R. C. Patel Educational Trust's
R. C. Patel Arts, Commerce and Science College
Shirpur-425405, Karvand Naka, Dist.- Dhule (Maharashtra)
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Affiliated to: K. B. C. North Maharashtra University, Jalgaon-425001

Course Outcomes (COs) for all Programmes offered by the institution

UG – BCA

F.Y.BCA	
BCA 101 **Foundation Course for Managers**	CO1: To make and present well designed and informative presentations
	CO2: Illustrate C for decision making, branching and looping statements
	CO3: Understand the concept of Array and Strings to solve different problems.
BCA 105 **Practical on Computer & Internet**	CO1: Students can able to understand the installation of operating system.
	CO2: Students can understand basic DOS command, and different browser.
	CO3: Student understand different platforms, Internet, mails, tables
	CO4: Students can learn text formatting and table formatting.
	CO5: Students capable to design power point presentation, tables, shapes, smart arts and charts
BCA 106 **Practical on Web Design-I**	CO1: Students were able to design consistent look and feel web pages.
	CO2: Students were capable to use multimedia in web page.
	CO3: Students were implement effective web page navigation.
	CO4: Students were capable to design web page layout
	CO5: Students were implement use of style sheet.
BCA 107 Practical on C Programming	CO1: Students understand the input output functions.
	CO2: Students can understand the use of various operator.
	CO3: Students can understand the use of control statements.
	CO4: Students can design the various expressions in C

	CO5: Students can understand the array and its type.
BCA 201 **Financial Accounting**	CO1: To develop his verbal and nonverbal communication ability
	CO2: To communicate with people effectively and confidently.
	CO3: To draft effective business correspondence documents.
	CO4: To make and present well designed and informative presentations
BCA 202 **Professional Communication**	CO1: To develop his verbal and non-verbal communication ability
	CO2: To communicate with people effectively and confidently.
	CO3: To draft effective business correspondence documents.
	CO4: To make and present well designed and informative presentations
BCA 203 **Essential of Web Design II**	CO1: Student were able to embed JavaScript in web page
	CO2: Students successfully added interactivity in web page
	CO3: Students were applied validation on web form
	CO4: Students were implemented different events.
	CO5: Students were familiar with bootstrap framework.
BCA 204 **Programming In C++**	CO1: To Understand OOPs Concept
	CO2: To Understand the concept to implements Functions, Pointer Array in C++
	CO3: To Understand to implements Class, Object ,Inheritance and polymorphism
	CO4: To understand the concepts of Exception handling and File management
BCA 205 **Practical on Professional Communication**	CO1: To understand and Learn Communication Skill

BCA 206 **Practical on Web Design-II**	CO1: Student were able to develop web page using JavaScript
	CO2: Students successfully added interactivity features in web page
	CO3: Students were implemented validation on web form
	CO4: Students were implemented different events.
	CO5: Students were familiar with bootstrap framework.
BCA 207 Practical on C++ Programming	CO1: Solve real time problems and isolate and fix common errors in C++ programs
	CO2: Understand the object-oriented approach for the program development and make use of the OOP concepts (data abstraction, encapsulation, polymorphism, overloading, and inheritance) of C++ appropriately in problem solving.
S.Y.BCA	
BCA 301 **Mathematics and Statistics for Managers**	CO1: Understanding of all terms related to mathematical logic.
	CO2: Ability to know the types of sets, method of representation, operations, and laws related to it.
	CO3: Ability to solve problems related to matrices.
	CO4: Understand the basic concepts of Statistics.
	CO5: Analyze statistical data using measures of central tendency.
	CO6: Performing mathematical and statistical functions using MS-Excel.
BCA 302 **Management Information System**	CO1: To impart the knowledge of MIS among students
BCA 303 **Java Programming**	CO1: To apply object oriented programming features and concepts for solving givenproblem.
	CO2: Develop reusable programs using the concepts of inheritance, polymorphism,interfaces and packages.
	CO3: To develop simple interactive applications.

BCA 304 **Linux Operating System**	CO1: To get aware of the main components, computer organization interface, and system calls of OS.
	CO2: Ability to apply process management and threading.
	CO3: To Make understand the features of Linux OS
	CO4: To Learn the basic Linux command
BCA 305 **Practical on Java**	CO1: To understand basics of Java Programming.
	CO2: Implement different applications using Java.
BCA 306 **Practical on Linux**	CO1: Apply Linux operating system commands.
	CO2: Understand different Linux shell scripts and execute various shell programs.
BCA 307 **Practical on Tally ERP**	CO1: To practically train students in Accounting using Tally ERP
BCA 401 **Introduction to Information System Audit**	CO1: To impart the knowledge and importance of Information System and Audit among Students for Quality Management.
BCA 402 **RDBMS**	CO1: To prepare students in using and managing Relational databases and its applications
BCA 403 **C#.NET**	CO1: To impart the knowledge of object oriented programming using C# among student.
BCA 404 **Data Structure**	CO1: To analyse algorithms and algorithm correctness.
	CO2: To summarize searching and sorting techniques.
	CO3: To describe stack, queue and linked list operation.
	CO4: To have knowledge of tree and graphs concepts.
BCA 405	CO1: To practically train students in programming in C#.NET

Practical on C#.NET	
BCA 406 **Practical on RDBMS using Oracle**	CO1: To learn SQL Queries
BCA 407 **Practical on Data Structure using CPP**	CO1: Be capable to identity the appropriate data structure for given problem.
	CO2: Have practical knowledge on the applications of data structures
	CO3: Analyze the various sorting and searching algorithms.
	CO4: Apply the different linear data structures like stack, queue and link list to variouscomputing problems.
T.Y.BCA	
BCA 501 **Entrepreneurship Development**	CO1: Learn about Entrepreneurship Development
BCA 502 **Cyber Security**	CO1: To impart the knowledge of Cybercrime and cyber security among students.
BCA 503 **ASP.NET**	CO1: Design Web application / Website using ASP.NET and .NET Framework.
	CO2: Use ASP.NET controls in web applications
	CO3: Create event driven ASP.NET web application.
	CO4: State Management for user and application data.
	CO5: Create web application to manage data from data base using ADO.NET.
BCA 504 **Software Engineering**	CO1: To design and develop a software in learned language.
	CO2: To prepare software requirement specification.
	CO3: Estimate the size and cost of software product.
	CO4: Get knowledge of different types of software testing
BCA 505 **Practical on ASP.Net**	CO1: Use .NET IDE for ASP.NET web application development and form developmentusing standard .NET

	Controls.
	CO2: Develop web application handling different events.
	CO3: Use validation controls for validating page data.
	CO4: Create and use master page, apply theme and skin for web pages.
	CO5: Develop web applications using data from database.
BCA 506 **Practical on CASE Tool with MS-VISIO and Software Testing**	CO1: practically train students in using CASE tools for designing real time system diagrams.
BCA 507 **Field work on IT Project Assessment**	CO1: Students will understand the issues in implemented IT project by assessing it using research methodology.
BCA 601 **E-Commerce & M-Commerce**	CO1: To impart the knowledge of e-Commerce & m - Commerce among students.
BCA 602 **Cloud Computing**	CO1: This course will help the students to get familiar with cloud computing fundamentals, architecture, services, implementation and deployment techniques etc
BCA 603 **Android Application Development**	CO1: to know that how mobile communication works and how to build mobile apps for android operating system.
	CO2: To understand mobile communication and to develop Android Applications.
BCA 604 **Server Side Scripting using PHP**	CO1: Design Web applications / Website using HTML and PHP.
	CO2: Use PHP script with functions, Arrays, and Strings in web applications.

	CO3: Use Forms and Handle Files using PHP Script.
	CO4: Create web applications using MySQL database.
BCA 605 **Practical on Android &PHP**	CO1: Design web site / web applications using HTM and PHP script
	CO2: File and directory handling using PHP for web applications.
	CO3: Create web application using MySQL database.
BCA 606 **Practical on Employability Skills**	CO1: To practically train students in developing required employability skills
BCA 607 **Project Report and Viva**	CO1: Learn to use applications of the theory and practical learned during the course and prepare the project.

UG – B.COM

Class: F. Y. B.Com	
101 English for Business	CO1: To introduce communication theory to students.
	CO2: To inculcate various communication skills in English among students.
	CO3: To introduce various soft skills to students.
	CO4: To improve oral and written competency in English of students.
102 Hindi	CO1: To introduce various famous entrepreneurs to commerce students.
	CO2: To develop Hindi reading and linguistic comprehension of students
	CO3: To improve professional and entrepreneurial attitude of students through success stories.
	CO4: To Acquaint Students with special challenges of starting new ventures
103 Micro Economics	CO1: To introduce Microeconomics
	CO2: To develop Indifference Carve Analysis of Demand
	CO3: To develop Theory of Production
104 Financial Accounting and Costing	CO1: To lay a foundation for understanding the Accounting Standards issued by the ICAI.
	CO2: To gain the ability to solve problems relating to settlement of obligations on dissolution of partnership firm and also relating to their business combinations
	CO3: To introduce the concepts used in Cost Accounting, elements of costs and the concept of cost sheet.
105 Computing Skills	CO1: To familiarize the Students with basics of Internet.
	CO2: To understand the use of Office application.
	CO3: To know the role of word processor, Spread sheet, presentation in industry.
	CO4: To understand the how of accounting software works.
106 Modern office Management	CO1: To understand the concept of office management.
	CO2: To know the secretarial procedure.
	CO3: To acquire operational skills of office management.
	CO4: To develop the interest in methods and procedures of office management.
107 Principles & Practices of Banking	CO1: To understand the concept of Banking.
	CO2: To know the Banking procedure.
	CO3: To develop the interest in methods and procedures of Banking.
201 English for Business	CO1: To improve oral and written competency in English of students.
	CO2: To introduce communication theory to students.
	CO3: To inculcate various communication skills in English among students.
	CO4: To introduce various soft skills to students.

202	CO1: To introduce various famous entrepreneurs to commerce students.

Hindi	CO2: To Acquaint Students with special challenges of starting new ventures
	CO3: To develop Hindi reading and linguistic comprehension of students.
	CO4: To improve professional and entrepreneurial attitude of students through success stories.
203 Micro Economics	CO1: To understand Concept of Market
	CO2: To Study of Market of Perfect Competition
	CO3:To develop students for MPSC and UPSC Exams
204 Financial Accounting and Costing	CO1: To lay down a theoretical foundation for the recording of financial transactions concerning specialized area related to non-corporate entities and for preparing the related accounts or statements.
	CO2: To lay a foundation for the preparations of financial statements from incomplete record.
	CO3: To lay a foundation for understanding the Accounting procedure for Material cost and price methods.
205 Quantitative Techniques	CO1: To develop and employ mathematical models
	CO2: To develop and employ mathematical , theories
206 Modern Office Management	CO1: To understand the concept of office management.
	CO2: To know the secretarial procedure.
	CO3: To acquire operational skills of office management.
	CO4: To develop the interest in methods and procedures of office management.
207 Principles & Practices of Banking	CO1: To understand the concept of Banking.
	CO2: To know the Banking procedure.
	CO3: To develop the interest in methods and procedures of Banking.
	CO4: To study of Multiple Credit Creation by a Commercial Ban
	Class: S.Y BCOM
301 Macro Economics	CO1: To make students Familiar with the basic concepts of macro Economics
	CO2:To enable the students to Understand objectives of macro Economics The ones and Policies
	CO3:To develop students for MPSC and UPSC Exams
302 Business & Tax Laws	CO1: Learn The Law & Legal Principals OF Contract Act 1872.
	CO2: Draft legal documents including partnership deed & service tax returns.
	CO3: Understand the basic structure, rules & powers of consumer protection act.
	CO4: To know the provision regarding strikes and lock outs under industrial dispute act.
303 Business Management	CO1: To introduce the concept of management to the students.
	CO2: To acquaint the student with modern management practices
	CO3: To develop leadership skills and communication skills.
	CO4: To familiarize the students with the nature and scope of management.

304 Corporate Accounting and Costing	CO1: To develop an understanding of the rules of measurement and reporting relating to various components of corporate financial transactions.
	CO2: To introduce the relevant Accounting Standards issued by the Institute of Chartered Accounts of India.
	CO3: To introduce different methods of Costing.
	CO4: To lay a foundation for understanding the Labor & Overheads Accounting procedure.
305 Computing Management	CO1: To Understand the Objectives of Computerized Accounting.
	CO2: To Know the Principles Of Tally Software.
	CO3: To acquire Computing Skills.
	CO4: To Study Various features of Tally.
306 Business Entrepreneurship	CO1: To understand the concept of entrepreneurship.
	CO2: To know the qualities of entrepreneur.
	CO3: To describe the types of entrepreneur
	CO4: To identify the new business opportunities.
307 Modern Banking & Financial System	CO1: To acquaint students with the new concepts of Banking
	CO2: To update the students about new changes in Banking
	CO3: To know the relevance Banking practices in modern competitive world
	CO4: To make understandable of Banking operations
401 Macro Economics	CO1: To make students Familiar with the basic concepts of macro-Economic
	CO2: To enable the students to Understand objectives of macro Economics The ones and Policies
	CO3: To develop students for MPSC and UPSC Exams
402 Business Tax and Laws	CO1: To understand the basic structure, rules & powers of the Consumer Protection Act.
	CO2: To know the provision regarding strikes and lock-outs under the Industrial Disputes Act.
	CO3: To be acquainted with the Environment Protection Act.
	CO4: To be acquainted with the Goods and Services tax Act.
403 Business Management	CO1: To introduce the concept of management to the students
	CO2: To acquaint the student with modern management practices.
	CO3: To develop leadership skills and communication skills.
	CO4: To familiarize the students with the nature and scope of management.
404 Corporate Accounting and Costing	CO1: To provide working knowledge of accounting principles and procedures for recording of transactions related to corporate entities, and for preparing the corporate accounts and statements in accordance with the statutory requirements.
	CO2: To introduce the relevant Accounting Standards issued by the Institute of Chartered Accounts of India

	CO3: To introduce different methods of Costing.
	CO4: To lay a foundation for understanding the Labor & Overheads Accounting procedure.
405 Business Communication	CO1: To Understand the Concept Process, Importance and Objectives of Communication
	CO2: To Develop Awareness regarding New Trends in Business Communication
	CO3: To Know the Principles Of Effective Communication.
	CO4: To acquire Communication Skills.
406 Business Entrepreneurship	CO1: To understand the concept of entrepreneurship
	CO2: To know the qualities of entrepreneur.
	CO3: To describe the types of entrepreneur.
	CO4: To identify the new business opportunities.
407 Modern Banking & Financial System	CO1: To acquaint students with the new concepts of Banking
	CO2: To update the students about new changes in Banking
	CO3: To know the relevance Banking practices in modern competitive world
Class: T.Y.Bcom	
501 Indian Economic Scenario	CO1: To acquaint students with new concepts of Economics.
	CO2: To update the students about new changes brought in Indian Economy
	CO3: To make students competent to become success in competitive examination.
	CO4: To know the relevance Economic practices in modern competitive world
502 Principles & Practices of Auditing	CO1: To know Introduction of Audit
	CO2: To study of Audit Program& Documentation
	CO3: To study of Vouching, Verification and Valuation
	CO4: To study of Audit Evidence
503 Income Tax	CO1: know the various provisions relating to Income and Incomes tax computation
	CO2: understand the basic concepts of the Income Tax Act 1961 and get the elementary knowledge of scheme of taxation in India
	CO3: compute Income and Tax of an Individual assesse under the Act
504 Human Resource Management	CO1: To introduce the concept, principles and practices of H.R.M. to the students.
	CO2: To familiarize students with concepts of human resource planning, Job Analysis, Recruitment and selection procedures.
505 Modern Management Technique- I	CO1: To know the Modern Management Technique
	CO2: To Know Concept of E- Customer relationship management

506 Advanced Accounting–I	CO1: To impart the students, knowledge about accounting treatment of functional aspects corporate and Non-corporate undertakings.
	CO2: To appraise the students about need and importance of Accounting Standards concerning the Functional aspects accounting
	CO3: To appraise the students about the application of accounting knowledge in preparation of financial
	CO4: Statements of Farm Activities, and Corporate Sector units.
507 Advanced Accounting–II	CO1: To impart the students, knowledge about accounting treatment of corporate undertakings restructuring.
	CO2: To apprise the students about the application of accounting knowledge in preparation of financial statements of Bank Accounts.
	CO3: To appraise the students about application of the AS concerning the aspects in accounting.
	CO4: To appraise the students about the application of accounting knowledge in reading and interpreting the financial statements of corporate entities.
601 Indian Economic Scenario	CO1: To acquaint students with new concepts of Economics.
	CO2: To update the students about new changes brought in Indian Economy
	CO3: To make students competent to become success in competitive examination.
	CO4: To know the relevance Economic practices in modern competitive world
602 Principles & Practices of Auditing	CO1: To know Introduction of Audit
	CO2: To study of Audit Program& Documentation
	CO3: To study of Vouching, Verification and Valuation
	CO4: To study of Audit Evidence
603 Soft Skills Development	CO1: To equip students with the necessary soft skills to enhance their competitive edge in the job market
	CO2: To imbibe in students positive attitude towards life and work
	CO3: To help students excel in their individual and professional lives using the soft skills
604 Human Resource Management	CO1: To introduce the concept Training and Management Development of H.R.M. to the students.
	CO2: To provide recent trends in Human Resource Management.
	CO3: To develop the total personality of students as future Human Resource of India.
	CO4: To study the various dimensions of Human Resource Management
605 Modern Management Technique- II	CO1: To Study Modern Management Technique Skills & Knowledge
	CO2: To know Modern Management Techniques in Functional Area
606	CO1: To impart the students, knowledge about accounting treatment of functional aspects Corporate and Non-corporate undertakings.

Advanced Accounting–I	CO2: To appraise the students about need and importance of Accounting Standards concerning the Functional aspects accounting
	CO3: To appraise the students about the application of accounting knowledge in preparation of financial
	CO4: Statements of Farm Activities, and Corporate Sector units.
607 Advanced Accounting–II	CO1: To Impart the students, knowledge about accounting treatment of corporate undertakings restructuring.
	CO2: To apprise the students about the application of accounting knowledge in preparation of financial statements of Bank Accounts.
	CO3: To appraise the students about the application of accounting knowledge in reading and interpreting the financial statements of corporate entities.

PG – M.COM

101 Economics Of Industries-I	CO1: To Obtain an understanding of various types pricing methods and procedures
	CO2: To Understand the preparation of the profile of a project.
	CO3: To appraise the students about application of the AS concerning the aspects in accounting.
	CO4: To Obtain a theoretical understanding of Price Wars and Non-price competition, Industrial finance and productivity
102 Strategic Management	CO1: To know and understand main concepts & level of Strategic Management.
	CO2: To know the modern techniques concepts of strategic control and evaluation.
	CO3: To understand co-operate level strategies in the competitive situation.
	CO4: To understand co-operate level strategies in the competitive situation and productivity
103 Research Methodology	CO1: To study Research Methodology for decision making in business
	CO2: To overview the methods of Data Collection
	CO3: To understand process of research by students for preparation of research report.
104 Advanced Accountancy	CO1: Understand elementary knowledge about Accounting Standard
	CO2: Understand different aspects of Value Added Statement and Reporting
	CO3: 3 Understand the advanced aspects of accounting relating to company liquidation, Holding company
	CO4: Understand the method of presenting financial statements by Insurance companies
201 Economics Of Industries-Ii	CO1: To study the basic concepts of Industrialization
	CO2: To study the performance and problems of Indian Industry
	CO3: To study the government regulation of firm and industry

	CO4: To study the impact of industrialization on Indian Economy
202 Case Studies In Strategic Management	CO1: To understand the different environment of business organization through practical cases
	CO2: To solve the situational problem and understand the importance
	CO3: To observe real life situation through cases
203 International Business	CO1: To understand the concept and International Business.
	CO2: To know the International Business Environment.
	CO3: To study the India's International Business.
	CO4: To know the concept of Foreign Collaboration and Joint Venture.
204 Advanced Cost Accountancy	CO1: To understand the nature of cost accounting records maintained by manufacturing companies.
	CO2: To figure out how to reconcile Cost and Financial Accounts.
	CO3: To know the legal requirements regarding maintaining the cost accounting records and audit thereof
	CO4: To enable students to gain knowledge the nature of Cost Information System for presenting the cost data to the management.
301 Management Accounting	CO1: Understand the philosophy and rationale of the financial analysis
	CO2: Understand the techniques of analysis and interpretation of financial statements
	CO3: Develop an appreciation about the utility of techniques of financial analysis for management information and decision making process.
	CO4: Evaluate the implications of cash flow and fund flow on financial position of an industrial organisation.
302 Entrepreneurship Management	CO1: To encourage and inspire the students to become an Entrepreneur
	CO2: To acquaint the students with the challenges to start a new venture
	CO3: To provide theoretical foundation for executing various projects.
	CO4: To highlight the support system for Entrepreneurship Management
303 Organizational Behavior	CO1: To get an overview of organizational behaviour and the challenges and opportunities.
	CO2: To understand the concept of behaviour – individual and Organizational Behaviour.
	CO3: To know about perception, learning, attitude, values and emotions.
	CO4: To gain knowledge of Motivation and Leadership and its various theories
304 Advanced Accountancy	CO1: Understand basic knowledge about Accounting Standard
	CO2: Understand the basics of Price Level Change, like Inflation Accounting, etc
	CO3: Understand the advanced aspects of accounting for Lease
	CO4: Understand the method of presenting Financial Statement of Credit Cooperative Societies

401 Management Accounting	CO1: Understand the concept and techniques of financial control used in management accounting
	CO2: Imbibe knowledge about the control techniques namely budgetary control and standard costing.
	CO3: Develop the skill to analyze the cost-variance for effective cost control.
	CO4: Familiarize with the concept, role, and utility of marginal costing, and its implications and utility for managerial decision making process
402 Modern Retail Management	CO1: To understand dynamics of modern organized retail trade
	CO2: To overview Retail Development in India and Modern Retail Format
	CO3: To understand the Merchandise Management and Retail Franchising
	CO4: To know the Application of Information Technology in Retailing
403 Information Systems For Business	CO1: Develop conceptual understanding about latest developments in the field of Information Technology and the impact of I.T. in Managing business.
	CO2: Learn to use Information Technology to gain competitive advantage in business
	CO3: Develop students as Cyber Security experts , ERP domain experts and Data Analysts
	CO1: Develop conceptual understanding about latest developments in the field of Information Technology and the impact of I.T. in Managing a Business.
404 Advanced Accountancy	CO1: Know audit skills required for audit of Banks and Co-operative Societies
	CO2: Understand the legal framework governing the audit of various forms of business entities and non-business entities
	CO3: Understand the proper way of making examination of the financial statements of various business entities, and form opinion thereon
	CO4: Understand the way of auditing of different units of service sector

