BA Functional English

Program Outcome

The major aim of teaching English in Indian Universities is to enable the learners to gain English language proficiency in such a way that it improves their functional efficiency and employability. This programme in Functional English especially tries to incorporate a multidisciplinary approach into the functional aspects of the English language to make it more versatile and utilitarian.

Program Specific Outcome

- Developing advanced level English language skills in the learners
- Providing/creating appropriate materials for training the students in basic language skills (Listening, Speaking, Reading and Writing)
- Application of English in prospective job areas—Media, Business, Creative Writing, Translation, Advertising, Film, Sports, Entertainment etc.
- Fostering human values and developing literary/cultural sensibility through exposure to literature in English and encouraging critical thinking and creative expression
- Encouraging the use of ICT for learning, gaining functional efficiency and dissemination of knowledge
- Providing support for IELTS, TOEFL and other international language testing systems and other competitive examinations
- Construction of a solid platform for the students to take off to higher studies in diverse fields: English Literature, Media Studies, Journalism, Social Work, Management etc

Course outcome

1.1B01FNG Contemporary English Grammar
To enable students to internalize language rules, structure and usage
2. 2B02FNG English Pronunciation and Conversation
To create in the students an awareness of the functioning of the English sound system

3. 3B03FNG Introduction to English Literature
To enable the students to develop a sense of history for better understanding
and appreciation of literature.
4. 3B04FNG Fundamental Writing Skills
To develop in them the ability to write effective texts for various contexts/needs,
leading to effective written expression
5.4B05FNG ICT for Academic Purposes
To make the learners computer literate so that they will be able to use computers
efficiently for both academic and non academic work they are required to take up in
their daily life
6. 4B06FNG Indian Writing in English
To give students an introduction to the rich body of Indian English writing and its concerns
7. 5B07FNG Introduction to Linguistics
To develop in the students an awareness of the structural organization of language at
different levels of expression
8. 5B08FNG Introduction to Media Studies
To equip students with the skills required to critically analyze and evaluate media
Content
9. 5B09FNG Translation Studies
To familiarize the students with the basic theories and functions of translation
10. 5B10FNG Introduction to Theatre Studies
The course is intended to provide the student with a broad overview of theatre in
terms of dramatic structure, style and history
5B11FNG Methodology of Language & Literature

To help the students understand the place of language studies among humanities disciplines and their relevance to modern education

6B12FNG Introduction to Literary Theory & Criticism

To enable students to see the historical continuities/discontinuities in ideas and critical practice

6B13FNG Introduction to Creative Writing

To introduce the students to different types of literary writing that can stimulate their creative, imaginative, aesthetic and literary sensibilities

6B14FNG English Language Teaching

To provide the students with an insight into the theories of language acquisition, learning and teaching

6B15FNG Film Studies

To enable students to understand and study cinema as a popular art form evolved from the need for cultural communication in the age of mechanical reproduction

6B16FNG Project

To hone the students' skills of conceptualizing themes/ideas and documenting them in appropriate text formats

5D01FNG Basic English Use

To familiarize the students with the use of English in communication and help them acquire the ability to expand their linguistic resources to enhance communicative competence

Common Courses in English

1A01ENG COMMUNICATIVE ENGLISH I

The course broadly aims at helping the students to select and use a variety of speaking, listening, and writing strategies to clarify meaning and reflect understanding, interpretation, application, and evaluation of content, processes, or experiences.

1A02ENG LANGUAGE THROUGH LITERATURE I

The course broadly aims at improving students' insights about literature, humanity and social values in conjunction with the technicalities or mechanics of writing such as grammar, register, generic conventions and disciplinary guidelines

2A03ENG COMMUNICATIVE ENGLISH II

To equip the students with a mature command of the English language through learner-centred and activity-oriented English Language learning.

2A04ENG LANGUAGE THROUGH LITERATURE II

This course has been designed in accordance with UGC stipulations that Environmental Issues be included in the Common Paper of English. The paper aims at enhancing the awareness of students regarding vital issues pertaining to the environment.

