Bachelors of Commerce

Programme Outcomes (POs) Commerce

At the time of graduation, the students will be able to-

PO1: Work with various fields effectively in broad range of analytic, scientific, government, non-government, financial, health, technical sectors

PO2: understand mathematical or statistical expertise independently when needed

PO3: Recall the component of the written business plan

PO4: Remember the elements of feasibility analysis

PO5: Examine market segmentation, size and trends, buyer behaviour and competitions

PO6: Know necessity of accounting and its benefits

PO7: Understand technical skills required for preparation of financial statements

PO8: Apply procedural knowledge in order to perform concept testing and collect consumer behaviour and feedback data

Course Outcomes

F.Y. B.Com

Semester I

Business & Industrial Economics-I

By the completion of course, the students will able to-

CO1: Calculate the benefits of economics and its theories in setting the objectives of business firm

CO2: Identify the consumer behaviour for their competitive approach

CO3: Determine the concept of equilibrium to consumer satisfaction & factors price determination

CO4: Identify the limits of economic analysis

CO5: To conduct economic analysis using graphs

CO6: Identify various types of competition in market and determine the strategic approach of firm

Entrepreneurship Development-I

By the completion of course, the students will able to-

CO1: Describe trends in Entrepreneurship

CO2: Describe role of Entrepreneurs in Economic Development

CO3: Understand Development of Entrepreneurship in twenty first century

CO4: Classify life cycle of Project

Business Mathematics & Statistics I

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

CO1: Determine critical outcomes from collected data
CO2: Identify the connection between theory and applications data analysis
CO3: Identify the P-value of current data
CO4: Describe the results of collected data by using mathematical and statistical literacy

Financial Accounting –I
Financial Accounting -II
After the completion of the course, the students will able to-
CO 1: Prepare Final Statements of Accounts of sole trader and solicitor
CO 2: Able to prepare Final Accounting of Non-trading
CO 3: Perform calculation and payments concern in case of Royalty Undertakings
CO 4: Write difference between hire purchase system and instalment purchase method

Computer Application in Business – I
Computer Application in Business – II
By the completion of the course, the students will able to-
CO1: Calculate Computers different number system
CO2: Explain and Correlate the Computers High-Level, Low-Level, Assembly-Language
CO3: Describe Word Document and Various Functions of Word
CO4: Calculate numerical examples in Excel and different Functions of Excel Sheet
CO5: Explain different Functions to crate the PPT Presentation, Slide Effects in PowerPoint

Semester II

Business Organization & Management –II
After completion of the course, the students will able to-
CO1: Determine basic concepts of management
CO2: Identify the functions of management in business
CO3: Give planning and Decision making in business organization
CO4: Determine importance of motivation & communication
CO5: Determine as an individual a smart and self esteemed

Entrepreneurship Development -II
After completion of the course, the students will able to-
CO1: Evaluate elements of company structure
CO2: Determine the activities in setting-up enterprise
CO3: Understand essentials of enterprise
CO4: Create new ideas which consist of brainstorming activities, focus groups, research

Business Mathematics & Statistics -II
After completion of the course, the students will able to-

CO1: Describe the results of collected data by using mathematical and statistical literacy
CO2: Calculate the correlation of Coefficient with various methods
CO3: Calculate the probability of any event
CO4: Identify regression of any event

S.Y. B.Com
Semester III

Principle of Business Management -I
Upon completion of the course, the students will able to-

CO1: Determine correct action plan for successful execution of task
CO2: Identify qualities of HR and classify HR according to requirement of task skills
CO3: Describe principles of management in application of its functions in daily activity
CO4: Determine periphery of designation and calculate authoritative actions

Business Regulatory Framework – I
Upon completion of the course, the students will able to-
CO1: Determine correct and lawful object for making of contract
CO2: Identify and differentiate various types of valid contract with enforceability
CO3: Calculate risk of absence of any element essential for enforceability of valid contract
CO4: Describe significance of consideration for a promise
CO5: Classify various concepts of in mercantile law

Financial Management -I
Upon completion of the course, the students will able to-
CO1: Identify various investment avenues for the purpose of capital raise
CO2: Identify the requirement of optimum capital in business
CO3: Determine the cost of capital according to their debt
CO4: Identify optimum utilization of available resources
CO5: Give proper planning for budgeting

I.T Application in Business- I
I.T Application in Business -II
Upon completion of the course, the students will able to-
CO1: Elaborate Importance of Tally and Computerised Accounting
CO2: Identify and create voucher entry, Payment voucher, Receipt voucher, Credit and Debit Note
CO3: Explain e-commerce and its applications

CO4: Describe online shopping and E - marketing

CO5: Explain Electronic Business and E- commerce

Semester IV

Principle of Business Management –II

Upon completion of the course, the students will able to-

CO1: Evaluate significance of two way communication in any business
CO2: Describe proper hierarchy of management and identify correct protocol of reporting
CO3: Identify qualities and role of leaders
CO4: Describe the stages in motivation

Business Regulatory Framework - II

Upon completion of the course, the students will able to-
CO1: Describe various concepts in contract of sale
CO2: Determine the various negotiable instruments for performing the contract
CO3: Identify the redresser machinery for consumer protection
CO4: Identify the various rights of human

Corporate Accounting – I
Corporate Accounting - II

Upon completion of the course, the students will able to-
CO1: Differentiate equity share capital and preference share capital
CO2: Explain process of Issue of Debenture and Redemption of Debentures
CO3: Classify expenses and Income as well as Assets and liabilities to Prepare final statement of Accounts
CO4: Explain process of reconstruction and liquidation
CO5: Elaborate process of amalgamation absorption and holding of companies and relationships between them

Financial Management- II

Upon completion of the course, the students will able to-
CO1: Identify sources for capital structure
CO2: Calculate the rate of return on investment with various methods

CO3: Determine optimum utilization of capital structure to increase wealth of going concern
CO4: Identify and calculate the requirement of working capital in business activities
CO5: Describe the significance of leverages in financial Management
CO6: Identify correct dividend policy according to business motive

T.Y.B.Com
Semester V

Cost Accounting - I
Upon completion of the course, the students will able to-
CO1: Determine per cost of units
CO2: Explain quality strategy to reduce the cost of product and increase the level of profit by maintaining quality of goods
CO3: Explain methods of distribution of Overhead
CO4: Identify methods of time keeping and time booking for labour control

Direct & Indirect Taxes- I
Direct & Indirect Taxes - II
Upon completion of the course, the students will able to-
CO1: Calculate taxable amount for tax payment
CO2: Determine tax exemption and increases amount for saving
CO3: Describe and differentiate tax amount under various leads
CO4: Evaluate application of fiscal policy and determine policy for tax planning
CO5: Classify tax amount according to tax slab rates

Management Accounting -I
Upon completion of the course, the students will able to-
CO1: Calculate various methods of ratio analysis
CO2: Differentiate fund flow and Cash flow Statement
CO3: Prepare cash budget, flexible budget and different activities budget
CO4: Explain difference between Management Accounting and Financial Accounting

Advance Financial Accounting- I
Upon completion of the course, the students will able to-
CO1: Determine concept of Social accounting
CO2: Identify allocation of Departmental Expenses
CO3: Identify Purchase and sales of investment before the date of payment of cum-interest and ex-interest
CO4: Classify forms of balance sheet as per scheduled sated Form A and Form B in Bank Final Account

New Auditing Trends- I

Upon completion of the course, the students will able to-
CO1: Explain Duties and Liabilities of Company Auditor
CO2: Describe methods of verification as per audit standards
CO3: Classify vouching process according to the expectation of board of auditors
CO4: Evaluate transparency and calculate interdepartmental malpractices

Information and Communication Technology – I
Information and Communication Technology - II
Upon completion of the course, the students will able to-

CO1: Explain Structure of C programming, data types and C tokens
CO2: Define and declare arrays, single dimensional and multi-dimensional
CO3: Describe Internet banking system in India, types of E- payment cards
CO4: Explain E banking – NEFT, RTGS and security in e banking- SSL and Firewalls
CO5: Describe ERP models or products, BPO and knowledge management IT's life cycle

Semester VI

Cost Accounting -II
Upon completion of the course, the students will able to-
CO1: Calculate process cost to reduce the unnecessary expenditure in process of production
CO2: Describe elements of cost and classify it to apply strategic approach in reduction of cost and improvement in level of productivity
CO3: Calculate work in progress profit on Contract
CO4: Classify Reconciliation of Cost and Financial Accounts

Management Accounting -II
Upon completion of the course, the students will able to-
CO1: Prepare capital budget
CO2: Identify Cash Budget
CO3: Explain pay-back period method
CO4: Describe benefits of Responsibility Accounting

Advance Financial Accounting –II
Upon completion of the course, the students will able to-
CO1: Describe Stock market and procedure of D-mat Accounts
CO2: Determine Insolvency of an Individual and preparation of accounts as per act
CO3: Identify rules regarding application of cash and accrual basis system in Local Government Accounts
CO4: Classify accounts of farm accounting of Dairy and Poultry with special adjustment

New Auditing Trends –II

Upon completion of the course, the students will able to-
CO1: Determine style of presentation of report writing
CO2: Explain importance of Human Resource Audit
CO3: Describe difference between Audit and Investigation
CO4: Explain Auditor's role under Income Tax Act

M. COM.

Program Outcomes (POs)

PO1: To learn principles of commerce and management.

PO2: It help the learner to correlate the subject with real life situation.

PO3: To apply mathematical and statistical tools to solve problems in economics, actuarial studies, accounting, marketing, management.

PO3: To analyse theories of economics with respect to markets, firms, government policy.

PO4: To know about basic entrepreneurship skills and knowledge of the subject.

PO5: To demonstrate the practical knowledge of accountancy, taxation and marketing.

PO6: To understand new trends in banking, insurance and finance and role of information technology in commerce.

M.Com
Program Specific Outcomes (PSOs)

PSO1. Evaluate business problems in complex contexts using social, ethical, economic, regulatory and global perspectives.

PSO2. Integrate advanced theoretical and technical knowledge in business which includes a selection of issues in accounting, auditing and
Business related disciplines.

PSO3.Understand topics of wide relevance including banking, mutual fund, corporate tax, and accounting.

PSO4.Gain knowledge of statistics, law, and other areas that influence the subject area.

PSO5.Appraise and appreciate strategic implications of local and global changes /developments in the subject area.

PSO6.Develop key personal and inter-personal globally relevant skills for academic and professional enhancement.

Course Outcomes (COs)

SEMISTER I

Modern Management Practices

After completion of the course students will be able to

CO1. To describe and communicate the management evolution and how it will affect future managers.

CO2. To identify and evaluate the influence of historical forces on the current practice of management.

CO3. To identify and evaluate social responsibility and ethical issues involved in business situations and logically articulate own position on such issues.

CO4. To describe how organizations adapt to an uncertain environment and identify techniques managers use to influence and control the internal environment.

CO5. To practice the process of management's four functions: planning, organizing, leading, and controlling.

CO6. To identify and properly use vocabularies within the field of management to articulate one's own position on a specific management issue and communicate effectively with varied audiences.

Managerial Economics

After completion of this course students will be able to:

CO1. Describe various approaches of consumer behaviour and derivation of demand accordingly.

CO2. Various theories of growth of the firms and their subsequent behaviour towards setting of objectives and trade-offs, providing various real life cases covering almost all concerned aspects.

CO3.Describe the probable outcomes of concept of Production and Cost their functions and relations.

C04. Understand transformation of inputs into output and associated cost in short run as well as in long run,

C05. Know specific laws related to behaviour of production and cost functions along externalities, with simple case studies.

CO6. Determination of price and output and reactions with regard to number of sellers, number of buyers, homogeneous products, heterogeneous products etc.

Corporate Financial Accounting

After completion of the course students will be able to understand

CO1. Nature and classifications of accounting theory, the use of GAAP and selected accounting principles.

CO2. Concepts related to income measurement and comparison of standard setting in India, US and UK.

CO3. Nature and benefits of financial reporting the conceptual framework of FASB and IASB

CO4. Issues related to corporate Financial reporting with major concern to changing prices.

CO5. An overview of interim reporting and Foreign Currency Translation.

CO6. Recent developments in accounting-HRA, Social reporting and Financial Reporting in Not-For-Profit and PSU'S

Statistical Analysis

By Studying this subject students will be able:

CO1. Determine an understanding of the theory of probability, rules of probability and probability distributions.

CO2. Comprehend the decision making process under uncertainty using statistical tools.

CO3. Describe the concepts in sampling, sampling distributions and estimation.

CO4. Identify the meaning and process of hypothesis testing including one-sample and two-sample tests.

CO5. Describe the importance and application of non-parametric tests in hypothesis testing.

CO6. Identify the meaning and importance of correlation and regression analysis including both simple and multiple correlation and regression

SEMISTER II

D-Commerce

After completion of this course students will be able to

CO1. Describe the foundations and importance of D-commerce

CO2. Analyze branding and pricing strategies, by using and determining the effectiveness of market research

CO3. Determine the impact of D-commerce on business models and strategy

CO4. Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational.

CO5. Describe the infrastructure for D-commerce

CO6. Describe the key features of Internet, Intranets and Extranets and explain how they relate to each other.

CO7. Describe legal issues and privacy in D-Commerce

CO8.Determine electronic payment systems

CO9. Identify and discuss global D-commerce issues

Organizational Behaviour And Work Culture

After completion of this course students will be able to

CO1. Identify the areas of development for long term effectiveness.

CO2. Determine the role that individuals play collectively to perform in organizations.

CO3. Describe the development of Organisational Behaviour.

CO4. Identify the problems facing managers at work.

CO5. Develop an awareness of Organisational Behaviour as it currently affects organisations from newspapers, professional journals and the Internet.

CO6. Determine the different research methods used in Organisational Behaviour.

CO7. Determine the findings of researchers in Organisational Behaviour.

Advance Cost Accounting

After Completion of the course students will be able to:

CO1. Describe the place and role of cost accounting in the modern economic environment

CO2. Select the costs according to their impact on business

CO3. Classify methods of schedule costs per unit of production

CO4. Classify methods of calculating stock consumption

CO5. Describe the impact of the selected costs method

CO6. Identify the specifics of different costing methods

Tax Planning, GST and Management

After Completion of the course students will be able to:

CO1. Identify the difference between tax evasion and tax planning.

CO2. Describe how the provisions in the corporate tax laws can be used for tax planning.

CO3. Classify the different types of incomes and their taxability and expenses and their deductibility.

CO4. Determine the corporate tax laws.