UG – BMS (e-Com)

Class: - FYBMS (e-Com) SEM-I (2017-18)

E 1.1 Principles of Management	CO1: To understand fundamental concepts Management.
	CO2: To understand the basics of Management.
	CO3: To understand management ethics
E 1.2–Professional Communication I	CO1: To develop his verbal and nonverbal communication ability
	CO2: To communicate with people effectively and confidently.
	CO3: To draft effective business correspondence documents.
	CO4: To make and present well designed and informative presentations
E 1.3 Fundamentals of Accounting	CO1: Acquire the knowledge of fundamentals of Computer and Operating System.
	CO2: Develop problem solving skill through algorithms and flowcharts.
	CO3: Understand the basics of computer networking and internet.
E 1.4 Fundamentals of Computer & Internet	CO1: Acquire the knowledge of fundamentals of Computer and Operating System.
	CO2: Develop problem solving skill through algorithms and flowcharts.
	CO3: Understand the basics of computer networking and internet.
E 1.5 C-Programming	CO1: Acquainted with elements, Tags and basic structure of HTML files.
	CO2: Up skills the knowledge of basic and advanced web designing.
	CO3: Students were implement effective use of List and Tables.
	CO4: Students were implement effective web page navigation.
	CO5: Students were capable to design web page layout
E 1.6 Practical on C Programming	CO1: Students understand the input output functions.
	CO2: Students can understand the use of various operator.
	CO3: Students can understand the use of control statements.
	CO4: Students can design the various expressions in C
	CO5: Students can understand the array and its type.
E 1.7 Practical on Office Automation	CO1: Students can able to understand the installation of operating system.
	CO2: Students can understand basic DOS command, and different browser.
	CO3: Student understand different platforms, Internet, mails, tables
	CO4: Students can learn text formatting and table formatting.
	CO5: Students capable to design power point presentation, tables, shapes, smart arts and charts

Class:- FYBMS(e-Com) SEM-II

E 2.1 Introduction to Organization Behavior	CO1: To understand the basics of Organization
	CO2: To understand Interpersonal Relationship among the organization units
E2.2 Professional Communication II	CO1: To communicate with people effectively and confidently.
	CO2: To draft effective business correspondence documents.
	CO3: To make and present well designed and informative presentations
E 2.3 Financial Accounting & Costing	CO1: Acquire the knowledge of fundamentals of Computer and Operating System.
	CO2: Develop problem solving skill through algorithms and flowcharts.
	CO3: Understand the basics of computer networking and internet.
	CO4: Understand the basics of Costing.
E 2.4 Elements of E-Commerce	CO1: To impart the knowledge of e-Commerce among students.
	CO2: To impart the knowledge of m - Commerce among students.
E 2.5 Programming in C++	CO1: Acquainted with elements, Tags and basic structure of HTML files.
	CO2: Up skills the knowledge of basic and advanced web designing.
	CO3: Students were implement effective use of List and Tables.
	CO4: Students were implement effective web page navigation.
	CO5: Students were capable to design web page layout
E 2.6 Practical on C++ programming	CO1: Solve real time problems and isolate and fix common errors in C++ programs
	CO2: Understand the object-oriented approach for the program development and make use of the OOP concepts (data abstraction, encapsulation, polymorphism, overloading, and inheritance) of C++ appropriately in problem solving.
E 2.7 Practical on Tally ERP	CO1: To practically train students in Accounting using Tally ERP

SYBMS(e-Com) SEM-III

E 3.1 Mathematics & Statistics for Managers	CO1: Understanding of all terms related to mathematical logic.
	CO2: Ability to know the types of sets, method of representation, operations, and laws related to it.
	CO3: Ability to solve problems related to matrices.
	CO4: Understand the basic concepts of Statistics.

	CO5: Analyze statistical data using measures of central tendency.
E 3.2 Business Economics	CO1: To understand Nature and Scope of Business Economic.
	CO2: To understand Production Cost and Revenue concepts
E3.3 Business Ethics & Professional Values	CO1: To understand Business Ethics
	CO2: To understand Organizational Ethics
E 3.4 Web Designing Using HTML and CSS	CO1: Acquainted with elements, Tags and basic structure of HTML files.
	CO2: Up skills the knowledge of basic and advanced web designing.
	CO3: Students were implement effective use of List and Tables.
	CO4: Students were implement effective web page navigation.
	CO5: Students were capable to design web page layout
	CO6: Students were understood and implement use of style sheet.
E 3.5 Java Programming	CO1: To apply object oriented programming features and concepts for solving givenproblem.
	CO2: Develop reusable programs using the concepts of inheritance, polymorphism,interfaces and packages.
	CO3: To develop simple interactive applications.
	CO1: To apply object oriented programming features and concepts for solving givenproblem.
	CO2: Develop reusable programs using the concepts of inheritance, polymorphism,interfaces and packages.
E 3.6 Practical on Java Programming	CO1: To understand basics of Java Programming.
	CO2: Implement different applications using Java.
E 3.7 Practical on HTML & CSS	CO1: Students were able to design consistent look and feel web pages.
	CO2: Students were capable to use multimedia in web page.
	CO3: Students were implement effective web page navigation.
	CO4: Students were capable to design web page layout
	CO5: Students were implement use of style sheet.

Class:- SYBMS(e-Com) SEM-IV

E 4.1 Management Information System	CO1: To impart the knowledge of MIS among students
	CO2: To understand hierarchy and structure of Management

E 4.2 Research Methodology	CO1: To impart the knowledge of Basic Concepts of Research
	CO2: To impart the knowledge of Methods of data collection, Tools of Data Analysis
	CO3: To impart the knowledge of Testing of Hypothesis
E 4.3 Cyber Security and IT Act	CO1: To impart the knowledge of Cybercrime and cyber security among students.
	CO2: To impart the knowledge of Cybercrime laws among students.
E 4.4 RDBMS	CO1: To prepare students in using and managing Relational databases and its applications
E 4.5 Programming in C#.NET	CO1: To impart the knowledge of object oriented programming using C# among student.
E 4.6 Practical on C#.Net	CO1: To practically train students in programming in C#.NET
E 4.7 Practical on RDBMS	CO1: To learn SQL Queries

Class:- TYBMS(e-Com) SEM-V

E 5.1 Entrepreneurship Development	CO1: Learn about Entrepreneurship Development
E 5.2 Marketing Management	CO1: To understand basics of marketing
	CO2: To understand basics of Marketing Environment and Marketing Research, Segmentation
	CO3: To understand basics of Digital Marketing
E 5.3 Introduction to scripting languages	CO1: Design Web applications / Website using HTML and PHP.
	CO2: Use PHP script with functions, Arrays, and Strings in web applications.
	CO3: Use Forms and Handle Files using PHP Script.
E 5.4 System Analysis And Design	CO1: To design and develop software in learned language.
	CO2: To prepare software requirement specification.
	CO3: Estimate the size and cost of software product.
	CO4: Get knowledge of different types of software testing

E 5.5 Web Programming with ASP.NET	CO1: Use .NET IDE for ASP.NET web application development and form developmentusing standard .NET Controls.
	CO2: Develop web application handling different events.
	CO3: Use validation controls for validating page data.
	CO4: Create and use master page, apply theme and skin for web pages.
	CO5: Develop web applications using data from database.
E 5.6 Practical on ASP.NET	CO1: Design Web application / Website using ASP.NET and .NET Framework.
	CO2: Use ASP.NET controls in web applications
	CO3: Create event driven ASP.NET web application.
	CO4: State Management for user and application data.
	CO5: Create web application to manage data from data base using ADO.NET.
E 5.7 Practical on Scripting Language	CO1: Design web site / web applications using HTM and PHP script
	CO2: File and directory handling using PHP for web applications.
	CO3: Create web application using MySQL database.

Class:- TYBMS(e-Com) SEM-V

E 6.1 Introduction to Banking and Insurance	CO1: To understand Introduction to Banking, Nature of Insurance and Bank Management
	CO1: To understand Co-operative Banking
E 6.2 Human Resource Management	CO1: To understand Introduction to Human Resource Management and Recruitment, Selection, Placement & Induction
	CO1: To understand Performance Appraisal, Promotion, Transfer, Separation and Demotion
E 6.3 Introduction to Information System Audit	CO1: To impart the knowledge and importance of Information System and Audit among Students for Quality Management.
E 6.4 Enterprise Resource Planning	CO1: To train students in basics of ERP
	CO2: To understand needs of Enterprise
E 6.5 - PHP Scripting and MySQL	CO1: Design Web applications / Website using HTML and PHP.
	CO2: Use PHP script with functions, Arrays, and Strings in web

	applications.
	CO3: Use Forms and Handle Files using PHP Script.
	CO4: Create web applications using MySQL database.
E 6.6 – Practical on PHP and MySQL	CO1: Design web site / web applications using HTM and PHP script
	CO2: File and directory handling using PHP for web applications.
	CO3: Create web application using MySQL database.
E 6.7 – Project Work	CO1: Learn to use applications of the theory and practical learned during the course and prepare the project

UG – B.A. (History)

Class: F. Y. B. A.	
History of Indian Freedom Movement	CO1: Make a familiar the various sources of Economic History of modern India.
	CO2: Examine the Economic policies during mid-18th centuries
	CO3: Analyze the impact on Indian Economy and society.
	CO4: Evaluate the responses of Indians and growth of Nationalism in Colonial India.
Class: S. Y. B. A.	
DSC - HIS - 231 History of the Marathas (A.D.1605-1750 A.D.	CO1: Student will develop the ability to analyses sources for Maratha History.
	CO2: Student will learn significance of regional history and political foundation of the region.
	CO3: It will enhance their perception of 17th century Maharashtra and India in context of Maratha history.
	CO4: Appreciate the skills of leadership and the administrative system of the Marathas.
DSE-HIS-232 History of United States of America (A.D.1776 - A.D. 1945)	CO1: Student understands the importance of America (USA) in the world history.
	CO2: Student studies the foreign policy of America (USA).
	CO3: Student understands the Role of America (USA) in world politics.
	CO4: Student evaluate the progressive era of America (USA) and its important the world.
	CO5: Student study and the Role of America between two world wars.
	CO6: Human Rights Movement in America (USA).
DSE-HIS-233 History of Ancient India (B.C 3000 to B.C 600)	CO1: Students of history will acquire knowledge regarding the primitive life and cultural status of the people of ancient India. 2They can gather knowledge about the society, culture, religion and political history of ancient India as well. 3They will learn about the origin of the Indian empire, trade and urbanizations of ancient civilization, like Harappa civilization, Vedic civilizations, later Vedic civilizations etc.
	CO2: Student Know Various Sources to study of ancient India and Harappa civilization
	CO3: Understand the Philosophy of Jainism and Buddhism. 3) Comprehended the history of vaidic period
SEC-HIS-234 Research Methodology in History	CO1: Students understand about the role of Archives in the preservation of Heritage.

	CO2: Students understand the importance of Archives in study of History.
	CO3: To create awareness to conserve the historical records in their local areas.
	CO4: Interest was created among student to pursue career in the field of Archives.
DSC - HIS - 241 History of the Marathas (A.D.1605 - A.D 1750)	CO1: Students will be able to analyze the Marathas policy of expansionism and its consequences.
	CO2: They will understand the role played by the Marathas in the 18th century India.
	CO3: They will be acquainted with the art of diplomacy in the Deccan region.
	CO4: It will help to enrich the knowledge of the administrative skills and profundity of diplomacy
DSE - HIS - 242 History of United States of America (A.D. 1776 - A.D.1945)	CO1: Student understands the importance of America (USA) in the world history.
	CO2: Student studies the foreign policy of America (USA).
	CO3: Student understands the Role of America (USA) in world politics.
	CO4: Student evaluate the progressive era of America (USA) and its important the world.
	CO5: Student study and the Role of America between two world wars.
	CO6: Human Rights Movement in America (USA).
DSE-HIS- 243 History of Ancient India (B.C 600 - A.D 1206)	CO1: Learn innovative study techniques in the study of History of Ancient India to make it value based, conceptual and thought Provocative.
	CO2: Understand the importance of past in Exploration of present context.
	CO3: Understand the Socio –economic, cultural and political and architecture background of Post Mauryan to the Age of the Rashtrakuta
	CO4: Acquire knowledge of various Empire after the age of Mouryas.
Class: T.Y.B.A.	
DSC 1 E HIS 351 History of Modern Europe (AD 1781 - AD 1913)	CO1: Understand the concept and meaning of the` History of Modern Europe`.
	CO2: Explain important information of the `History of modern Europe`.
	CO3: introduce various perspectives of the History of modern Europe.
	CO4: Cover an Important topic of the `History of Modern Europe`1781 to 1945.
	CO5: To inculcate Liberty, Equality and fraternity among the students.
DSE 2 C HIS 353 History of India (AD 1206 – AD	CO1: Students learn about the various polity and sultanate period's (1206-1526) in India.

1526)	CO2: Students understand and review about the social, Economic and cultural information during the Sultanate period in Medieval India.
	CO3: Students understand and review detail about the agricultural, trade and commerce position of women and religious condition in sultanate period.
SEC 3 HIS 354 Travel and Tourism in India	CO1: Understand the concept and types of Tourism.
	CO2: Acquire adequate knowledge about various aspects in Tourism planning.
	CO3: Explain important information of some Historical tourist places.
	CO4: Develop career in Tourism industry.
DSC 1 F HIS 361 History of Modern Europe (AD 1914 - AD 1945)	CO1: Understand the concept and meaning of the` History of Modern Europe`.
	CO2: Explain important information of the `History of modern Europe`.
	CO3: To introduce various perspectives of the History of modern Europe.
	CO4: Cover an Important topic of the `History of Modern Europe`1781 to 1945
	CO5: To inculcate Liberty, Equality and fraternity among the students.
DSE 2 D HIS 363 History of India (AD 1526 – AD 1707)	CO1: Students learn about the various polity and sultanate period's (1206-1526) in India.
	CO2: Students understand and review about the social, Economic and cultural information during the Sultanate period in Medieval India.
	CO3: Students understand and review detail about the agricultural, trade and commerce position of women and religious condition in sultanate period.
SEC 4 HIS 364 An Introduction to Museums in India	CO1: Acquire adequate knowledge about Historical Importance of Museums as Sources of History.
	CO2: Understand Management of Museums.
	CO3: Acquire important information of some Famous Museums in India

पदवी व पदव्युत्तर स्तर मराठी (BA and MA)

Class :- FYBA	
Mar-(G-1)	मराठी वाङ्मयातील आधुनिक गद्य पद्य साहित्यप्रकार व संकल्पना समजून घेतली. आधुनिक काळातील गद्य-पद्य स्वरूप विचारात घेऊन साहित्यिकांच्या परिचय झाला.
Class :- SYBA	
Mar-(G-2)	मराठीतील वैचारिक गद्य लेखनाचा परिचय करून घेतला. महात्मा ज्योतीराव फुले जीवन, कार्य व वैचारिक जडणघडण लक्षात घेतली. शेतकऱ्यांच्या असूड मधील वैचारिक आशयाची स्वरूप वैशिष्ट्ये लक्षात घेतली.
Mar-(S-1)	कादंबरी या आधुनिक वाङ्मय प्रकाराचे स्वरूप वैशिष्ट्ये लक्षात घेतली. अवकाळी पावसाच्या दरम्यानची गोष्ट या कादंबरीचे वाङ्मयीन मूल्य लक्षात आले.चरित्र व आत्मचरित्र लेखनाचे सामाजिक व वाङ्मयीन दृष्ट्या महत्त्व लक्षात घेतले. मराठीतील चरित्र व आत्मचरित्र लेखनाच्या परंपरेच्या परिचय झाला.
Mar-(S-2)	भारतीय आणि पाश्चात्य साहित्य विचारांचा परिचय करून झाला. साहित्याच्या भाषेचे स्वरूप लक्षात घेतले.
Mar-(SEC)	लेखनकौशल्य मुद्रित शोधनाचे स्वरूप व आवश्यकता लक्षात आली. सर्जनशील लेखनाचे स्वरूप व त्याची वैशिष्ट्ये लक्षात घेतली.
Mar-(MIL)	माध्यमांसाठी लेखन व संवादाचे स्वरूप लक्षात घेतले. वृत्तपत्र या मुद्रित माध्यमाचे कार्य लक्षात आले. नभोवाणी या श्राव्य माध्यमाचा परिचय झाला.
Class :- TYBA	
Mar-(G-3)	ललित गद्य या वाङ्मय प्रकाराची संकल्पना त्याचे स्वरूप व त्याची वैशिष्ट्ये लक्षात घेतली. ललित गद्य लेखनाची वाटचाल लक्षात घेतली. एकाकिका लेखनाचे स्वरूप, वाटचाल समजली.
Mar-(S-3)	मध्ययुगीन मराठी वाङ्मयाचा इतिहास, निर्मिती प्रेरणा समजल्या. महानुभाव व शाहिरी काव्याचे स्वरूप लक्षात आले.
Mar-(S-4)	भाषा स्वरूप, कार्य, लक्षणे, वैशिष्ट्ये समजून घेतल्या. भाषाअभ्यासाच्या विविध परंपरा, भाषाकुल संकल्पना समजून घेतल्या.
Mar-(SEC)	लेखनकौशल्य- निबंध लेखन व ग्रंथ परीक्षण लेखनाचे स्वरूप, महत्व व आवश्यकता लक्षात आली.
Mar-(MIL)	दृक-श्राव्य माध्यमांसाठीचे लेखन व संवादाचे स्वरूप समजून घेतले. दूरचित्रवाणीचे स्वरूप लक्षात आले. आधुनिक समाजमाध्यमांचा परिचय करून घेतला.
Mar-Generic	लोकरंगभूमी संकल्पना, स्वरूप समजून घेतली. लोकरंगभूमीची पारंपरिक रूपे

	कीर्तन, भारुड, खानदेशी वही या लोकरंगभूमीच्या प्रादेशिक प्रकारांची स्वरूप वैशिष्ट्ये समजली.
Class-FYBsc	
Marathi	ललित गद्य लेखनाचा परिचय झाला. 'चांदण्यात भिजायचे राहून जाऊ नये म्हणून..' मधील ललित गद्य आशयाचे आकलन झाले.
Class- SYBsc	
Marathi	विज्ञानकथा या कथा प्रकाराचा परिचय झाला. कथेतील विविध प्रकारांचे आकलन झाले. कथांतून वैज्ञानिक दृष्टिकोन विकसित झाला.
Class- M.A.-I	
Mar-1	मध्ययुगीन समाज-संस्कृतीचे स्वरूप आणि वाङ्मय निर्मिती व विशिष्ट कालखंडाचा अनुबंध लक्षात आला.
Mar-II	साहित्त्याविषयी चिकित्सक दृष्टी विकसित होऊन साहित्याचे वाङ्मयीन मूल्यमापन व समीक्षा दृष्टी विकसित झाली.
Mar-III	भाषेचे स्वरूप, भाषा व्यवहार, आधुनिक भाषाविज्ञान संकल्पना लक्षात घेऊन भाषेची आंतरिक रचना लक्षात आली.
Mar-IV	ग्रामीण साहित्य निर्मितीच्या प्रेरणा लक्षात आल्या.
Mar-V	दलित साहित्य निर्मिती मागील पार्श्वभूमी व विचार लक्षात आला.
Mar-VI	मराठी भाषा व कौशल्य विकास लेखनकौशल्य, लेखनाचे स्वरूप, महत्व व आवश्यकता लक्षात आली.
Class- M.A.-II	
Mar-1	मराठी साहित्यातील निवडक चळवळी व त्यांचे स्वरूप व त्यांच्या निर्मितीमागील पार्श्वभूमी लक्षात आली.
Mar-II	भाषाभ्यास पद्धती, आधुनिक भाषाविज्ञानातील मूलभूत संकल्पना व भाषाअभ्यासक्षेत्रे लक्षात आली.
Mar-III	चरित्र व आत्मचरित्र लेखनाचे सामाजिक व वाङ्मयीन दृष्ट्या महत्त्व लक्षात घेतले. मराठीतील चरित्र व आत्मचरित्र लेखनाच्या परंपरेच्या परिचय झाला.
Mar-IV	लोकसाहित्याची संकल्पना व स्वरूप समजून घेतली. लोकरंगभूमीची पारंपरिक रूपे कीर्तन, भारुड, खानदेशी वही या लोकरंगभूमीच्या प्रादेशिक प्रकारांची स्वरूप वैशिष्ट्ये समजली.
Mar- VI	Human Rights- To make students aware about human rights and human values.

UG – B.A. (Political Science)

Class: F. Y. B. A.	
DSC 1 A POL - G - 101 - A – Introduction to Indian Constitution	CO1: High Lights of the Paper This paper deals with major fundamental concepts and dimension in Indian Constitution and political system. It highlights various aspects of political system.
	CO2: This paper would be assets of any kind of educational institutions as well as beneficial to all types of competitive exams.
Class: S. Y. B. A.	
PoI – (DSC 1 C) Introduction to Administration of Maharashtra	CO1: To Develop the right concepts about Public Administration. Theory building properly Identify what real problems are and why the research is needed in development Administration.
	CO2: Illustrate types of concepts related to Political Science & Pub-Administration research After completing this course student will be able to Looking for the UPSC/MPSC Competitive exam.
Class: S. Y. B. A.	
DSC-1 E Indian Political Thinker Part I&II	CO1: Tracing the evolution of Indian political thought from ancient India to modern India. - Critical evaluation of social, economic and political variables for a proper understanding of the plurality of Indian.
	CO2: This paper aims to provide students a sound understanding of political science, including various approaches, ideological perspectives and relationship with other Social Sciences.
	CO3: Acknowledging the importance of state in the contemporary political discourses, the students will be able to comprehend the function of the state in society and how it rules and regulates the power structure by learning various theories of origin and functioning of the state.
	CO4: Learners would be able to describe and comprehend various key concepts related to the discipline and develop their own understanding of politics. They will understand what power is and how it functions in society and politics.
	CO5: They will be able to explain various theories of Justice. They will learn to comprehend and explain various theories and contemporary debates in democracy. Also, they will come to know how liberal.