3A05ENG: READINGS IN PROSE &POETRY

The course broadly aims at enabling students to understand the different stylistic, thematic and technical qualities present in the literature of different cultures and historical periods and the specific ways in which language has shaped the reactions, perceptions and beliefs of the local, national, and global communities

4A06ENG : READINGS IN FICTION AND DRAMA

The student will learn to respond critically to drama and fiction, formulate insights about the texts, learn to construct meaning and identify the characteristics that distinguish literary forms.

B. Sc. Chemistry

Program outcome

B.Sc Chemistry program is aimed to enable the students to understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their application in the day-to-day life. It also helps to acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.

Program Specific outcomes
- ✓ Provide a broad foundation in chemistry that stresses scientific reasoning and Analytical problem solving with a molecular perspective
- ✓ Achieve the skills required to succeed in graduate school, the chemical industry and professional school.
- ✓ Get exposures of a breadth of experimental techniques using modern instrumentation.
- ✓ Understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.
- ✓ Understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.
- ✓ Learn the laboratory skills needed to design, safely and interpret chemical research.
- ✓ Acquire a foundation of chemistry of sufficient breadth and the depth to enable them to understand and critically interpret the primary chemical literature.
- ✓ Develop the ability to communicate scientific information and research results in written and oral formats.
- ✓ Learn professionalism, including the ability to work in teams and apply basic ethical principles.

Course outcome

1B01CHE: Theoretical and inorganic chemistry

Describes chemical bonding from a quantum mechanical perspective using molecular orbital theory

2B03CHE: Analytical Chemistry

Explains the fundamentals of analytical chemistry and steps of a characteristic analysis and expresses the role of analytical chemistry in science. Compares qualitative and quantitative analyses and experimental mean with a true value. Evaluates the effects of systematic errors on analytical results

1B02CHE & 2B02CHE Core Course Practical I Volumetric Analysis

Express the titrimetric analysis methods, terms such as standard solution, titration, back titration, equivalence point, end point, primary and secondary standard. Solves volumetric calculations.

3B04CHE Organic Chemistry-I

Explains the hybridization and geometry of atoms and the three-dimensional structure of organic molecules. Discusses reactivity and stability of an organic molecule based on structure, including conformation and stereochemistry

4B06CHE Organic Chemistry-II

Develops an understanding of nucleophiles, electrophiles, electronegativity, resonance, prediction of mechanisms for organic reactions. Understands How to use their understanding of organic mechanisms to predict the outcome of reactions

6B14CHE Organic Chemistry III

Recognize stereochemistry and be able to apply the Cahn-Ingold-Prelog system to designation of stereochemistry (E/Z or R/S). Learn many of the reactions of alkanes, alkenes, polyenes, alkynes, aromatic, carbonyl, and amine compounds, and close related species. Be able to predict reactions involving these functional groups.

5B07CHE Inorganic Chemistry-I

Understands bonding fundamentals for both ionic and covalent compounds, including electro negativities, bond distances and bond energies using MO diagrams and thermodynamic data.

5B08CHE Inorganic Chemistry-II

Develops knowledge about the bonding models, structures, reactivities, and applications of coordination complexes, boron hydrides, metal carbonyls, and organometallics.

5B09CHE Physical Chemistry-I

Understand various phenomena occurring in gaseous, liquid and solid states, states of matter and how they depend on temperature and pressure as well as how they co-exist in phase equilibria.

5B10CHE Physical Chemistry- II

Concepts in thermodynamics, different thermodynamic quantities such as heat and work and how they are measured related or transformed from one to the other. Application of phase rule to different types of chemical systems.

6B15CHE: Physical Chemistry- III

Learns the concept of electrochemistry and application of electrochemical cells. Develops understanding about chemical kinetics- how reaction rates are measured and represented in rate laws, and applications of chemical kinetics in studying enzyme mechanisms.