CO5. State the use of deductions of expenses to reduce the taxable income

CO6. Describe various concepts of Goods & Service Tax

CO7. Identify the impact of new regulation on distribution of pesticides and kind of changes needed to be done

CO8. Gain an insight on the recording and analyzing the transactions for compliance under GST especially in supply chain & distribution

SEMISTER III

After Completion of the course students will be able to:

Research Methodology

After completion of this course students will be able to

CO 01 Describe the meaning and role of Business Research.

CO 02 Determine the research problem and understanding the major research designs.

CO 03 Determine data sources and learn the art of designing a questionnaire.

CO 04 Identify various sampling techniques used for data collection.

CO 05 Identify the Data collection and Fieldwork

CO 06 Describes data analysis using various Univariate analysis ,Bivariate and Multivariate techniques

CO 07 Learn how to communicate the results and follow up

Human Resource Planning and Development

After completion of this course students will be able to

CO1. Determine the basics of Human Resource Development

CO2. Identify HRD process including implementation and evaluation

CO3. Determine learning as a process and HRD culture

CO4. Basic Identification of HRD activities and applications

CO5. Identify contemporary HRD trends and practices

CO6. Basic Identification of Strategic Human Resource Management

CO7. Determinelearning strategy implementation concerning HR

CO8. Identifying HR Functions from Strategic perspective

CO9. Broader Identification of SHRM and its links with corporate strategy

CO10. Determining and Learning new developments in the field of SHRM

Business Legislation

After completion of this course students will be able to

CO1. Describe the evolution of company law in India and over the World; how the Indian Laws were formed and modified from time to time.

CO2. Determine how the companies are formed; what are the various kinds of Companies;

CO3. Describe the term "prospectus" and purpose of issuing prospectus etc.

CO4. Determine the various provisions related to Directors, Managers, Meeting under Companies Act 2013;

CO5. Describe how the Directors and Managers are being appointed and how they can be removed etc.

CO6. Determine the various provisions related to maintenance of Accounts,

CO7. Describe how a company can declare dividend; and who can inspect the accounts of the company etc.

CO8. Determine the various provisions related to Consumer Protection Act; what are the rights and obligations of Consumers etc.

CO9. Determine the various provisions related to SEBI Act, 1992; and The purpose for formation of SEBI, its functions;

CO10. Describe how the Government is able to avoid the issue of insider trading etc.

International Marketing

After completion of this course students will be able to

CO1. Describe the concept and nature of international marketing,

CO2. segmenting and positioning process and different modes of making entry into international markets.

CO3. Determine various decisions required to be made in respect of products to be launched in foreign markets and determining price and terms at which these will be offered.

CO4. Determine decisions related to designing channel as well as physical distribution systems for making available the products in the international markets.

CO5. Classify various methods through which a firm can promote its products in foreign markets and be able to make all the necessary decisions needed for promoting the product in overseas markets.

CO6. Determine emerging trends and issues in international marketing such as international marketing through internet, ecological concerns and marketing ethics.

Entrepreneurship Development (Service Course)

After completion of this course students will be able to

CO1. Determine the fundamentals of entrepreneurship and its role in economic development and to motivate them towards entrepreneurial activities.

CO2. Describe the concept of business plan & its importance in business and simultaneously making them aware about various legal issues involved in business.

CO3. Identify and demonstrate the marketing and financial implications for establishing and managing any business venture.

CO4. Determine and develop the skills to rise the funding for the business from different sources for a start-up venture.

CO5. Determine the plans for business growth and sustenance through effective negotiation skills and time management.

SEMISTER IV

After completion of this course students will be able to

Quantitative Techniques

CO1. Describing the basics of decision making by using models.

CO2. Use of Linear Programming; its formulation and solution using graphic and simplex method.

CO3. Identify and deal with the exceptional cases of transportation and assignment problems.

CO4. Identify and use of Inventory models and Queuing systems with the techniques of selective control.

CO5. Determine the concepts of PERT & CPM techniques and their applications, time- cost trade off.

CO6. Determine the concepts related to game theory, Markov chains-decision process, market share analysis &A/c receivable analysis.

Security Analysis

After completion of this course students will be able to

CO1. Classification of the various alternatives available for investment.

CO2. Determine and Measure risk and return.

CO3. Identify the relationship between risk and return.

CO4. Determine the value of the equities and bonds.

CO5. Gain knowledge of the various strategies followed by investment practitioners

International Business

After completion of this course students will be able to

CO1. Describe how international factors affect domestic concerns;

CO2. Determine regional economic integration and economic and political integration;

CO3. Determine the main institutions that shape the global marketplace;

CO4. Describe businesses expansion abroad;

CO5. Describe the key legal issues related to businesses operating in other countries;

CO6. Determine and enhance their cognitive knowledge of global issues; interpersonal skills with individuals from various cultures, and social responsibility awareness on global issues.

Research Project

After completion of this course students will be able to

CO1. Determination and Carrying out a substantial research-based project

CO2. Describe and Demonstrate capacity to improve student achievement, engagement and retention

CO3 Describe and Demonstrate capacity to lead and manage change through collaboration with others

CO4. Describe and Demonstrate an understanding of the ethical issues associated with practitioner research

CO5. Determine and Analysis of data and synthesize research findings

CO6. Report research findings in written and verbal forms

CO7. Determine the uses of research findings to advance education theory and practice.

B.Sc. Computer Science

Programme Specific Outcomes

PSO1: Understand basics of software systems

PSO2: Design, implement and document solutions to significant computational problems

PSO3: Demonstrate understanding of principles and working of hardware and software systems of computer systems

PSO4: Apply fundamental principles and methods of Computer Science to a wide range of applications

PSO5. Design, implement, test, and evaluate computer system, component, or algorithm to meet desired needs and to solve computational problems

PSO6: Develop proficiency in the practice of computing

PSO7: Apply problem-solving skills and knowledge of Computer Science to solve real problems

PSO8: Enhance programming skills and adapt new computing technologies for attaining professional excellence and carrying research

Course Outcomes

Semester I

Computer Fundamentals

CO1: Explain various steps involved in problem solving techniques

CO2: Classify 7-8 high-level programming languages and two operating systems

CO3: Analyze complex problems and the synthesis of solutions to those problems

CO4: Explain software engineering principles

Digital Electronics

CO1: Define digital components and devices

CO2: Explain logic gates and realization of OR, AND, NOT AND XOR Functions using universal gates

CO3: Explain combinational circuits like half adder/full adder, half subtractor/full subtractor, code converters, comparators, MUX/DEMUX

CO4: Evaluate sequential circuits like flip-flops, counters and shift registers

Microprocessor- I

CO1: Define taxonomy of microprocessors and knowledge of contemporary microprocessors

CO2: Explain architecture, bus structure and memory organization of 8086 as well as higher order microprocessors

CO3: Explore techniques for interfacing I/O devices to the microprocessor 8086 including several specific standard I/O devices such as 8251 and 8255

CO4: Define programming using the various addressing modes and instruction set of 8086 microprocessor

C-programming I

CO1: Explain flowchart and design algorithm for a given problem and to develop IC programs using operators

CO2: Define conditional and iterative statements to write C programs

CO3: Classify user defined functions to solve real time problems

CO4: Describe C programs that use Pointers to access arrays, strings and functions

CO5: Explain user defined data types including structures and unions to solve problems

Communications Skill – I

CO1: Describe importance of communication in daily life

CO2: Elaborate importance of grammar as an effective tool for accuracy in communication

CO3: Describe listening is the most important aspect of all communication skills

CO4: Develop body language is an important aspect of effective communication

CO5: Discuss how pronunciation of words is essential for better comprehension in communication

Mathematical Foundation

CO1: Define set and constructing proofs

CO2: Draw graphs on the basis of available data

CO3: Explain relations and determine their properties

Semester II

Data Structure

CO1: Define concept of Dynamic memory management, data types, algorithms

CO2: Give basic data structures such as arrays, linked lists, stacks and queues

CO3: Describe the hash function and concepts of collision and its resolution methods

CO4: Explain problem involving graphs, trees and heaps

CO5: Solve algorithm for sorting, searching, insertion and deletion of data

Operating Systems

CO1: Define the main components of an OS & their functions

CO2: Explain the process management and scheduling

CO3: Elaborate various issues in Inter Process Communication (IPC) and the role of OS in IPC

CO4: Describe the concepts and implementation

Microprocessor- II

CO1: Define the taxonomy of microprocessors and knowledge of contemporary microprocessors CO2: Explain architecture, bus structure and memory organization of 8086 as well as higher order microprocessors

CO3: Explore techniques for interfacing I/O devices to the microprocessor 8086 including several specific standard I/O devices such as 8251 and 8255

CO4: Classify programming using the various addressing modes and instruction set of 8086 microprocessor

C-programming II

CO1: Give flowchart and design algorithm for a given problem and to develop IC programs using operators

CO2: Develop conditional and iterative statements to write C programs

CO3: Exercise user defined functions to solve real time problems

CO4: Explain C programs that use Pointers to access arrays, strings and functions

CO5: Classify user defined data types including structures and unions to solve problems

Communications Skill – II

CO1: Give importance of communication in daily life

CO2: Describe how grammar is an effective tool for accuracy in communication

CO3: Elaborate importance of all communication skills

CO4: Explain body language as an important aspect of effective communication

CO5: Give importance of pronunciation of words for better comprehension in communication

Numerical Computational Method

CO1: Describe error analysis for a given numerical method

CO2: Explain an algebraic or transcendental equation using an appropriate numerical method

CO3: Prove results for numerical root finding methods

CO4: Explain approximate a function using an appropriate numerical method

Semester III

Advance Data Structure

CO1: Explain asymptotic notation, its properties and use in measuring algorithm behavior

CO2: Explain mathematical principles to solve various problems

CO3: Evaluate complexities of various algorithms and select the best

CO4: Describe different strategies that are known to be useful in finding efficient algorithms to solve problems and to be able to apply them

CO5: Use appropriate data structure and algorithms to solve a particular problem

UNIX Operating system

CO1: Develop software for Linux/UNIX systems

CO2: Define C language and get experience programming in C

CO3: Explain important Linux/UNIX library functions and system calls

CO4: Verify the inner workings of UNIX-like operating systems

CO5: Define a foundation for an advanced course in operating systems

PC maintenance

CO1: Describe electronic circuits with the knowledge of courses related circuits, networks, linear digital circuits and analog electronics

CO2: Explore the scientific theories, ideas, methodologies in operation and maintenance of communication systems to bridge the gap between academics and industries

CO3: describe work profession with new cutting edge Technologies in the fields of electronic design, communication and automation

CO4: Describe operating system and other application software

Programming in CPP

CO1: Explain the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects

CO2: Describe dynamic memory management techniques using pointers, constructors, destructors CO3: Explain concept of function overloading, operator overloading, virtual functions and polymorphism

CO4: Describe inheritance with the understanding of early and late binding, usage of exception handling, generic programming

DBMS

CO1: Describe different issues involved in the design and implementation of a database system

CO2: Explain physical and logical database designs, database modelling, relational, hierarchical, and network models

CO3: Explain data manipulation language to query, update, and manage a database

CO4: Describe DBMS concepts such as: database security, integrity, concurrency

Statistical Method

CO1: Explain inferential and descriptive statistics. Differentiate between a quantitative and a qualitative variable, Know the four levels of measurement: - nominal, ordinal, interval, and ratio

CO2: Define frequency distribution, determine the class midpoints, relative frequencies, and cumulative frequencies of a frequency distribution, Construct a Histogram, a Frequency Polygon, and a Pie Char.

CO3: Define mean, mode, and median. Explain the characteristics of the mean, mode, and median. CO4: Calculate mean, mode and median for both grouped and ungrouped data

Semester IV

Software Engineering -

CO1: Describe successful professionals in the field with solid fundamental knowledge of software engineering

CO2: Utilize and exhibit strong communication and interpersonal skills, as well as professional and ethical principles when functioning as members and leaders of multidisciplinary teams

CO3: Explain foundations in software engineering to adapt to readily changing environments using the appropriate theory, principles and processes

CO4: Describe the issues affecting the organization, planning and control of software.

Fedora Linux

CO1: Describe various contents of Linux

CO2: Give the requirements in Linux system installation

CO3: Describe the concept of handling Linux and performing operations using Linux commands and tools

CO4: Describe the basics of Linux, logical channels, advantages and limitations

Basics of Networking -

CO1: Describe concepts of OSI reference model and the TCP/IP reference model

CO2: Describe concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks

CO3: Explain wireless networking concepts

CO4: Explain contemporary issues in networking technologies CO5: Explain network tools and network programming

Core Java

CO1: Define structure and model of the Java programming language

CO2: Use the Java programming language for various programming technologies

CO3: Describe software in the Java programming language

CO4: Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements

Adv. DBMS

CO1: Explain elementary and advanced features of DBMS and RDBMS

CO2: Describe conceptual frameworks and definitions of specific terms that are integral to the Relational Database Management Systems

CO3: Define basic concepts of Concurrency Control and database security

CO4: Prepare various database tables and joins them using SQL commands

Web Fundamental

CO1: Describe history of the internet and related internet concepts that are vital in understanding web development

CO2: Discuss insights of internet programming and implement complete application over the web CO3: Describe important HTML tags for designing static pages and separate design from content using Cascading Style sheet.