Class: B. A. (Psychology)

Psy101-Foundations of Psychology	CO1: To impart knowledge and understanding of the basic concepts, theories of psychology. CO2: Explain the different theoretical concepts to understand human behavior.
Psy201- Introduction To Social Psychology	CO1: Clarify similarities and differences between social psychology, personality psychology, and sociology. Outline the history of social psychology. CO2: Identify ways in which social psychologists can connect with one another.
PSY-231 Human Developmental Psychology- Early Life	CO1: Describe the basic periods of human development CO2: Describe the basic periods of human development CO3: Explain the basic concepts, issues related to the field of Developmental Psychology as well as the basic theories of lifespan development. CO4: explain how different aspects of human development as progress through different stages of life
PSY-241 Human Developmental Psychology- Later Life	CO1: Describe the basic periods of human development CO2: Explain the basic concepts, issues related to the field of Developmental Psychology as well as the basic theories of lifespan development. CO3: explain how different aspects of human development as progress through different stages of life
PSY-351(A) Modern Applied Psychology	CO1: Apply the knowledge of Psychological principles and theories in their respective area of specialization in Applied Psychology.
PSY-361(A) Applied Psychology & Modern Life	CO1: Understand how psychological theories and principles relate to everyday life and applied Knowledge of Behaviour modification and life skill training. CO2: Students are exposed to basic scientific research methods, techniques, counseling skills, ethics and evaluate skills of Psychology. CO3: Apply psychological principles to personal and social issues and problems.
PSY-351 Management of Interpersonal Relations	CO1: Understand how to maintain healthy interpersonal relations in the organization through transactional analysis. CO2: Understand how to maintain healthy interpersonal relations in the organization through transactional analysis, appreciate the concept of life positions, which is an important part of TA as a way of understanding individual's behavior in the organization. CO3: Know the importance of Johari window in improving the interpersonal relationships in the organization.
PSY-361 Adjustment in Life Span	CO1: Analyze each situation rationally and take decisions better and faster than others
Psy - 101 Basic Principles in Psychology	CO1: Develop a working knowledge of Psychological contents, areas and applications of psychology. CO2: Develop a base in cognitive psychology with the help of relevant examples of everyday life. CO3: Comprehend and analyze situations in real life appropriately and enable others to exercise in the same way.

	Appreciate and apply various theories of learning in the practical world. Identify the importance of experiments in the field of memory and other cognitive aspects and analyze the way it shaped cognitive psychology
Psy - 201 Fundamental Concepts of Psychology	CO1: Understanding and application of psychological principles, theories and methods of different psychological areas (like learning, memory, etc.) to understand the complexity of human behaviour. CO2: Knowledge of the fundamental physiological functional mechanism behind the Nervous system in the human body. CO3: It also correlates to the understanding of historical context of different studies and researches.

UG – B.A. (Defense Studies)

Class: B.A.

DEF-112- Disaster Management and Security-I	CO1: Learning and understanding the basic knowledge of Disaster Management concept and different approaches to reduce the impact of disaster.
	CO2: Understand the types of disaster their origin causes and their management and the disaster profile of India.
	CO3: Learning to apply the knowledge of technology for monitoring and management of the disaster
	CO4: Drill based learning of disaster management.
	CO5: Understand the role of State and Central Government in Disaster Management.
DEF-122 - Disaster Management and Security-II	CO1: To understanding the basic knowledge of Disaster Management act.
	CO2: Students will develop advanced skills in risk assessment, vulnerability analysis, and the design of effective disaster mitigation and preparedness strategies.
	CO3: Students will explore advanced concepts of crisis leadership and decision-making during disasters, including the ethical and moral dimensions of emergency response.
	CO4: Students will examine strategies for engaging communities in disaster preparedness and building social resilience, particularly in marginalized or vulnerable populations
DEF-113- Military History of India-I	CO1: Students will demonstrate an advanced and nuanced understanding of the military history of India, focusing on specific historical periods, events, and developments.
	CO2: Students will analyze the geopolitical factors that shaped military conflicts, alliances, and territorial changes in Indian history.
	CO3: To acquire knowledge about Vedic and Epic military traditions.
DEF-115- Road Safety and Traffic Management –I	CO1: Learning importance of multidisciplinary approach to planning for traffic safety and rehabilitation.
	CO2: Understand the types of Gain information and knowledge about

	people responsible for accidents and their duties.
	CO3: Generate awareness about number of people dying every year in road accidents, traffic rules and characteristics of accident.
	CO4: To understanding of the causes and consequences of accidents and responsibilities in ensuring road safety understand military system and war tactic of various empire in India.
DEF-121- Conceptual Aspects of War –II	CO1: Students will explore complex ethical dilemmas related to the conduct of war, including just war theory, civilian protection, and the use of emerging technologies in warfare.
	CO2: Students will develop advanced strategic thinking skills, including the ability to assess national security strategies, military doctrines, and geopolitical considerations.
	CO3: Students will analyze the concept of national and international security, including threats, risk assessment, and the role of military and non-military instruments in safeguarding security

UG – B.A. (Economics)

Class: F. Y. B. A.	
FYBA Eco G- 101(B) – Economy of Maharashtra **Eco G- 201(B) – Economy of Maharashtra**	CO1: Students will Introduce the various issues i.e. Main features and Significance of the Economy of Maharashtra, Human Resource , Agriculture, Irrigation, Industrial Development, Infrastructure, Co-operative Movement, Cooperative Financial System and Marketing, Transport and Communication, State Finance Commission, State revenue and state expenditure, Budget , Right to Information Act, etc. and various policy and programs implemented by the Govt. of Maharashtra in the Economy of Maharashtra.
	CO2: Students knowledge will enhance about the Social and Economic Problems before the Economy of Maharashtra like low female population, Law agriculture Productivity, Suicides of farmers, Corruption, Problems of Local bodies, etc.
Class: SYBA	
SYBA DSC Eco231 C – Indian Economy Since 1980 –I **DSC Eco241 D – Indian Economy Since 1980 –II**	CO1: Students will Introduce various Contemporary Issues in Indian Economy which will provide basic knowledge. Such Issues i.e. Human resources, Cooperative System, Cooperative Banking, agricultural, industrial, Infrastructure, Poverty, Economic inequity and Unemployment, Economic Planning and Five year plans etc. and economic development.
	CO2: Students knowledge will enhance about the Economic and Social Problems before the Indian Economy like problems of over population, low female population, Problems of Transport, Crisis of Energy , defects in agricultural marketing, Low agriculture Productivity, Suicides of farmers, Problems of Industries, etc.
	CO3: The students will able to understand the recent changes or implemented policies in Economy i.e. D.C.T.S., Jan Dhan Yojna, Mudra Bank Yojna, Make in India, NITI Ayog, function and role of related with the economy of India and develop the students' understanding about the organization and policy

TYBA	
DSC-1(E) -Eco- 351	CO1: Students will enable to various issues of Indian Economy, Students

Indian Economy Since 1980 – III **DSC-1(F)-Eco- 361** **Indian Economy Since 1980 – IV**	analyzing capability will develop in the context of Indian Economy. It also help understands the empirical aspects such as Indian financial System, Inflation, The students will able to understand the function and role of Banks and financial institutions ,trade reforms and their impact on India economy. Contemporary Issues in Indian Economy shall provide basic knowledge on various issues involved in India.
	CO2: Considering the increasing role of Government in economy, this syllabus will generate theoretical and empirical understanding of students about different aspect of Governmental activities and their rationality. It covers fundamental concepts of public economics, finance commission, public revenue, public expenditure, and public debt, deficit financing with special reference of Indian economy.

UG – B.A. (English)

Class: F.Y.B.A.	
Comp. English	CO1: The students use basic skills of languages
	CO2: They learn values through literatures
	CO3: Students acquire the competency in grammar
Opt. English	CO1: The course will introduce the basic forms of literature to the students.
	CO2: The course will develop the liking of reading in the students.
	CO3: The course will inspire students to develop their creative ability.
	CO4: Consequently, the course will develop reading skill and creative and expressive ability of the students.
Class: S.Y.B.A.	
Comp. English	CO1: The students understand, read, write the English through the oral and written communication.
	CO2: The students acknowledge the values.
DSC I & II English GII The Study of English Novel and Drama	CO1: The students understand the aspects, elements and nature of drama and fiction.
	CO2: They understand the origin and development of drama and fiction. CO3: They critically study and appreciate the drama and fiction.
DSE 1 A & B English SI The Study of 16th and 17th Century English Literature	CO1: The students are able to understand the origin and development of English literature of 16 century.
	CO2: The students analyze and appreciate the 16 and 17 century literature.
	CO3: The students critically examine the works agonist the historical background and the find out the elements and aspects of the poetry, drama and novel of 16 and 17 century.
DSE 2 A & B English SII The Study of 18th and 19th Century English Literature	CO1: The students are able to understand the origin and development of English literature of 18/19 century.
	CO2: The students analyze and appreciate the 18 and 19 century literature.
	CO3: The students critically examine the works agonist the historical background and the find out the elements and aspects of the poetry, drama and novel of 18 and 19century.
SEC 1& 2 – Skill based paper	CO1: Students acquire English language abilities necessary in the competitive examinations
	CO2: The comprehension ability of the students increase.

Class: T.Y.B.A.	
Comp. English- AEC:	CO1: The students read with understanding and respond to the problems

Developing Communication Skills	based on texts.
	CO2: The students perfects in Group discussion, public Speaking and Interviews.
	CO3: The students understand the use of language through literature and reproduce it.
DSC English GII Indian Writing in English	CO1: The students understand the genre of drama with its origin and development.
	CO2: The students read the drama and understand all the aspects and elements of drama.
	CO3: The students study the drama practically and can critically appreciate it.
DSE 3 A& B - SIII :Twentieth Century English Literature	CO1: The students know and study the Indian/American novel and drama in English.
	CO2: He gets acquainted with the origin and development of Indian/American Creative Prose and Dramatic writings.
	CO3: He students Indian novels and dramas and critically analyze and appreciate.
English SIV DSE 4 A & B The Study of English Language	CO1: The students understand the origin and development of language.
	CO2: They learn sounds in English and they are trained to pronounce the sounds and words correctly.
	CO3: The students are aware of word formation and develop their ability to use the words properly by studying semantic and syntactic features.
SEC ENG: English for Practical Purposes 3 & 4	CO1: The students learn English usages
	CO2: They use English usages in day to day life.
	CO3: They learn the hard and soft skills necessary for the job attainment.
Generic Elective Course GE-1(A and B) GE Eng A and B: Film and Literature	CO1: Students understand the various genres of arts.
	CO2: They understand the similarities and dissimilarities between films and novel/drama as genres
	CO3: They acquire the knowledge of adaptation from a work of literature into films.
	CO4: They can analyze film adaptation of literary text.
	CO5: They comprehend and appreciate the novels, drama, short story and movies.

UG – B.A.(Geography)

Class: F. Y. B. A.	
Gg. -101 (DSC A -1) – PHYSICAL GEOGRAPHY	CO1: Students find the location and extent of a region using graticule.
	CO2: Understand the composition the earth and distribution of the continents and oceans.
	CO3: Students identify the characteristics of various rocks and explain the process of weathering.
	CO4: Explain the formation of various geographical features
	CO5: Explain the structure and composition of the atmosphere.
	CO 6: Elaborate the causes of uneven distribution of insolation and temperature.
	CO7: Understand the pressure belts and global as well as local wind system.
	CO8: Explain the forms of condensation and types of precipitation.
	CO9: Understand the structure of ocean floor and mechanism of ocean currents.
Class: S. Y. B. A.	
Gg. 232 (DSE 1 A): GEOGRAPHY OF TOURISM	CO1: To develop and communicate basic conceptual frame work of Geo Tourism.
	CO2: To realize its potentials and against achieved in the Indian context.
	CO3: To understand the various Geo tourism.
	CO4: To know the role and responsibilities, economic growth of Tourism industry in India.
	CO5: To evaluate the role of various organization of tourism.
	CO6: To know the importance of the sustainable tourism.
	CO7: To develop Socio cultural aspects for the Tourism geography.
Gg. 242 (DSE 1 B): GEOGRAPHY OF INDIA	CO1: To make the students able to understand Geographical Personality of India.
	CO2: To study minerals and power resources in the specific regions of India.
	CO3: To study the nature of industries and their development in India.
	CO4: To aware the students about agricultural and demographic problems and make them able to find remedial measures on those problems.
Gg. 233 (DSE 2): PRACTICAL GEOGRAPHY	CO1: To give basic information about various tools and techniques used in making maps.
	CO2: To understand the concept of scale at the initial stage and enable know the scale and distance of surveying.
	CO3: To know how to draw the maps on various scale hence acquaint the

	students with basic of Scale, Map Projections and cartographic Techniques
	CO4: To enable the students to use Scale, Map Projections and cartographic techniques to acquire knowledge of survey language and sense of technique of surveying.
	CO5: To know how to draw layout by surveying of region. to acquaint the students with basic
	Knowledge and technique of ground survey.
	CO6: To acquire the knowledge of survey instruments to provide basic information about Mechanism of survey instruments.
	CO7: To acquaint the knowledge how to use survey instruments and the importance of surveying and survey instruments.
Gg. 234 (SEC 1): REGIONAL PLANNING AND DEVELOPMENT	CO1: Student will become well aware about the Regional Planning and Development.
	CO2: Students will get the knowledge of planning, its limitation.
	CO3: Students will be able to participate in planning and regional development.
	CO4: Students will get knowledge about various approaches and models of regional planning and development.
	CO5: Students will be aware of the Special area development plans and argo Ecological Zones of Maharashtra.
Gg. 244 (SEC 2): REMOTE SENSING AND GPS BASED PROJECT REPORT	CO1: To understand the principles of Remote Sensing.
	CO2: To acquaint the students with fundamental concepts of Aerial Photography.
	CO3: To introduce students with advance techniques for data collection.
	CO4: To learn principles and applications of GPS.
	CO5: To learn basics of GPS based survey.
Gg. 245 (DSC 3D): MINOR STUDY PROJECT	CO1: To motivate the students towards Research.
	CO2: To understand the various problems in the field of Geography.
	CO3: To introduce research methodology and to inculcate research aptitude.
	CO4: To enhance analytical thinking and report writing ability of the students.
Class –T. Y. B. A.	
Gg. 351 (DSC 1E) Environmental Geography	CO1: To create the environmental awareness amongst the students.
	CO2: To acquaint the students with fundamental concepts of Environmental Geography.
	CO3: To aware the students about the processes and patterns in the natural environment.
	CO4: To acquaint the students with potentials of Environmental

	Geography.
	CO5: To aware the students about use of resources with prudence.
	CO6: To acquaint the students with different environmental policies.
Gg. 352 (DSE 3A) Economic Geography	CO1: To acquaint the students with the knowledge of economic realm in the world.
	CO2: To highlight the different economic activities.
	CO3: To study mineral and power resources in the specific regions of the world.
Gg. 353 (DSE) Practical Geography	CO1: To introduce the practical approach of Human Geography.
	CO2: To introduce the importance of statistical techniques in Human Geography.
	CO3: To introduce some basic research methods to the students.
	CO4: To introduce the students with Survey of India's toposheets and to acquire the knowledge of interpretation.
	CO5: To acquaint the students with Indian Meteorological Department's weather maps and to gain the knowledge of weather Map interpretation.
Gg. 354(SEC 3) Field Techniques and Introduction to Project Report.	CO1: To introduce the analytical skill of field-work.
	CO2: To develop the skill of selection of appropriate technique for field study.
	CO3: To enable the student to frame different types of questionnaires to conduct a field study.
	CO4: To develop the analytical interpretation and report writing based upon the data collected during a field study.
Gg. 355 (GE 1A) Disaster Risk Reduction.	CO1: To introduce the concept of disaster risk.
	CO2: To prepare DRM Plans and its implementation.
	CO3: To aware the students about the Disaster Risk Reduction/Mitigation strategies.
Gg. 361 (DSC 1F) Population Geography.	CO1: Understand the components of population change.
	CO2: Develop skills to use population information in the planning process.
	CO3: Understand the impact of planning activities on population size, composition, and distribution
	CO4: Population is an important resource. The development of any nation is depending on human resource. It is a prime deity to acquaint with the human resource of the nation.
	CO5: To understand the recent problems of population in the world as well as nation.
Gg.362 (DSE 3B) Political Geography	CO1: To enable students to acquire knowledge of Political Geography
	CO2: To understand basic concepts of Political Geography.

	CO3: To study various theories of Political Geography.
	CO4: To understand the frontiers and Boundaries.
Gg. 364 (SEC 4) Geographical Information System.	CO1: To introduce the fundamentals and components of Geographic Information System
	CO2: To provide details of spatial data structures and input, management and output processes.
	CO3: To aware about the application of GIS in various fields.
Gg. 365 (GE 1B): SUSTAINABILITY AND DEVELOPMENT	CO1: It brings to attention the students about the issues which surround Sustainable Development, including its Principles, Processes and Concepts, its Deciding factors, and Potentials it holds.
	CO2: Students will get the information and Importance of the MDGS.
	CO3: Students will be aware about National Environmental Policy.

UG – B.A.(Hindi)

Class: - FYBA

Hndi-G-121-a)	छात्रो को गद्य तथा पद्य कि विविध रचनाओके मध्यम से मानवीय मूल्य ,भाषिक और लेखन क्षमता, सामाजिक संवेदना जागृत करना ।
Class :- SYBA	
Hndi-231	छात्रो को गद्य विधा का विकास ,कालजयी रचना के मध्यम से मूल्य संवर्धन सामाजिक संवेदनशीलता को बढावा देना ।
Hndi-232	छात्रो को काव्यशास्त्र का सामान्य परिचय ,विविध विधाओ से परिचय एवं अलंकारो से परिचय कराना ।
Hndi-233	छात्रो को उपन्यास के माध्यम से समय का महत्व एवं सामाजिक उत्तरदायित्व से परिचित कराना॥
Hndi-234	हिंदी भाषा के भाषिक स्वरूप ,संप्रेषण के विविध रूपो से छात्रो को अवगत कराना॥
Hndi-235	छात्रो को अभिव्यक्ति के विविध क्षेत्र लेखन कौशल ,मानवीय मूल्य संवर्धन एवं सामाजिक संवेदनशीलता को बढावा देना॥
Class :- TYBA	
Hndi-351-A	यात्रा साहित्य विधा के विकास ,प्रमुख साहित्यकार तथा यात्रा वर्णन , साहित्य लेखन की कला से परिचय कराना॥
Hndi-352	छात्रो को भाषा के विविध रूप ,बोलिया ,भाषा की व्युत्पत्ति के सिद्धांत ,साहित्यकरो का परिचय एवं विविध संस्थाओ का परिचय कराना ।
Hndi-353	हिंदी साहित्य का काल विभाजन ,नामकरण ,आदिकाल ,भाक्तीकाल एवं रीतिकाल की प्रमुख रचना तथा रचानाकारो से परिचय कराना ।
Hndi-354	छात्रो को हिंदी भाषा की व्याकरणिक संरचना ,शब्द संसाधन , संक्षेपण ,पल्लवन ,वकृत्त्व कला ,वादविवाद ,कला कौशल से परिचित कराना ।
Hndi-355	छात्रो को संपादन कला ,संपादक की योग्यता और लेखन तत्व से परिचित कराना ।
Hndi-356	हिंदी की राष्ट्रीय काव्यधारा के प्रमुख कवि ,राष्ट्र के प्रति अस्मिता , स्वाभिमान तथा गौरव भाव को जागृत कराना ।

UG –B. Sc. (Biotechnology)

UG –FY B. Sc (2021-22)

BT101: Cell Biology	CO1: learn basic knowledge pertinent to cell as unit, cell organelles and its architecture
	CO2: know the structural and functional details of cell
	CO3: How the subject emerge as new branch of biology
	CO4: Learn ancient view about life continuity and concept of experiment
BT102: Biochemical Tools	Co 1. Understand the fundamental biochemical concepts and familiarize with standard solution, buffer and reactions
	CO2: Describe the concepts of pH and its biological significance, buffers, Henderson-Hassel Balch equation, biological buffer systems and their importance
	CO3: Comprehend the various methods for identification of unknown microorganisms
BT 201: Biomolecules	CO1: Overview of major biomolecules –carbohydrates, lipids, proteins, aminoacids, nucleic acids, classification, structure, function of the above mentioned biomolecules CO2.comparative characteristics of prokaryotes and eukaryotes and also Understand the structural architecture and differences among bacteria/archaea
	CO3: Know basic knowledge pertinent to cell biomolecules
BT 202: Basic Microbiology	CO1: Understand the basic microbial structure and study the comparative characteristics of prokaryotes and eukaryotes and familiarize the structural similarities and differences among various microbes
	CO2: Know various Culture media and their applications and also understand various physical and chemical means of sterilization
	UG –S.Y. B. Sc (2021-22)
BT: 301 Basic Genetics	CO1: understand basic concept of Gene, DNA & understand the Mendel's laws
	CO2: study mutation and chromosomal variations learn basic aspect about gametogenesis and cell cycle.
BT 302: Bioprocess Technology	CO1: Develop an understanding of the various aspects of Bioprocess Technology.
	CO2.Cognizant about various pathways used by microbes to break down molecule and
	CO3: Aware with screening of Industrially Important Strains and culture collection centres
	CO4: Aware about the regulations and energetics of various pathways.

	CO5.Understand aerobic, anaerobic respiration and fermentation
BT 401: Molecular Biology	CO1: understand basic structure of DNA understand central dogma of molecular biology
	CO2.Concept and significance of mutation
	CO3: Methods to study mutation
BT 402: Immune Response	CO1: know the cellular ontogeny and organ involvement in immunity and explain the principles of self-tolerance and autoimmunity
	CO2: know how the immune system can fight infections and cancer, including examples of immunodeficiency diseases
UG –T.Y. B. Sc (2021-22) Semester – V	
BT-501 Genetics &molecular biology	CO1: To introduce the concepts in Microbial Genetics.
	CO2: To provide basic knowledge about the fundamental molecular process of living cells
	CO3: To introduce the students to the principles of ecology and genetic disorders
BT-502 Agricultural Biotechnology	CO1: This course presents application of plant biotechnology in agriculture, Nitrogen fixation and Bio fertilizer, Rhizosphere microflora and its role in the rhizosphere.
	CO2. The course presents understanding of Plant pathology and disease control, horticulture and floriculture
	CO3: To understand the processes involved in fermentation.
	CO4: To introduce with concepts related to bioreactors and their types.
	CO5.To acquaint with concepts strain improvement and scale up.
BT-503 Animal Tissue Culture	CO1: To introduce the students to the basic principles of Animal tissue and cell culture
	CO2: The course will describe as to how animal cell culture is carried out for research and diagnostic purposes
	CO3: How transgenic animals are generated, what are the pros and cons along with ethical issues associated with transgenesis
BT-504 Bioengineering	CO1: To acquire requisite skills for the design and development of bioreactors, media, sterilization, microbial growth etc.
	CO2.To acquaint with the principles of Bioenergetics
BT-505 Food Biotechnology	CO1: The course provides understanding of Microbial analysis of milk, Microbial production of fermented food viz. cheese, bread etc.
	CO2: Causes of food spoilage, Spoilage of fruit, Vegetables, Dairy product.
	CO3: Food Preservation –Chemical Method, Physical method
BT-506 Environmental Biotechnology	CO1: An exposure to environmental perspectives.

