. • The meaning & nature of career guidance & appreciate different modes of dissemination of career information.
PSY V2.1-P	**School Guidance and Counselling**	•
PSY V2.2-T	**Inclusive Education**	• Understand the meaning of inclusion of all learners. • Appreciate different factors facilitating and impeding inclusion in educational settings. • Understand the bandwidth of diversity in educational settings.
PSY V2.2-P	**Inclusive Education**	• Understand the importance of identifying and celebrating diversity by providing equitable opportunities.

SANSKRIT		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
B0051	**RAGHUVAMSHAM (CANTO 1)**	Students learn to read Sanskrit poetry, know different dynasties Understand the value of religious rites ,understand the moral values, ethical values etc mentioned in poetry.
B0380	**HITOPADESHA(SUHRUDBHEDA)**	Know the origin of Kathasahitya in Sanskrit literature,learn about Bruhathkatha ,how the irresponsible person can be changed into responsible citizen is adviced through the stories, Nethishastra teaches Life values to the young minds, analyse the mistakes committed by blindly believing others words when friendship is ended up
C0050	**CHAMPOORAMAYANA (SUNDARAKANDA KANDA)**	Students learn about five champoo works : authors,to read both prose and poetry , get inspired by the,adventures of Hanuman , like this many life values are learnt by the students.
A0050	**KARNABHAARAM(DRAMA)**	Enables students to improve voice,move on the stage and overcome stage fear, perform in front of crowd, develop communication skill, Social responsibility
A0050	**DASHARATHA VRITTAANTHA IN JANAKIHARANAM**	Learn the way of reading prose passage, verses,, understand the life values through stories,to appreciate articles,, develop rational thinking
B0050	**MITRALABHAM FROM PANCHATANTRAM**	Learn many life values such as live cordially,equalityin society irrespective of caste, nature , status etc
C0050	**ARANYAKANDA FROM CHAMPOO RAMAYANAM**	Learn to accept any situation in life, to lead simple life , to bear patience, , totally to get exposed to calamities and to face it.
D0050	**PRATHIJNAYOUGANDHARAYANAM (DRAMA)**	To trace original source of the PLAY, understand to think critically to remove social evils , differenciate between present day political field and the olden days

SOCIOLOGY

PAPER	COURSE NAME	COURSE OUTCOME
DSC -1	**UNDERSTANDING SOCIOLOGY**	Student should be able to: 1. Understand the nature and role of Sociology in a changing world 2. Comprehend the uniqueness of sociological imagination in the study of real world 3. Recognise different perspectives of perceiving the workings of social groups 4. Differentiate between sociology's two purposes - science and social reform 5. Express one's understanding of current social issues in oral and written forms
DSC -2	**CHANGING SOCIAL INSTITUTIONS IN INDIA**	Student should be able to: 1. Identify the new forms taken by institutions of family and marriage 2. Understand the role played by religion in modern world 3. Sensitise the students to the conflicting norms of secularism and living by one's religious beliefs 4. Appreciate the role of education and challenges in making education accessible to all 5. Recognise the social nature of economy and work 6. Grasp the opportunities offered by democracy and the threats it faces 7. Undertake micro research work and communicate effectively
DSC -3	**FOUNDATIONS OF SOCIOLOGICAL THEORY**	Student should be able to: 1. Contextualise the social and intellectual background of classical sociologists 2. Appreciate the contemporaneity of classical sociological thought 3. Appreciate the need for thinking in theoretical terms and concepts 4. Demonstrate Basic Understanding of Theory and Research
DSC -4	**SOCIOLOGY OF RURAL LIFE IN INDIA**	Student should be able to: 1. Understand the myths and realities of village India constructed by Western scholars 2. Understand the changes in land tenure systems and consequences 3. Appreciate the role of traditional social institutions and how they have responded to forces of change 4. Make an informed analysis of various development programmes and challenges encountered.
DSC -5	**SOCIAL STRATIFICATION AND MOBILITY**	● Understand the concept of stratification. ● Understanding cast class estate concepts. ● Understand the concept of middle class and its emergence.
DSC -6	**SOCIOLOGY OF URBAN LIFE IN INDIA**	● Importance of urban life. ● Impact of city life on people. ● Understanding various urban policies in India.
DSC -7	**SOCIOLOGY OF MARGINALISED GROUPS**	● Understanding marginalised groups. ● Understanding some economic indices of marginalisation. ● Understanding social justice in the context of globalisation.
DSC -8	**POPULATION AND SOCIETY**	● Understanding the relationship between society and population. ● Comparative study age and gender composition in India. ● Critical analysis of population policy in India.