CO4: Define the concept of JavaScript's

Semester V

Software Cost Estimation

CO1: Prepare SRS document, design document, test cases and software configuration management and risk management related document

CO2: Describe function oriented and object oriented software design using tools like rational rose CO3: Describe unit testing and integration testing

CO4: Describe various white box and black box testing techniques

Android OS

CO1: Explain android platform Architecture and features

CO2: Design User Interface and develop activity for Android Applications

CO3: Define Intent, Broadcast receivers and Internet services in Android Applications

CO4: Design database Application and Content providers

Core Java-II

CO1: Describe fundamentals of programming such as variables, conditional and iterative execution, methods

CO2: Explain fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries

CO3: Give important topics and principles of software development

CO4: Elaborate computer program to solve specified problems

CO5: Discuss Java SDK environment to create, debug and run simple Java programs

Computer Graphics

CO1: Elaborate basics of Computer Graphics, different graphics systems and applications of Computer Graphics

CO2: Summarise the working principle of Display devices

CO3: Explain various algorithms for scan conversion and filling of basics objects and their comparative analysis

CO4: Analyse line, Circle and Ellipse and Character generation algorithm

CO5: Describe Geometric transformations including Translation, Scaling, rotation and Shear for 2D objects

CO6: Describe Geometric transformations including Translation, Scaling, rotation and Shear for 3D objects

Beginners Programming with PHP

CO1: Describe client server architecture and able to develop a web application using java technologies to create fully functional website/web applications

CO2: Describe role of language PHP and workings of the web and web applications

CO3: Prepare web page and identify its elements and attributes

CO4: Create dynamic web pages

Advanced Networking

CO1: Describe state-of-the-art in network protocols, architectures and applications

CO2: Describe existing network protocols and networks

CO3: Define new protocols in networking

CO4: Evaluate research in networking

CO5: Investigate novel ideas in the area of networking via term-long research projects

Semester VI

Software Quality & Testing

CO1: Describe reason for bugs and analyze the principles in software testing to prevent and remove bugs

CO2: Classify various test processes for quality improvement

CO3: Define test planning

CO4: Discuss test process

CO5: Explain software testing techniques in commercial environment

Android Application Development

CO1: Install and configure Android application development tools

CO2: Design user Interfaces for the Android platform

CO3: Evaluate information across important operating system events

CO4: Explain Java programming concepts to Android application development

Theory of Computation

CO1: Explain finite state machines and the equivalent regular expressions

CO2: State and prove the equivalence of languages described by finite state machines and regular expressions

CO3: Classify pushdown automata and the equivalent context free grammars

CO4: Verify equivalence of languages described by pushdown automata and context free grammars

Advanced Computer Graphics

CO1: Give importance of viewing and projections

CO2: Explain the fundamentals of animation, virtual reality and its related technologies

CO3: Describe typical graphics pipeline

CO4: Design an application with the principles of virtual reality

Advanced Programming with PHP

CO1: Explain general concept of PHP scripting language for the development of Internet websites CO2: Define basic functions of My SQL database program

CO3: Give relationship between the client side and the server side scripts

CO4: Evaluate final project using the learned techniques

Ethics and Cyber law

CO1: Explain ethical way of using computer, computer networks and Internet

CO2: Define the terms such as ethics, morals, character, ethical principles and ethical relativism

CO3: State laws and rules for using computer recourses and making them secure

CO4: State and explain laws concerning Cyber Space

B.B.A.

Program outcomes

PO1: To provide adequate understanding about management education among the students.

PO2: To prepare students to exploit opportunities being newly created in the management.

PO3: To train the students in communication skills effectively.

PO4: To develop appropriate skills in the students so as to make them competent and provide themselves self employment.

PO5: To inculcate entrepreneurial skills.

PO6: To communicate business information professionally.

PO7: To foster thinking minds that are sensitive to societal need and issues thus making them good human being and responsible member of the society.

Program specific outcomes

PSO1: Students will be able to apply knowledge of accounting, finance and economic concepts and practices in new small venture.

PSO2: Students will be able to understand the practical aspect of industry with the help of different seasonal activities like interviews, group discussion etc.

PSO3: Gains the essential qualities for team work, leadership and negotiation.

PSO4: Develops the ability to organize and present the business related information through communication skills.

PSO5: Helps to identify business related problems such as financial, economical, human resource etc.
PSO6: Analyses the ethical and social justice, demonstration of market and policy outcomes.
PSO7: To identify the relationship between important variable and to understand the different between correlation and cause & effect apply algebraic, graphical and statistical tools to analyse problems and issues in business and public policy.

Course outcomes

CO1: It provides the students a wide range of managerial skills with leadership qualities.
CO2: Empowers students with entrepreneurial and decision making skills by providing an excellent academic environment inculcating values of discipline, dignity, dedication and devotion to higher causes along with sportsmanship to make them better citizens.
CO3: Students will become effective communicators.
CO4: It will demonstrate critical thinking skills.
CO5: Students will get knowledge about ethical factors in the business environment.
CO6: The graduates will understand the global business environment.
CO7: Demonstrates analytical skills and technological expertise which will develop and present business information.
CO8: Students will get an insight into the management techniques prevailing in the corporate world.
CO9: It exposes students with various subjects: finance, management, marketing.

M.Sc. (Computer Science)
Programme Specific Outcomes

PSO1: Understand Fundamentals of programming
PSO2: Gain knowledge of Digital Signal Processing
PSO3: Proficient in advanced operating systems
PSO5: Analyze algorithms using various methods
PSO6: Understand advanced software engineering

Course Outcomes

M.Sc. I

Semester I

Advanced Java

CO1: Explain the concept of programming fundamentals

CO2: Explain problem analysis: Explain, formulate, review research literature, and analyze computer Programming problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and Programming sciences

CO3: Describe ethical principles and commit Explain professional ethics and responsibilities and norms of the Programming practice

CO4: Explain Logic and Algorithm principle, Describe model, design and implement software projects meet to' business objectives

CO5: Describe Modern Tool usage: Create, select, and apply appropriate techniques, resources, and modern Programming and IT tools including prediction and modelling tools complex Programming activities with an understanding of the limitations

Neural Network

CO1: Explain how the neural networks provided significantly better results than the regression model in terms of variation and prediction of extreme outcomes

CO2: Explain how neural network computation continues Explain gain popularity as an information processing Tool and has been applied Explain several problems in medical decision-making that traditionally have been attacked using statistical methods

CO3: Describe that how the neural networks are also self-training and amenable and explain incremental training after being put in to use. On the negative side, neural networks operate as "black boxes" in that they fail Explain elucidate any "deep" knowledge about the process being modelled

CO4: Explain mathematical preliminaries

CO5: Describe the artificial neurons abstraction field of Computer Science

Digital Signal Processing

CO1: Explain the signals and systems (SOA)

CO2: Describe the principles of discrete-time signal analysis Explain perform various signal operations (SO A, E)

CO3: Describe the principles of z-transforms and explain finite difference equations. (SO A, E)

CO4: Describe the principles of Fourier transform analysis Explain the frequency characteristics of discrete-time signals and systems (SO A, E)
CO5: Explain the principles of signal analysis and explain filtering (SO A, C, E)

Advanced Operating System
CO1: Explain Linux kernel mode with user mode and differentiate Kernel structuring methods
CO2: Explain file system structure with device drivers and file operations using system calls
CO3: Process management and Thread management strategies
CO4: Construct shell scripts with different programming syntax
CO5: Prepare for various OS case studies

Semester II
Data Structure & Analysis of Algorithms
CO1: Explain the asymptotic performance of algorithms
CO2: Describe rigorous correctness proofs for algorithms
CO3: Explain a familiarity with major algorithms and data structures
CO4: Describe important algorithmic design paradigms and methods of analysis
CO5: Describe efficient algorithms in common engineering design situations

Advance Neural Network & Fuzzy Systems
CO1: Describe soft computing concepts and techniques and foster their abilities in designing and implementing soft computing based solutions for real-world and engineering problems.
CO2: Explain fuzzy systems, fuzzy logic and its applications Explain the students about Artificial Neural Networks and various categories of ANN
CO3: Describe fuzzy systems, fuzzy logic and its applications, Artificial Neural

Networks and various categories of AFNN Image Processing
CO1: Describe Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering

discipline
CO2: Explain In-depth understanding of specialist bodies of knowledge within the engineering discipline
CO3: Describe the knowledge development and research directions within the engineering discipline
CO4: Describe Application of established engineering methods Explain complex engineering problem solving
CO5: Explain fluent application of engineering techniques, Tools and resources.
CO6: Describe Application of systematic engineering synthesis and design processes

Parallel Computing
CO1: Describe foundation of mathematics, computer science and problem solving methodology for effective implementation in the area of software development
CO2: Explain knowledge about various sub-domains related Explain the field of computer science and applications
CO3: Describe about principles of system analysis, design, development and project management
CO4: Explain effective communication skills combined with professional & ethical attitude

Semester III
Java Network Programming
CO1: Describe the concept of programming with mathematics
CO2: Describe problem analysis: Explain, formulate, review research literature, and analyze computer Programming problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and Programming sciences
CO3: Describe ethical principles and commit Explain professional ethics and responsibilities and norms of the Programming practice
CO4: Describe Logic and Algorithm principles, explain model, design and implement software projects Explain meet customers' business objectives
CO5: Describe Modern Tool usage: Create, select, and apply appropriate

techniques, resources, and modern Programming and IT Tools including prediction and modelling Explain complex Programming activities with an understanding of the limitations

Advanced Software Engineering & Technology

CO1: Describe ethics, professionalism, and cultural diversity in the work environment.

CO2: Explain basic software quality assurance practices Explain ensure that software designs, development, and maintenance meet or exceed applicable standards

CO3: Describe effective written and oral communication skills. Graduates can prepare and publish the necessary documents required throughout the project life cycle

CO4: Describe effectively contribute Explain project discussions, presentations, and reviews.

CO5: Explain the need for lifelong learning and can readily adapt and explain new software engineering environments

Computer Vision

CO1: Describe theory of computer vision

CO2: Describe the basics of pattern recognition concepts with applications Explain computer vision

CO3: Describe necessary theory and skills for automatic analysis of digital images, and thereby to construct representations of physical objects and scenes, and Explain make useful decisions based on them

CO4: Explain the ability to evaluate the computing systems from view point of quality, security, privacy, cost effectiveness, utility and ethics

CO5: Describe inculcate lifelong learning by introducing principles of group dynamics, public policies, environmental and societal context

CO6: Describe Recite algorithms that employ randomization. Explain the difference between a randomized algorithm and an algorithm with probabilistic inputs

Data Warehousing

CO1: Explain Data kernel mode with user mode and differentiate Kernel structuring methods

CO2: Explain internal file data system structure with device drivers and file operations using system calls

CO3: Explain Process of data warehousing and Thread management strategies

CO4: Describe Construct shell warehousing with different programming syntax

CO5: Explain the various Data Ware Housing case studies

Semester IV

Pattern Recognition

CO1: Describe learn Restoration Process, Noise Models, and Restoration in Presence of Noise

CO2: Explain learn Periodic Noise Reduction by Frequency Domain Filtering

CO3: Describe study estimating the Degradation Function,

CO4: Explain learn Degradation model Algebraic Approach Explain Restoration

CO5: Describe give basics of pattern recognition concepts with applications explain computer vision

CO6: Describe necessary theory and skills for automatic analysis of digital images, and thereby to construct representations of physical objects and scenes

Cryptography & Network Security

CO1: Describe the fundamentals of Cryptography

CO2: Describe knowledge on standard algorithms used Explain provide confidentiality, integrity and authenticity

CO3: Explain key distribution and management schemes

CO4: Describe encryption techniques Explain secure data in transit across data networks

CO5: Explain design security applications in the field of Information technology Graduates use effective communication skills and technical skills and explain assure production of quality software, on time and within budget.

CO6: Describe knowledge of science, mathematics, and engineering and explain

take on more expansive tasks that require an increased level of self-reliance, technical expertise, and leadership

CO7: Explain the computing systems from view point of quality, security, privacy, cost effectiveness, utility and ethics

Master of Library Science

PROGRAMME OUTCOMES

PO1: Should be able to get acquainted with various standards and tools being used in processing, managing and retrieving information resources.

PO2: Should be able to manage information traditionally as well as in modern ways.

PO3: Should be able to design, query and evaluate information systems.

PO4: Should be able to demonstrate understanding of research methods, the ability to design a research project, and the ability to evaluate and synthesize research literature;

PO5: Should be able to evaluate programs and services using library automation.

Course Outcome:

CO1: Should be able to examine the role of academic libraries in current scenario and concepts of information resources.

CO2: Should be able to select and use the appropriate print and electronic information sources.

CO3: Should be able to understand the concepts of information systems and services.

CO4: Should be able to deals with theoretical foundations of various information behaviors such as information needs, utilizing, gathering, seeking, and evaluating

CO5: Should be able to get acquainted with the information sources and their evaluation.

CO6: Should be able to select and use the appropriate print and electronic information sources.

CO7: Should be able to understand the methodologies and research tools being used by scientists in the area of Social Sciences and Humanities.

CO8: Should be able to use and evaluation of print and electronic resources.

CO9: Should be able to understand activities of research institutions and professional organizations at National and International.

CO11: Should be able to Collection Development Policy & Procedure, Weeding out Policy & Central Government Rules.

CO12: Should be able to explore various library services.

CO13: Should be able to apply the modern techniques of planning and implementation of policies and procedures.

CO14: Should be able to apply comprehend the basic knowledge and skills of handling the library finances.

CO15: Should be capable of managing the human resources beneficially.

M. Sc. Chemistry

Programme outcomes (P.O)

PO1 Think critically and analyze chemical problem.

PO2 Work effectively and safely in laboratory environment.

PO3 Students will demonstrate and understand major concepts in all disciplines of chemistry

PO4 Present Scientific and technical information resulting from laboratory experimentation in both written and oral formats.

PO5 Use technologies/instrumentation to gather and analyze data.

PO6 Work in teams as well as independently.

PO7Awareness of the impact of chemistry on the environment, society and other cultures outside the Scientific Community.

Programme Scientific Outcome

PSO1 The ability to perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental result. perform calculations on these results and draw reasonable accurate conclusion.

PSO2 The ability to synthesize, separate and characterize compounds using published reactions, protocols, standard laboratory equipment and modern instrumentation.

PSO3 An ability to employ critical thinking and efficient problem solving skills in four basic areas of chemistry (Analytical, Inorganic, Organic and Physical).

PSO4 Collaborate effectively on team oriented project.

PSO5 The ability to use modern instrumentation for chemical analysis and separation.

PSO6 Gathers attention about physical aspects of atomic structure, dual behaviour reaction pathways with respect to time, various energy transformations, molecular assembly in nanolevel, significance of electrochemistry, molecular segregation using their symmetry.

PSO7 Learns about the potential uses of analytical industrial chemistry, medicinal chemistry and green chemistry

PSO8 Carry out experiments in the area of organic analysis, estimation, separation, derivative process, inorganic semi micro analysis, preparation, Conductometric and Potentiometric analysis.

Course Outcomes

Analytical Chemistry

1. To Understand different chromatographic technique in real life.
2. To understand the basic separation technique.
3. To understand function of essential and trace element in biological system.
4. To understand classification of point groups.

Organic Chemistry

1. To understand the effect of confirmation on reactivity.
2. To understand various types of substitution reaction.

Physical Chemistry

1. To analyze thermodynamics of biological reaction.
2. To understand theory of absolute reaction rates.

Spectroscopic method of analysis

1. To understand different spectroscopic methods and their application in the analysis of compound.
2. To understand general introduction of characterization of electro magnetic radiation.

Inorganic Chemistry

1. To understand electronic spectra and magnetic properties of metal complex.
2. To understand methods of preparation, properties and structure of various compound.

Organic Chemistry

1. To understand general mechanistic consideration of rearrangement reaction.
2. To understand mechanism elimination reactions.

Physical Chemistry

1. To understand properties of quantum mechanical operators.
2. To understand classification of solids on the basis of shapes & bonding.