	CO2.Insight into the management of wastewater, biodegradation techniques bioremediation and xenobiotic
UG –T.Y. B. Sc (2021-22) Semester – VI	
BT-601 Recombinant DNA Technology	CO1: To get acquainted with the molecular regulatory mechanisms in bacteria.
	CO2.To understands the principles underlying techniques used in molecular Biology.
	CO3: To study the principle and applications of recombinant DNA technology.
BT-602 Plant Biotechnology	CO1: Understand concept of totipotency, organization of plant tissue culture, aseptic technique of PTC, meristem culture, organ culture
	CO2: Principles and applications of phytohormones
BT-603 Immunology	CO1: Basic principles of Immune system, types of immunity, primary and secondary lymphoid organ.
	CO2: Antigen presentation, immune response lymph organs, complements system, immunological disorders
BT-604 Bioprocess Technology	CO1: Basic principles of upstream and downstream process of different commercially important products: enzymes, antibiotics, organic acids
	CO2.To create theoretical base for practical approaches.
	CO3: Understand Quality and economic aspects ion fermentation
BT-605 Pharmaceutical Biotechnology	CO1: To understand various protective mechanisms underlying the human immune system,
	CO2.To study immunological disorders and tumours.
	CO3: To study the principles underlying various immunological techniques.
	CO4: To debate the immuno-prophylactic measures against various novel viral infections
Biometry BT-606A Environmental Biotechnology-II **BT-606B Biostatistics**	CO1: To understand concepts in plant pathology.
	CO2.To acquaint the students with basic knowledge of plant disease control.
	CO3: To complement the students with the concepts in Agricultural Microbiology.
	CO4: To understand concepts in plant pathology.

PG – M.sc I Biotechnology

	Biotechnology (June 2018-19)
BT 101: Microbial Physiology and diversity	CO1: To basic and applied aspects of microbial diversity and systematic.
	CO2: To Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic.
	CO3:.To study about Impact of various groups of microbes on earth atmosphere, human, plant and animal health and technology development.
BT 102 : Biochemistry	CO1: To study Structure, properties, pathways and significance of biomolecules.
	CO2 : Applications of microbial biomolecules in various fields.
BT 103 : Immunology	CO1: Understand the concepts of functions of cells
	CO2: Types of hypersensitivity.
BT- 104 Methods in Microbiology & biochemistry BT-105 Methods in n Enzymology and Immunology	CO1:To study Characteristics and significance of Extremophiles, Algae, Fungi, Viruses.
	CO2:To understand biomolecules
BT 201: Molecular Biology	CO1: Understand basic and applied aspects of Genetic makeup of bacteria, algae, fungi and viruses.
	CO2: Causes, mechanisms and consequences of defect in gene/genome of microorganisms.
BT 202: Bioanalytical Techniques	CO1: To Principles, working and application of bioinstruments used in isolation and identification of microbes.
	CO2: structural determination of biomolecules.
BT 203: Bioprocess Technology	CO1: Bioprocess and the kinetic aspects, types of fermenters developed for specialized applications, extraction.
	CO2: purification of fermentation product, concept of quality process and related documentation.
BT- 204 Methods in Microbiology BT-205 Methods in Biochemistry	CO1: Understand the concepts of techniques SDS , PAGE, electrophoresis.
	CO2: study plasmid isolation, conjugation, transformation.

Biotechnology (June 2021-22)	
BT 101: Microbial Diversity and Physiology	CO1: To basic and applied aspects of microbial diversity and systematic.
	CO2: To Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic.
	CO3:.To study about Impact of various groups of microbes on earth atmosphere, human, plant and animal health and technology development.
BT102 : Biomolecules and Molecular Enzymology	CO1: To study Structure, properties, pathways and significance of biomolecules.
	CO2 : Applications of microbial biomolecules in various fields.
BT 103 : Immunology	CO1: Understand the concepts of functions of cells
	CO2: Types of hypersensitivity.
BT- 104 Laboratory course-I -- BT-105 Laboratory Course –II	CO1: To study Characteristics and significance of Extremophiles, Algae, Fungi, Viruses.
	CO2:To understand biomolecules
BT 201: Molecular Biology	CO1: Understand basic and applied aspects of Genetic makeup of bacteria, algae, fungi and viruses.
	CO2: Causes, mechanisms and consequences of defect in gene/genome of microorganisms.
BT 202: Bioinstrumentation and Biostatistics	CO1: To Principles, working and application of bioinstruments used in isolation and identification of microbes.
	CO2: structural determination of biomolecules.
BT 203: Bioprocess Engineering Technology	CO1: Bioprocess and the kinetic aspects, types of fermenters developed for specialized applications, extraction.
	CO2: purification of fermentation product, concept of quality process and related documentation.
BT- 204 Laboratory Course – III BT-205 Laboratory Course –IV	CO1: Understand the concepts of techniques SDS , PAGE, electrophoresis.
	CO2: study plasmid isolation, conjugation , transformation.

Biotechnology (June 2022-23)	
BT 101: Microbial Diversity and Physiology	CO1: To basic and applied aspects of microbial diversity and systematic.
	CO2: To Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic.
	CO3: To study about Impact of various groups of microbes on earth atmosphere, human, plant and animal health and technology development.

BT 102 : Biomolecules and Molecular Enzymology	CO1: To study Structure, properties, pathways and significance of biomolecules.
	CO2: Applications of microbial biomolecules in various fields.
BT 103 : Immunology	CO1: Understand the concepts of functions of cells
	CO2: Types of hypersensitivity.
BT- 104 Laboratory course-I -- BT-105 Laboratory Course –II	CO1: To study Characteristics and significance of Extremophiles, Algae, Fungi, and Viruses.
	CO2:To understand biomolecules
BT 201: Molecular Biology	CO1: Understand basic and applied aspects of Genetic makeup of bacteria, algae, fungi and viruses.
	CO2: Causes, mechanisms and consequences of defect in gene/genome of microorganisms.
BT 202: Bioinstrumentation and Biostatistics	CO1: To Principles, working and application of bio instruments used in isolation and identification of microbes.
	CO2: structural determination of biomolecules.
BT 203: Bioprocess Engineering Technology	CO1: Bioprocess and the kinetic aspects, types of fermenters developed for specialized applications, extraction.
	CO2: purification of fermentation product, concept of quality process and related documentation.
BT- 204 Laboratory Course – III BT-205 Laboratory Course –IV	CO1: Understand the concepts of techniques SDS, PAGE, electrophoresis.
	CO2: study plasmid isolation, conjugation, transformation.

PG – M. Sc II (2021-22) Semester III

MB 301: Pharmaceutical Microbiology	CO1: To introduce knowledge about antibiotics, biopharmaceuticals and GMP, ICH process CO2: To familiarize the students with spoilage and regulatory aspects as well as quality control issues in pharmaceuticals.
MB 302: Applied Molecular Biology	CO1: To learn about the various enzymes involved in r-DNA Technology CO2: To know the principles of c-DNA construction and amplification methods. CO3: Making aware of synthesis of recombinant products
MB - 303: Applied and Environmental Microbiology	CO1: To understand offline/ online strategies adopted for microbial analysis of food CO2: To learn about role of microbes in wastewater treatment, as well as liquid and solid waste management CO3: To impart knowledge about removal of recalcitrant from contaminated environment
MB-304: Methods in Bioinformatics	CO1: To impart training about elementary aspects of statistics used in microbiology CO2: To introduce student to the variety of computational methods currently available for predicting functional behavior of biological system CO3: To analyze the output data to predict a biologically relevant function
MB-305: Methods in Applied Microbiology	CO1: To impart training to students about various quality control analysis carried out for pharmaceuticals CO2: To familiarize the students with quality activities required in pharmaceutical industry
PG –M. Sc II (2021-22) Semester IV	
MB – 401: Fermentation Technology	CO1: To introduce microbial fermentation, product recovery and bioreactor design CO2: To familiarize the student with separation techniques used for fermentation products CO3: To introduce the microbial process adopted for production of various metabolites
MB - 402: Microbial Genetics	CO1: To extend the knowledge on molecular basis of mutation and repairs in microbes CO2: To understand different modes of gene regulation and expression mechanisms in bacteria CO3: To understand the principle role of plasmids, gene transfer methods and DNA replication

MB – 403: Agricultural Microbiology	CO1: To introduce various attributes of microbial ecology and plant microbe interactions CO2: To learn the student about how plant elicit defence against pathogens CO3: To know bio control, bio fertilizers for plant nutrition, remediation of salt-affected soils
MB - 404: Methods in Biotechnology	CO1: To train the student in basic molecular biology tools CO2: To learn gene transfer and gene expression CO3: To introduce microbial interaction with plant
MB – 405: Laboratory course (Project Dissertation)	CO1: To give exposure to the students to research culture and technology CO2: To introduce students how to select a research topic, plan, perform experiments, collect data and analyze the data CO3: To foster self-confidence and self-reliance in the students as he/she learns to work and think independently
PG M. Sc (2021-22) Semester – III	
MB-301: Applied and Environmental Microbiology	CO1: To understand offline/ online strategies adopted for microbial analysis of food CO2: To learn about role of microbes in wastewater treatment, as well as liquid and solid waste management CO3: To impart knowledge about removal of recalcitrant from contaminated environment
MB-302: Molecular Biology and Bioinformatics	CO1:To impart training about elementary aspects of statistics used in microbiology CO2: To introduce student to the variety of computational methods currently available for predicting functional behavior of biological system CO3: To analyze the output data to predict a biologically relevant function
MB-303: Pharmaceutical Microbiology	CO1: To introduce knowledge about antibiotics, biopharmaceuticals and GMP, ICH process CO2: To familiarize the students with spoilage and regulatory aspects as well as quality control issues in pharmaceuticals
MB- 304: Methods in Biostatistics and Bioinformatics	CO1: To impart training about elementary aspects of statistics used in microbiology CO2: To introduce student to the variety of computational methods currently available for predicting functional behaviour of biological system CO3:To analyse the output data to predict a biologically relevant function
MB- 305: Methods in Applied Microbiology	CO1: To impart training to students about various quality control analysis carried out for pharmaceuticals CO2: To familiarize the students with quality activities required in pharmaceutical industry

M.Sc. Part II (2021-22) (Semester IV)	
MB - 401: Fermentation Technology	CO1: To introduce microbial fermentation, product recovery and bioreactor design CO2: To familiarize the student with separation techniques used for fermentation products CO3: To introduce the microbial process adopted for production of various metabolites
MB-402: Applied Molecular Biology	CO1: To extend the knowledge on molecular basis of mutation and repairs in microbes CO2: To understand different modes of gene regulation and expression mechanisms in bacteria CO3: To understand the principle role of plasmids, gene transfer methods and DNA replication
MB - 403: Agricultural Microbiology	CO1: To introduce various attributes of microbial ecology and plant microbe interactions CO2: To learn the student about how plant elicit defence against pathogens CO3:To know biocontrol, biofertilizers for plant nutrition, remediation of salt-affected soils
MB-404: Methods in Biotechnology	CO1: To train the student in basic molecular biology tools CO2: To learn gene transfer and gene expression CO3: To introduce microbial interaction with plant
MB-405: Laboratory course (Project Dissertation)	CO1: To give exposure to the students to research culture and technology CO2: To introduce students how to select a research topic, plan, perform experiments, collect data and analyse the data CO3: To foster self-confidence and self-reliance in the students as he/she learns to work and think independently

UG – B.Sc. (Botany)

Class: FYBSC 2018-19

Bot. 101: Microbial Diversity, Algae & Fungi	CO1: Provide identification technique diversity among Microbes.
	CO2: To study systematic, morphology and structure of Bacteria, Viruses, Algae and Fungi.
	CO3: Understand the life cycle pattern of Bacteria, Viruses, Algae and Fungi.
	CO4: Students will aware about useful and harmful activities of Bacteria, Viruses, Algae and Fungi.
Bot. 102: Plant Taxonomy	CO1: To study the diversity of angiosperms.
	CO2: Understand the comparative account among the families of angiosperms.
	CO3: Students will able to understand economic importance of the angiosperm plants.
Bot. 201: Diversity Of Archegoniates	CO1: To study salient features of Archegoniates.
	CO2: To make students aware of the status of higher cryptogams& gymnosperms as a group in plant kingdom.
	CO3: To study the life cycles of selected genera.
	CO4: Students will able to understand economic and ecological importance of Archegoniates.
Bot. 202: Plant Ecology	CO1: Students will able to scope and importance of the discipline
	CO2: Students will able to plant communities and ecological adaptations in plants.
	CO3: To know about conservation of biodiversity.
Bot-201: Diversity Of Higher Cryptogams	CO1: Student will be able to understand the basic knowledge of the subject.
	CO2: To understand the basic structure and study the comparative characteristic of Bryophytes and Pteridophytes.
	CO3: Also, to understand the structural similarities and differences among both the groups.
	CO2: Understand the systems of classification of angiosperms, nomenclature and interdisciplinary approaches.
	C03: Recognize members of the major angiosperm families by identifying their diagnostic features, economic and medicinal importance.

PG – M.Sc. (Botany)

CLASS-MSC-I:-2021-22	
Semester I **BOT-101 Plant Systematics-I** **(Algae, Fungi & Bryophytes)**	CO1: Able to differentiate cryptogrammic plants
	CO2: Able to describe life cycle patterns in cryptogams
	CO3: Higher cognitive skills will develop
BOT-102 Taxonomy of Angiosperms	CO1: Student provide with importance of classification in Angiosperms
	CO2: They will get the knowledge of recent system of classification in Angiosperms.
	CO3: This course helps to make them aware of wild plants their habit and habitat from field tour
BOT-105 Applied Plant Biotechnology	CO1: To the fundamentals of totipotency, plant tissue culture techniques
	CO2: To study transgenic technology for the improvement of quality and quantity of Plant and there by product.
	CO3: To understand the advantages of in vitro propagation in various areas.
AC-101 Audit Course **Practicing Cleanliness**	CO1: Identify need at of cleanliness at home/office and other public places
	CO2: Plan and observe cleanliness programs at home and other places
	CO3: Practice Japanese 5-S practices in regular life.
Semester I I **BOT-201 Plant Systematics-II** **(Pteridophytes, Gymnosperm & Palaeobotany)**	CO1: Examine the distribution, morphology, anatomy & reproduction mentioned in the syllabus
	CO2: Students will know about economic importance of Pteridophytes & Gymnosperms
	CO3: Understand the significance of Palaeobotany
BOT-202 Plant Physiology and Biochemistry	CO1: The students are aware about the knowledge of the process such as diffusion, osmosis and Imbibition that occurs in the plant cells
	CO2: Students will get the knowledge of the important process like Photosynthesis and respiration in plants.
	CO3: The students will able to know the stepwise reactions occur in plant process like photosynthesis, respiration and fatty acid synthesis as well as catabolic activities.
BOT-203 Cytogenetic and Molecular Biology	CO1: To study structural organization and variation in the chromosome as well as karyotype analysis.
	CO2:To study extra-chromosomal inheritance in the plant system
	CO3: To study molecular biology about genetic material, its inheritance,

	modification, replication, and repair.
AC-201 A/B/C/D **AC-201 C: Yoga**	CO1: To motivate students towards yoga and provide them required training.
	CO2: Yog: Meaning, Definition & Introduction, Objectives
	CO3: Primary Introduction of Ashtanga Yoga
CLASS- M.Sc. Part-IInd (Sem-III and IV)	
BOT-301 Plant Development & Reproduction	CO1: Able to differentiate vascular tissue
	CO2: Able to identify embryological stages
	CO3: Expertise in tissue culture technique
BOT-302 C: Angiosperm Special Paper-I	CO1: Able to differentiate and identify various Angiospermic plants
	CO2: Able to classify flowering plants.
	CO3: Expertise taxonomic structure and nomenclature of Angiosperm.
BOT 305 A: Biostatistics and Bioinformatics	CO1: Able to understand the ways to report the results in a scientific way.
	CO2: Able to recognize importance of Biostatistics in interpreting the biological data
	CO3: Expertise in Bioinformatics stools to analyze different protein or nucleotide sequences
AC-301 D: Biodiversity and Conservation	CO1: The students will understand the various conservation strategies, man-made environmental issues at local, national and global level and the measures to control their adverse effects at individual and collective level.
	CO2: Understanding the Management and Conservation strategies at national and international.
	CO3: Understanding the key environmental issues and ecosystem Management.
Semester IV BOT-401 C: Angiosperm Special Paper-II	CO1: Able to know Conquest's system of classification..
	CO2: Able to know phylogeny and interrelationship of different orders and taxa.
	CO3: Able to understand biosystematics and ultra-structural systematic.
BOT-402 C: Angiosperm Special Paper-III	CO1: To trace the origin of Angiosperms.
	CO2: To study embryology of Angiosperm plant.
	CO3: To study palynology of Angiosperm plant.
BOT-405 A: Plant Ecology & Phytogeography	CO1: Able to know concept, scope and importance of the discipline.
	CO2: Able to describe ecosystem ecology and community ecology.

	CO3: Higher cognitive skills about conservation of biodiversity, energy and pollution will develop
AC-401 C: Banana Fruit Processing	CO1: The students will be able to understand the use various methods of preparing banana
	CO2: The students will be able to understand the preserved or processed.
	CO3: The processing of the fruits also provides a cushion to stabilize the price during the peak harvest period.

UG –B.Sc. (Chemistry)

Class: FYBSC

CH: 101 Physical and Inorganic Chemistry	CO1: Apply the rules of logarithm for solving numericals in chemistry
	CO2: Draw, calculate the slope of various graphs for chemistry experiments
	CO3: Calculate derivative and integration of some simple functions especially related to chemical problems
	CO4: Various theories and principles applied to reveal atomic structure
	CO5: Nature of matter and experiments which confirmed it.
CH: 102 Organic and Inorganic Chemistry	CO1: Different types of bonds and structures of organic compounds.
	CO2: Different types of structural effects and their effect on the strength of acids and bases.
	CO3: Fundamentals of organic reaction mechanism, structural isomerism, methods of purification of organic compounds.
	CO4:Different types of solvents used in organic reactions Students will be able to understand:
	CO5:SP3, SP2 and SP hybridizations

Class: SYBSC

CH-301 Physical &Inorganic Chemistry	CO1: To gain knowledge about origin of surface tension.
	CO2: To determine surface tension.
	CO3: To get idea regarding viscosity.
	CO3:Students will be able to apply thermodynamic principles to physical and chemical
	CO5: Calculations and significance of entropy.
	CO6: Students will be able to understand equilibrium.
	CO7:To learn and apply various concepts such as
CH - 302 Organic and Inorganic Chemistry	CO1:The course helps to build up a conceptual framework for understanding the principles and theories for chemical bonding and properties of inorganic compounds
	CO2: Understood various methods of synthesis of heterocyclic compounds.
	CO3: Acquire skill to predict reactivity of heterocyclic compounds.
	CO4:To gain the knowledge about acid and bases according to different type theories
CH-304 SEC-1: Basic Analytical Chemistry	CO1: Explain the fundamentals of analytical methods and instruments for qualitative and quantitative Analysis.
	CO2: Express the role of analytical chemistry in science.
	CO3: Students will be able to function as a member of an interdisciplinary problem solving team.

Class: TYBSC

CH-501 **Subject- Principles of Physical Chemistry-I**	CO1: After successful completion of this course, students are expected to Understand the significance of wave function and postulates of quantum mechanics.
	CO2:Deduce rate equations and half-life equations for first and second order reactions
	CO3:Draw and explain the one and two component system phase diagrams
	CO4:Explain the principles of electrode processes and
	CO5:apply them during Practicals
CH-502 **Subject-Inorganic Chemistry**	CO1: Learn about the VSEPR theory and how it can be used to explain molecular shapes.
	CO2: Learn about the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap.
	CO3: Learn about stability of complexes using CFSE.
	CO4: Learn about MOT to draw energy diagrams and to predict bond order.
CH-503 **Subject- Organic Reaction Mechanism**	CO1:Students will learn organic reactions like nucleophilic substitution, electrophilic substitution, nucleophilic addition, electrophilic addition and elimination
	CO2: Students will be able to write/ explain mechanisms of those types of reactions.
	CO3:Students will understand how a reaction takes place in one or more
	CO4: Students will understand the types of intermediates steps formed in different reactions.
	CO5: Students will learn how reagent attacks the substrate molecule and accordingly how bonds break and formed.
	CO6: Students will learn how change in structure of substrate, reagent and solvent changes the product formed and its stereochemistry.
CH-504 **Subject- Industrial Chemistry**	CO1: Basic requirements of Chemical Industry, different terms, operations and processes involved in chemical Industry.
	CO2: Describe Copy Right Act, Patent Act and Trade Marks, Bureau of Indian Standards (BIS) and International Organization for Standardization (ISO).
	CO3:Basic requirements, raw materials, different processes and operations involved in Sugar Industry and also different grades of sugar

	and uses of by-products of sugar industry.
	CO4:Importance of fermented products, basic requirements, theory and process of alcohol making, fractional distillation and various terms involved in Fermentation Industry.
	CO5:Understand Occurrence of Petroleum, theories of formation of Petroleum and different terms Viz. Knocking, Anti-Knock Compounds, Octane number, Cetane number, Gasohol and Power alcohol etc.
	CO6:Manufacturing processes involved in Industrial Organic Synthesis such as Methanol, Isopropanol, Glycerol, Acetylene and Aromatic hydrocarbon i.e. Toluene from petroleum with their uses
CH-505 **Subject- Analytical Instrumentation**	CO1: To develop an understanding of the range and uses of analytical methods in chemistry.
	CO2:To understand and establish the role of chemistry in quantitative analysis
	CO3: To enhance the Analytical instrumental skill of the students.
	CO4: Explain the fundamentals of analytical methods and instruments for qualitative and quantitative Analysis.