SOC C9	**Social Entrepreneurship**	• Provide knowledge about social entrepreneurship • To help them to start their own social enterprise or NPO • Understand the scope and need for social entrepreneurship • Plan and implement socially innovative ideas in the areas of entrepreneurship
SOC C10	**Society and Tribes**	• Gain basic knowledge about social organisation of tribals • Critically understand the implications of changes occurring in tribal life • Undertake micro research work • Assess the impact of social changes on tribal social life
SOC C11	**Statistics in Sociological Research**	• Use appropriate research method • Use appropriate statistical techniques • Summarise data, examine relationships among variables
SEC-4	**Society, Health and Social Care**	• This course helps the learners gain knowledge about basic concepts of health care and social well being. • Learners will be able to identify the main stakeholders of health care • Learners develop knowledge to grasp the significance of both formal and informal social care agencies. • It equips the learner to identify his role in taking care of aged, sick and children in his family
SOC C12	**Sociological Perspectives**	• Understand major Sociological theoretical approaches • Compare and contrast the different theoretical perspectives • Appreciate the significance of major Sociological theories • Able to use fundamental theoretical categories
SOC C13	**Sociology of Health**	• Understand the concept of health, illness and social conditions • Analyze the inter-relationship between social factors and health status • Understand the role of doctors, nurse, pharmaceutical industry and social institutions in maintaining and promoting human health. • Distinguish between health, well-being, illness and disease • analyze the role of pharmaceutical industry and hospitals critically
	INTERNSHIP/ Dissertation	• Enable students to have real life exposures, which they theoretically learnt in the classroom • To comprehend critically the issues pertaining to

		chosen area • To experience the problems and challenges in the chosen area. • To explore possible employability skills in the chosen area

STATISTICS		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
DSC A1	**DESCRIPTIVE STATISTICS**	● Acquire knowledge of introductory statistics, its scope and importance in various areas such as Medical, Engineering, Agricultural and Social Sciences ● Get knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion ● Perceive the knowledge of correlation, regression analysis, regression diagnostics, partial and multiple correlation. ● Learn different of types of data reflecting independence and association between two or more attributes. ● Develop ability to critically assess a standard report having graphics, probability statements. ● Conceptualize the probabilities of events including frequentist and axiomatic approach. Simultaneously, they will learn the notion of conditional probability including the concept of Bayes' theorem. ● Get knowledge related to concept of discrete and continuous random variables and their probability distributions including expectation and moments ● Learn knowledge of importance discrete and continuous distributions such as Binomial, Poisson, Normal distributions. ● Acquire knowledge on R programming in the descriptive statistics and probability models.
DSC A2	**PROBABILITY AND DISTRIBUTIONS**	
DSC A3	**CALCULUS AND PROBABILITY DISTRIBUTION**	The students will be able to: ● Judge continuity of a function, find integrations and solve problems of differentiability. ● Solve problems of various analytical environments using different distributions and their properties. ● Find sampling distributions of functions of random variables and explore their applications.
DSC A4	**STATISTICAL INFERENCE - I**	The students will be able to: ● Carryout statistical analysis by identifying families of distributions and the use of order statistics. ● To find estimators using different methods of estimation and compare estimators. ● To carryout statistical inference using different tests of hypotheses under different scenarios.
STAC9-T	**Sampling Theory and Regression analysis (Theory)**	• Understand the principles underlying sampling as a means of making inferences about a population. • Understand different sampling techniques. • To learn to estimate population parameters from a sample.
STAC10-P	**Sampling theory and Regression analysis**	• Develop and understanding of simple and regression models, including the assumptions underlying these models, techniques for inference and hypothesis testing and diagnostics checks and corrections. • Apply regression analysis techniques to real world data sets.