Laboratory course

General and Analytical

1. Analyze different components such as oil, coco-cola, bleaching powder.
2. Analyze COD in water.

Inorganic

1. Separation and metal ions from binary mixture.
2. Identification of basic radicals.

Organic

1. Understand single stage preparation.
2. Analyse binary mixture.

Physical

1. Understand instrumental techniques such as potentiometer, conductometer, colorimeter.
2. Understand Non- instrumental methods.
3. Stuctural elucidation by spectral methods
4. Understand H1 NMR, C13 NMR and Mass Spectroscopy.
5. Understand Problems of UV, IR.
6. Understand Principle of massbauer spectroscopy, Quadrupole spiliting.
7. Understand Principle of ESR Spectroscopy, Hyperfine splitting, Kramer's'degeneracy.
8. Develope ability to elucidate structure by spectral methods.

Organic Synthesis

1. Understand mechanisms of different reactions.
2. Concept of oxidation, different oxidative reagents.
3. Develope ability to find out different reduction reaction.
4. Acquired ability to use organic reagents
5. Understand reaction intermediates and preparation and use of organometallic reagents

Asymmetric synthesis and Bioorganic chemistry

1. Acquire knowledge of Bioorganic chemistry and enzyme chemistry.

Concept of co-enzyme chemistry.

1. Understand enzyme models, chiral recognition, cyclodextrins.
2. Unerstand chiral pool, chiral auxillary, asymmetric hydrogenation,
3. asymmetric hydroxylation, asymmetric reactions.

Photochemistry, Free radicals And Pericyclic reactions

1. Concept of Pericyclic and Electrocyclic reactions.
2. Understand Cycloaddition reactions eg. Suprafacial and antarafacial interactions.

3. Acquire knoeledge of electrocyclisation, sigmatropic rearrangements, photofries rearrangement.
4. Concept of Free radical reactions.
5. Organic Synhesis: REtrosynthetic Approach
6. Understand disconnection approach, protecting group, C-C disconnections.
7. Concept of ring synthesis, rearrangements, photochemistry in synthesis.
8. Retrosynthetic analysis of different molecules.

Advanced Organic and Heterocyclic Chemistry

1. Understand mechanisms of rearrangements and Name reactions.
2. Concept of nomenclature of all types of heterocycles.
3. Unerstand Five membered and fused heterocycles.

Chemistry of Natural Products

1. Understand Terpenoids and carotenoids, coniine,nicotine,atropine, quinine and morpholine.
2. Concepts of Diel's hydrocarbon, Bile acids, harmones.
3. Acquire knowledge of plant pigments and Biogenesis.

Medicinal Chemistry

1. Understand drug, prodrug, drug activity, drug bsorption, distribution and deposition.
2. Concept Mechanism of drug action, classification of drugs.
3. Undestand Synthesis and Utilities of different drug molecules.

Laboratory Courses

Qualitative analysis of ternary mixtures

1. Analyse ternary mixture and Identify each component in it.
2. Understand safety in laboratory during practices.

Organic multistep preparations

1. Understand multistep preparation with mechanism
2. Concept of thin layer chromatography

Structure elucidation and green protocol

1. Concept of green synthesis, importance of green synthesis.
2. Understand spectral analysis of organic compound

Project work

1. Understand literature survey, scope of project, experimental details
2. Concept of synthesis, knowledge of project writing.

English [Optional Paper]

COURSE OUTCOME (CO)

B.A.I Optional English Semester I

Paper I The Structure of English

CO1. This course has helped students to get advanced knowledge of English. They know the structure of English language.

CO2. They are able to pronounce English correctly.

CO3. They are able to write correct English with precision & master the sound system of English.

CO4. They have acquired the grammatical intricacies and phonetics which helps them to use the English language correctly. Both in written and spoken.

B.A.I Optional English Semester I

Paper No. II Title of the paper Reading Literature

CO1: This course enables the students to read and appreciate various forms of literature and offers critical insight in order to evaluate the texts with different perspectives.

CO 2: It introduces appropriate literary strategies to read literature.

CO 3: Students pinpoint how far literary language deviates from ordinary language.

CO 4: It guides in unraveling the meanings of a literary text.

B.A.I Optional English Semester II

Paper No. III The Structure of English

CO1 It enables the students to get advanced knowledge of English.

CO2 They are able to pronounce English correctly.

CO3 They are able to write correct English with precision & master the sound system of English.

CO4 They have acquired the grammatical intricacies and phonetics which helps them to use the English language correctly. Both in written and spoken.

B.A.I Optional English Semester II

Paper No. IV Title of the paper Reading Literature

CO 1: It enables the students to acquaint with the various forms of literature

CO 2: It tries to inculcate the strategies to read literature.

CO 3: Differentiate between the literary language and ordinary language.
CO 4: It helps to analyze literary text

BA II year Semester III
Paper No. V Title of the paper Literature in English 1550-1750
CO1: Students will be able to read and appreciate various forms of literature.
CO 2: Students will be able to appreciate English Literary Corpus produced between1550-1750 and develop a socio-historical understanding of the time.
CO 3: Students will be able to pinpoint as to how literary language deviates from ordinary language in terms 'Register' and 'Jargon'.

BA II year Semester III
Paper No. VI Title of the paper Literature in English 1550-1750
CO 1: Students will be able to read and appreciate forms of literature; viz. drama, poetry and essay
CO 2: Students will have deep understanding of English Literary Corpus produced between 1550-1750
CO 3: Students will develop a socio-historical understanding of the time.

BA III year Semester V
Title of the paper Twentieth Century English Literature
CO 1: Students will acquire first-hand information regarding literary trends in twentieth Century English and how the socio political situation affects the contemporary literature.
CO 2: Students master the skills of critical analysis of various genres in English Literature pertaining to thematic concerns and their relevance in this world to man's life.
CO 3: Students become eligible to explore job avenues in the fields of teaching, editing, tutoring and translating.

B. A. III Optional English Semester V
Title of the paper Introduction to Literary Criticism and Terms
CO 1. It familiarizes the students with the literary terms.
CO 2. It introduces to them the various streams in literary criticism
CO 3. It develops their skills for literary evaluation.

B. A. III Optional English Semester VI

Paper No. XIV Title of the paper Introduction to Literary Criticism and Terms

CO 1. It makes the students able to understand the background of English literature.

CO 2. It helps them to understand the development literary criticism

CO 3. It provides a background to understand literary devices and terms

B. A. III year Semester English Main

Title of the paper Indian Writing in English

CO 1. Students acquire knowledge about Indian Literature in English and its place among the World Literature in English.

CO2. They understand the background of Indian Literature and its development

CO3. They develop skills of literary evaluation and the understanding of diverse culture reflected in writing.

CO4. Students acquire critical thinking which leads them to see how texts are affected by the context.

B. A. III year English Main Semester

Title of the paper Indian Writing in English

CO 1. Students acquire knowledge about Indian Literature in English and its place among the World Literature in English.

CO2. They understand the background of Indian Literature and its development

CO3. They develop skills of literary evaluation and the understanding of diverse culture reflected in writing.

CO4. Students acquire critical thinking which leads them to see how texts are affected by the context.

BA III year Semester

Title of the paper Twentieth Century English Literature

CO 1:Students will acquire first-hand information regarding literary trends in twentieth Century English and how the socio political situation affects the contemporary literature.

CO 2:Students master the skills of critical analysis of various genres in English Literature pertaining to thematic concerns and their relevance in this world to man’s life.

CO 3:Students become eligible to explore job avenues in the fields of

B. A. I year Semester II

English (Compulsory) COURSE OUTCOME (CO)

Title of the paper Learning Language Skills

CO 1. This course strengthens students' ability in listening, speaking, reading and writing both at practical and theoretical level.

CO 2. It introduces the grammatical properties in order to enable students to write properly.

CO 3. It helps to speak English consciously

B. A. I year Semester II English (Compulsory)

Title of the paper Learning Language Skills

CO 1. It trains the students both in precision and in appropriate use of language through prose reading.

CO 2. It acquaints students with a keen and subtle way in which the English language is used.

CO 3. It familiarizes the students with writing skills.

B. A I year Semester II

English (Compulsory)

Title of the paper Learning Language Skills

CO 1. It helps students in studying drama

CO 2. It enhances the style of letter witting

CO 3. This course provides guidelines for easy writing.

B.A. II year Semester III

Paper No. III Title of the paper Learning Language skills- II

CO 1: Students ability in listening, speaking, reading and writing will be strengthened

CO 2: Students will be aware of the grammatical properties in order to write and speak English consciously.

CO 3:Students will be trained in appropriate use of language through reading prose and poetry.

CO 4: Students will be acquainted with keen and subtle way in which the English language is used, especially in verse.

CO 5:Students ability in listening, speaking, reading and writing will be strengthened

BA II year Semester IV

Paper No. IV Title of the paper Learning Language skills- II

CO 1:Ability of Students in listening, speaking, reading and writing will be strengthened

CO 2:Students will be acquainted with the grammatical properties in order to write and speak

English consciously.

CO 3:Students will be coached in appropriate use of language through reading prose and poetry.

CO 4: Students will learn to appreciate language in verse.

B. Com. Semester I English Compulsory

Paper No. I Title of the paper Written and Spoken Communication in English

CO 1. This course helps student s to know definite and indefinite articles.

CO 2. A student comes to know the proper use of prepositions, subjective and objective analysis of the sentences.

CO 3. It offers tips on the use of speech sounds of English and helps to pronounce effectively

B. Com. I Semester II English Compulsory

Paper No. II Title of the paper Written and Spoken Communication in English

CO 1. Provides content on the effective ways of routine communicative activities

CO 2. Students start using of tenses easily and differentiate the between phrases, clauses and sentences.

CO 3. It gives ideas on reported speech and tries to inculcate writing techniques on paragraph, essay and the letter of application with CV.

Political Science

Programme Specific Outcomes

At the time of graduation, the students will be able to-

PSO1: Understand basic concepts of Political Science

PSO2: Describe origin and politics of Maharashtra state

PSO3: Explain Indian Government and Politics

PSO4: Identify ideology of political parties

PSO5: Discuss concept and approaches of international relations

PSO6: Understand western political thoughts

PSO7: Explain major political ideologies

Course Outcomes

F.Y. B.A.

Semester – I

Basic Concepts of Political Science

After the completion of this course students will be able to -

CO1: Describe Fundamental concepts of Political science

CO2: Explain origin of state

CO3: Write meaning and theory of Sovereignty.

CO4: Explain concept of Citizenship

Government and Politics of Maharashtra

After the completion of this course students will be able to -

CO1: Describe origin of Maharashtra state

CO2: Classify organs of the state government

CO3: Explain cooperative movement and movements of Peasants

CO4: Explain Dalit and Feminist movements in Maharashtra

Semester – II

Basic Concepts of Political Science

After the completion of this course students will be able to -

CO1: Explain concept of Rights

CO2: Identify importance of liberty, equality and justice

CO3: Write down meaning, types and merits-demerits of Democracy

CO4: Write meaning and functions of Welfare state

Government and Politics of Maharashtra

After the completion of this course students will be able to -

CO1: Write down structure and functions of Panchayati Raj in Maharashtra

CO2: Write down importance of Panchayati Raj in Maharashtra

CO3: Explain ideology and programmes of main National political parties in Maharashtra

CO4: Explain ideology and programmes of main domestic political parties in Maharashtra

S.Y. B.A.

Semester – III

Indian Government and Politics

After the completion of this course students will be able to -

CO1: Write down sources and features of Indian Constitution

CO2: Explain fundamental rights and directive principles of state policy given in Indian Constitution
CO3: Classify structure of the Union government of India
CO4: Write down budgetary process and functions of important parliamentary committees
CO5: Explain structure and functions of Attorney General and CAG of India

International Relations
After the completion of this course students will be able to -
CO1: Discuss meaning, nature, scope and significance of International relations
CO2: Explain main approaches to the study of International relations
CO3: Describe India's foreign policy in regards of its principles and objectives
CO4: Explain concepts of National Interest, National Power and Deterrence
CO5: Describe Balance of Power and NAM

Semester – IV

Indian Government and Politics
After the completion of this course students will be able to -
CO1: Write down structure and functions of Supreme court of India and recognise its importance
CO2: Discuss about relations between Centre and States. Explain the division of powers between them
CO3: Describe composition, power and function of Election commission of India and explain the electoral reforms in India
CO4: Identify challenges before Indian democracy

International Relations
After the completion of this course students will be able to -
CO1: Identify relevance of Collective security and UNO in international environment
CO2: Identify major issues like terrorism and environmentalism in internationalism
CO3: Outline structure and functions of international organisations such as IMF, WB, WTO
CO4: Explain organisation of SAARC and ASEAN.

T.Y. B.A.
Semester – V

Indian Political Thinkers
After the completion of this course students will be able to -

CO1: Write down views of Raja Ram Mohan Roy on Religion and Social and Political system of India.
CO2: Describe religious, political and social thoughts of Dayanand Saraswati
CO3: Explain liberal and political thoughts of Gopal Krishna Gokhale
CO4: Recall views of Lokmanya Tilak on Nationalism and Social reform
CO5: Write Mahatma Gandhi's views on religion and explain his concept of "Ram Rajya"

Western Political Thinkers
After the completion of this course students will be able to -
CO1: Recall Aristotle's views on state, citizenship and revolution
CO2: Describe Machiavelli's advice to Prince, views on religion, morality and human nature
CO3: Classify theory of Social Contract of Hobbes, Locke
CO4: Explain concept of Utilitarianism of J. S. Mill and write down his views on liberty and representative government

Political Ideologies
After the completion of this course students will be able to -
CO1: Classify major political ideologies
CO2: Describe Nationalism
CO3: Describe Feminism
CO4: Discuss on Liberal ideology

Semester – VI

Indian Political Thinkers
After the completion of this course students will be able to -
CO1: Write views of Maulana Azad on religion and politics and Hindu-Muslim Unity. Explain his ideas of nationalism and synthesis nationalism
CO2: Explain Views of J. Nehru on democracy and socialism, nationalism and internationalism
CO3: Recall critique of Marxism by M. N. Roy and explain his radical thoughts
CO4: Recall relevance of thoughts of Dr.Ambedkar and his views on religion, society, democracy and economy
CO5: Explain idea of total revolution by Jaya Prakash Narayan

Western Political Thinkers
After the completion of this course students will be able to -
CO1: Classify theory of Social Contract of Rousseau
CO2: Describe views of Jeremy Bentham on State, Government and Rights and Utilitarianism
CO3: Explain Marxism and its importance
CO4: Write down Laski's views on Liberty

Political Ideologies

After the completion of this course students will be able to -

CO1: Describe socialism and communism

CO2: Understand Anarchism

CO3: Indicate the need of Environmentalism in politic

CO4: Criticize ideology of fascism

Program Specific Outcome
Psychology

Programme Specific Outcome (P.S.O.)