	CO5: Express the role of analytical chemistry in science.
	CO6:Students will be able to function as a member of an interdisciplinary problem solving team
CH-506(B) **Subject- Green Chemistry**	CO1:With this course, the graduate students will be able to understand the twelve principles of green chemistry that will help to build the basic understanding of toxicity, hazards and risk of chemical substances
	CO2: The course will help to understand stoichiometric calculations and relate them to green chemistry metrics. The students will learn about atom economy and understand its importance over percentage yield
	CO3:The students will learn to design safer chemicals, products and processes that are less toxic than the conventional chemistry, understand significance of catalysis, use of renewable feed stock, renewable energy sources, importance of green solvents, etc.
	CO4: The course will train the students to appreciate green chemistry and boost the students to think and develop the skills to innovate and search for the solutions to environmental problems.
	CO5: Green chemistry is only way of future chemistry to ensure sustainability with absolute zero waste. The success stories and real-world cases will motivate the young generation to practice green chemistry.

PG –M.Sc. Class: MSC I	
CH-411 : **Advanced Physical Chemistry–I**	CO1:Students should able to understand core and study of chemical kinetics and spectroscopy
	CO2:Apply the quantum mechanical principles to simple systems of chemical
	CO3: Students should understand the importance of statistical thermodynamics and concept of partition functions.
CH-413 : **Advanced Organic Chemistry-I**	CO1:Develop knowledge of substitution (electrophilic, nucleophilic) addition and elimination reactions
	CO2:Differentiate between various organic reactive intermediates and their reactions
	CO3:Students can understand the carbon-carbon multiple bonds and carbon heteroatom multiple bonds- Mechanism and stereochemical aspects
CH-416-A : **Advanced Inorganic Chemistry**	CO1:The course helps to build up a conceptual framework for understanding the principles and theories for chemical bonding and properties of inorganic compounds.
	CO2:The course helps to furnishes the basic concepts of group theory and its applications for various inorganic compounds
	CO3: The course furnishes knowledge of Organometallic compounds of some important transition metals and their applications.
	CO4: The course offers information lying on synthesis, structure, bonding, reactivity and properties of some selected non transition elements.

RM-417 :Research Methodology for Sciences **Learning outcomes:**	CO1:Students will understand the basic concept of science and scientific research
	CO2:Learn and follow the ethical guidelines while doing research avoid plagiarism in research publications
	CO3: Able to write a comprehensive literature review on a given research
	CO4:To be able to write a crisp research proposal or research project independently
	CO5: To be learn most advanced chemistry tools for the efficient research work.

	CO6:Acquire knowledge about various hazardous chemical handling procedures and implement it while working in the laboratory

Class: M.Sc. II:

CH-350: Organic Reaction Mechanism	CO1: To make the students conversant with the CO-1. Learn in detailed strength of acid and bases. Understand the Linear free energy relationship, Hammett and Taft equation, substituent and reaction constants
	CO2:Detailed mechanism of hydrolysis with breaking and formation of sigma bond
	CO3: Study of reaction of carbanion with detailed mechanism, coupling reactions along with name reactions.
	CO4: Study of basics of photochemical reactions and learn various photochemical reactions
CH-351: Spectroscopic Methods in Structure Determination	CO1: Study of basics of photochemical reactions and learn various photochemical reactions To make the students conversant with the CO-CO2: Study 1H NMR Spectroscopy: Chemical Shift, deshielding, correlation for protons bonded to carbon and other nuclei
	CO2:Study of basics of photochemical reactions and learn various photochemical reactions
	CO3: Study of basics of photochemical reactions and learn various photochemical reactions 2D NMR techniques: COSY, homo and hetero nuclear 2D resorts spectroscopy, NOESY and the applications.
	CO4: Study of mass spectrometry: Instrumentation, various methods of ionization, FAB, ESI, TPSI, MALDI, TOF, Mass spectral fragmentation of Organic compounds
CH-352: Organic Stereochemistry	CO1: To make the students conversant with the CO-1. To learn and apply various concepts such as stereochemistry and fundamental principles of stereo selectivity in organic chemistry.
	CO2: Study of different types of per cyclic reactions. CO-3. Study of stereo chemical aspects of fused and bridged rings.
	CO3: Study of stereo chemical aspects of six membered and other related rings CO-5 Study of prochirality and topocity.

CH-353 A: Heterocyclic	CO1: Understood various methods of synthesis of heterocyclic compounds.

Chemistry	CO2: To predict the product and suggest the mechanism
	CO3: Understand the importance of heterocyclic in industry as well as in drug discovery.

UG –B.Sc. SEM II

Class: FYBSC

CH: 201 Physical and Inorganic Chemistry	CO1:To gain knowledge about origin of surface tension
	CO2: To determine surface tension.
	CO3: To get idea regarding viscosity.
	CO4:To get idea regarding viscosity
	CO5: Students will be able to understand equilibrium.
	CO6:Students will be able to understand different factors affecting equilibrium
	CO7: Students will be able to understand equilibrium
CH: 202 Organic and inorganic chemistry	CO1:Alcohols, their classification and nomenclature
	CO2:Different methods of preparation and reactions of alcohols
	CO3: Different methods of preparation and reactions of phenols.
	CO4: Different methods of preparation and reactions of ethers

Class: SYBSC

CH- 401 Physical and Inorganic Chemistry	CO1: Explain the principles of electrode processes and apply them during Practical's.
	CO2:identify and write different types of equilibria of an electrolyte in solutions
	CO3:Third law of thermodynamics and its applications
CH - 402 Organic and Inorganic Chemistry	CO1: The course furnishes knowledge of Organometallic compounds of some important transition metals and their applications.
	CO2: Study of transition metal complexes in organic synthesis.
	CO3: Learn about MOT to draw energy diagrams and to predict bond order.
	CO4: Learn about the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap.
CH-404 SEC-2: Advanced Analytical Chemistry	CO1:Compare the Instrumental methods and non instrumental methods and there advantages
	CO2: Solve the problem of detection and separation using analytical instruments.
	CO3:Students will be able to explore new areas of research in both chemistry and allied fields of science and technology

Class: TYBSC

CH-601 Subject- Principles of Physical Chemistry-II	CO1: After successful completion of this course, students are expected to: Analyze the rotational spectra of diatomic molecules and determine the bond length.
	CO2:Explain and apply the radioactivity principles for various chemical and biological investigations
	CO3:Describe the mechanism of fluorescence, phosphorescence and photochemical reactions
	CO4:Analyze the given crystal structure and determine the indices of planes, inter- planer distances and type of crystal structure
CH-602 Subject-Inorganic Chemistry	CO1:Learn about basic principles and synthesis of nanomaterials
	CO2:Learn about classification, composition and processing of cement
	CO3:Learn about classification and composition of alloys
CH-603 Subject- Spectroscopic Methods of Structure Determination	CO1: Students will learn interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters.
	CO2: Students will learn principle of mass spectroscopy, its instrumentation and nature of mass spectrum.
	CO3: Students will understand principle of UV spectroscopy and nature of UV spectrum. They will learn types of electronic excitations
	CO4: Students will be able to calculate maximum wavelength for any conjugated system. And from the value of λ-max they will be able to find out extent of conjugation in the compound.
CH-604 Subject- Chemistry of Industrially Important Products	CO1: Describe the industrial production of a number of important organic and inorganic compounds / chemicals and products of end use.
	CO2:Gain comprehensive knowledge of cutting-edge developments in a field of different chemical industries
	CO3: Importance of Cosmetics Industry and a general study including preparation and uses of the Hair dye, hair spray, shampoo, suntan lotions, lipsticks, talcum powder, nail enamel, creams (cold, and shaving creams).
	CO4:Perfumes and identify the distinguishing features of its components and also an essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone etc.

	CO5:Know about pesticides both natural and synthetic, benefits and adverse effects of it, also synthesis, manufacture and uses of pesticides viz. Organochlorines (DDT, Gammexene,); Organophosphates (Malathion, Parathion); Anilides (Alachlor and Butachlor).
CH-605 Subject- Analytical Techniques	CO1:To provide knowledge of instruments which are used in Chemical, Pharma, Petroleum, and insecticide and pesticide industry
	CO2: To increase student technical skill as per industry need.
	CO3: To develop an understanding of the range and uses of analytical methods in chemistry.
	CO4: Compare the Instrumental methods and non-instrumental methods and there advantages.
	CO5: Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.
CH-606(A) Subject- Polymer Chemistry	CO1:Define terms like monomer, polymer, polymerization, polydispersity index, etc., classify polymers based on their origin, native backbone chain, and thermal response
	CO2: Know glass transition temperature and its determination, various ways to express molecular weights of polymers and polydispersity index.
	CO3: Identify different mechanisms of polymerizations viz. free radical, ionic, and condensation polymerizations.

Class: MSC I

CH-421 : Advanced Physical Chemistry-II	CO1:Differentiate between the nature of chemical bond concept from MOT and VBT
	CO2:Students will be able to apply the Approximate quantum methods for simple conjugated systems
	CO3: Students will be able to explain the mechanism of spectroscopic methods and solve the numerical problems related with it.
CH-423 : Advanced Organic Chemistry-II	CO1:Students can understand various reactions and rearrangements
	CO2:Understand and write mechanism of reactions and their applications
	CO3:Understand how to convert one molecule into another molecule by using oxidizing and reducing agents
	CO4: Plan the fundamental organic reactions of significance for organic synthesis and design synthesis of organic molecules.
CH-426-A : Advanced Inorganic Chemistry-I	CO1:This course provides detailed information of ionic solids, examples with their structures and calculation of radius ratio w. r. t. C. N. 3, 4, 6. CO2:This course offers to impart the basic knowledge about spectroscopy of inorganic compounds
	CO3:This course also offers to study the reaction mechanism in transition metal complexes

Class: MSC II

CH-450: Chemistry of Natural Products	CO1: To study the important features of terpenoids.
	CO2: To study the biosynthesis of natural products.
	CO3: To apply the knowledge of different reagents for synthesis of natural product.
	CO4: To understand the classification and uses of vitamins.
CH-451: Synthetic Methods in Organic	CO1:The students will be able to • Understand and apply the specific protecting groups for the reactant to react the desirable functional group
	CO2: Design the synthetic pathway from target molecule by applying the retrosynthesis, disconnection approach.
	CO3: Understand various synthetic methods in organic synthesis.
	CO4:Understand advanced organic reactio
CH-452(A): Drug Chemistry	CO1:Acquire knowledge on metabolism of biomolecules
	CO2: Familiarise with amino acids, proteins, lipids, nucleic acids and enzymes
	CO3: Understand biochemical reactions in microbial cells and metabolic pathway diversity

UG - B. Sc. (Computer Science)

CS 101: Essential of Computer Science	CO1: To do basic operations regarding
	CO2: To identify network type and analyze & comply basic issues in networking.
	CO3: To design an algorithm and draw the flowchart.
	CO4:.To study about networks and its type
CS 102: C Programming-I	CO1:Understand basic Structure of the C-Programming, declaration and usage of variables
	CO2: Understand the concepts of various operators and conditional statements.
	CO3: Understand array to store multiple pieces of homogeneous data.
CS LAB: DSC 1A LAB: Lab Course on Essential of Computer and C Programming	CO1:To study various data types, arrays and functions in C
	CO2:To understand input-output and, control and iterative statements in C
	CO3:To study various data types, arrays and functions in C
CS 201: Internet Computing	CO1: Understand the idea of a digital world
	CO2: Understand the importance of keeping safe online
CS202: C Programming-ll	CO1: Understand the concepts of functions and pointers.
	CO2: Be able to work with operators and conditional statements
COMP-211 :Data Structure – I	CO1: Demonstrate an understanding og basic data structure (Such as an array-based list, linked list, stack ,queue, binary search tree)and algorithms
COMP-212 : Programming in C++-I	
	CO1: Use functions and pointers in your C++ program.
	CO2: Understand tokens, expressions, and control structures.
	CO3: Explain arrays and strings and create programs using them.
	CO4: Describe and use constructors and destructors.
	CO5: Understand and employ file management.
Class: (T.Y.Bsc)Semester – V	
	CO1: Understand details about system software

CS-501System Programming	CO2: To do basic system program like development of editors lexical analyzers etc
	CO3: Students are familiar with language processing activities-functions of translators, loader and linkers
CS-502 Database Management System	**On completion of the course, student will be able to–**
	CO1:Solve real world problems using appropriate set, function, and relational models.
	CO2:Design E-R Model for given requirements and convert the same into database tables.
CS-503Software Engineering	CO1: Students are able to perform the E-R Diagram, DFD, Data dictionary, Decision tree about software.
	CO2: They can also design the software in learned language using the course content.
	CO3: Get the knowledge of types of testing & how testing is performed in industry.
CS-504 Computer Aided Graphics	CO1:Differentiate between interactive and non-interactive graphics.
	CO2:Study line Drawing and Circle Drawing techniques and algorithms.
	CO3:Perform 2D and 3D transformation on different images.
	CO4:Know about detail working of 2D and 3D clipping and windowing.
	CO4:Understand raster graphics and hidden surface elimination.
CS-505 Python Programming	
	CO1:Explain basic principles of Python programming language
	CO2:Construct and apply various filters for a specific task.
	CO3:Apply the best features of mathematics, engineering and natural sciences to program real life problems.
CS-506B JAVA Programming I	CO1:Get knowledge of JDK environment
	CO2:Explore polymorphism using method overloading and method overriding
	CO3:Understand the different aspects of hierarchy of classes and their extensibility
	CO4:Understands the concept of streams and files
	CO5:Write programs for handling run time errors using exceptions
DSC UG-CS-508: LAB on Computer Aided Graphics	CO1:Understanding Graphics Concept Practically
	CO2: Hands on of using standard graphics library
	CO3: Hands on of implementation of DDA, Bresenham's Line,Circle Drawing Algorithm
	CO4: Hands on of implementation of 2D Transformation: Translation,

	Scaling and Rotation
	CO5: Hands on of implementation ofCohen-Sutherland line clipping algorithm
CS-509B: Lab on JAVA Programming I	CO1:Get knowledge of JDK environment
	CO2:Explore polymorphism using method overloading and method overriding
	CO3:Understand the different aspects of hierarchy of classes and their extensibility
	CO4:Understands the concept of streams and files
	CO5:Write programs for handling run time errors using exceptions
Semester –VI	
CS-601 Operating System	CO1:Students should familiar with Operating System Services.
	CO2:Understand CPU scheduling algorithms, memory Management Techniques, Disk Drum Scheduling algorithms, Deadlock preventions and avoidance.
	CO3:Introduction to android operating systems – its architecture, applications and uses
CS-602 Relational Database Management Systems	**On completion of the course, student will be able to–**
	CO1:Design E-R Model for given requirements and convert the same into database tables.
	CO2:Use database techniques such as SQL & PL/SQL.
	CO3:Explain transaction Management in relational database System.
	CO4:Use advanced database Programming concepts
CS-603 Computer Network	**After completion of the course:**
	CO1: Students understand the information exchange done across the network with the help of OSI & TCP/IP models.
	CO2: Student understands how errors are captured & handled in network.
	CO3: Student understands various attack & its prevention techniques.
CS-604 Theoretical Computer Science	CO1: Understanding the use of Sets, Relations and Graphs.
	CO2: Understand Languages in TCS.
	CO3: Introduction of Regular Languages and Expressions.
	CO4: Understanding Pumping Lemma and its applications.
	CO5: Explore the knowledge of Pushdown Automata.
	CO6: Understanding Normal Forms with Examples.
	CO7: Understanding Turing Machine.
CS-605 Python Programming – II	CO1:Explain basic principles of Python programming language
	CO2: Implement object oriented concepts, database applications.
	CO3: Construct regular expressions for pattern matching and apply

	them to various filters for a specific task.
	CO4: Design and implement Database Application and Content providers.
	CO5:Apply the best features of mathematics, engineering and natural sciences to program real life problems
CS-606B: JAVA Programming II	CO1: Program using graphical user interface with Swing classes
	CO2:Create programs using menus and dialog boxes
	CO3:Understand advanced java concepts like JDBC, Java Beans
	CO4: Handle different kinds of events generated while handling GUI components
	CO5: Program to create applets
CS-Lab 608: Lab on RDBMS	CO1: To use SQL & PL/SQL.
	CO2: To perform advanced database operations.
	CO3: Create database tables in postgreSQL.
	CO4: Write and execute simple, nested queries
	CO5: To use SQL & PL/SQL.
CS-509 B: Lab on JAVA Programming II	CO1: Program using graphical user interface with Swing classes
	CO2: Handle different kinds of events generated while handling GUI components
	CO3: Create programs using menus and dialog boxes
	CO4: Program to create applets
	CO5: Program using graphical user interface with Swing classes
	CO6: Handle different kinds of events generated while handling GUI components
	CO7: Create programs using menus and dialog boxes
	CO8:Understand advanced java concepts like JDBC, Java Beans
CS 101: Essential of Computer Science	CO1: To do basic operations regarding
	CO2:To identify network type and analyze & comply basic issues in networking.
	CO3:To design an algorithm and draw the flowchart.
CS 102: Programming in C-I	CO1: Understand array to store multiple pieces of homogeneous data.
	CO2:Understand the concepts of functions and pointers.
	CO3:Be able to work with operators and conditional statements
PG Computer Science- **M.Sc. (Computer Science)**	
Data Structures and Algorithms	CO1: Student will be able to choose appropriate data structure as applied to specified problem definition
	CO2: Students will be able to use linear and non-linear data structures like stacks, queues, linked list etc.

	CO3: To increase the student's intuitive understanding of search trees
	CO4: To learn advanced tree data structures
	CO5: To learn to represent data using graph data structure
	CO6:Students will be able to apply concepts learned in various domains like DBMS, compiler construction etc.
CS-102 Database Management System (DBMS)	CO1:To analyze Database design methodology.
	CO2: Acquire knowledge of fundamentals of Database Management System.
	CO3:Analyze the difference between traditional file system and DBMS.
	CO4:To deal with different Database languages.
	CO5:Draw various data models for Database, writing and executing queries to get expected results.
CS-103 Automata Theory and Computability	CO1: Understand, design, construct, analyse and interpret Regular languages, Expression and Grammars.
	CO2: Design different types of Finite Automata and Machines as Acceptor, Verifier and Translator.
	CO3: Understand, design, analyse and interpret languages, Expression and Grammars.
	CO4: Design different types of Push down Automata and Turing Machine.
CS-104 Operating Systems	CO1: understand different types of operating systems.
	CO2: gain extensive knowledge on principles and modules of the operating systems.
	CO3: understand key mechanisms in the design of operating systems modules.
	CO4: understand process management, thread management, memory management, file management and deadlock handling.
	CO5compare performance of different processor scheduling algorithms.
	CO6produce algorithmic solutions to process synchronization problems
	CO7understand the issues related to protection and security
CS-105 Object Oriented Programming using JAVA	CO1:To understands the fundamentals of Java programming language and its constructs.
	CO2:To understand concept of object-oriented programming concept using Java.
	CO3:To implement the applications using the concept of the Inheritance, Interfaces, Lambda Expressions, and Inner Classes.
	CO4:To design and implement the real-world application using the concept of the Exceptions and Generic Programming
	CO5: understand how to use concept of the Graphics Programming,

	Event Handling, Swing Components, and JDBC in their application.
CS LAB-I LAB on Data Structures and Algorithms and JAVA programming	**Data Structures and Alg**.
	CO1: Develop solutions for a range of problems using procedure oriented / object oriented programming.
	CO2: Apply divide and conquer strategy to searching and sorting problems using iterative And / or recursive solutions.
	CO3: Design scenarios to explain behaviors and demonstrate correctness of programs
	CO4: Determine which algorithm or data structure to use in different scenarios
	CO5: Choose the appropriate data structure and algorithm design method for a specified application.
	CO6: Have practical knowledge on the applications of data structures
	JAVA programming
	CO1:Write Java application programs using OOP principles and proper program structuring
	CO2:Implementing user interface: 2D shapes, events, dialog box, menu and popup menu
	CO3Developing Applets, multithreaded programs
	CO4:Implementing generic and JDBC programming
	CO5:Demonstrate the concepts of polymorphism and inheritance
	CO6: Write Java programs to implement error handling techniques using exception handling
CS LAB-II LAB on DBMS	CO1: To understand Database design methodology.
	CO2: Acquire knowledge in fundamentals of Database Management System.
	CO3: Work with popular Database languages.
	Co4:.Realise various data models for Database and Write queries in SQL.
	Co5: Familiar with basic database storage structures and access techniques.
CS-201 Compiler Construction	Understanding of basic structure of compiler, concepts and terminology in programming languages, lexical analysis, finite state techniques, scanner generator, parsing, kinds of parsers, designing lexical analyzer, scanner and parsers, principal ideas with intermediate code generation, optimizations.
CS-202 Mathematical Foundations of Computer Science	Understanding of all concepts essential to design compiler
	CO1:demonstrate their understanding of and apply methods of mathematics in computer science to subsequent courses in algorithm design and analysis
	CO2: identify, formulate, and develop solutions to computational challenges.