STAC14-T	**Statistical Quality Control and Statistical Inference -II**	• Learn about process control and product control, different limits and causes of variation. • Understand control chart for variables and process capability. • Understand lot acceptance sampling and sampling plans.
STAC15-P	**Statistical Quality Control and Statistical Inference -II**	• Learn about UMP test, MLR property and Likelihood ratio tests • Learn about one sample and two sample nonparametric tests.
STAC11-T	**Analysis of variance and Design of experiments**	• Learn fixed and random effect models and one-way and two-way classified data. • Understand different designs (CRD, RBD, LSD) and missing plot techniques.
STAC12-P	**Analysis of variance and Design of experiments**	• Understand the different factorial experiments. • Develop complete and partial confounding for factorial experiments
STAC16-T	**Applied Statistics**	• Formulation of a linear programming problem and solve it using graphical, simplex methods. Conceptualize the feasible region • Know the components and Need for Time series, understand the different methods of studying trend and Seasonal Index. • Study the concept of vital statistics, sources of data, different measures of Fertility and Mortality, Understand the Growth rates- GRR and NRR and their interpretations.
STAC17-P	**Applied Statistics**	• Find out feasible solution and transportation and assignment problems and give the optimal solution and solve game theory problems • Understand the Price and Quantity Index numbers and their different measures, understand the applicability of cost-of-living Index number.

ZOOLOGY		
PAPER	**COURSE NAME**	**COURSE OUTCOME**
DSCC5Z00T1	**CYTOLOGY, GENETICS AND INFECTIOUS DISEASES**	At the end of the course the student should be able to understand: 1. The structure and function of the cell organelles. 2. The chromatin structure and its location. 3. The basic principle of life, how a cell divides leading to the growth 4. Organism and also reproduces to form a new organism. 5. How a cell communicates with its neighboring cells? 6. The principles of inheritance, Mendel 's laws and the deviations. 7. How environment plays an important role by interacting with genetic factors. 8. Detect chromosomal aberrations in humans and study of pedigree analysis
DSCC5Z00P1	**CELL BIOLOGY & CYTOGENETICS LAB**	At the end of the course the student should be able to: 1. To use simple and compound microscopes. 2. To prepare stained slides to observe the cell organelles. 3. To be familiar with the basic principle of life, how a cell divides leading to the growth of an organism and also reproduces to form new organisms. 4. The chromosomal aberrations by preparing karyotypes. 5. How chromosomal aberrations are inherited in humans by pedigree analysis in families. The antigen-antibody reaction.
DSCC5Z00T2	**BIOCHEMISTRY AND PHYSIOLOGY**	The student at the completion of the course will learn: 1. To develop a deep understanding of structure of biomolecules like proteins, lipids and carbohydrates. 2. How simple molecules together form complex macromolecules. 3. To understand the thermodynamics of enzyme catalyzed reactions. 4. Mechanisms of energy production at cellular and molecular levels. 5. To understand various functional components of an organism. 6. To explore the complex network of these functional components. 7. To comprehend the regulatory mechanisms for maintenance of function in the body.
DSCC5Z00P2	**BIOCHEMISTRY AND PHYSIOLOGY**	At the end of the course the student should be able to understand: 1.Basic structure of biomolecules through model making. 2. Develop the skills to identify different types of blood cells. 3. Enhance basic laboratory skill like keen observation, analysis and discussion. 4. Learn the functional attributes of biomolecules in animal body. 5. Know uniqueness of enzymes in animal body and their importance through enzyme kinetics.
DSCC5ZOOT3	**MOLECULAR BIOLOGY, BIOINSTRUMENTATION & TECHNIQUES IN BIOLOGY**	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.
DSCC5ZOOP3	**MOLECULAR BIOLOGY, BIOINSTRUMENTATION AND TECHNIQUES IN BIOLOGY**	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.
DSCC5ZOOT4	**GENE TECHNOLOGY IMMUNOLOGY AND COMPUTATIONAL BIOLOGY**	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.
DSCC5ZOOP4	**GENE TECHNOLOGY, IMMUNOLOGY AND COMPUTATIONAL BIOLOGY**	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 techniques.
DSC**C5 ZOO -T5**	**Non-Chordates and Economic Zoology**	• Group animals on the basis of their morphological characteristics/structures. • Demonstrate comprehensive identification abilities of Non-Chordate diversity • Explain structural and functional diversity of Non-Chordates • Develop the knowledge of economic animals.
DSC**C5 ZOO -P5**	**Non-Chordates and Economic Zoology**	• Understand basics of classification of non-chordates. • Learn the diversity of habit and habitat of these species. • Develop the skills to identify different classes and species of animals. • Know uniqueness of a particular animal and its