1) Such course helps students to understand, analyze and apply various principles in the field to solve the problems of human behaviour.
2) Enhancement of adjustment skills to tackle different problems of life.
3) Enabling the students to measure personality, intelligence, aptitude, interest, adjustment and different psychological problems.
4) Introduction to counselling techniques and process.
5) Increase the knowledge of mental disorders, their types, causes treatment and prognosis how to take care of mental health.

Course Outcome (C.O.)

B.A. F.Y.

I) General Psychology

1) Making familiar with basic concepts related to foundation of psychological various branches methods.
2) Acquaintance physiological basis of behaviour brains its functions and association with behaviour, glands and hormonal impact.
3) Understanding of personality, intelligence motivation and leaning process.

II) Social Psychology

1) Understanding the behaviour in social context.
2) To know about how people think, interact and influence each other.
3) Understanding the process of attitude, conformity and group influence.
4) To increase the knowledge of aggression process, prejudice, helping behaviour. How to promote altruism in society and reduce the aggression.

B.A. S.Y

Psychology of Adjustment

1) To enable students to make adjustment in various situation of life.
2) Understanding the relation between psychology and its application to daily life.
3) Understanding the process of communication, components, problems, interpersonal conflicts, verbal and non-verbal communication.
4) To know about friendship perspectives and its development.
5) To understand the process of choosing career and various psychological models.
6) Challenge to traditional model of marriage, marital adjustment, divorce and domestic violence etc.
7) To know about nature of stress, effects, types, coping with stress, psychology and its relations with physical health.

Psychological Testing

1) Introduction to field of psychological testing.
2) Understanding of psychological assessment techniques.
3) To make students understand various statistical methods their applications and interpretation.
4) To know the nature of personality, intelligence, aptitude, interest test and their scoring and interpretation for assessment work.
5) To improve skills necessary foe selecting and applying different tests for different purpose such as evaluation and training and rehabilitation.

B.A. T.Y

Abnormal Psychology

1) Getting acquainted with field of psychopathology.
2) Introduction of various types of disorders, their causes, treatments and prognosis.
3) To know the responsible factors for creating abnormal behaviour on basis of various models in psychopathology.
4) To know the clinical picture of various disorders.

Organisation Behaviour (O.B.)

1) Understanding the behaviour of individual in organisational setup.
2) To learn theoretical aspects of organisational behaviour and familiarise themselves with skills, techniques and their applications.
3) To understand the importance of values, types, attitude and job satisfaction.
4) Major personality factors affecting on organisation.

Counselling

1) To understand the field of counselling psychology.
2) To know the goals, importance and scope of counselling.
3) To increase the knowledge about counselling process, counselling relation, factors affecting on counselling process.
4) Comprehending counsellors' skills, counselling relationship.

Psychology Practicum's

1) To obtain knowledge on the significance of Psychological tests.
2) To understand the method of testing and interpretation of the various tests.
3) To understand and critically analyze an individual's personality and behavior patterns.
4) To know the ethics in psychological assessment.
5) To understand the importance of psychological assessment in the field of psychology.

Sociology

B. A. Sociology

Program Specific Outcomes

PSO1: Understand nature, scope and basic concepts of Sociology
PSO2: Learn critical evaluation of theories in sociology
PSO3: Understand concepts of social relations, social control, values and culture
PSO4: Acquire significance of social institution, caste system, religion, nationalism, integrity, equality and justice
PSO5: Follow new stream of thoughts and theories of social thinkers
PSO6: Gain knowledge about various social groups like tribal community, women community, etc

COURSE OUTCOMES

B. A. Sociology

SEMISTER I

Introduction to sociology

At the completion of the course, the students will be able to:

CO1: Explain concepts of theoretical perspectives in sociology and how they are used in
sociological explanations of social behaviour

CO2: Describe how social interactions are influenced by local, regional, national, and global
cultures

CO3: Describe origin and the development of sociology in general and development in India
in particular

CO4: Elaborate various approaches and principles of sociology

CO5: Give importance and uses of sociology in present society

Individual and Society

At the completion of the course, the students will be able to:

CO1: Give Importance of Indian culture and Socialization

CO2: Describe concept of social Structure

CO3: Elaborate origin of caste system

CO4: Explain factor of social change and social control

CO5: Write concept of conformity and deviance

SEMISTER II

Introduction to subfield of sociology

At the completion of the course, the students will be able to:

CO1: Give Importance of Scope

CO2: Describe concept of social psychology

CO3: Elaborate origin of the political sociology

CO4: Explain factor of anthropology

CO5: Write concept of applied sociology

Indian Social Composition

At the completion of the course, the students will be able to-

At the completion of the course, the students will be able to-

CO1: Explain features of Indian society

CO2: Describe population factor & Impact

CO3: Write importance of Secularism in Indian society

CO4: Elaborate structure of rural society in India

CO5: Give importance of Democracy in India

SEMISTER III

Problems of rural India

At the completion of the course, the students will be able to:

CO1: Explain Problem's of rural women

CO2: Describe Domestic violence law

CO3: Explain education Dropout in rural area

CO4: Give India rural area Economy

CO5: Elaborate major issue in Development

Contemporary Urban issues

At the completion of the course, the students will be able to:

CO1: Explain concept of Urbanization

CO2: Elaborate cause and impact of Indian Migration

CO3: Explain various types of urban planning

CO4: Give importance of Globalization

CO5: Evaluate urban change

SEMISTER IV

Population in India

At the completion of the course, the students will be able to:

CO1: Explain basic concepts of Indian population

CO2: Describe density of population in India

CO3: Write on human population dynamics

CO4: Elaborate population growth and environment

CO5: Give importance of population policy in India

Sociology of development

At the completion of the course, the students will be able to:

CO1: Describe conceptual perspectives on development

CO2: Explain concept of sustainable development

CO3: Write on problems of Poverty & Unemployment,

CO4: Elaborate view of capitalist socialist and mixed approaches

CO5: Give importance Impact of Government schemes in India

SEMISTER V

Sociological Tradition

At the completion of the course, the students will be able to:
CO1: Give Scope industrial revolution
CO2: Describe French revolution
CO3: Explain theory low of three stages
CO4: Elaborate Durkheim theory of suicide
CO5: Describe theory of Karl Marx's Class struggle

Introduction to research methodology
At the completion of the course, the students will be able to:
CO1: Give Scope and Importance of Social Research
CO2: Describe Types of Research
CO3: Explain Scientific Research Process
CO4: Elaborate difference between Theory and Research
CO5: Describe problem of objectivity in Research

Social Problem in India
At the completion of the course, the students will be able to:
CO1: Explain Problems of corruption in India
CO2: Elaborate causes & Effects of Suicide in India
CO3: Give importance of industrial Project in India
CO4: Explain deference between rural and urban society in India
CO5: Describe educational equality in India

SEMISTER VI

Sociological Theories
At the completion of the course, the students will be able to:
CO1: Explain theory of social action
CO2: Elaborate Robert matrons theory of role set
CO3: Describe Lewis Coser theory of violence
CO4: Explain symbolic interaction theory
CO5: Write on theory of power and authority

Social Research Methods
At the completion of the course, the students will be able to:
CO1: Explain techniques of Sociological Investigation
CO2: Describe use of computer in social research
CO3: describe introduction of SPSS
CO4: Elaborate utility of social research
CO5: Give use of internet in social research

Social Disorganisation in contemporary in India
At the completion of the course, the students will be able to:
CO1: Explain concept and cause of social disorganisation
CO2: Elaborate women violence in India

CO3: Describe terrorism and nakshalism in India
CO4: Explain Regional imbalance in India
CO5: Write changing values and culture

Project Work
At the completion of the course, the students will be able to:
CO1: Write Importance of research culture
CO2: How collects data in field work
CO3: Describe impact of problems on society
CO4: Elaborate importance of research methodology

PUBLIC ADMINISTRATION

Program Specific Outcome (PSOs,)

PSO - 1. Students would be able to know about the research and development opportunities in the field of Administration / policy/ governance studies.

PSO - 2. Students would be able to analyze the effectiveness of governmental policies and Programmes.

PSO - 3. Students would be familiar with the issues of human rights, disaster management, governance reforms, information communication technology and public administration etc.

PSO - 4. Students would gain confidence while dealing with administrative officials and political leaders.

PSO - 5. Students would be able to develop their research aptitude and orientation.

Course Outcomes

Paper I : Principles & Concepts of Public Administration

CO1. Explain the Meaning, Nature & Scope of Public Administration.
CO2. Differentiate between Public and Private Administration.
CO3. Explain the Meaning & forms of Organisation.
CO4. Describe the different Principles of Organisation.
CO5. Students have understood the Concepts of Public Administration.

Paper II : Public Administration in India

CO1. To demonstrate an understanding of the institutional, political, and legal processes of the country, and articulate the functions of public administration in terms of historical roots, structure, and contemporary issues.
CO2. To understand the historical evolution and socio-economic, political, cultural and global context of Indian Administration;
CO3.To identify the transformative role of Indian Administration;
CO3 To discern the connects and disconnects between structure, purpose and process and results in Indian Administration;
CO4. To understand the form and substance of Indian Administration;
CO5. To appreciate the emerging issues in Indian Administration in the context of changing role of state, market and civil society.

Paper III: Maharashtra Administration

CO1. Discuss the formation of Maharashtra State and Its administrative features.
CO2. Describe the structure of state executive in detail.
CO3. Identify the structure and functions of the state legislature.
CO4. Discuss on the structure and functions of Judiciary at state level.
CO5. Identify the relevance of Constitutional and Statutory bodies at state level such as MPSC, MEC, MFC etc.

Paper IV: District Administration

CO1. Understand and articulate the functions of district administration in terms of historical roots, structure, and contemporary issues.
CO2. Describe the structure of district executive in detail.
CO3. To appreciate the emerging issues in Police & Revenue Administration
CO4. Identify the various aspects of the concept Law & Order.
CO5.

Paper V: Personnel Administration

CO1. To become familiar with the contexts, problems, paradoxes, processes, prospects, issues, strategies, and challenges in public personnel administration
CO2. To view public personnel administration from a variety of perspectives specially Indian.
CO3. To better appreciate and understand human resource techniques and functions in public organizations
CO4. To comprehend the politics, legal aspects, and policies of public personnel administration
CO6. To develop the ability to interact with human resource professionals.
CO7. Develop an awareness of the historical development of personnel practices in the public sector, and develop an understanding of the responsibility of administrators to comply with legal and ethical requirements in the field of human resource management.
CO8. Develop techniques to recruit, screen, and select qualified candidates for positions in law enforcement. List training and development needs for the 21st century.

Paper VI : Panchayati Raj & Rural Development

CO1. Demonstrate the basic concept of Local Self Government in India and its importance in the State.

CO2. Describe the PanchayatRaj and Urban local self Govt. organizations at the Centre, State and Local levels.

CO3. Understand the aspects of Administrative Structures in local self Govt..

CO4. Explain the different personnel & Local Bodes roles in the local self Govt..

CO5. Identify the rural and urban problems and the laws implemented to local self administration

CO6. analyze the Role of Panchayatiraj in rural development.

CO7. Explain the problems related to rural & Urban areas and Communities.

CO 8. Understand & Analyze the various Urban & Rural Development Agencies.

Paper VII : Financial Administration

CO1. Understand the basics of financial administration,budgeting.

CO2. Demonstrate an understanding of the overall role and importance of the finance function.

CO3. Demonstrate basic audit knowledge.

CO4. Explain the parliamentary control over financial activities in a democratic country**.**

CO5. To make familiar to students the concept of liberalisation, privatization and globalization.

Paper VIII : Urban Local Self Government & Urban Development

CO1. Demonstrate the basic concept of Local Self Government in India and its importance in the State.

CO2. Describe the PanchayatRaj and Urban local self Govt. organizations at the Centre, State and Local levels.

CO3. Understand the aspects of Administrative Structures in local self Govt..

CO4. Explain the different personnel & Local Bodes roles in the local self Govt..

CO5. Identify the rural and urban problems and the laws implemented to local self administration

CO6. analyze the Role of Panchayatiraj in rural development.

CO7. Explain the problems related to rural & Urban areas and Communities.

CO 8. Understand & Analyze the various Urban & Rural Development Agencies.

Paper IX : Human Resource Development

CO1. Explain the nature, scope, structure & processes of human resource development.

CO2. Understand the changing paradigms of human Resources development.

CO3. Unravel the varying methods of performance assessment of public institutions.

CO4. Appreciate the changing paradigms of human resource development

CO5. Identify the systems and processes of financial and material resource development
CO6. Appreciate institutional capacity building strategies and programmes.
CO7. Understand the way in which the public power is exercised and public resources are managed and expanded.

Paper X : Educational Administration in India

CO1. Describe the Concept of Education
CO2. Discuss on the historical background of Education in the light of various Committee's recommendations and government policies.
CO3. Indicate the structure and relevance of Higher Education in India.
CO4. Identify the role of Quality Control Institutions, such as NAAC and AICTE, in Higher Education
CO5. Discuss on various challenges before Higher Education in India
CO6. Identify the impact of Globalisation on Higher Education in India.

Paper XI : Administrative Thinkers

CO1. Discuss on the concept of Scientific Management by F. W. Taylor.
CO2. Write down Max Weber's Ideal Model of Bureaucracy.
CO3. Explain the elements and Principles of Management.
CO4. Write down Mary Parker Follet's Concept of Authority.
CO5. Describe Elton Mayo's Hawthorne Experiment.
CO6. Examine Behavioural approach and Decision Making approach by H. Simon.
CO7. Write down Ecological approach and the concept of Prismatic Society by F. W. Riggs.

Paper XIII : Public Policy

CO1. Explain the concept of Public Policy in detail.
CO2. Discuss the role of Executive, Legislature, Judiciary, Media and Civil society in the formulation of Public Policy.
CO3. Discuss on the role of Executive and Bureaucracy in the implementation of Public Policy.
CO4. Discuss on the renowned Public policies of the government including Disinvestment Policy, National Water Policy, Food Security Policy etc.
CO5. Write down the meaning of inclusive growth and explain the concept of Sustainable Development and PURA
CO6. Identify various challenges before Development.

Paper XIV : Health Administration in India

CO1. Explain and compare the organizational elements, structure, performance, terminology, and delivery modalities for India healthcare systems.
CO2. Analyze the structure and interdependence of healthcare system elements and issues

Chemistry

Programme Specific Outcome (PSO)

PSO1: To understand the fundamental principles of Chemistry.