6B16CHE Physical Methods in Chemistry

Be able to solve problems employing spectroscopic methods including mass spectrometry, infrared and NMR spectroscopy. Recognize and know how to test for exchangeable hydrogens in a molecule. Identify the peaks that correspond to the solvent and to the internal reference (TMS). Deduce unknown structures and fully assign an NMR spectrum to the structure

5B12CHE: Core Course practical - Gravimetric Analysis

Able to define the different gravimetric methods, the properties of precipitate and precipitating reagent. Uses the gravimetric calculations.

6B12CHE: Core Course practical - Organic Chemistry

Understands how to perform common laboratory techniques, including reflux, distillation, steam distillation, recrystallization, vacuum filtration, aqueous extraction, thin layer chromatography, column chromatography. Students will learn and apply basic techniques used in the organic

6B18CHE : Core Course Practical - Physical Chemistry

Expresses the terms such as electrolyte, acid, base, conjugate acid/base. Explains the chemical equilibrium and equilibrium constant types. Describes the activity coefficient and properties of activity coefficient. Know the significance of pKa values in experimental steps.

BSc.Physics

Programme Outcome

The BSc. Physics course aims at developing interest in physics in order to continue further in the field of physics or to attain the necessary physics and allied background which an employer needs.

Programme Specific Outcome

- ✓ Conceptual knowledge is one of the major aims of this programme.
- ✓ Students are provided with coaching classes for various competitive exams like IIT-JAM, JEST, CUCET, CUSAT-CAT etc.
- ✓ Well-equipped laboratory is available for developing interests in experimental physics and minor projects.

Course outcome

1) 1B01PHY: PHYSICS PRIMERS

This course aims at developing primary ideas and a general approach in the perspectives of physics. It deals with perspectives of physics, mathematical methods in physics and waves and oscillations.

2) 2B02PHY: ELECTRONICS I

Students enters to the world of electronics through this course. It deals with bipolar junction transistors and their biasing, field effect transistors and their biasing, number systems, operations and codes and logic gates.

3) 3B03PHY: ALLIED PHYSICS

This course aims at developing ideas including solid state physics, properties of matter and electricity. Students will get a clear picture about allied physics.

4) 4B04PHY: OPTICS

Optics deals with the perspectives of light. This course discusses matrix method in paraxial optics, interference by division of amplitude, Fresnel diffraction, Fraunhoffer diffraction, polarization and double diffraction.

5) 5B06PHY: ELECTRODYNAMICS-I

This course aims at developing fundamental concepts of electromagnetic theory. It includes electrostatics, electrostatic fields in matter and magnetostatics.

6) 5B07PHY: THERMAL PHYSICS

Thermal physics gives an introduction to thermodynamics and statistical mechanics. It deals with fundamental concepts, work, heat and first law of thermodynamics, heat engines and second law of thermodynamics, entropy and thermodynamic potentials and statistical mechanics.

7) 5B08PHY: CLASSICAL MECHANICS AND RELATIVITY

This course takes the students to go through concepts of mechanics. It deals with relativity, linear and angular momentum, potentials and fields and Lagrangian formulation.

8) 5B09PHY: PYTHON PROGRAMMING

Computational physics concepts are included in this course. Python language chosen for the course. It includes programming in python, arrays and matrices, data visualisation, and numerical methods.

9) 5B10PHY: ATOMIC, NUCLEAR AND PARTICLE PHYSICS

High energy physics concepts are discussed in this course. It deals with atomic structure, many-electron atoms, nuclear structure, nuclear transformations and elementary particles.

10) 6B11PHY: ELECTRODYNAMICS-II

This course is a continuation of electrodynamics-I and discusses modern electromagnetic theory concepts. It deals with magnetostatic fields in matter, electrodynamics, electromagnetic waves, applications of static fields and time varying electromagnetic fields.

11) 6B12PHY: PHOTONICS & SPECTROSCOPY

Concepts of light based applications and experimental techniques such as spectroscopy are discussed in this course. This course deals with the lasers, holography, fibre optics and spectroscopy.