		importance
DSC**C5 ZOO –T6**	**Chordates and Comparative Anatomy**	• Demonstrate comprehensive identification abilities of chordate diversity • Explain structural and functional diversity of chordate diversity • Understand evolutionary relationship amongst chordates • Take up research in biological sciences. • Realize that very similar physiological mechanisms are used in very diverse organisms. • Get a flavor of research by working on project besides improving their writing skills. It will further enable the students to think and interpret individually
DSC**C5 ZOO –P6**	**Chordates and Comparative Anatomy Zoology**	• Demonstrate comprehensive identification abilities of chordate diversity • Explain structural and functional diversity of chordate diversity • Understand evolutionary relationship amongst chordates
DSC**C5 ZOO –T7**	**Evolutionary & Developmental Biology**	• Understand that by biological evolution we mean that many of the organisms that inhabit the earth today are different from those that inhabited it in the past. • Understand that natural selection is one of several processes that can bring about evolution, although it can also promote stability rather than change. • Understand how the single cell formed at fertilization forms an embryo and then a full adult organism. • Integrate genetics, molecular biology, biochemistry, cell biology, anatomy and physiology during embryonic development.
DSCC5 ZOO –P7	**Evolutionary & Developmental Biology**	• Understand a variety of interacting processes, which generate an organism's heterogeneous shapes, size, and structural features. • Understand how a cell behaves in response to an autonomous determinant or an external signal, and the scientific reasoning exhibited in experimental life science.
DSCC5 ZOO –T8	**Environmental Biology, Wildlife Management &Conservations**	• Develop an understanding of how animals interact with each other and their natural environment. • Develop the ability to use the fundamental principles of wildlife ecology to solve local, regional and national conservation and management issues. • Develop the ability to work collaborative team-based projects.

DSCC5 ZOO –P8	**Environmental Biology, Wildlife Management & Conservation**	• Gain an appreciation for the modern scope of scientific inquiry in the field of wildlife conservation management. • Develop an ability to analyze, present and interpret wildlife conservation Management in formation.