PSO2: To analyze various Organic mixture and individual compound.

PSO3 Identify and estimate organic and inorganic compounds using classical and modern laboratory methods.

PSO4 Develop skills in evaluation, interpretation and synthesis of chemical information and data.

PSO5 Develop skills in the safe-handling of chemical materials, taking into account of their physical and chemical properties including any specific hazards associated with their use

Course Outcomes

B.Sc. I year

Inorganic Chemistry

Paper No. I

CO 1. Predict atomic structure, chemical bonding and molecular geometry based on accepted models

CO 2. Use standardized names and symbols to represent atoms, molecules, ions and chemical reactions

CO 3. Explain interactions between matter and energy at atomic and molecular levels

CO 4. Predict biological role of Alkali & Alkaline earth metals

CO 5. Demonstrate preparation, physical and chemical properties, structural properties, applications of various elements

CO 6. Explain trends of periodic properties of elements in periodic table

CO 7. Differentiate types of indicators and correlate with appropriate titration method

Practicals (Lab course) I yr.-

CO 1. Follow safety procedures and use properly personal protective equipment.

CO 2. Demonstrate laboratory techniques that relate to investigations of the physical or chemical properties of different molecules

CO 3. Operate common laboratory instruments used for chemical analysis.

CO 4. Identify acidic, basic radicals.

CO 5. Identify the types of organic compounds by chemical analysis method.

Organic Chemistry-II

CO 1. Understand various effects, and properties of organic compounds, nature of bond.

CO 2. Understand nature of bond breaking and mechanical phenomenon.

CO 3. Concept of isomerism, types of stereochemical configuration.

CO 4. Develop ability to mechanistic pathways of simple organic reaction.

CO 5. Understand the alkane by much organic reaction.

Physical Chemistry

B. Sc. I year, Semester- II, Paper: Physical Chemistry, P. No.: IV

CO1: Differentiate colloids, liquid crystals and properties of physical states

CO2: Derive differential equations related to order of reactions

CO3: Explain and correlate various laws with respect to gaseous state

CO4: Categorize catalysis on the basis of phases

CO5: Identify areas of applications of colloids, enzyme catalysts in day to day life

Class: B.Sc. II year

Inorganic Chemistry (Paper No. X)

CO 1. Present in depth knowledge of abundance, position, preparation, properties, chemical behaviour of various d and f block elements from the periodic table

CO 2. Identify co-ordination compounds and its applications.

CO 3. Differentiate aqueous and non aqueous solvent.

Organic Chemistry-VII

CO 1. Understand types of alcohol and its identification in simple organic compounds.

CO 2. To differentiate between alcohol and phenols in simple and complex organic molecules.

CO 3. Understand the structure of carbonyl compounds and type of various name reaction involving carbonyl group.

CO 4. To analyse effect of substituent on acidity of carboxylic acid.

CO 5. Understand and analyse effect of basicity in various simple heterocycles.

Physical Chemistry

B. Sc. II year, Semester: III, Paper: Physical Chemistry, P. No.: VIII

CO1: Distinguish isothermal, adiabatic, isochoric and other thermodynamic processes

CO2: Correlate law of mass action, equilibrium constant with free energy

CO3: Solve numerical problems related to efficiency, work done, heat change

CO4: State and explain postulates of laws of Thermodynamics

B. Sc. II year, Semester: IV, Paper: Physical Chemistry, P. No.: XI

CO1: Explain different types of conductomertic titrations

CO2: Solve mathematical problems on electro-chemistry

CO3: Explain phase diagrams of one component systems

CO4: Explain phase diagrams of two component systems

CO5: Classify electrochemical and electrolytic cells

Practical Physical Paper: IX + XII

CO1: Determine concentration values of sample solutions using instrumentation

CO2: Evaluate and interpret heat of neutralization reactions

CO3: Analyse quantitatively, specific elements by volumetric and gravimetric methods

CO4: Determine critical solution temperatures of heterogeneous phases

CO5: Determine the molar refractive index of given sample by refractometer

CO6: Prepare organic derivatives and determine physical constants

CO7: Estimate ester, amide and other organic molecule entities

Class: B.Sc. III year

Inorganic Chemistry (Paper No. XVI)

CO 1. Explain nature of metal-ligand bonding and illustrate splitting of d orbitals

CO 2. Demonstrate mechanism of sodium potassium cycle

CO 3. Describe essential and trace elements and their role in biological system

CO 4. Categorize chromatographic techniques with reference to adsorbents and other components

Organic Chemistry-XIV

CO1. Acquired ability to find out types of sets of proton in organic compound.

CO 2. Understand and solve simple PMR problems with given data.

CO 3. Classify various organometallic compounds and activity in simple organic transformation.

CO 4. Identify and classify various active Methylene compounds.

Organic Chemistry-XXII

CO 1. Understand effect of aromaticity on strength of basicity of heterocyclic compound.

CO 2. Classify carbohydrates and its utility in day to day life.

CO3. Describe polymer and classify accordingly.\

CO 4. Identify dyes and drugs. Analyse electron flow in various dyes and its effect.

Practical-Lab Course-IX

CO 1. Identify the types of organic mixtures by chemical analysis method.

Practical- Lab Course -X

CO 1. Analyse inorganic radicals by chemical analysis method.

CO 2. Identify and separate given mixture by gravimetric and volumetric method.

Practical- Lab Course –XII

CO 1. Analyse percent composition of acid mixture by conductometrically.

CO 2. Identify empirical formula by potentiometrically.

B. Sc. III year, Semester: V, Paper: Physical Chemistry, P. No.: XIII

CO1: Explain synthesis of nanomaterials

CO2: Solve mathematical problems on determination of bond length

CO3: Derive Schrodinger wave equation of Hydrogen atom

CO4: Explain basic features of different spectrometers

CO5: Determine structure of molecules applying magnetic property using critical thinking to formulate innovative system designs that improve healthcare delivery.

CO3. Integrate concepts of ethics, privacy, Administration to achieve optimal organizational effectiveness while adhering to personal and professional values in all elements of health delivery.

Paper XV : Recent Trends in Public Administration & Important Laws

CO1. Discuss the Concept of New Public Administration.
CO2. Write down the meaning and features of New Public Management
CO3. Explain the Public Choice Approach in detail.
CO4. Indicate the relevance of Civil Society.
CO5. Write the meaning and importance of Citizen Charter.
CO6. Discuss on the concept of Good Governance.
CO7. Elaborate the concept of E-Governance.
CO8. Explain the concept of Disaster Management.
CO9. Discuss on important Laws such as Civil Rights Protection, Consumer Protection, Environment Protection, Right to Public Services.

Paper XII & XVI : Project Work

CO1. Demonstrate critical reasoning, problem solving abilities, communications skills, technology skills and ethical considerations relating to public responsibility.

CO2. Demonstrate an understanding of the social, political, economic, and cultural factors that influence public administration.

CO3. Demonstrate the ability to effectively communicate, both in writing and orally, using the important terminology, facts, concepts, and theories used in the field of public administration

Botany

Program Specific Outcomes

1. Understand the environmental and basic concept of taxonomy, ecology.
2. Determine economic & medicinal plant in agriculture and medicine.
3. Analyse the relationship between plants and microbes.
4. Understand the biology of diversity of seed plants or phanerogames.
5. Understand the behaviours of fossils and gymnosperm plants.
6. Understand the plant disease, chemical properties and evolutionary relationship among taxonomic groups.

Course Outcomes

Program -F. Y. B. Sc. Sem. - I
Course Title - Morphology of Angiosperms

Paper I Diversity of Cryptogams-I

CO1. Understand the diversity among Algae. Know the systematic, morphology and structure, of Algae. Understand the life cycle pattern of Algae

C02.Understand the diversity among Fungi. Know the systematic, morphology and structure, of Fungi. Understand the life cycle pattern of Fungi

CO3. Economic importance of Algae and Fungi

CO4. General Characters of Viruses and Bacteria. Their role in scientific world

CO5. Lichens and their economic importance

Paper II

Co1 Students understand various types of habitat, habit and morphological characters.

Co2 Students identify various types of root, stem and leaves.

Co3 Students identify various types of inflorescence and flowers.

Co4 Students identify various types of fruits.

Co5 Students understand modifications of roots, stems and leaves.

Course Title- Histology, Anatomy and Embryology Sem. - II
Paper VI

Co1 Students know about various types of tissues.

Co2 Students know about anatomical characters of monocot and dicot plants.

Co3 Students know about various types of ovules.

Co4 Students know about vascular elements in tissues.

Course Title-Laboratory practical
Paper II & VI

Co1 Students identify various plants according to habits and habitats.

Co2 Students identify various morphological characters with their types and subtypes.

Co3 Students can make temporary slides of plant parts to study anatomical characters.

Co4 Students can identify various types of ovules.

Co5 Students know about vascular tissues, meristematic tissues etc.

S. Y. B. Sc. (Sem. - III)
Course Title- Taxonomy of Angiosperms
Paper IX

Co1Students know about various Classification Systems.

Co2 Students able to distinguish between various Classification Systems.

Co3 Students understand characteristics of various angiosperm families.

Co4 Students are able to understand various taxonomic terminologies.

Co5 Students able to describe plants provided them while doing practical.

Co6 Students able to understand importance of plant studies.

S. Y. B. Sc. (Sem IV)
Course Title- Gymnosperms and Utilization of plants
Paper XIII

Co1Students can differentiate angiosperm and gymnosperm.

Co2 Students know the characteristic feature of gymnospermic plants.

Co3 Students know about economic importance of cereals pulses.

Co4 Students know about importance of timber plants.

Co5 Students know about medicinal values of plants.

Co6 Students know about uses of plants and their parts in various industries.

Course Title-Laboratory practical
Paper IX & XIII

Co1 Students identify families of plant specimen.

Co2 Students know the specific characteristics of families.

Co3 Students can make permanent slides of plant parts to study anatomical characters.
Co4 Students can identify gymnosperm plants.

B. Sc. Third Year (Sem V)
Course Title- Diversity of Angiosperms-I
Paper XVIII (A)

Co1Students know about various Classification Systems.

Co2 Students able to distinguish between various Classification Systems.

Co3 Students understand characteristics of various angiosperm families.

Co4 Students are able to understand various taxonomic terminologies.

Co5 Students able to describe plants provided them while doing practical.

Co6 Students able to understand importance of plant studies.

Course Title- Diversity of Angiosperms - II
S. Y. B. Sc. (Sem VI) Paper XXII (A)

Co1 Students know characteristic feature of various families of angiosperm plants.
Co2 Students know the importance of plants of various families.

Co3 Students know about various tools used in taxonomy.

Co4 Students know about botanical gardens, bio-reservoirs and conserved forests.
Co5 Students know about herbariums and gene banks.

Course Title-Laboratory practical

Co1 Students learn to prepare herbarium specimens.

Co2 Students able to identify various plants by using floras.

Co3 Students able to understand various angiosperm families by using keys.

Co4 Students understand economic importance of various plants of various families.

Co5 Students able to identify some plants on field.

Programme Specific Outcomes

Mathematics

PSO 1 : Acquire fundamentals and advance knowledge of mathematics.

PSO 2 : Students should be able to communicate solutions of mathematical problems effectively.

PSO 3 : Enable the students to equip knowledge in various concepts involve in Calculus, differential equation, real analysis and algebra.

PSO 4 : Students are able in an effective manner to attend the competitive exams in order to brighten their future.

PSO 5 : Students should able to determine the reasonableness of solutions Including sign, size, accuracy and units of measurement.

PSO 6 : Students should be able to apply mathematical proof techniques in a Wide variety of mathematical areas, including algebra and analysis.

PSO 7 : Acquire a breadth and depth of understanding in mathematics.

COURSE OUTCOMES

B.Sc- I (Sem.I):

MAT 101 : DIFFERENTIAL CALCULUS

CO 1 : Solve the problems on limits continuity and successive differentiation of

Functions.

CO 2 : Determine the partial derivative of function more than one variable.

CO 3 : Describe Rolle 's Theorem, Lagrange's mean value theorem and Cauchy's mean value theorem.

CO 4 : Determine expansion of e^x, sin x , cos x, sinh x, cosh x,tanh x, log (ax+b) etc.

CO 5 : Determine gradient, divergence and curl and directional derivatives.

B.Sc- I (Sem.I):

MAT 102 : DIFFERENTIAL EQUATIONS

CO 1 : Determine the solution of first order linear differential equation.

CO 2 : Determine the solution of exact differential equation.

CO 3 : Determine the solution of linear equation with constant coefficient using general and short method.

CO 4 : Determine the solution of linear homogeneous differential equation.

CO 5 : Formation of the partial differential equation by eliminating the arbitrary constants and functions.

B.Sc- I (Sem.II):

MAT 201 : INTEGRAL CALCULUS

CO 1 : Understand and apply the reduction formula.

CO 2 : Find the integration of algebraic rational functions.

CO 3 : Understand and apply the fundamental theorem of integral calculus.

CO 4 : Find the area bounded by a curve.

CO 5 : Calculate the length of arc of a curve.

CO 6 : Find line integral and surface integrals.

CO 7 : Apply the theorems of Gauss, Green's and Stoke's.

B.Sc- I (Sem.II): MAT 202 : GEOMETRY

CO 1 : Identify and use the different type of equations of plane.

CO 2 : Determine the equations of the system of planes and the length of perpendicular to a plane.

CO 3 : Determine the equation of right line and the angle between the plane and line.

CO 4 : Determine condition for coplanar lines and short distance between two lines.

CO 5 : Determine the equation of sphere and its intersection with the plane.

B.Sc- II (Sem.III): MAT 301 : NUMBER THEORY

CO 1 : Describe the division algorithm and solve the problem on it.

CO 2 : Determine GCD and LCM by using Euclidean algorithm.

CO 3 : Describe the method of solving linear Diophantine equation.

CO 4 : Determine the solution of linear congruence.

CO 5 : Describe the Fermat's and Euler's theorem.

B.Sc- II (Sem.III): MAT 302 : INTEGRAL TRANSFORM

CO 1 : Define beta and gamma functions, derive their properties and apply them in evaluating integrals.

CO 2 : Determine the Laplace transform for various functions, properties of Laplace transforms.

CO 3 : Determine inverse Laplace transform, properties of inverse Laplace Transform, solve the problems using convolution theorem.

CO 4 : Determine Fourier transform, properties of Fourier transform, Fourier sine and cosine transforms.

CO 5 : Application of Laplace transform to ordinary and partial differential

equations.