12)   6B13PHY: QUANTUM MECHANICS

Quantum mechanical concepts are belongs to modern physics perspective. This course discusses introductory concepts of quantum mechanics such as origin of quantum theory, wave mechanical concepts, eigen functions and eigen values, one dimensional eigen value problems and hydrogen atom.

13)   6B14PHY: ELECTRONICS-II

This course is a continuation of electronics-I course. In this course, AC analysis of BJT circuits and small signal amplifiers, feedback in amplifiers, signal generators and power amplifiers, operational amplifiers and its applications, standard forms of Boolean expressions and functions of combinational logic are discussed.

14)   PRACTICAL-I,II & III

The three practical physics courses aims at developing experimental skills to the students.

Department of Commerce (B.Com)

The Bachelor of Commerce degree (B.Com)has the objective of preparing graduates who embody the Mary Matha Arts and Science college graduate attributes. Mainly aims to develop each one as a men and women with social values,it seeks to provide students with the knowledge and technical skills necessary to understand and participate in the modern business world, to prepare them for subsequent graduate studies and to allow them to achieve the highest level of success in their professional careers.

PROGRAMME OUTCOME
PO – 1: After completing three years of Bachelor's degree in Commerce (B.Com program), students would gain a thorough knowledge about the fundamentals of Commerce and Computer Applications.
 PO – 2: The B Com curriculum offers specialization in Computer Applications and practical exposures which would equip the student to face the modern-day challenges in IT and allied subjects.
PO -3: The all-inclusive outlook of the course offer a number of value based and job oriented courses ensures that students are trained into up-to-date.
PO-4: Develop managerial and entrepreneurial skills necessary to venture into the corporate sector.

PROGRAMME SPECIFC OUTCOME

PSO – 1: Students will acquire conceptual knowledge, logical reasoning ability and analytical skills in the domain of commerce
PSO – 2 Students will gain systematic and subject skills within various disciplines of commerce, business, accounting, tax, economics, finance, auditing and marketing
PSO – 2: Learners will be able to recognize features and roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react aptly when confronted with critical decision making

PSO – 3: Students will demonstrate progressive affective domain development of values, the role of accounting in society and business.

PSO – 4: Students will learn relevant financial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.

PSO – 5: Learners will be able to prove proficiency with the ability to engage in competitive exams like CA, CS, ICWA and other courses

PSO – 6: : Learners can also acquire practical skills to work as tax consultant, audit assistant and other financial supporting services

PSO–7: Learners will involve in various co-curricular activities to demonstrate relevancy of foundational and theoretical knowledge of their academic major and to gain practical exposure

PSO – 8: Learners will be able to do higher education and advance research in the field of commerce and finance

PSO – 9: Students will be able to demonstrate progressive learning of various tax issues and tax forms related to individuals

PSO – 10 :Students will be able to demonstrate knowledge in setting up a computerized set of accounting books
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COURSE OUTCOME

1.1B01 COM (CORE –I): MANAGEMENT CONCEPTS & PRINCIPLES

> To acquaint the students with the principles of management, help in understanding various functions of management and developing management skills.

2.1B02COM(CORE –II): FINANCIAL ACCOUNTING

> To develop among the students a conceptual understanding of the fundamentals of financial accounting system and to equip them with basic skills for recording various types of business transactions. To help the students to acquire the conceptual knowledge of accounting and to help them to learn the techniques of preparing the financial statements.

3.1C01 COM(COMPL - 1): BUSINESS STATISTICS

> To familiarize the students with the basic statistical tools used to summaries and analyse quantitative information for decision making.

4.2B03 COM(CORE –III) :PRINCIPLES OF MARKETING
> To provide basic knowledge about the concepts, principles, tools and techniques of marketing

5.2B04 COM(CORE –IV): HUMAN RESOURCE MANAGEMENT
> The objective of this course is to familiarize the students with the basic principles of Human Resource Management (HRM).

6.2C02COM(COMPL- I1):QUANTITATIVE TECHNIQUES FOR BUSINESS DECISION
> To acquaint students with the basic statistical tools which have application in business and economic situations.