PG MATHEMATICS

PAPER	COURSE NAME	COURSE OUTCOME
	FIRST SEMESTER	
M101T	**ALGEBRA-I**	• Students learn about different types of groups. They also learn the applications of isomorphism, automorphism and inner automorphism to groups. • Students understand the concept of group action, orbits, stabilizers and their properties. • Students are introduced to Sylow's groups, simple groups, solvable groups and their applications. • Students learn different types of rings, ideals and their properties. • Students are introduced to Euclidean rings, polynomial rings, their properties and applications
M102T	**REAL ANALYSIS**	• Students learn the definition and properties of Riemann-Stieltjes integral, uniform convergence of sequences and series of functions, and functions of several variables. • Students also learn to approximate continuous functions using polynomials. • Students will understand the concept of compactness, continuity and uniform continuity on the n-dimensional real space
M103T	**TOPOLOGY-I**	• To study and understand the nature of the convergence of the series and sequences, metric spaces and application of these spaces in embedding. To learn the concept of continuity and homeomorphism of the functions. • Exposure to the finite and infinite sets. • Introduction to number system and nature of infinite and finite sets, limit points and bounds. • To understand the criteria for point-wise convergence, uniform convergence of metric spaces. • The criteria for continuity and homeomorphism of the functions to understand local connectedness and path-connectedness of topological spaces. • To understand continuity and homeomorphism of the functions defined on topological spaces.
M104T	**ORDINARY DIFFERENTIAL EQUATIONS**	• Recognize real world circumstances to identify when ordinary differential equations are appropriate, formulation of problems and solving the problems using multiple approaches • Students will learn what an ordinary differential equation is, distinguish between linear and nonlinear ODEs and classify ODEs, what are initial and boundary value problems, what constitutes a solution. Students will learn to visualize and manipulate ODEs in graphical and symbolic form. • Students will understand the concept of existence and uniqueness of solutions. Learn to find the power series solution of linear differential equations. • Students will be introduced to system of ODEs and discuss graphical and analytical solution method
M105T	**DISCRETE MATHEMATICS**	• Students are introduced to logic, rules of inference, methods of proof and counting techniques.

		• Students learn modeling with recurrence relations, generating functions and difference equations with various examples. • Students also learn to represent relations using matrices and digraphs. • Students understand the concept of graph theory, types of graphs, their properties and applications. • Students study trees, their properties and algorithms for minimum spanning trees
M106P	**MAXIMA PRACTICALS BASED ON PAPER M105T**	• Students are introduced to Maxima programming, its usage and advantages. • Students verify different various concepts, principles and properties of discrete mathematics and graph theory using Maxima programming
M107SC	**MATHEMATICAL ANALYSIS**	• Students revisit the concepts of limit, continuity and differentiability of functions. • Students learn about the different mean value theorems with examples. • Students study the numerical sequences and series of real numbers, their types and properties. • Students understand the various tests of convergence for sequences and series of numbers with examples
SECOND SEMESTER		
M201T	**ALGEBRA-II**	• Students are introduced to Nil and Jacobson radicals, operations on ideals and prime spectrum of a ring. • Students study about modules, their different types, properties and applications. • Students learnt about finite, algebraic, simple and separable extensions, and splitting fields. • Students are introduced to construction with straight edge and compass. • Students understand the concept of Galois theory
M202T	**COMPLEX ANALYSIS**	• To study and understand the importance of entire and meromorphic functions, convex functions and their application in mathematical analysis of solutions obtained by the mathematical modeling of the problems existing in atmospheric, engineering, aerodynamics etc. • To learn the conformal mapping of the elementary functions. • Finding the radius of convergence of the power series solutions and plotting. • Evaluation of functions involving singularities and boundaries of different types and branch points. • Applications of complex valued functions in circles and concentric circles, understanding of conformal mapping using Reimann mapping theorem
M203T	**TOPOLOGY-II**	• Students learn about compactness, its types and properties. • Students study the first and second axioms of countability. • Students are introduced to different separation axioms, their comparison, properties and characteristics. • Students understand the concept of para-compactness and metrizability
M204T	**PARTIAL DIFFERENTIAL EQUATIONS**	• Recognize real world circumstances to identify when partial differential equations are appropriate, formulation of problems and solving the problems using multiple approaches • Students will learn what partial differential equation is,