B.Sc- II (Sem.III): MAT 303 : MECHANICS- 1

CO 1 : Describe the different types of forces , triangle law of forces, Parallelogram of forces, resultant of forces, sine rule and cosine rule.

CO 2 : Learn the resultant of several coplanar forces, equation of the line of action of the resultant, equilibrium of a rigid body under 3 coplanar forces.

CO 3 : Learn the Lammi's theorem and polygon of forces.

CO 4 : Learn vector moment of a force and vector moment of couple.

CO 5 : Describe the basic concepts of centre of gravity and its applications.

B.Sc- II (Sem.IV): MAT 401: Numerical Methods

CO 1 : Learn Bisection Method, Method of False Position, Newton-Raphson Method.

CO 2 : Understand Finite Differences, Newton's Formula for Interpolation, Lagrange's Interpolation Formula, Divided Differences.

CO 3 : Describe Least Square Curve Fitting Procedures, Fitting a straight line, Chebyshev polynomial, Power series.

CO 4 : Calculate Solution of Linear system of equations, Eigen values and Eigen Vectors.

CO 5 : Calculate solution of ordinary differential equation by Taylor's series Method, Picard's Method, Euler's Method.

B.Sc- II (Sem.IV): MAT 402: Partial Differential Equation

CO 1 : Solve Lagrange's equation.

CO 2 : Find different types of solutions like complete integral, Singular integral and general integral.

CO 3 : Determine the solution of partial differential equations using Charpit's Method.

CO 4 : Classify partial differential equations to special types.

CO 5 : Describe Monge's Method, Method of transformation.

B.Sc- II (Sem.IV): MAT 403: Mechanics II

CO 1 : Learn velocity and acceleration in terms of vector derivatives, curvature, Angular speed and angular velocity.

CO 2 : Describe Radial and Transverse components of velocity and acceleration, areal speed and velocity.

CO 3 : Understand Newton's Law of motion, angular momentum, work, energy, vector point function, Field of force.

CO 4 : Describe motion under gravity, projectile, Motion of projectile, Parabola of safety.

CO 5 : Learn motion in resisting medium.

CO 6 : Understand areal velocity of central orbit, Pedal's equation.

B.Sc- III (Sem.V): MAT 501: Real Analysis –I

CO 1 : Learn sets, functions, real valued functions, countable sets, Least upper Bound axiom and greatest lower bound axiom.

CO 2 : Understand the different types of sequence such as convergent, Divergent, monotone and its properties.

CO 3 : Describe limit superior, limit inferior and Cauchy sequence

CO 4 : Understand the basic concepts of series such as convergent, divergent, alternating series.

CO 5 : Learn the absolute and conditional convergence of the series.

B.Sc- III (Sem.V): MAT 502: Abstract Algebra- I

CO 1 : Learn elementary concepts of sets, functions and integrals.

CO 2 : Understand group, subgroup, counting principle, Normal subgroup, Quotient groups, Homomorphism.

CO 3 : Define Ring, some special types of ring.

CO 4 : Describe Ideals, Maximal Ideals.

CO 5 : Learn quotient ring, polynomial ring.

B.Sc- III (Sem.V): MAT 503: Mathematical Statistics-I

CO 1 : Learn frequency distribution, Histogram.

CO 2 : Acquire knowledge of Measures of central tendency.

CO 3 : Describe Dispersion and Kurtosis.

CO 4 : Understand the concepts of random variables and its characteristics.

CO 5 : Understand the concept of the probability with illustration.

B.Sc- III (Sem.VI): MAT 601: Real Analysis –II

CO 1 : Acquire knowledge of Limits in Metric spaces.

CO 2 : Learn continuous functions on Metric spaces.

CO 3 : Describe connectedness, completeness and compactness.

CO 4 : Understand set of Measure zero, Riemann integral, Fundamental theorem of calculus.

CO 5 : Learn Fourier series.

B.Sc- III (Sem.VI): MAT 602: Abstract Algebra- II

CO 1 : Learn elementary basic concepts of vector spaces.

CO 2 : Understand Linear independence and bases.

CO 3 : Describe dual spaces.

CO 4 : Understand inner product spaces.

CO 5 : Learn modules with illustrations.

B.Sc- III (Sem.VI): MAT 603: Mathematical Statistics-II

CO 1 : Learn Mathematical Expectation and generating functions.

CO 2 : Understand theoretical discrete probability distribution.

CO 3 : Describe uniform distribution, binomial distribution, Normal Distribution, Gamma distribution.

CO 4 : Learn correlation coefficient.

CO 5 : Understand regression.

Zoology

PROGRAM SPECIFIC OBJECTIVES (PSO)

1. To provide a comprehensive education in zoology that stresses scientific reasoning and problem solving across the spectrum of disciplines within zoology
2. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of zoology
3. To provide extensive hands-on training in electronic technology, statistical analysis, laboratory skills, and field techniques
4. To provide thorough training in written and oral communication of scientific information
5. To enrich students with opportunities for alternative education in the area of zoology through undergraduate research, internships, and study-abroad.

Course Outcomes
B.Sc. FY – Protozoa to Annelida

1. To identify the animal by watching keenly.
2. To describe unique characters of protozoa, porifera, coelenterate, helminthes and annelids.
3. To recognize life functions of protozoa, porifera, coelenterate, helminthes and annelids.
4. Recognise the ecological role of phylum protozoa, porifera, coelenterate, helminthes and annelids.
5. Recognise the diversity from protozoa, porifera, coelenterate, helminthes and annelids.

B.Sc. FY – Cell Biology

1. To understand the unit structure of organism the cell.
2. purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles
3. To understand how these cellular components are used to generate and utilize energy in cells.
4. To understand the cellular components underlying mitotic cell division.
5. To understand responses to environmental or physiological changes, or alterations of cell function brought about by mutation.
6. To understand the process of cell division in both somatic and germ cell.

B.Sc. FY - Arthropoda to Echinodermata and Hemichordata

1. Student should be able to identify the animal by watching keenly.
2. Student should be able to describe unique characters of arthropods, mollusks, echinoderms and hemichordates.
3. Student should be able to recognize life functions of arthropods, mollusks, echinoderms and hemichordates.
4. To recognise the ecological role of phylum from arthropods to hemichordate.
5. To recognise the diversity from arthropods to hemichordate.

B.Sc. FY – Genetics - I

1. Comprehensive and detailed understanding of the chemical basis of heredity.
2. Understanding about the role of genetics in evolution.
3. The ability to evaluate conclusions that are based on genetic data.
4. The ability to understand results of genetic experimentation in animals.

B.Sc. SY – Vertebrate Zoology

1. Student should be able to describe unique characters of urochordates, cephalochordates and fishes.
2. Student should be able to recognize life functions of urochordates to fishes.
3. To understand the ecological role of different groups of chordates.
4. To understand the diversity of chordates. Student should be able to describe unique characters of amphibians, reptiles, aves and mammals.
5. Student should be able to recognize life functions of amphibians, reptiles, aves and mammals.
6. To understand the ecological role of different classes of vertebrates.
7. To understand the diversity of vertebrates.

B.Sc. SY – Genetics - II

1. Able to know gene expression and its behaviour in transformation.
2. Understanding about the role of genetics in evolution.
3. Able to evaluate conclusions that are based on genetic data in population genetics.
4. Able to know about genetic diseases and disorders.
5. Able to have techniques used in genetic engineering.

B.Sc. SY – Animal Physiology

1. Students are able to understand the physiology at cellular and system levels.
2. Students are able to describe the role and functions of different biomolecules.
3. Students are able to understand how mammalian body get nutrition from different biomolecules.
4. Students are able to describe the role and functions of different systems.
5. Able to describe the physiology of respiratory, renal, endocrine and reproductive systems to define normal and abnormal functions.

B.Sc. SY – Biochemistry and Endocrinology

1. Students are able to understand the metabolism of carbohydrates, proteins, fats.
2. Students are able to understand the fundamental biochemical principles.
3. Students are able to understand the basic laboratory techniques in biochemistry.
4. Students are able to understand the structure and function of endocrine glands.
5. Students are able to the hormonal regulation.

B.Sc. TY – Ecology

1. List abiotic and biotic factors that affect, the distribution, dispersal, and behaviour of organisms.
2. Identify factors that affect biological diversity and the functioning of ecological systems in Wisconsin
3. Use an ecological vocabulary in arguments and explanations of ecological phenomena
4. Apply concepts and theories from biology to ecological examples
5. Analyse and interpret ecological information, research and data

B.Sc. TY – Biotechnology-I

1. Students should able to describes the use of genetically engineered products to solve environmental problems.
2. Students should able to recognize the foundation of modern biotechnology and explain the principles for the basis for recombinant DNA technology.
3. Students will be able to explain the steps involved in the production of byproducts and methods to improve modern biotechnology and can apply basic biotechnological principles, methods and models to solve biotechnological tasks.

B.Sc. TY – Evolution

1. Able to describe evolutionary history of man.
2. Able to describe origin of species on earth.
3. Have an enhanced knowledge and appreciation of evolutionary biology and behaviour.
4. Be able to develop cogent and critical arguments based on the course material.
5. Be able to perform, analyse and report on experiments and observations in whole-organism biology.
6. This course will provide students with an opportunity to gain information regarding animal classification and systematic, animal structure and function relationships, evolution between and within major animal groups, human evolution and animal reproduction and development.

B.Sc. TY – Biotechnology-II

1. Students will be able to demonstrate the ability to apply research strategies like contamination and sterilization of laboratory in cell culture.
2. Students will possess hands-on technical skills necessary for supporting biotechnology research activity in tissue culture and transgenic animal methods.
3. Students will show understanding of their knowledge of industrial regulations and the regulatory environment in the biotechnology industry for commercial production of enzymes.
4. Students will possess the technical background knowledge needed to support biotechnology research activity like in Gene therapy and DNA fingerprinting.
5. Students will be able to demonstrate their knowledge of biotechnology concepts in ex vivo, in vivogene therapy to diagnosis human diseases.

Physics

Programme specific outcome

PSOs 1: To study and understand basic concepts of Physics.

PSOs2: To study and use different basic measuring instruments in laboratory.

PSOs 3: Acquire the Knowledge of mathematical physics and its applications.

PSOs 4: To understand some basic Laws of physics practically.

PSOs 5: To study and perform practical's of electronic and draw conclusion.

PSOs 6: An ability to understand different types of crystal structure, classical and quantum theory of specific heat.

PSOs 7: Able to apply and understand the simple basics of quantum mechanics.

PSOs 8: Able to solve Maxwell's equation and applications of Gauss laws in electrostatics.

PSOs 9: Gain complete knowledge of different techniques used in laser and its applications.

PSOs10: Ability to prepare project and its industrial applications.

Course Outcomes (COs)

B. Sc. First Year **(Semester –**I &II**)**

Paper no –I **Course code- Phy-101**

Title of Paper- Mechanics, Properties of Matter and Sound

CO1- Determine basics of acceleration due to gravity, Newton's law of gravitation and basic of potential and fields.

CO2- Describe basic properties of matter, how young's modulus, Bulk modulus and modulus of rigidity are defined and how they are evaluated for different shapes of practical's relevance.

CO3- Identify properties of matter especially knowledge of viscosity and surface tension helps the students in their daily life this will cater basic requirement for their higher studies.

CO4- Classify general terms in acoustics intensity, loudness, reverberation etc. and study in detail about production, detection, properties and uses of ultrasonic waves.

CO5- Learn basics of Mechanics, gravitational, potential field& solve their related problems.

CO6- Introduction of Elasticity and study of elastic material.

CO7- Understanding Viscosity and surface tension of liquids.

CO8- Acquire knowledge of ultrasonic sound and its applications and acoustics & applications.

Paper no –II **Course code- Phy-102**

Title of Paper- Heat & Thermodynamics

CO1- Apply and analyze laws of thermodynamics and their application in various processes.

CO2- Understand, formulate and solve the problems in Thermodynamics and Heat.

CO3- Learn and use of limits of classical physics & to apply the ideas in solving the problems.

CO4-Derive thermodynamic parameters and apply fundamental laws solve thermodynamic problems.

Paper no –IV **Course code- Phy-**104

Title of Paper- Geometrical and Physical Optics

CO1-Analyze the intensity of variation of light due to diffraction interference and polarization

CO2-Describe types of waves and interference of light.

CO3-Identifies necessary foundation in optics which prepares students for intensive studies in advanced topics at later stage. Covering the very important and fascinating areas of interference, diffraction and polarization with many experiments associated with it.

CO4-Describe concepts of cardinal points and hence different eye pieces.

CO5- Review about Geometrical optics and optical instruments, Understand different types of lenses knowledge.

CO6- Study interference phenomena of light and different experiments.

CO7- Concept of diffraction of light and its types.

CO8- Polarization of light and its applications

Paper no - V **Course code- Phy-**105

Title of Paper- Electricity & Magnetism

CO1-Demonstrate a mastery of 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.

CO2-Demonstrate and understanding of the relation between electric field and potential, exploit the potential to solve a variety of problems, and relate it to the potential energy of a charge distribution.

CO**3-**Apply Gauss's law of electrostatics to solve a variety of problems

CO**4-**Apply the tools of vector calculus, and demonstrate a working understanding of the divergence and curl of vector fields, as well as the divergence and curl integral theorems.

CO**5-**Demonstrate an understanding of electric dipoles and the role of molecular dipoles in the electrostatic response of dielectrics.

CO**6-**Ability to understand scalar vector & its triple product, solve divergence, Gradient & curl.

C**O7-**To know Gauss Divergence Law, Greens Thm, Stokes Thm& its applications

B.Sc. First Year Practical (Semester -I&II**)**

Paper no. III+VI **Course code- Phy-**103 & 106

CO1- Identify that they have learned laboratory skills, enabling them to take measurements in physics laboratories and analyze the measurements to draw valid conclusions

CO2- Describe oral and written and scientific communication and will prove that they can think critically and work independently

CO3- Identify laboratory skills and exposures to a verity of experiments at appropriate levels that illustrates phenomena discussed in theory classes

CO4- Describing instrumentation and experimental techniques. Methods for quantitative analysis of data and measurement uncertainty.

CO5- Learn least count & applications of measuring instruments – Venire callipers, Screw Gauge and Travelling Microscope & Spectrometer, Spherometer Least Count with error calculation.

CO6- Understand Coefficient of static, kinetic and rolling friction.

CO7-Verification of Principle of Conservation of energy.

CO8- Determine Moment of inertia of body.

CO9- Verification of Parallel and perpendicular axes theorem.

CO10-Determine Moment of inertia of a flywheel.