	CO3: understand and solve a computational problem to meet desired needs within realistic constraints.
	CO4: analyze the behavior of the data, model the data using statistical measures and represent it graphically on paper without using available computerized tools.
	CO5: apply mathematical foundations, probability theory in the modeling and design of computational systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
CS-203 Artificial Intelligence	Co1: Identify problems that are amenable to solution by AI methods.
	CO2: Identify appropriate AI methods to solve a given problem.
	CO3: Design smart system using different informed search / uninformed search or heuristic approaches.
	CO4: Apply the suitable algorithms to solve AI problems.
CS-204 Design and Analysis of Algorithms	CO1: Analyze the asymptotic performance of algorithms.
	CO2: Write rigorous correctness proofs for algorithms.
	CO3: Design and analyze divide-and-conquer based algorithms.
	CO4: Devise and Synthesize greedy and dynamic-programming based algorithms.
	CO5: Employ graphs to model problems solvable using traversal techniques.
	CO6:Able to model problems using backtracking
	CO7: Able to classify nondeterministic polynomial time algorithms.
CS-205 Python Programming	CO1: understand the basic concepts of Python programming.
	CO2:write Python programs that supports some constructs of functional programming like map, reduce, filter.
	CO3:understand the use of strings, lists, tuples, dictionaries, and files and able to manipulates data available within them with help of various functions.
	CO4:understand how to write user defined classes, methods as well as module creation and handle exceptions while implementing python programs.
	CO5:use regular expression for validating email address or domain name.
CS-301 Machine Learning	CO1:Distinguish between, supervised, unsupervised and semi-supervised learning
	CO2:Apply the apt machine learning strategy for any given problem
	CO3:Suggest supervised, unsupervised or semi-supervised learning algorithms for any given problem
	CO4:Design systems that uses the appropriate graph models of machine learning
CS-302 Web Application	CO1:Successful students will able to design web applications using ASP.NET

Development Technology	CO2:Successful students will be able to use ASP.NET controls in web applications.
	CO3:Successful students will be able to debug and deploy ASP.NET web applications
	CO4:Successful students will be able to create database driven ASP.NET web applications and web services
CS-303 Computer Graphics and Digital Image Processing	CO1: Developed scientific and strategic approach to solve complex problems Computer in the domain of Computer Graphics and Digital Image Processing.
	CO2: Demonstrated various algorithms for scan conversion and filling of basic primitives objects and their comparative analysis and applied 2-D and 3-D geometric transformations, viewing and clipping on graphical objects.
	CO3: Built the mathematical foundations for digital image representation, image acquisition, image transformation, image enhancement and restoration.
	CO4: Developed a theoretical foundation of fundamental concepts of digital image processing.
	CO5: Exposed students to MATLAB Image Processing Toolbox.
CS-304 Software Engineering	CO1:Understand and demonstrate basic knowledge in software engineering
	CO2: Define various software application domains and remember different process model used in software development.
	CO3: Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
	CO4:Convert the requirements model into the design model and demonstrate use of software and user interface design principles.
	CO5: Distinguish among SCM and SQA and can classify different testing strategies and tactics and compare them.
	CO6:Justify role of SDLC in Software Project Development
	CO7:Generate project schedule and can construct, design and develop network diagram for different type of Projects.
CS-305 (A) Natural Language Processing	CO1: Students will get idea about know-hows, issues and challenge in Natural Language Processing and NLP applications and their relevance in the classical and modern context.
	CO2:Student will get understanding of Computational techniques and approaches for solving NLP problems and develop modules for NLP tasks and tools such as Morph Analyzer, POS tagger, Chunker, Parser, WSD tool etc.
	CO3:Students will also be introduced to various grammar formalisms, which they can apply in different fields of study.
	CO4:Students can take up project work or work in R&D firms working in NLP and its allied areas

CS-305 (B) Optimization Algorithms	CO1: write about OR and decision making.
	CO2: Differentiate between feasible and optimal solution
	CO3: Apply solving techniques to all types of LPP.
	CO4: Apply solving techniques to network problems and game theory problems as well.
CS-305 (C) Data Warehousing and Data Mining (DWDM)	CO1: Explain organization of data warehousing and data marts.
	CO2:Differentiate between OLTAP and OLAP
	CO3:Apply data pre-processing techniques
	CO4:Write basic algorithms for extracting patterns from data (association mining, classification and clustering)
	CO5:Solve problems related with various aspects of data mining
CS LAB-V LAB on Web Application Development Technology	CO1: Students will get hands-on experience on basic concepts in web applications development using ASP.NET technology.
	CO2:Students can develop or undertake professional looking real life web sites using ASP.Net technology.
	CO3:It will help students to grasp other Web Application Development technologies/platforms easily through learn-by-comparison approach so that the learning curve will be smooth and faster.
LAB on Computer Graphics and Digital Image Processing	CO1:Developed scientific and strategic approach to solve complex problems Computer in the domain of Computer Graphics and Digital Image Processing using C++ and MATLAB respectively.
	CO2:Implemented various algorithms for scan conversion and filling of basic primitives objects and their comparative analysis and applied 2-D and 3-D geometric transformations, viewing and clipping on graphical objects.
	CO3Exposed students to MATLAB and Image Processing Toolbox.
	CO4:Used various tools in MATLAB to implemented image transformation, image enhancement in spatial and frequency domain.

UG – B.Sc. (Electronics)

Class: F.Y. B.Sc. (2018-19)

ELE-101:Network Analysis And Digital Integrated Circuits **ELE-102: Digital Integrated Circuits**	CO1: Apply knowledge to develop circuits using electronic devices.
	CO2: Apply the concept and knowledge of electronics devices to real life problems.
	CO3: Simulate complex circuits and understand the behavior of the systems.
	CO4: Understand and analyze, linear and digital electronic circuits.
	CO5: Review, prepare and present technological developments.
ELE-201: Analog Electronics **ELE-202: Linear Integrated Circuits**	CO1: Apply the concept and knowledge of integrated circuit chips to develop new systems.
	CO2: Apply practical knowledge to solve real life problems of the society.
	CO3: Understand of the course and create scientific temperament and give exposure to the students for independent use of integrated circuit chips for innovative applications.
	CO4: Model complex circuits and simulate them.
	CO5: Handle simulation software to analyze electronics circuits.

Class: S.Y. B.Sc. (2019-20)

ELE-301: Analog Communication **ELE-302: Microprocessors and Applications**	CO1: Apply knowledge to develop circuits of analog modulation and demodulation.
	CO2: Apply the concept and knowledge of microprocessors to real life problems.
	CO3: Analyze modulation circuits and understand the behavior of the systems.
	CO4: Understand and analyze 8085 microprocessor and its programming.
	CO5: Review, prepare and present technological developments.
ELE-401: Digital Communication **ELE-402: Microcontrollers and Applications**	CO1: Apply the concept and knowledge of digital communication to develop new systems.
	CO2: Apply practical knowledge of microcontrollers to solve real life problems of the society.
	CO3: Understanding of the course and create scientific temperament and give exposure to the students for independent use of microcontroller for innovative applications.
	CO4: Gain knowledge of microcontroller programming.
	CO5: Handle hardware and software to shoot problems of the society.

UG – B.Sc. (Mathematics)

Class: F.Y. B.Sc.

MTH 101: Matrix Algebra	CO1: understand concepts on matrix operations and rank of the matrix.
	CO2: understand use of matrix for solving the system of linear equations.
	CO3: understand basic knowledge of the Eigen values and Eigen vectors.
	CO4: apply Cayley-Hamilton theorem to find the inverse of the matrix.
	CO5: know the matrix transformation and its applications in rotation, reflection, translation.
MTH 102: Calculus	CO1: understand basic concepts on limits and continuity.
	CO2: understand use of differentiations in various theorems.
	CO3: know the Mean value theorems and its applications.
	CO4: make the applications of Taylor's, Maclaurin's theorem.
	CO5: know the applications of calculus
MTH 103(B): DISCRETE MATHEMATICS	CO1: Students are able to understand the concepts of relations, coding and decoding mathematical logic, Boolean algebra.
MTH 201: Ordinary Differential Equations	CO1: understand basic concepts in differential equations.
	CO2: understand method of solving differential equations
	CO3: understand use of differential equations in various fields
MTH 202: Theory of Equations	CO1: Students can find out roots of any equation of degree less than or equal to five. Theory of equations is highly useful in various subjects like algebra, linear algebra, calculus, ordinary and partial differential equations etc.
MTH 203(A): Laplace Transform	CO1: This course provides fundamental knowledge of Laplace transform and their applications in solving differential Equations.
S. Y. B. Sc. (2021-22)	
MTH -301: Calculus of Several Variables	CO1: limit and continuity of functions of several variables
	CO2: fundamental concepts of multivariable Calculus.
	CO3: series expansion of functions.
	CO4: extreme points of function and their maximum, minimum values at those points.

	CO5: meaning of definite integral as limit as sums.
	CO6: how to solve double and triple integration and use them to find area by double integration and volume by triple integration.
MTH -302(A): Group Theory	CO1: understand group and their types which is one of the building blocks of pure and applied mathematics.
	CO2: understand Lagarnge, Euler and Fermat theorem
	CO3: understand concept of automorphism of groups
	CO4: understand concepts of homomorphism and isomorphism
	CO5: understand basic properties of rings and their types such as integral domain and field.
MTH 304: Set Theory and logic	CO1: Uses of the language of set theory, designining issues in different subjects of mathematics
	CO2: understand the issues associated with different types of finite and infinite sets via countable uncountable sets
	CO3: knowledge of the concepts and methods of mathematical logic, set theory, relation calculus, and concepts concerning functions which are included in the fundamentals of various disciplines of mathematics
	CO4: understanding the role of propositional and predicate calculus
	CO5: able to provide the logical mathematical reasoning, formulate theorems and definitions
MTH -401: Complex Variables	CO1: The course is aimed to introduce the theory for functions of complex variables
	CO2: Students will understand the concept of analytic function
	CO3: Students will understand the Cauchy Riemann Equations
	CO4: Students will understand harmonic functions
	CO5: Students will understand complex integrations
	CO6: Students will understand calculus of residues.
	CO7: Students will acquire the skill of contour integrations
MTH-402(A): Differential Equations	CO1: Students will aware of formation of differential equations and their solutions
	CO2: Students will understand the concept of Lipschitz condition
	CO3: Students will understand method of variation of parameters for second order L.D.E.
	CO4: Students will understand simultaneous linear differential equations and method of their solutions
	CO5: Students will understand Pfaffian differential equations and method

	of their solutions
	CO6: Students will understand difference equations and their solutions
MTH 404: Vector Calculus	CO1: understand scaler and vector products
	CO2: understand vector valued functions and their limits and continuity and use them to estimate velocity and acceleration of partials.
	CO3: Calculus the ecaluate line integrals of functions along curves.
T. Y. B. Sc. (2021-2022)	
MTH - 501: Metric Spaces	CO1: Understand the Euclidean distance function on AB and appreciate its properties, and state and use the Triangle and Reverse Triangle Inequalities for the Euclidean distance function on AB
	CO2: Explain the definition of continuity for functions from AB to AD and determine whether a given function from AB to ADis continuous
	CO3: Explain the geometric meaning of each of the metric space properties (M1) – (M3) and be able to verify whether a given distance function is a metric
	CO4: Distinguish between open and closed balls in a metric space and be able to determine them for given metric spaces
	CO5: Define convergence for sequences in a metric space and determine whether a given sequence in a metric space converges
	CO6: State the definition of continuity of a function between two metric spaces
MTH - 502: Real Analysis –I .	CO1: Understand the structure of Riemann Integration
	CO2: Represent lattice in diagrammatic form.
	CO3: Understand the Improper integrals with finite limit and infinite limit their properties.
	CO4: Learn the concepts of Beta and Gamma Integrals.
MTH - 503: Algebra	CO1: know the use Permutation Groups
	CO2: know normal Subgroups and group isomorphisms
	CO3: Know Ideals in rings, Quotient Rings and Isomorphism of Rings
	CO4: Know polynomial Rings and irreducibility of polynomials
MTH - 504: Lattice Theory	CO1: Understand the structure of posset and lattice.
	CO2: Represent lattice in diagrammatic form.
	CO3: Understand the terms Maximal element, Minimal element, Greatest element, Least elements.
	CO4: Learn the concepts of ideals and their properties.
	CO5: Learn the concepts of homomorphism.
	CO6: Understand complemented and relatively complemented lattice

MTH - 505: Integral Transforms	CO1: Know the use of Fourier transform in Wave equation
	CO2: Solve Boundary Value Problems, also problem on Heat-flow in semi-infinite bar.
	CO3: Use Fourier transform in communication theory and signal analysis, image processing and filters, data processing and analysis, solving partial differential equations for problems on gravity.
	CO4: Students will be able to use Z-transform in the characterization of Linear Time-Invariant system (LTI), in development of scientific simulation algorithms
MTH – 506(B): Number Theory	CO1: solve Diophantine equations
	CO2: use Fermat's theorem, Euler's theorem and Wilson's theorem for finding remainders
	CO3: understand perfect, Mersenne and Fermat's numbers.
	CO4: understand Fibonacci sequence
	CO6: solve Diophantine equations by using finite continued fractions.
MTH - 601: Measure Theory	CO1: Learn measurable sets. Learn the concept of Sets of measure zero.
	CO2: Understand why a more sophisticated theory of integration and measure is needed.
	CO3: Show that certain functions are measurable.
	CO4: Understand properties of the Lebesgue integrals
MTH - 602: Real Analysis – II	CO1: solve Convergence and divergence
	CO2: use Test for absolute convergence
	CO3: understand Fourier series for even and odd functions t
	CO4: understand Sine and cosine series in half range
MTH - 603: Linear Algebra	CO1: solve Rank and nullity theorem
	CO2: use Cayley Hamilton theorem, Euler's theorem and finding Eigen values and Eigen vectors of linear transformation.
	CO3: understand Kernel and image of linear transformations.
	CO4: understand Singular and non-singular linear transformations
MTH - 604: Ordinary and Partial Differential Equations	CO1: Know the exact differential equation and its solution.
	CO2: Solve the exact differential equations by using integrating factor.
	CO3: Solve the linear differential equation of second order by using Various methods.
MTH - 605: Graph Theory	CO1: Understanding a functional hierarchical code organization.
	CO2: Ability to define and manage graphs, connected graphs.
	CO3: Understanding a concept of Cut set and cut vertices

MTH – 606(B): Operations Research	CO1: solve the linear programming problem by graphical method and simplex method.
	CO2: learn the unbounded, alternative and infeasible solutions of LPP by graphical and simplex method.
	CO3: understand the standard and canonical form of LPP.
	CO4: find the optimal solution of TP by MODI method.
	CO5: solve the solution of assignment problems by Hungerian Method.
	CO6: Understand the unbalanced, balanced, maximization, restricted AP and alternative solution of AP.
	CO7: understand the saddle point, maximin-minimax principal, two person zero sum game.
	CO8: use of dominance property to find the solution games.

PG – M.Sc. (Mathematics)

MSc – I (2021-2022)	
MT-101: Advanced Real Analysis	CO1: Acquire fundamentals of Countability, Continuum hypothesis and Zorn's lemma.
	CO2: Understand and analyze Lebesgue measure, measurable functions and their properties.
	CO3: Solve integrations of functions not necessarily defined on closed sets and verify their properties.
MT-102: Topology	CO1: understand the definition of topology, examples, basis, order topology.
	CO2: understand the subspaces, closed sets, limit points of a set.
	CO3: understand continuous functions on topological spaces, product topology and metric topology.
	CO4: understand connectedness of a set, compact ness and separation axioms.
MT - 103: Abstract Algebra	CO1: Understand class equation for finite groups and its applications.
	CO2: Explain Sylow theory and solvable groups.
	CO3: Learn Euclidean domains, Principal ideal domains, unique factorization domains, Noetherian rings and the Hilbert Basis Theorem
MT - 104: Partial Differential Equations	CO1: Find solutions of partial differential equations and determine the existence, uniqueness of solution of partial differential equation
	CO2: Apply the concepts of partial differential equations to solve problems in allied fields.

	CO3: Know the important theorems and their applications
MT 105 Programming in C++	CO1: Visualize the features of C++ supporting object-oriented programming.
	CO2: Construct how to produce object-oriented software using C++.
	CO3: Survey the major object-oriented concepts to implement object-oriented
	CO4: programs in C , encapsulation, inheritance and polymorphism
AC-101: Practicing Cleanliness	CO1: Identify need at of cleanliness at home/office and other public places Plan and observe cleanliness programs at home and other places. Practice Japanese practices in regular life.
MT - 201: Number Theory	CO1: Understand the concept of Mobius function μ , The Euler totient function, Mangolt function, Liouvilles function, The divisor function, Bell series.
	CO2: Explain Residue classes, Lagrange's theorem and its applications, Polynomial congruences with prime power modu
	CO3: Learn Quadratic residues, existence and non-existence of primitive Roots.
MT - 202: Complex Analysis	CO1: Acquire useful knowledge of complex analysis understand the concept of power series about complex analysis solve the complex integration in various forms gain the knowledge of singularities prepare themselves for competitive examinations:SET, NET, GATE
MT - 203: Linear Algebra	CO1: Understand and interpret the concepts of modules and submodules, Homomorphism and isomorphism in modules, types of modules and group theorem.
	CO2: Understand the concepts of Jordan and Rational canonical forms and use them to solve problems involved in matrix theory and computer algebra.
	CO3: Understand the concepts of Local rings and modules, Noetherian modules, Primary decomposition for modules
MT - 204: Classical Mechanics	CO1: Define and understand basic mechanical concepts related to advanced problems of classical mechanical systems and application of Langrangian formation
	CO2: Derived the Lagrange's equation and Hamilton principle.
	CO3: Demonstrate knowledge and understanding of fundamental concept-- the Cayley-Klein parameters, linear & angular momentum, Tensors and dyadic, and Principle axis transformations.
	CO4: Understand the concept of Legendre's transformation and apply to derived the Hamilton's Equation.

	CO5: Understand the concept of canonical transformation and apply to derived Poisson's Identity&Poisson's Bracket's
MT - 205: Python Programming	CO1: Acquire skill in Python package particularly basics of Python
	CO2: Represents data with the help of plotting in Python
	CO3: Understand symbolic mathematics and solve system of equations with Python programming
MSC-II	
MT-301: Topics in Functional Analysis	CO1: Know how functional analysis uses and unifies idea from vector spaces.
	CO2: apply fundamental theorem from theory of normed and Banach space.
	CO3: Understand and apply from theory of Hilbert spaces to others areas
MT - 302: Numerical Analysis	CO1: Acquire techniques of numerical methods.
	CO2: Solve system of equations with the help of numerical techniques.
	CO3: Find solutions of differential equations numerically.
MT - 303: Topics in Field Theory	CO1: Understand extensions on fields, Eisenstein criterion, reducible and Irreducible polynomials algebraically closed understanding fundamentals of Normal extensions, Separable and Inseparable extension. understand the applicability of Galois theory and Roots of Unity
	CO2: Solve the problems on solvability by radicals, basic knowledge of Transcendental extensions
MT - 304: Fluid Dynamics	CO1: understand the concept of fluid & their types, lines to study of fluid flow.
	CO2: understand the equation of motion of fluid.
	CO3: understand the information regarding three-dimensional flows.
	CO4: understand the concept of two-dimensional flows. understand various models in viscous flows.
MT 305-Statistical Techniques	CO1: Students will understand Basic concepts : Discrete and Continuous series, Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and Mode. Range, Quartile deviation, Mean deviation, Standard Deviation, Variance and coefficient of variation.
	CO2: Correlation: Definition, meaning, scatter diagram method, Karl Pearson's method, Probable error, Standard error and Rank correlation and concurrent deviations.
	CO3: Solving examples based on Sample space, discrete probability, Mathematical theory of probability, independent events, Addition and Multiplication theorems of probability, conditional probability and Baye's theorem.

	CO4: Making applications Theoretical distributions: Random variable, probability distribution of a discrete and continuous random variable Probability density function, mathematical expectation. Binomial, Poisson and Normal distributions and their properties.
	CO5: Analyzing statistical data to study Correlation, scatter diagram. Method, Karl Pearson's method, Probable error, Standard error and Rank correlation and concurrent deviations.
AC-301(C): Typesetting with Latex	CO1: Analyze material available at different source.
	CO2: Write articles/research notes/review on particular topic of interest develop research skills
MT-401: Linear Integral Equations	CO1: Know the relation between differential and integral equations, and how to change from one to another.
	CO2: Understand different kinds of kernels and use techniques for solving problems on each kind.
	CO3: Use Laplace transform, Fourier transform for solving a wide range of differential and integral equations.
MT-402: Operations Research	CO1: analyze the results and propose solutions to the decision-making processes in Management and Engineering.
	CO2: describe mathematical tools needed to evaluate decision problems.
	CO3: develop technical knowledge for replacement and inventory models to solve problem arises in allied fields.
MT - 403: Commutative Algebra	CO1: Understand the concept of exact sequences, projective and flat modules.
	CO2: Explain the concepts of Artinian module and Artinian rings.
	CO3: Learn the Valuation rings and Discrete valuation rings.
MT - 404: Advanced Abstract Algebra	CO1: Know the different types of ideals and their importance.
	CO2: Know Jacobson radical and prime radical of a ring with the relative Concepts.
	CO3: Know the direct sum of rings and some advanced results on Noetherian rings
MT 405 Algebraic Topology	CO1: Understand the fundamental concepts and methods in algebraic topology.
	CO2: Explain the well-known theorems: The Euler-Poincare theorem, Euler's theorem, Brouwer's fixed point theorem.
	CO3: Learn the relation between first homology group and fundamental Group.
MT – 406: Theory of Special	CO1: list the basic concept of integral calculus and special functions of

Functions	various engineering problem and to know the application of some basic mathematical methods via all these special functions
	CO2: Explain the applications and the usefulness of these special function
	CO3: Justify the use of gamma function, beta function special functions, Hyper geometric function and Hyper geometric series to: evaluate different types of integral calculus problems and solve differential equations.

UG –FY B. Sc. (Microbiology)

UG –FY B. Sc (2021-22)

MB 101: Microbial History, Diversity and Taxonomy	CO1: Aware about historical developments and their applications as technology
	CO2: Know general bacteriology and microbial aspects pertinent to bacteria, fungi and algae
	CO3: Understand the structural similarities and differences among various physiological groups of bacteria/archaea
	CO4: Aware about diversity of microorganism
	CO5: Learn ancient view about life continuity and concept of experiment
MB 102: Microscopy and Basic Bacteriology	CO1: Demonstrate theory in microscopy and their handling techniques and staining procedures
	CO2: Learn aseptic techniques and be able to perform routine culture handling tasks safely and effectively
	CO3: Demonstrate theory in microscopy and their handling techniques and staining procedures
	CO4: Comprehend the various methods for identification of unknown microorganisms
MB 201: Basic Biochemistry and Cytology	CO1: Understand the basic microbial structure and function and study the CO2: comparative characteristics of prokaryotes and eukaryotes and also Understand the structural architecture and differences among bacteria/archaea
	CO3: Know basic knowledge pertinent to cell biomolecules
MB 202: Microbial Techniques	CO1: Know general bacteriology and introduce microbial techniques for isolation of pure cultures of bacteria, fungi, algae and virus
	CO2: Demonstrate theory and practical skills in handling microbial culture
UG –S.Y. B. Sc (2021-22)	
MB - 301: Basic Microbial Enzyme and Metabolism	CO1: Understand the basic of microbial enzymology, nature of enzyme, their nomenclature, working mechanism, classification based on their action etc.
	CO2: Learn about nutrient uptake by microbes, various mechanism used to transport ions and molecules in microbial cells.