		distinguish between linear and nonlinear PDEs, classify PDEs, geometrical interpretation of PDEs, what are initial and boundary value problems, what constitutes a solution. Students will learn to visualize and manipulate PDEs in graphical and symbolic form. Application of PDEs to analytical dynamics, discontinuous solution and shock waves. ● Students will learn to classify second order linear PDEs as hyperbolic, parabolic and elliptic PDEs and find their solution by different methods. Students will acquire knowledge on solving boundary value problems of hyperbolic, parabolic and elliptic PDEs
M205T	**NUMERICAL ANALYSIS-I**	● Basic concepts and techniques of numerical solution of algebraic equations, system of algebraic equations, system of non linear equations. Demonstrate understanding of common numerical methods and apply numerical methods to obtain approximate solutions to mathematical problem ● Students learn about different types of errors. ● Students study different iteration methods to obtain the solution of nonlinear equations in one variable. ● Students also learn to obtain the solutions of system of linear and nonlinear equations using direct and iteration methods. ● Students study different techniques of interpolation and approximation. ● Students understand the numerical methods used for determining the value of single and multiple integrals. ● Students also study the convergence of all the methods
M206P	**SCILAB PRACTICALS BASED ON PAPER M205T**	● Students are introduced to different aspects of Scilab programming. ● Students use Scilab to determine better approximations of solutions of some numerical methods.
M207SC	**ELEMENTARY NUMBER THEORY**	● Students learn about divisibility, distribution of primes and introduced to linear Diophantine equations. ● Students understand the concept of linear and polynomial congruences with applications. ● Students are introduced to quadratic residues, Legendre symbol, Jacobi symbol and their properties. ● Students learn about sum of two squares, four squares and Pythagorean triples.
THIRD SEMESTER		
M301T	**DIFFERENTIAL GEOMETRY**	● Students are introduced to coordinate and differentiable functions, tangent spaces, directional derivative, differential forms and mappings of Euclidean spaces. ● Students study about frame fields, their properties and characteristics. ● Students understand different concepts about surfaces with examples. ● Students learn the shape operators of sphere, plane, cylinder and saddle surfaces
M302T	**FLUID MECHANICS**	● To study and understand the real world applications of fluid mechanics and solving the resultant mathematical equations using relevant methods to realize the complexity of the solution of the physical, engineering, bio-medical, atmospheric and mechanical based problems. To understand the importance of software usage.

		• Mathematical modeling of the fluid flow systems. Solving resultant ordinary and partial differential equations using relevant methods. • Representation of the solution using plotting the graphs. • Dimensional analysis of the system for understanding rescaling the actual physical configuration to the conventional forms • Analysis of the solution using stream functions. • Students are introduced to the concept of Cartesian tensors, their types and properties. They also learn about suffix, comma and semicolon notation. • Students study about the configuration of a continuum, description of motion, stress, fundamental basic physical laws and related concepts. • Students study the complex potential and singularities of two dimensional flow.
M303T	**FUNCTIONAL ANALYSIS**	• Students are introduced to normed linear spaces and Banach spaces, their properties, characteristics and examples. • Students learn about continuous linear transformations, linear functionals and projections on Banach spaces. • Students study the definition, examples and properties of inner product spaces and Hilbert spaces. • Students understand the concepts of orthogonality and orthonormality in Hilbert spaces. They also learn operators and projections on Hilbert spaces.
M304T	**LINEAR ALGEBRA**	• Students study linear transformations, their properties, characteristics, matrix representation and diagonalizability. • Students learn about different canonical forms. • Students are introduced to Gram-Schmidt orthonormalization process. • Students understand the concept of singular value decomposition, its applications and examples. • Students also learn about bilinear and quadratic forms
M305T	**NUMERICAL ANALYSIS-II**	• Students study single and multistep methods for solving initial value problems of first and second order ODEs. • Students learn methods for solving boundary value problems of second order ODEs. • Students are introduced to explicit and implicit methods to solve elliptic, parabolic and hyperbolic PDEs. • Students also study the convergence and stability of all the methods.
M306P	**SCILAB PRACTICALS BASED ON PAPER M305T**	• Students learn to write Scilab code for several methods used for solving initial and boundary value problems of first and second order ODEs. • Students understand the nature of the solutions by plotting the solutions of PDEs. • Students also learn how to debug the code.
3.5	**ACADEMIC ENGLISH (OPEN ELECTIVE)**	• Students study process writing. • Students write essays related to various topics. • Students learn how to write their Curriculum Vitae (CV). • Students also learn how to write a short research paper.
FOURTH SEMESTER		