B. Sc. Second Year **(Semester** -V & VI**)**

Paper no – VII **Course code- Phy**-201

Title of Paper-Mathematical Statistical Physics & Relativity

CO1- Understand partial differentiation, Successive differentiation, total differentiation.

CO2- Understanding ordinary differential equation and solution of 1st order and 2nd order differentiation equation.

CO3- Understand of the theories and methods of statistical physics and quantum statics.

CO4- Formulate and solve the problems on probability, permutation combination.

CO5- To demonstrate understanding of basic principle of special theory of relativity.

CO6- To understand Einstein equation E=mc2 (to know mass energy conversion).

Paper no –VIII **Course code- Phy**-202

Title of Paper- Modern and Nuclear Physics

CO1- Express the basic concepts Modern & nuclear physics.

CO2- Identify some introductory terminology, express the radioactive decays

CO3- State some quantities characterizing the decay such as half-life, decay constant.

CO4- Able to express Successive Decays & express reaction equation and Q values and Energy of alpha particles.

CO5- Express nuclear binding energy and nuclear masses & write semi-empirical mass formulas.

CO6- Explain the terms in the semi-empirical mass formula & explain nuclear reactions

CO7- Understand nuclear fission, fusion, can write characteristics of fusion& fission with reactions &Know basic elements of nuclear reactor.

Paper no – XI **Course code- Phy**-205

Title of Paper- General Electronics

CO1- Identify the unique vocabulary associated with electronics and explain the basic concepts of Semiconductor diodes such as p-n junction diode, characteristics and ammeters, DC load line, Zener diode.

CO2- To apply the basics of diode to describe the working of rectifier circuits such as Full and half wave rectifiers. To solve examples on rectifiers for parameters such as Capacitance, load and source effect, line and load regulations, and circuit current.

CO3- Draw and explain the structure of bipolar junction transistor. Explain the operation of each device in terms of junction bias voltage and charge carrier movement. Identify and explain the various current components in a transistor.

CO4- Describe the application of transistors for Current and voltage amplification. Also to describe the characteristics of different configurations of the transistor. Describe DC load line and bias point.

CO5- Sketch, explain and design the amplifier circuit for given specification analyze and Design the different types of Oscillators. Discuss ideal and practical operational amplifier and their electrical parameters.

C06- Sketch and explain the basic block of communication system. State the principles of modulation and explain the different modulation techniques.

Paper no –XII **Course code- Phy**-206

Title of Paper-Solid state physics

CO1- Understand types of solids, miller indices, inter planner spacing and different types of crystal structure.

CO2- Understand concept of inter atomic forces and study model and study Kroning penney model.

CO3- Understand of classical theory of lattice heat capacity and Debye model, Limitation of Debye model.

CO4- Critically asses range of application of free electron theory of metals. (Hall effect, Hall voltage and hall coefficient importance of hall effect)

CO5- Understand the transport properties of electrical conductivity thermal Conductivity.

B.Sc. Second Year Practical (Semester -V & VI**)**

Paper no.IX + XIII& X + XIV **Course code**-Phy-203, 204, 207, 208

CO1- Understand & demonstrate the experiment on sound and calculate Frequency and velocity of sound by turning fork of A.C. main

CO2- Study basic principle of photocell.

CO3- Understand the application of Interference

CO4- Understanding concept of telescope, microscope and other optical instrument with their applications.

CO5- Demonstrate and find charge/mass ratio

CO6- Understand application of semiconductor devices.

B. Sc. Third Year **(Semester -**V & VI**)**

Paper no –XV **Course code- Phy-**301

Title of Paper-Classical & Quantum Mechanics

CO1- Understand Newton's laws in through and deep.

CO2- Able to solve the Lagrange's equations using various applications for simple configurations.

CO3- Understand the basics of constraints its types & virtual work done concept.

CO4- Apply the mathematical basics of quantum mechanics.

CO5- Able to apply, solve, and understand the simple configurations of Schrodinger equations.

CO6- Understand the effect of symmetries in quantum mechanics.

Paper no –XVI **Course code- Phy-**302

Title of Paper-Electrodynamics

CO1- Describe and understand diversions, curl, Gauss Law applications in Electrostatics.

CO2- Understand concepts of self-induction, mutual induction and equation of continuity.

CO3- Understand origin of Maxwell's equations in Magnetic and dielectric media.

C04- Derive electromagnetic wave equation in conduction medium.

C05- Understand transport of energy and poyinting vector, poyinting theorem.

C06- Understand boundary condition for electromagnetic field vectors B, E, D and H.

Paper no –XIX **Course code- Phy-**305

Title of Paper-Atomic Molecular Physics & Laser

CO1- Acquire knowledge of the fundamental physics underpinning atomic and molecular physics.

CO2- Able to explain the concepts and potential applications of atomic and molecular physics.

CO3- Understand and execute analytical, laboratory and computing skills through problem solving, and laboratory, which involve the application of physics.

CO4- Apply the theoretical techniques presented in the course to practical problems.

CO5- List different types of atomic and molecular spectra and related instrumentation.

CO6- Understand and describe theories explaining the structure of atoms and the origin of the observed spectra& able to identify atomic effect such as space quantization and Zeeman Effect.

CO7- Able to explain and understand different technique used in laser and applications.
CO8- Find the interrelations between Einstein coefficients quantitatively describe the key characteristics of pulsed lasers and their interrelation
CO9- Describe concrete major example laser systems in detail and understand their technological challenges Students should therefore gain a significantly enhanced understanding of how lasers work and which types of lasers are most relevant for specific performance specifications and subsequent applications.

Paper no –XX **Course code-** Phy-306
Title of Paper-Non-conventional energy sources and optical fiber
CO1- Create awareness among the student about non-conventional sources of energy technologies.
CO2- Able to understand various renewable energy technology and system.
CO3- Understand non-conventional energy sources: Biomass, wind energy, tidel energy, ocean energy, geothermal energy and solar energy.
CO4- The concept of solar energy and their applications in different field.
CO5- Classify structures of optical fibers.
CO6- Understand fiber fabrication techniques, testing of optical fiber cables.

B.Sc. Third Year Practical (Semester -V & VI**)**

Paper no. XVII-XVIII & XXI-XXII **Course code-** Phy-303-304 and 307-308

CO1- Understand the basic principles, characteristics of laser.

CO2- Perform the procedures and application in the laboratory.

CO3- Understand the basic concepts of optical fibres.

CO4- Understand the applications part of optical fibre into communication system.

CO5- Study the basic idea of the experiment.

CO6- Study the elastic behaviour of materials.

CO7- Understand the applications of semiconductor devices.

CO8- Understand the basic of diode and working of rectifier circuits and characteristics.

CO9- Ability to gain ideas for project with industrial applications and utilities base on industrial tour/research Centre visit.

Programme Specific Outcomes

Mathematics

PSO 1 : Acquire fundamentals and advance knowledge of mathematics.

PSO 2 : Students should be able to communicate solutions of mathematical problems effectively.

PSO 3 : Enable the students to equip knowledge in various concepts involve in Calculus, differential equation, real analysis and algebra.

PSO 4 : Students are able in an effective manner to attend the competitive exams in order to brighten their future.

PSO 5 : Students should able to determine the reasonableness of solutions Including sign, size, accuracy and units of measurement.

PSO 6 : Students should be able to apply mathematical proof techniques in a Wide variety of mathematical areas, including algebra and analysis.

PSO 7 : Acquire a breadth and depth of understanding in mathematics.

COURSE OUTCOMES

B.Sc- I (Sem.I):

MAT 101 : DIFFERENTIAL CALCULUS

CO 1 : Solve the problems on limits continuity and successive differentiation of Functions.

CO 2 : Determine the partial derivative of function more than one variable.

CO 3 : Describe Rolle 's Theorem, Lagrange's mean value theorem and Cauchy's mean value theorem.

CO 4 : Determine expansion of e^x, sin x , cos x, sinh x, cosh x,tanh x, log (ax+b) etc.

CO 5 : Determine gradient, divergence and curl and directional derivatives.

B.Sc- I (Sem.I):

MAT 102 : DIFFERENTIAL EQUATIONS

CO 1 : Determine the solution of first order linear differential equation.

CO 2 : Determine the solution of exact differential equation.

CO 3 : Determine the solution of linear equation with constant coefficient using general and short method.

CO 4 : Determine the solution of linear homogeneous differential equation.

CO 5 : Formation of the partial differential equation by eliminating the arbitrary constants and functions.

B.Sc- I (Sem.II):

MAT 201 : INTEGRAL CALCULUS

CO 1 : Understand and apply the reduction formula.

CO 2 : Find the integration of algebraic rational functions.

CO 3 : Understand and apply the fundamental theorem of integral calculus.

CO 4 : Find the area bounded by a curve.

CO 5 : Calculate the length of arc of a curve.

CO 6 : Find line integral and surface integrals.

CO 7 : Apply the theorems of Gauss, Green's and Stoke's.

B.Sc- I (Sem.II): MAT 202 : GEOMETRY

CO 1 : Identify and use the different type of equations of plane.

CO 2 : Determine the equations of the system of planes and the length of perpendicular to a plane.

CO 3 : Determine the equation of right line and the angle between the plane and line.

CO 4 : Determine condition for coplanar lines and short distance between two lines.

CO 5 : Determine the equation of sphere and its intersection with the plane.

B.Sc- II (Sem.III): MAT 301 : NUMBER THEORY

CO 1 : Describe the division algorithm and solve the problem on it.

CO 2 : Determine GCD and LCM by using Euclidean algorithm.

CO 3 : Describe the method of solving linear Diophantine equation.

CO 4 : Determine the solution of linear congruence.

CO 5 : Describe the Fermat's and Euler's theorem.

B.Sc- II (Sem.III): MAT 302 : INTEGRAL TRANSFORM

CO 1 : Define beta and gamma functions, derive their properties and apply them in evaluating integrals.

CO 2 : Determine the Laplace transform for various functions, properties of Laplace transforms.

CO 3 : Determine inverse Laplace transform, properties of inverse Laplace Transform, solve the problems using convolution theorem.

CO 4 : Determine Fourier transform, properties of Fourier transform, Fourier

sine and cosine transforms.

CO 5 : Application of Laplace transform to ordinary and partial differential equations.

B.Sc- II (Sem.III): MAT 303 : MECHANICS- 1

CO 1 : Describe the different types of forces , triangle law of forces, Parallelogram of forces, resultant of forces, sine rule and cosine rule.

CO 2 : Learn the resultant of several coplanar forces, equation of the line of action of the resultant, equilibrium of a rigid body under 3 coplanar forces.

CO 3 : Learn the Lammi's theorem and polygon of forces.

CO 4 : Learn vector moment of a force and vector moment of couple.

CO 5 : Describe the basic concepts of centre of gravity and its applications.

B.Sc- II (Sem.IV): MAT 401: Numerical Methods

CO 1 : Learn Bisection Method, Method of False Position, Newton-Raphson Method.

CO 2 : Understand Finite Differences, Newton's Formula for Interpolation, Lagrange's Interpolation Formula, Divided Differences.

CO 3 : Describe Least Square Curve Fitting Procedures, Fitting a straight line, Chebyshev polynomial, Power series.

CO 4 : Calculate Solution of Linear system of equations, Eigen values and Eigen Vectors.

CO 5 : Calculate solution of ordinary differential equation by Taylor's series Method, Picard's Method, Euler's Method.

B.Sc- II (Sem.IV): MAT 402: Partial Differential Equation

CO 1 : Solve Lagrange's equation.

CO 2 : Find different types of solutions like complete integral, Singular integral and general integral.

CO 3 : Determine the solution of partial differential equations using Charpit's

Method.

CO 4 : Classify partial differential equations to special types.

CO 5 : Describe Monge's Method, Method of transformation.

B.Sc- II (Sem.IV): MAT 403: Mechanics II

CO 1 : Learn velocity and acceleration in terms of vector derivatives, curvature, Angular speed and angular velocity.

CO 2 : Describe Radial and Transverse components of velocity and acceleration, areal speed and velocity.

CO 3 : Understand Newton's Law of motion, angular momentum, work, energy, vector point function, Field of force.

CO 4 : Describe motion under gravity, projectile, Motion of projectile, Parabola of safety.

CO 5 : Learn motion in resisting medium.

CO 6 : Understand areal velocity of central orbit, Pedal's equation.

B.Sc- III (Sem.V): MAT 501: Real Analysis –I

CO 1 : Learn sets, functions, real valued functions, countable sets, Least upper Bound axiom and greatest lower bound axiom.

CO 2 : Understand the different types of sequence such as convergent, Divergent, monotone and its properties.

CO 3 : Describe limit superior, limit inferior and Cauchy sequence

CO 4 : Understand the basic concepts of series such as convergent, divergent, alternating series.

CO 5 : Learn the absolute and conditional convergence of the series.

B.Sc- III (Sem.V): MAT 502: Abstract Algebra- I

CO 1 : Learn elementary concepts of sets, functions and integrals.

CO 2 : Understand group, subgroup, counting principle, Normal subgroup,

Quotient groups, Homomorphism.

CO 3 : Define Ring, some special types of ring.

CO 4 : Describe Ideals, Maximal Ideals.

CO 5 : Learn quotient ring, polynomial ring.

B.Sc- III (Sem.V): MAT 503: Mathematical Statistics-I

CO 1 : Learn frequency distribution, Histogram.

CO 2 : Acquire knowledge of Measures of central tendency.

CO 3 : Describe Dispersion and Kurtosis.

CO 4 : Understand the concepts of random variables and its characteristics.

CO 5 : Understand the concept of the probability with illustration.

B.Sc- III (Sem.VI): MAT 601: Real Analysis –II

CO 1 : Acquire knowledge of Limits in Metric spaces.

CO 2 : Learn continuous functions on Metric spaces.

CO 3 : Describe connectedness, completeness and compactness.

CO 4 : Understand set of Measure zero, Riemann integral, Fundamental theorem of calculus.

CO 5 : Learn Fourier series.

B.Sc- III (Sem.VI): MAT 602: Abstract Algebra- II

CO 1 : Learn elementary basic concepts of vector spaces.

CO 2 : Understand Linear independence and bases.

CO 3 : Describe dual spaces.

CO 4 : Understand inner product spaces.

CO 5 : Learn modules with illustrations.

B.Sc- III (Sem.VI): MAT 603: Mathematical Statistics-II

CO 1 : Learn Mathematical Expectation and generating functions.

CO 2 : Understand theoretical discrete probability distribution.

CO 3 : Describe uniform distribution, binomial distribution, Normal Distribution, Gamma distribution.

CO 4 : Learn correlation coefficient.

CO 5 : Understand regression.