MB - 302: Microscopy and Microbial Ecology	CO1: Aware about concept of metabolism and its basic types.
	CO2: Cognizant about various pathways used by microbes to break down molecule and
	CO3: Generate ATP as a source of energy.
	CO4: .Aware about the regulations and energetics of various pathways.
	Understand aerobic, anaerobic respiration and fermentation
MB SEC- I: Microbiological Analysis of Air, Water and Soil	CO1: Competently explain various aspects of environmental microbiology
	CO2: .Aware about the pollution, Water and air-borne diseases and their transmission, methods of determination of sanitary quality of water and sewage treatment methods employed in waste water treatment
MB-401: Genetics and Immunology	CO1: understand the concepts like gene, chromosome, Structural know general terms used in genetics aware about genetic code
	CO2: organization of chromosome, extra chromosome: plasmid and its types
	CO3: learn mutation, type, agent causing mutation and their mechanism, test to detect mutation etc
MB - 402: Basic Industrial Microbiology	CO1: understand the basics of fermentation technology, screening techniques, microbial culture preservation techniques etc.
	CO2: know the concepts of inoculum development and media sterilization for fermentation process
SEC-II: Bio fertilizers and Bio pesticides	CO1: Completion of the course will give an overview of relevant use of microbial biofertilizers and biopesticides.
	CO2: The students will become familiar with the vast reserves of available microbial biodiversity that provide abundant opportunities to harness the ability of micro -organisms and their chemical constituents
	CO3: To sustainably minimize damage from pests or increase agricultural productivity and production
UG –T.Y. B. Sc (2021-22) Semester – V	
MB 501 Microbial Genetics	CO1: Acquaint with the concepts of Gene transfer and its Central Dogma.
	CO2: Able to learn the principles and applications of various molecular techniques
	CO3: To update applied knowledge in the field of microbial genetics.
MB502 Bioprocess Technology	CO1: Know a bioreactor, its parts, types and working.
	CO2: Get knowledge about the significant processes in a

	bioreactor like strain
	CO3: To understand the processes involved in fermentation.
	CO4: To introduce with concepts related to bioreactors and their types.
	CO5: To acquaint with concepts strain improvement and scale up.
MB 503 Metabolism	CO1: Get well versed with the catabolic and anabolic pathways.
	CO2: Understand the concept of ETC and principles of thermodynamics.
	CO3: Apply the principles of metabolism in various bacteria.
	CO4: To acquaint with the principles of Bioenergetics.
MB 504 Basic Immunology	CO1: Get acquainted with Antigenicity and Immunogenicity.
	CO2: Know the role of immune cells and organs and the functional mechanisms of each.
	CO2: Understand the structure and role of MHC and APC.
MB 505 Medical Microbiology I	CO1: Get a clear vision about various aspects of infectious diseases.
	CO2: Understand the principles of immunological phenomena associated with the infectious diseases
	CO3: Carry out fundamental or applied research in the field of Medical Microbiology
	CO4: To introduce the concepts in Medical Microbiology
MB 506(A) Food Microbiology	CO1: Know the concepts related to popular milk products, milk examination and spoilage.
	CO2: Comprehend knowledge regarding fermented food products, food spoilage and infection
	CO3: Understand diverse strategies for food preservation
MB 506 (B)- Pharmaceutical Quality Control & Quality Assurance	CO1: Understand microbial spoilage and preservation of pharmaceutical formulations during production and in products.
	CO2: Get hands-on knowledge of various methods / processes required in pharmaceutical quality control and assurance.
UG –T.Y. B. Sc (2021-22) Semester – VI	
MB 601 Molecular Biology	CO1: Get well versed with the regulatory mechanisms of Lactose and Tryptophan operon.
	CO2: Understand the principles and applications of advanced molecular techniques.
	CO3: Know the methodology involved in engineering of genes and its practical
MB 602 Fermentation	CO1: Understand fermentation processes involved in the production of various products.
	CO2: Get acquainted with the needs of a fermentation industry.

	CO3: Know about the large-scale production of various valuable products
MB 603 Enzymology	CO1: Know the role of coenzymes in enzyme action.
	CO2: Understand the regulation of enzymatic reactions pertaining to allosteric proteins and covalent modification.
	CO3: Acquire knowledge about purification of enzymes by various methods
MB 604 Advanced Immunology	CO1: Be well versed with protective immunity and tolerance in the body.
	CO2: Gain knowledge about the serological tests and their applications.
	CO3: Know the path that may help to overcome the challenges in the synthesis of novel
MB 605 Medical Microbiology II	CO1: Become aware about the various types of diseases and their sources.
	CO2: Justify the variation between viral, bacterial and other diseases.
	CO3: Explain prognosis of diseases and understand the role of medical microbiology in public health
MB 606 (A) Agricultural Microbiology	CO1: Understand classification of plant pathology with regional plant diseases.
	CO2: Know the concepts related to methods of plant disease control.
	CO3: Comprehend knowledge regarding Agricultural Microbiology
	CO4: Understand classification of plant pathology with regional plant diseases.
MB 606 (B)- Regulatory Practices and IPR	CO1: Understand role of regulatory practices in Pharmaceutical Industry and become aware of the patents norms.
	CO2: Have knowledge pertaining to Intellectual Property Rights and their protection

UG –FY B. Sc (2022-23)

MB 101: Microbial History, Diversity and Taxonomy	CO1: Aware about historical developments and their applications as technology
	CO2: Know general bacteriology and microbial aspects pertinent to bacteria, fungi and algae
	CO3: Understand the structural similarities and differences among various physiological groups of bacteria/archaea
	CO4: Aware about diversity of microorganism
	CO5: Learn ancient view about life continuity and concept of experiment
MB 102: Microscopy and Basic Bacteriology	CO1: Demonstrate theory in microscopy and their handling techniques and staining procedures
	CO2: Learn aseptic techniques and be able to perform routine culture handling tasks safely and effectively
	CO3: Demonstrate theory in microscopy and their handling techniques and staining procedures
	CO4: Comprehend the various methods for identification of unknown microorganisms
MB 201: Basic Biochemistry and Cytology	CO1: Understand the basic microbial structure and function and study the CO2: comparative characteristics of prokaryotes and eukaryotes and also Understand the structural architecture and differences among bacteria/archaea
	CO3: Know basic knowledge pertinent to cell biomolecules
MB 202: Microbial Techniques	CO1: Know general bacteriology and introduce microbial techniques for isolation of pure cultures of bacteria, fungi, algae and virus
	CO2: Demonstrate theory and practical skills in handling microbial culture

PG – M.sc I Microbiology

Microbiology (June 2021-22)	
MB 101: Microbial taxonomy and diversity	CO1: To basic and applied aspects of microbial diversity and systematic.
	CO2: To Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic.
	CO3:.To study about Impact of various groups of microbes on earth atmosphere, human, plant and animal health and technology development.
MB 102 : Microbial Biochemistry	CO1: To study Structure, properties, pathways and significance of biomolecules.
	CO 2 : Applications of microbial biomolecules in various fields.
MB 103 : Methods in Microbiology **MB- 104:Methods in Microbial Chemistry**	CO1: To study characteristics and significance of Extremophiles, Algae, Fungi, Viruses.
	CO2:To understand biomolecules
MB-105 Bioinstrumentation	CO1: To Principles, working and application of bioinstruments used in isolation and identification of microbes.
	CO2: structural determination of biomolecules.
MB 201: Molecular Biology and Bioinformatics	CO1: Understand basic and applied aspects of Genetic makeup of bacteria, algae, fungi and viruses.
	CO2: Causes, mechanisms and consequences of defect in gene/genome of microorganisms.
MB 202: Microbial Enzymology	CO1: Understand the concept of microbial enzymes, enzyme kinetics, regulation of enzyme activity, industrial applications of enzymes.
	CO2: Enzyme function in non-aqueous environment
MB 203: Immunology	CO1: Understand the concepts of functions of cells
	CO2: Types of hypersensitivity.
MB- 204 Methods in Molecular Biology and Immunology **MB-205 Methods in Enzymology**	CO1: Understand the concepts of techniques SDS , PAGE, electrophoresis.
	CO2: study plasmid isolation , conjugation , transformation.

M.Sc. Part II (2021-22) (Semester IV)	
MB - 401: Fermentation Technology	CO1: To introduce microbial fermentation, product recovery and bioreactor design CO2: To familiarize the student with separation techniques used for fermentation products CO3: To introduce the microbial process adopted for production of various metabolites
MB-402: Applied Molecular Biology	CO1: To extend the knowledge on molecular basis of mutation and repairs in microbes CO2: To understand different modes of gene regulation and expression mechanisms in bacteria CO3: To understand the principle role of plasmids, gene transfer methods and DNA replication
MB - 403: Agricultural Microbiology	CO1: To introduce various attributes of microbial ecology and plant microbe interactions CO2: To learn the student about how plant elicit defence against pathogens CO3: To know biocontrol, biofertilizers for plant nutrition, remediation of salt-affected soils
MB-404: Methods in Biotechnology	CO1: To train the student in basic molecular biology tools CO2: To learn gene transfer and gene expression CO3: To introduce microbial interaction with plant
MB-405: Laboratory course (Project Dissertation)	CO1: To give exposure to the students to research culture and technology CO2: To introduce students how to select a research topic, plan, perform experiments, collect data and analyse the data CO3: To foster self-confidence and self-reliance in the students as he/she learns to work and think independently

UG – B.Sc. (Physics)

F. Y. B.Sc.

PHY-101- Basic Mechanics	CO1: Apply the concept and knowledge of Basic Mechanics to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY-102 – Dynamics and Properties of Matte	CO1: Apply the concept and knowledge of Dynamics and Properties of Matter to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY-201- Electricity and Electrostatics	CO1: Apply the concept and knowledge of Electricity and Electrostatics to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY-202- Dielectrics, Magnetism and Electromagnetism	CO1: Apply the concept and knowledge of Dielectrics, Magnetism and Electromagnetism to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY-103 & 203 – Practical	CO1: To demonstrate their practical skills.
	CO2: To understand and practice the skills while doing Physics practical.
	CO3: To understand the use of apparatus and their use without fear.
	CO4: To correlate Physics theory concepts through practical.
	CO5: Understand the concepts of errors and their estimation.
PHY 301- Thermodynamics and Kinetic Theory of Gases	CO1: Apply the concept of use of knowledge of Thermodynamics and kinetic theory of gases to real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 302 A: - Electronics I	CO1: Apply the concept of use of knowledge of Electronics to real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 302 B -Instrumentation	CO1: Apply the concept of use of knowledge of Instrumentation to real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 401 – Waves, Oscillation and Acoustics	CO1: Apply the concept of use of knowledge of Waves and Sound to real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 402 – Optics and LASER	CO1: Apply the concept of use of knowledge of Optics and LASERS to real life problems
	CO2: Understanding of the course will create scientific temperament.
PHY 501 – Mathematical	CO1: Apply the concept and knowledge of Mathematical physics to

Physics	understand and solve real life problems
	CO2: Understanding of the course will create scientific temperament
PHY 502 – Solid State Physics	CO1: Apply the concept and use of knowledge of Solid state Physics understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament.
PHY 503 – Atomics and Molecular Physics	CO1: Apply the concept and knowledge of Atomic and Molecular Physics to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 504 – A- Electronics II	CO1: Apply the concept and use of knowledge of Electronics and Digital Electronics to real life problems.
	CO2: Understanding of the course will create scientific temperament
PHY 504 B –Instrumentation II	CO1: Apply the concept and use of knowledge of Instrumentation to understand and to solve real life problems.
	CO2: Understanding of the course will create scientific temperament
PHY 505 – Solar Energy and Applications	CO1: Apply the concept of use of knowledge of energy resources, solar radiations and conversion to real life problem.
	CO2: Understanding of the course will create scientific temperament.
	CO3: To impart knowledge of basic concepts of solar cell fundamentals.
	CO4: To provide the knowledge and methodology of conversion of solar energy into electricity.
PHY 506 D – Microprocessor I	CO1: Apply the concept and use of knowledge of Microprocessor to understand and to solve real life problems.
	CO2: Understanding of the course will create scientific temperament
PHY 601 – Quantum Mechanics	CO1: Apply the concept and use of knowledge of Quantum Mechanics to real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 602 – Material Science	CO1: Apply the concept of use of knowledge of Material Science to real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 603 – Nuclear Physics	CO1: Apply the concept and use of knowledge of Nuclear Physics to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 604 – Modern and Applied Physics	CO1: Apply the concept and use of knowledge of Modern and Applied Physics to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
PHY 605 – Basic Instrumentation Skills	CO1: Handle and use various basic mechanical and electrical measuring instruments

	CO2: Understanding of the course will create scientific temperament
PHY 606 D – Microprocessor II	CO1: Apply the concept and use of knowledge of Microprocessor to understand and to solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
General Course Outcomes	
CO1: Develop skill to impart practical knowledge in real time solution	
CO2: Design new instrument with practical knowledge	
CO3: Ability of modeling and solving physical problems	
CO4: Ability of searching solution of physical problems in scientific and technical literature	
CO5: Student should be comfortable while using an instrument	
CO6: Student should be understood to develop the various electronic circuit.	
CO7: Describe the nature of electromagnetic wave and its propagation through different media and interfaces.	
CO8: Explain charge particles dynamics and radiation from localized time varying electromagnetic sources	
CO9: Understand and explain the differences between classical and quantum mechanics	
CO10: Students are able to determine the charge, mass of any nucleus by using various spectrographs.	
CO11: Give a type of material be able to qualitatively describe the bonding scheme & its general physics properties as well as possible application.	
CO12: Give a type of bond is able to describe its physical origin as well as strength.	
CO13: Write programs to run on 8085 microprocessor based system.	

PG – M.Sc. (Physics)

Class: M.Sc.

PHY-101- Mathematical Method for Physics	CO1: Apply the concept and knowledge of Mathematical physics to understand and solve real life problems
	CO2: Knowledge about Vector calculus, Bessel Functions, Legendre Differential equations, complex variable, Laplace transforms, Fourier Series etc. and their physical significance is learnt by students. mathematical concepts are widely used in various physics derivations
	CO3: Understanding of the Basic Mathematical physics will create scientific temperament.
PHY-102 – Classical Mechanics	CO1: Apply the concept and use of knowledge of Classical Mechanics to real life problems.
	CO2: Understanding of the Classical Mechanics will create scientific temperament
	CO3: The Lagrangian and Hamiltonian approaches in classical mechanics.
	CO4: The classical background of Quantum mechanics and get familiarized with Poisson brackets and Hamilton -Jacobi equation.
PHY-103- Solid State Physics	CO1: Apply the concept and use of knowledge of Solid state Physics understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament
	CO3: Introducing the behavior of ferroelectric and ferromagnetic material in terms of their properties and applications.
	CO4: Introducing basic concepts via diffraction methods, lattice vibrations and free electrons, Hall effect.
	CO5: Understanding the basic transport properties of metals and semiconductors.
	CO6: Their introduction to the band structures for studying different materials
PHY-104 B – Electronics Instrumentation	CO1: Apply the concept and use of knowledge of Physics of Electronic Instrumentation to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
	CO3: Fabrication of integrated devices.
	CO4: Applications of electronic system.
	CO5: Bio-electric Signals and Electrodes
PHY-105 – Physics Laboratory I	CO1: Apply the concept and use of knowledge of the Basic Physics Laboratory course to real life problems.
	CO2: Amplifiers, diodes, various logic gates, flip-flops and multivibrator.
	CO3: Solar cell, Michelson interferometer, photovoltaic cell, lasers and various optoelectronic devices.
	CO4: Hall coefficient, Curie temperature, B-H curve.
	CO5: Digital electronics experiments.
	CO6: Understands in depth about thin film preparation and production controlling techniques and the application of thin films in the field of science & Technology.

PHY 201- Statistical Mechanics	CO1: Apply the concept and use of knowledge of Statistical Mechanics to understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament.
	CO3: Explain statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics.
	CO4: Apply the principles of statistical mechanics to selected problems.
	CO5: Grasp the basis of ensemble approach in statistical mechanics to a range of situations.
	CO6: To learn the fundamental differences between classical and quantum statistics and learn about quantum statistical distribution laws.
	CO7: Study important examples of ideal Bose systems and Fermi systems.
PHY 202 – Classical Electrodynamics	CO1: Apply the concept and use of knowledge of Classical Electrodynamics to understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament
	CO3: Have gained elaborated knowledge about the electrostatics and laws governing the charge distribution.
	CO4: Have gained ability to apply Laplace equation for calculating potentials
	CO5: Study in depth about Polarization, bound charges and boundary conditions.
	CO6: Realize the importance of application of Biot Savarts Law and Amperes law.
	CO7: Understand the relevance of different magnetization and the boundary condition of magnetic field.
PHY 203 Quantum Mechanics	CO1: Apply the concept and use of knowledge of Quantum Mechanics to real life problems.
	CO2: Understanding of the course will create scientific temperament
	CO3: Linear vector spaces, versed in Hilbert space, concepts of basis and operators and bra and ket notation.
	CO4: Both Schrödinger and Heisenberg formulations and their applications.
	CO5: Theory of angular momentum and spin matrices, orbital angular momentum and Clebsh Gordan Coefficients.
	CO6: Space -time symmetries and conservation laws, theory of identical particles, Oscillators
	CO7: Time Dependent and independent Perturbation Theory, Variation Method, WKB Method, Collision Theory and Relativistic Quantum Mechanics.
PHY 204 – Material Science	CO1: Apply the concept and use of knowledge of Physics of material Science to understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament.
	CO3: The student will get familiar with Crystal imperfections, Diffusion in solids and mechanical properties. Phase transformations and heat treatment
PHY 205 – Basic Physics Laboratory II	CO1: Apply the concept and use of knowledge of the Basic Physics Laboratory course to real life problems.
	CO2: Understanding of the Basic Physics Laboratory course which will create scientific temperament.
	CO3: Students will have hand on experience of : Zeeman effect using LG

	plate, Construction & study of Pb-Sn binary phase diagram Hall coefficient, Dielectric constant at high frequency, Magnetic susceptibility, Design, build & test square, triangular and sine wave generator etc.
PHY 301 – Atomics and Molecular Physics	CO1: Know about different atom model and will be able to differentiate different atomic systems, different coupling schemes and their interactions with magnetic and electric fields.
	CO2: Know about different atom model and will be able to differentiate different atomic systems, different coupling schemes and their interactions with magnetic and electric fields.
	CO3: Be able to apply the principle of Raman spectroscopy and its applications in the different field of science & Technology.
	CO4: To become familiar with different resonance spectroscopic techniques and its applications.
	CO5: To find solutions to problems related different spectroscopic systems.
PHY 302 – Material Synthesis and Preliminary Analysis	CO1: know about different atom model and will be able to differentiate different atomic systems, different coupling schemes and their interactions with magnetic and electric fields.
	CO2: Have gained ability to apply the techniques of microwave and infrared spectroscopy to elucidate the structure of molecules.
	CO3: Be able to apply the principle of Raman spectroscopy and its applications in the different field of science & Technology.
	CO4: To become familiar with different resonance spectroscopic techniques and its applications.
	CO5: To find solutions to problems related different spectroscopic systems.
PHY 303 – Systematic Material Analysis	CO1: After successful completion of the course, the student is expected to : know about Systematic Materials Analysis and Applications
	CO2: Have gained ability to apply the techniques of Introduction to Characterization Techniques: Importance of materials characterization
	CO3: The students will know the Mechanical response of Materials under - Infrared Spectroscopy, Ultra Violet & Visible Spectroscopy: Regions of UV-Visible radiation, Scanning Tunneling Microscopy: An Introduction to Quantum Mechanical Tunneling,
PHY 304 – Special Laboratory I	CO1: Apply the concept and use of knowledge of the Special Physics II course to real life problems.
	CO2: Understanding of the Special Physics II course which will create scientific temperament.
	CO3: Students will have hand on experience of Practical Based on : Measurement of thickness of thin film by Tolansky method, Material Synthesis, Material Science, Communication Electronics, Microprocessors.
PHY 305 Project I	CO1: Conceive a problem based on published research and carry out comprehensive survey of literature
	CO2: Plan and carry out task in given framework of dissertation and present the work in written and viva
	CO3: Use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues

	CO4: Learn handling of instruments, use of chemicals and how to conduct the experiments
	CO5: Learn how to present the project in power point and answer the queries to examiners as well as science of writing
AC 301 C – Seminar + Review Writing	CO1: Retrieve, analyses, comprehends the scientific information on a given topic and derives logical inferences.
	CO2: Compile the scientific information on a topic, verify for similarity index or plagiarism.
	CO3: Deliver the interactive presentation of scientific data before audience and participate in open discussion with confidence.
PHY 401 – Nuclear Physics	CO1: Apply the concept and use of knowledge of the Nuclear Physics course to real life problems.
	CO2: Understanding of the Nuclear Physics course which will create scientific temperament.
	CO3: Students will have hand on experience of theory Based on : General Properties of Nuclei Constituents of nucleus and their properties, Interaction of charged particle and EM radiations with matter Energy loss of charged particles, Particle accelerators and Radiation Detectors Classification of accelerators; Van-de-Graft generator etc.
PHY 402 – Nanomaterial's: Synthesis, Properties and Applications	CO1: Apply the concept and use of knowledge of the Nanomaterial's: Synthesis, Properties and Applications course to real life problems.
	CO2: Understanding of the Nanomaterial's: Synthesis, Properties and Applications Physics course which will create scientific temperament..
	CO3: Students will have hand on experience of Theory Based on : Comparison of Nanomaterial's with bulk material, Different Techniques for synthesis of Nanomaterial's of magnetic nanoparticles, Magnetic properties-Super paramagnetic materials.
PHY 403 A– Renewable Energy Sources	CO1: Apply the concept and use of knowledge of the Renewable Energy Sources course to real life problems.
	CO2: Understanding of the Renewable Energy Sources of Physics course which will create scientific temperament.
	CO3: Students will have hand on experience of Theory Based on: Solar Energy: Solar Energy conversion systems and their applications, Bio mass Energy Conversion Technologies: Origin of biomass, Biomass energy resources, Ocean Energy: Ocean as the potential energy resource.
PHY 404 – Special Laboratory II	CO1: Apply the concept and use of knowledge of Special Laboratory II: Practical and Applications course to real life problems.
	CO2: Understanding of Special Laboratory II: Practical Physics and Applications Physics course which will create scientific temperament.
	CO3: Students will have hand on experience of theory based on : Schottky barrier determination for various semiconductors, To analyze the Raman Spectrum of a sample, Nanoparticles, LASERS, Microwaves.