M401T	**MEASURE AND INTEGRATION**	• Students study about Lebesgue outer measure, Lebesgue measure, Lebesgue measurable sets and their properties. • Students understand the definition and properties of measurable functions. • Students learn about Lebesgue integral and its characteristics. • Students also study the convergence theorems of Lebesgue integral
M402T	**MATHEMATICAL METHODS**	• To study and understand the importance of Integral transforms like Laplace transform, Fourier transform, Hankel transform, Discrete Fourier transform and Wavelet transforms of functions and applications existing in atmospheric, engineering, aerodynamics etc. Finding Eigen values and Eigen functions of different types of integral equations existing in IVP and BVP problems. Understanding the closed form solution of the integral equations using asymptotic expansions. • Learn to apply Integral transforms to Differential and integro-differential equations. • Solving differential equations with initial and boundary conditions using Integral transforms. • Asymptotic expansion of the functions for in the valid interval of convergence. • Solving the linear and non-linear differential equations with constant and variable coefficients using Perturbation techniques like regular perturbation, Poincare-Lindstedt method and WKB approximation. • Studying applicative problem like Duffings equation, Vanderpol oscillator, small Reynolds number flow and singular perturbation problems. • Students study the Laplace, Fourier, discrete Fourier, Hankel and wavelet transforms, and their applications to solve ODEs and PDEs
M403T(C)	**THEORY OF NUMBERS**	• Students study different arithmetical functions, their properties and examples. • Students understand the concept of linear and polynomial congruences with applications. • Students are introduced to quadratic residues, Legendre symbol, Jacobi symbol and their properties. • Students are introduced to the concept of partitions. They learn the Euler's theorem, Jacobi's triple product identity and Rogers-Ramanujan identities
M403T(E)	**MAGNETOHYDRODYNAMICS**	• To study and understand the real-world applications of Magnetohydrodynamics, Nano Fluids and solving the resultant mathematical equations using relevant methods to realize the complexity of the solution of the physical, engineering, bio-medical, atmospheric and mechanical based problems. To understand the importance of software usage. • Mathematical modeling of the electrically conducting fluid flow systems. • Solving resultant ordinary and partial differential equations using relevant methods. • Representation of the solution using plotting the graphs. • Dimensional analysis of the system for understanding rescaling the actual physical configuration to the conventional

		forms ● Finding the velocity and temperature distribution for the MHD Flows and Plotting and analyzing using non-dimensional numbers
M403T(H)	**FINITE ELEMENT METHOD WITH APPLICATIONS**	● Recognize real world circumstances to apply Finite element method, formulation of problems and solving the problems using multiple approaches. ● To obtain an understanding of the fundamental theory of the Finite element method. ● To develop the ability to generate the governing Finite element equations for systems governed by ordinary and partial differential equations. ● To understand the use of the basic finite elements for structural applications using Torsion of shaft of a square, elliptic, triangular cross sections. ● To understand the application and use of the Finite element method for Laplace and Poisson equations over rectangular and non-rectangular and curved domains.
M404P	**LATEX AND LATEX BEAMER**	● Students learn how to use Latex for creating documents and presentations. ● Students use different Latex packages to style their documents and presentations. ● Students get hands-on experience in typesetting documents. ● Students also learn how to debug to Latex programs
	PROJECT WORK	● Students do a self-study of a topic (fairly advanced, not covered in their course work) under the guidance of a faculty member. ● Students gain deep knowledge about the project topic. ● Students create a project report leading to a possible publication at the end of the project work