7.3A11 COM (COMMON XI): DISASTER MANAGEMENT
> The main objective of the course is to study the emerging approaches in disaster reduction & management.

8.3A12 COM (COMMON XII): NUMERICAL SKILLS FOR BUSINESS

To understand basic concepts in mathematics which are applied in the managerial decision making.

To develop an understanding of numeric problems in business and social sciences, and techniques used to model such problems.

To develop mathematical skills needed to analyze numeric data used in business and social sciences.

9.3C03 COM (COMPL - III): BASICS OF RESEARCH METHODOLOGY

To help the degree students to understand how to do research in the area of Commerce and Management

10.3B05COM(CORE –V): ADVANCED ACCOUNTING

To help the students to acquire the conceptual knowledge of accounting for special transactions and to help them to learn the techniques of preparing the accounts and financial statements

11.3C04 COM(COMPL - IV): BUSINESS REGULATORY FRAMEWORK

To help the students to acquire the conceptual knowledge about the business regulations

12.4A13 COM(COMMON XII):ENTREPRENEURSHIP

To help the students understand the concepts of entrepreneurship and to develop the Entrepreneurial skills among them.

13.4A14 COM (COMMON - XIV):ENVIRONMENT STUDIES

The objective of the course is to give a general awareness to the students about the environment and sociology, and environmental pollutions.

14.4B07COM(CORE –VII): INCOME TAX LAW AND PRACTICE-1

To give the students the basic idea about the theoretical aspects of income tax in India, and to give an idea about the computation of income under different heads.

15.4B08 COM (CORE - VIII): INFORMATICS SKILLS

To Know the Fundamentals of Computers and to Understand how to use Computer

applications in day to Day Applications. Also to update and expand basic informatics skills and attitudes relevant to the emerging knowledge society and also to equip the students to effectively utilize the digital knowledge resources for their chosen courses of study.

16.4C05 COM (COMPL - V): CORPORATE LAW &BUSINESS REGULATION

To help the students to acquire the knowledge about the Company law and business regulations

17.5B10 COM (CORE - X): COST ACCOUNTING

To acquaint the students with the basic concepts used in Cost Accounting and the various methods involved in Cost Accounting system.

18.5B11 COM (CORE - XI): CORPORATE ACCOUNTING

To help the students to acquire the conceptual knowledge of Corporate Accounting, and to help them to learn the techniques of preparing the financial statements.

19.5B12 COM (CORE- XII): AUDITING

To create awareness among the students about the modern trends and practices of auditing and to inculcate the skills for independently undertaking the audit work.

20.5B13 COM (CORE - XIII): INCOME TAX LAW AND PRACTICE- II

To give the students an idea about the computation of total income and to know the relevant provisions relating to assessment.

21.6B15 COM (CORE - XV): MANAGEMENT ACCOUNTING

To acquaint the students with different methods involved in Cost Accounting system.

To provide the students an understanding about the use of financial and cost accounting data, for planning, control and managerial decision making

22.6B16 COM (CORE - XVI):INTERNATIONAL BUSINESS

To provide to the students an understanding about the international business activities and regulations

23.6B17 COM (CORE - XVII):MODERN BANKING

To provide to the students an understanding of the fundamentals of banking and impart basic knowledge of modern banking practices

24.6B18 COM (CORE - XVIII):FINANCIAL MARKETS & SERVICES

To familiarize the students with the constituents of financial market, their interactions and the services provided by them.

25.6B20 COM (CORE - XX): PROJECT

To provide an opportunity to investigate a problem by applying concepts in a scientific way

To enable the application of conceptual in a practical situation and to learn the art of conducting a study in a systematic way and presenting its findings in a coherent report.

To develop the skills of thinking, reasoning, enquiring, analyzing and treatise on business or economic institutions or on issues or problems relating to business or economy.5

26.3B06COM (CORE -VI Optional B : COMPUTER APPLICATIONS-I) COMPUTER LANGUAGES AND SOFTWARES

To acquire knowledge about programming languages and to develop skill in creating power point and blog.