PHY 405 – Project II	CO1: Conceive a problem based on published research and carry out comprehensive survey of literature
	CO2: Plan and carry out task in given framework of dissertation and present the work in written and viva
	CO3: Use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues.
	CO4: Learn handling of instruments, use of chemicals and how to conduct the experiments
	CO5: Learn how to present the project in power point and answer the queries to examiners as well as science of writing

Class: B. Sc. (Zoology)

F.Y.B.sc- ZOO- 101 Animal Diversity I	CO1 : To Understanding Develop a foundational understanding of the principles of
	CO2: To taxonomy and classification, including the hierarchical organization of animal groups.
	CO3: To Identify and categorize major animal taxa based on morphological, anatomical, and molecular characteristics.
	CO 4: To analyze key evolutionary adaptations and innovations that has contributed to the diversity.
	CO5: To Understand the relationship between anatomical features and adaptive behaviors in different animal groups.
	CO6: To analyze the role of animal diversity in shaping ecosystem dynamics, community structure, and trophic interactions.
	CO7: To Understand the principles of island biogeography and examine case studies of species diversity and endemism in different biogeographic regions.
F.Y.B.sc- ZOO- 102 Animal Diversity II	CO1:To provide thorough knowledge about external morphological features of grasshopper
	CO2: To develop an understanding about internal structural and functional details of grasshopper including its reproductive system and life cycle. Learning outcomes: After successful completion of these course students.
	CO3: To Acquire knowledge about external morphological features of grasshopper.
	CO4: To Understand internal structural and functional details of grasshopper.
	CO5: To knowledge about reproduction and life cycle of grasshopper Unit Study of Grasshopper.
F.Y.B.sc- ZOO 201 Comparative Anatomy of Vertebrates	CO1: To gain a knowledge base for understanding vertebrate anatomy levels of organization and related functions.
F.Y.B.sc- ZOO 202 Developmental Biology of Vertebrates	CO2: To understand how organisms maintain gametes population.
	CO3: To understand fertilization process.
	CO4: To understand way of cleavage and different patterns to form zygote.
	CO5: To understand the fundamental embryonic development.
	CO6: To understand the complete process of formation of germ layers.
S.Y.B.sc- ZOO 231 Non-Chordates - II	CO1: To Understand the diversity and evolutionary relationships within non-chordate organisms.
	CO2: To Investigate physiological and ecological adaptations of non-chordates to their environments.
	CO3: To Explore the developmental processes and life cycles of various non-chordate species.
S.Y.B.sc- ZOO 232 Medical Zoology	CO1: To Investigate the relationship between animal species and human health, including zoonotic diseases and medical treatments derived from animals.
	CO2: To Study the physiological, anatomical, and genetic similarities and differences between humans and various animal species to enhance medical knowledge and treatments.

	CO3: To Analyze the impact of environmental factors, such as animal-borne pathogens and pollutants, on public health and develop strategies for prevention and control.
S.Y.B.sc- ZOO 241 Chordates – II	CO1: To Explore the anatomical, physiological, and behavioral diversity within chordates.
	CO2: To Investigate the evolutionary relationships and developmental processes among different chordate groups.
	CO3: To Understand the ecological roles and adaptations of chordates in various environments.
S.Y.B.sc- ZOO 242 Applied Zoology	CO1: To Develop sustainable practices for animal husbandry, welfare, and production.
	CO2: To Investigate the role of animals in ecosystems and their impact on biodiversity and environmental health.
	CO3: To Study and mitigate the interactions between humans and wildlife to prevent conflicts and promote coexistence.
T.Y.B.sc Zoo 351 Non-chordates III	CO1: To identify the taxonomic status of the entire non-chordates and discuss the evolutionary model of the group.
	CO2: To describe the general biology of few selected non-chordates useful to mankind.
	CO3: To know about some of the important and common protozoans, helminthes and arthropods of parasitic nature causing diseases in Nepal.
	CO4: To help knowing the basic concept of biosystematics and procedure in taxonomy.
	CO5: To make able to discuss some and very important phenomena in Non-chordate. To help in the general survey of non-chordates in the area.
T.Y.B.sc Zoo -352 Cell and Molecular biology	CO1: To Students can understand the structure and functions of cell organelles.
	CO2: To understand the basic structure and functioning of the genetic materials-DNA and RNA.
	CO3:To learn about molecular mechanism of DNA replication
T.Y.B.sc Zoo -353 Mammalian Histology and Physiology I	CO1: To acquire a basic background in histology and to understand the properties of cells and their interactions with one another as components of tissues and organs.
	CO2: To understand how structure and function correlate at the microscopic level.
	CO3: To be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination.
	CO4: To discuss the various birth defects for each organ system development.
	CO5: To describe the world's past biodiversity.
	CO6: To outline the history of life on earth; and to develop new ideas about evolution and ecology.
	CO7: To understand disease mechanisms.
	C83: To investigate environmental Adaptations.

	CO9: To evaluate drug effects. Support clinical decision-making.
T.Y.B.sc Zoo 355 Systematics, Evolution and Paleontology	CO1: To understand will be able to evaluate evidence provided by data to qualitatively and quantitatively investigate the role of natural selection in evolution.
	CO2: To Students will be able to apply mathematical methods to data from a real or simulated population to predict what will happen to the population in the future.
	CO3: To know evaluate data-based evidence that describes evolutionary changes in the genetic makeup of a population over time.
	CO4: To Students will be able to connect evolutionary changes in a population over time to a change in the environment.
	CO5: To understand will be able to justify data from mathematical models based on the Hardy-Weinberg equilibrium to analyze genetic drift and the effects of selection in the evolution of specific populations.
	CO6: To students will get to know the different types of sedimentary and metamorphic rocks and fundamentals of sedimentary and metamorphic petrology.
	CO7: To The students will able to understand the texture, structures and process of their formation.
T.Y.B.sc Zoo 356 B) Pest management	CO1: To acquire basic skills in the observation and study of nature.
	CO2: To understand inculcate interest in adopting biological control strategies for pest control.
	CO3: To know various pests affecting our local crops and select the best method for their control.
	CO4: To acquire basic knowledge and skills in agriculture management to enable the learner for self-employment.
T.Y.B.sc Zoo 361 Chordates III	CO5: To Understand the diversity and evolutionary relationships within non-chordate organisms.
	CO1: To Investigate physiological and ecological adaptations of non-chordates to their environments.
	CO2: To Explore the developmental processes and life cycles of various non-chordate species.
T.Y.B.sc Zoo 362 General Embryology	CO1: To acquire Students develop understanding of the development of embryology; basic human development (fertilization, implantation, embryo, placentation, development of three germ layers.)
	CO2: To understand molecular processes (induction, determination, differentiation and growth), and of processes at all stages of embryogenesis and exogenesis.
	CO3To understanding of histogenesis and organogenesis of particular tissues and organs.
	CO4:Students acquire knowledge of achievements in modern experimental
	CO5: To understand Embryology and their practical use in daily work of a doctor, and of the elements and significance of comparative embryology.
T.Y.B.sc Zoo 363 Mammalian	CO1: To acquire a basic background in histology and to understand the properties of cells and their interactions with one another as components of tissues and organs.

Histology and Physiology II	CO2: To understand how structure and function correlate at the microscopic level.
	CO3: To be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination.
	CO4: To discuss the various birth defects for each organ system development.
	CO5: To know describe the world's past biodiversity.
	CO6: To understand outline the history of life on earth; and (3) to develop new ideas about evolution and ecology.
T.Y.B.sc Zoo 364 Research Methodology	CO1: To Understanding Research To the Research Methodology course in zoology is to provide students with a comprehensive understanding of research design and methodology.
	CO2: To students will learn about the various research designs used in zoological studies, such as observational studies, experimental designs, field surveys, and meta-analyses.
	CO3: To understand & developing Research Skills and Ethical Considerations: The second objective is to develop students' research skills and instill ethical considerations in zoological research.
	CO4: To students will learn how to formulate research hypotheses, design research projects, and develop research proposals.
T.Y.B.sc Zoo 365 Micro technique	CO1:To prepare the whole mounts microscopic slides and staining reactions.
T.Y.B.sc Zoo 366 C) Applied Zoology III (Permaculture, Poultry and Fisheries)	CO2: To understand main purpose of Poultry Farming is the production of eggs, meat, etc.
	CO3: To understand Numerous chickens were grown in poultry farms for the production of eggs and meat.
	CO4: To Evaluate drug effects.
S.Y.B.sc ZOO 302 Biochemistry	CO1: To study molecular structures and functions.
	CO2: To Investigate metabolic pathways.
	CO3: To understand enzyme mechanisms.
	CO4: To Explore biochemical interactions in cells.
	CO5: To apply biochemistry to medical research and biotechnology.
S.Y.B.sc SEC I Apiculture	CO1: To Promote sustainable beekeeping practices for honey production and pollination services.
	CO1: To conduct research to improve honeybee health and resilience against pests, diseases, and environmental stressors.
	CO1: To educate beekeepers and the public about the importance of bees in ecosystems and agricultural sustainability.
S.Y.B.sc ZOO 401 Genetics	CO1: To understand Student can gain knowledge about inheritance of characters and factor responsible for this.
	CO2: To study the basic concepts of genetic principles.
	CO3: To learn the principles of chromosome, syndromes and gene transformation.

S.Y.B.sc ZOO 402 Evolutionary Biology	CO1: To better understanding of species diversity and evolutionary relationships.
	CO2: To insights into adaptation and survival strategies in changing environments.
	CO3: To learn advances in conservation biology and preservation of biodiversity.
	CO4: To understand &Identification of evolutionary mechanisms such as natural selection and genetic drift.
	CO5: To application of evolutionary principles in medicine and agriculture.
S.Y.B.sc SEC II Medical Diagnostics	CO1: To develop accurate and efficient diagnostic tests for detecting diseases and health conditions.
	CO2: To improve early detection and monitoring of diseases to facilitate timely and effective medical interventions.
	CO3: To enhance diagnostic accuracy and reliability through advancements in technology and methodologies.
T.Y.B.sc Zoo-501 Reproductive Endocrinology	CO1: To learn about the various aspects of reproductive biology and endocrinology.
	CO2: To acquire a broad understanding of the hormonal regulation of physiological processes.
	CO3: To create awareness of new technologies in assisted reproduction as well as contraceptive methods.
T.Y.B.sc Zoo-502 Cell and Molecular Biology (CMB)	CO1: To understand the basic structure of cells, tissues and their working system.
	CO2: To Know the handling skill in laboratory methods of estimation, determination, working of cells and their molecules.
	CO3: To Use of binocular research microscope and bioinstrumentation in laboratory.
T.Y.B.sc Zoo-503 Mammalian Histology	CO1: To Understanding study the Histology of different tissues and systems of mammals.
T.Y.B.sc Zoo-504 Animal Biotechnology	CO1: To Studying animal cell and tissue culture techniques.
	CO2: To developing genetically engineered products for human animal welfare
	CO3: To Developing gene transfer technologies, cloning, transgenic animals
	CO4: To Studying hybridism technique and production of antibodies.
	CO5: To Impart knowledge about stem cell research.
T.Y.B.sc Zoo-505 Public health and hygiene	CO1: To provide knowledge and understanding regarding life style diseases.
	CO2: To promote an understanding of the value of good life style practices, physical fitness and healthy food habits for life style disease management.
	CO3: To motivate them to practice yoga and meditation in day-to-day life.
T.Y.B.sc Zoo506 (A) Pest Management	CO1: To acquire basic skills in the observation and study of nature.
	CO2: To inculcate interest in adopting biological control strategies for pest
	Control.
	CO3: To know various pests affecting our local crops and select the best method for their control.
	CO4: To acquire basic knowledge and skills in agriculture management to enable the learner for self-employment.
T.Y.B.sc Zoo-601 Study of	CO1: To understand habit, habitat and taxonomic status of Leech as invertebrates and Calottes as vertebrates.

Leech & Calotes.	CO1: To explain the basic aspects of structural and functional details of Leech and Calottes.
T.Y.B.sc Zoo Embryology	CO2: To study the various stages involved in the developing embryo.
	CO3: To study the initial developmental procedures involved in chick.
	CO4: To know the processes involved in embryonic development and practical applications of studying the chick embryology.
T.Y.B.sc Zoo-603Applied Zoology	CO1: To acquire basic knowledge and skills in applied branches of zoology.
	CO2: To acquire the students with self-employment capabilities.
	CO2: To provide scientific knowledge of profitable farming.
	CO3: To get technical awareness of vermin technology and vermicomposting technique.
	CO4: To convert unwanted, organic matter, particularly food scraps and paper into fertile soil.
	CO5: To learn about all aspects of raising poultry for their meat and eggs.
	CO6: To know the economics, problems and prospects of Vermicomposting and Poultry.
T.Y.B.sc Zoo-604 Micro techniqu e	CO1: To understand prepare the whole mounts microscopic slides and staining reactions.
T.Y.Bsc Zoo-605 Research Methodol ogy	CO1: To understand some basic concepts of research and its methodologies.
	CO2: To select and define appropriate research problem and parameters.
	CO3: To Understand the various techniques of Data Collection Observation, Questionnaire, Interview Schedule; Case Study, Social Survey, Content Analysis.
	CO4: To understand Describing various types of Sampling.
	CO5: To understand elaborate on Data Processing and Data Analysis.
	CO6: To understand writing of dissertations, project proposals, project reports, research papers.
T.Y.B.sc Zoo606(B)Sericult ure	CO1: To give scientific knowledge about mulberry cultivation, silkworm rearing techniques to the students.
	CO1: To train the students in compressive silk production techniques.
M.Sc.- Zoo-101 Structure and Functional Anatomy of Invertebrates	CO1: To understand the structural and functional anatomy of no chordates.
	CO2: To acquire the knowledge about locomotors, nutritional and organs of digestion and its mechanism.
	CO3: To understand the respiratory, excretory and nervous coordinating organization.
	CO4: To learn about the larval forms, colonial and social life of invertebrates.
MSc-I Zoo-102 Cellular organization and Developmental Biology	CO1: To understand the cellular organization with specific reference to plasma membrane, cell organelles and cell cycle.
	CO2: To acquire the knowledge about basic concept of gametogenesis, fertilization and embryonic development.
	CO3: To understand the concept of aging, apoptosis and senescence.

	CO1: To learn about the morphogenesis and organogenesis in specific animals.
M.Sc.-I Zoo-105 Goatery	CO1: To understand start Goat rearing as a small business enterprise by liaising with different stake holders To manage Goat rearing effectively as a small business enterprise.
	CO2: To gain all round knowledge of Goat rearing as a business enterprise rather than as a community profession.
MSc-I Zoo-201 Structure and Functional Anatomy of Vertebrates 4	CO1: To understand habit, habitat and taxonomic status of vertebrate animals.
	CO2: To know the basic aspects of structural and functional anatomy of vertebrate animals.
	CO3: To learn about adaptive radiation in vertebrates.
M.Sc.-I Zoo-202 Biochemistry	CO1: To know fundamental aspects of Biochemistry.
	CO2: To study different biological reaction mechanism.
	CO3: To know the importance of metabolism.
	CO4:To study the biochemical molecules and their interactions
M.Sc.-I Zoo-203 Tools and Techniques in Biology	CO1: To know basic terms of biological techniques.
	CO2: To study the applications of the various biological techniques.
	CO3: To know the principle, working and applications of basic techniques used in biology.
M.Sc.-I Zoo-205 Aquaculture & Ecology	CO1: To know the differentiating ability of abiotic and biotic components of ecosystem, interactions of various factors of ecosystem.
	CO2: To know the various biodiversity, hotspot and conservation of ecosystems.
M.Sc.-II Zoo301 C)Entomology I	CO1: To understand habit, habitat and taxonomic status of vertebrate animals.
	CO2: To know the basic aspects of structural and functional anatomy of vertebrate animals.
M.Sc.-II Zoo-302Enzymology and Immunology	CO3: To acquire the flavor of modern aspects of Zoology/Animal Sciences.
	CO4: To enable the students to study Enzymology and Immunology as a core course.
	CO5: To learn practicing skill so that to join public or private labs.
M.Sc.-II Zoo-305 (B) Forensic Zoology	CO1: The programmer has been designed in such a way so that the students get the flavor of modern aspects of Zoology/Animal Sciences.
	CO2: To know aims to enable the students to study Forensic Science as a elective course.
M.Sc.-II Zoo-401 C) Entomology II	CO1: To develop a strong foundation in entomology, including understanding of the importance of insects to human society.
	CO2: To know the process of digestion and metabolism, circulation, excretion, respiration, role of hormone in insect reproduction.
	CO3: To familiarize the students with identification of insect pests, vectors and their control methods.

	CO4: To develop a sufficient background for those students who wish to study more advanced entomological topics.
M.Sc.-II Zoo-402 Molecular Biology	CO1: To understand the basic structure of cells, tissues and their working system.
	CO2: To Know the handling skill in laboratory methods of estimation, determination, working of cells and their molecules.
	CO3: To Use of binocular research microscope and bioinstrumentation in laboratory.
M.Sc.-II Zoo-405 (B)Writing & presenting scientific research paper	CO1: To understand the process of writing, presentation and publication of research paper .
	CO2:To learn the skills related to presentation of paper
	CO3:To avoid the mistakes in writing research paper
F.Y.B.sc ZOO 101 Invertebrate Zoology	CO1: To understand familiarize the student with the basic concept of Invertebrate Zoology.
	CO2: To understanding of the ecological relationships of the local species.
	CO3: To identify common and unknown species.
	CO4: To understand the invertebrate taxonomy and diversity.
F.Y.B.sc ZOO 102 Grasshopper The No chordate	CO1: To provide thorough knowledge about external morphological features of grasshopper.
	CO2: To develop an understanding about internal structural and functional .details of grasshopper including its reproductive system and life cycle.
F.Y.B.sc ZOO 201 Vertebrate Zoology	CO1: To understand General Characters, habit, habitat and distribution of vertebrate animals.
	CO2: To understand the classification of vertebrate animals.
	CO3: To know Accessory Respiratory Organs.
	CO4: To know Migration in Fishes.
	CO5:To understand Metamorphosis in frog and Parental care in Amphibians
	CO6: To know Poisonous and non-poisonous snakes, Importance of snake venom.
	CO7: To know Flight adaptations in birds, Migration in birds.
	CO8: To understand Origin and Evolution of mammals.
F.Y.B.sc ZOO 202 Frog-The Chordate	CO1: To understand habit, habitat and taxonomic status of vertebrates.
	CO2: To explain the basic aspects of structural and functional details of Frog.
M.Sc.-I ZOO-411Comparative Anatomy of Invertebrates	CO1: To understand the structural and functional anatomy of Invertebrates.
	CO2: To acquire knowledge about locomotors, nutritional and organs of digestion and its mechanism.
	CO3: To understand the respiratory, excretory and nervous coordinating organization.
	CO4: To learn about the larval forms, colonial and social life of invertebrates.
M.Sc.-I ZOO-412 Biochemistry	CO1: To acquire knowledge regarding biochemical aspects of life.
	CO2: To understand different type of metabolic process and energetics thereof.
	CO3: To make students familiar with details of enzymes, classes and factors influencing rate of enzymatic reactions.
	CO4: To learn about hormones, neurotransmitters and its mode of action.

	CO5: To gain the insight about Proteomics and Genomics with its applications.
M.Sc.-I ZO-413 Biostatistics	CO1: TO understand the students with a solid understanding of the fundamental concepts and principles of biostatistics.
	CO2: To understand & apply Statistical Methods to Biological Data: The second objective is to enable students to apply statistical methods to analyze and interpret biological data effectively.
	CO1: To know Interpret and Critically Evaluate Research Findings.
	CO2: To acquire biostatistics course aims to develop students' ability to interpret and critically evaluate research findings in zoology.
	CO3: To understand Experimental Design: The fourth objective is to equip students with the knowledge and skills to apply biostatistics in designing scientific experiments in zoology.
M.Sc.-I ZOO-416 Wildlife Conservation and Management	CO1: To understand provide graduates in Biology a specialization in the field of Biodiversity, Conservation and Wildlife Management.
	CO2: To understand & generate qualified students who can directly get jobs in the allied fields of Biodiversity, Conservation and Wildlife Management.
	CO3: To understand & generate qualified postgraduates who can be part professional organizations working in the field of conservation and environment protection.
	CO4: To generate a team of post graduates who can take up jobs related to the environment in educational institutions.
M.Sc.-I -ZOO417 Research Methodology	CO1: To learn the basics of science, scientific research its importance.
	CO2: To learn the Ethics and plagiarism precautions to be taken while doing research.
	CO3: To understand the detailed referencing and literature review procedure before beginning the research.
	CO4: To understand the process of writing research papers, research project report and research proposal.
	CO5: To learn various advanced tools useful for the science and aware about the laboratory safety.
M.Sc.-I ZOO-421 Comparative Anatomy of Vertebrates	CO1: To understanding of the fundamental principles of comparative anatomy.
	CO2: To understand skills in anatomical observation and comparison.
	CO3: To understand evolutionary relationships among vertebrate groups: Comparative anatomy provides valuable insights into the evolutionary relationships among different vertebrate groups.
	CO4: To acquired &Apply comparative anatomy to broader scientific contexts: The final objective of the course is to enable students to apply their knowledge of comparative anatomy to broader scientific contexts.
M.Sc.-I ZOO-422 Immunology	CO1: To Understand all basics components of the immune system.
	CO2: To gain knowledge of how the immune system works building on their previous knowledge from biochemistry, genetics, cell biology and microbiology.
	CO3: To understand the role of cytokines in immunity and immune cell activation; and be able to identify and characterize cytokines of particular immune importance; • understand the significance the Major Histocompatibility Complex in terms of immune response and transplantation.

ZO-423 Tools and Techniques in Life Sciences	CO1: To understand course is to introduce students to a range of essential tools and techniques used in life sciences research in the field of zoology.
	CO1: To Understand experience in using various laboratory techniques relevant to zoology.
	CO1: To learn about field sampling techniques and data collection methods specific to zoology.
	CO1: To Know Analysis and Interpretation: Students will learn how to analyze and interpret data collected using tools and techniques in life sciences.
M.Sc.-I ZOO-426 Environmental Biology	CO1: To understand the Population and age structure of Population. CO2: To understand Growth of organism and models of population growth. CO3: To acquire knowledge of prey-predator system.
	CO4: To know Competition in Nature and concept of niche.
	CO5: To understand Community, Diversity and Ecological Succession.
	CO6: To Understanding the need of conservation.