27.4B09COM (CORE -IX Optional B: COMPUTER APPLICATIONS-II)

ELECTRONIC DATA PROCESSING & COMPUTER APPLICATION

To update and expand skills in electronic data processing and computer application in

business operation

28.5B14COM (CORE -XIV Optional B: COMPUTER APPLICATIONS-III)

To acquire knowledge about programming in Java.

To develop skill in writing program in Java.

29.6B19COM (CORE -XIX Optional B: COMPUTER APPLICATIONS-IV) ACCOUNTING PACKAGES – TALLY

To acquire knowledge about the tally accounting packages

To develop skill in preparing financial statements in Tally.

30. 5D01COM (Open Course-1): FINANCIAL SERVICES

To give an understanding to the students about the various financial services rendered by the commercial banks and financial institutions in India in the globalised economic scenario

MSc Computer Science

Program Outcomes

- ✓ Apply standard Software Engineering practices and strategies in real-time software project development using open-source programming environment or commercial environment to deliver quality product for the organization success.
- ✓ Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity.
- ✓ Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.
- ✓ An ability to apply knowledge of computing and mathematics appropriate to the discipline.
- ✓ An ability to function effectively on teams to accomplish a common goal.
- ✓ An understanding of professional, ethical, legal, security and social issues and responsibilities.
- ✓ An ability to communicate effectively with a range of audiences.
- ✓ An ability to analyze the local and global impact of computing on individuals, organizations, and society.
- ✓ Recognition of the need for and an ability to engage in continuing professional development.
- ✓ An ability to use current techniques, skills, and tools necessary for computing practice.
- ✓ An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- ✓ An ability to apply design and development principles in the construction of software systems of varying complexity.

Program Specific Outcome

- ✓ An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- ✓ An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- ✓ Ability to provide socially acceptable technical solutions to complex computer science engineering problems with the application of modern and appropriate techniques for sustainable development relevant to professional engineering practice.
- ✓ Ability to apply the knowledge of ethical and management principles required to work in a team as well as to lead a team.
- ✓ Ability to comprehend and write effective project reports in multidisciplinary environment in the context of changing technologies.

Course outcomes

MCS1C01: Discrete Mathematics
- ✓ Be able to understand logical arguments and logical constructs. Have a better understanding of sets, functions, and relations.

MCS1C02: Computer Organization And Architecture
- ✓ Understanding advanced topics in Computer Architecture with specific focus on to processor architecture (multi-core architecture), memory system design, accelerators, and high performance architectures.

MCS1C03: Digital Systems & Microprocessors
- ✓ To impart basic knowledge in digital logic and circuits

MCS1C04: Operating Systems

- ✓ To acquire the fundamental knowledge of the operating system architecture and components and to know the various operations performed by the operating system.

MCS1C05: Introduction to Programming
- ✓ To expose the students to the features of advanced programming language.

MCS2C06: JAVA PROGRAMMING
- ✓ To inculcate knowledge on Java Programming concepts

MCS2C07: Data Structures & Algorithms
- ✓ Have a high level understanding and exposure to advanced topics in data structures and algorithms.

MCS2C08: Database Management Systems
- ✓ The students would be fully conversant with the design principles of the engines and middleware of contemporary database systems, and their interactions with the related computing components, including the hardware, the operating system, and the data network.

MCS2C09: Computer Networks
- ✓ To master the terminology and concepts of the OSI reference model and the TCP-IP reference model.

MCS2C10: Formal Languages and Finite Automata
- ✓ Be familiar with thinking analytically and intuitively for problem-solving situations in related areas of theory in computer science.

MCS3C12: Computer Graphics
- ✓ To introduce the use of the components of a graphics system and become familiar with building approach of graphics system components and algorithms related with them.

MCS3C13: Systems Programming & Compiler Design
- ✓ To understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger.

MCS3C14: System Administration and Network Programming
- ✓ Demonstrate advanced knowledge of programming for network communications.

MCS3C15: Software Engineering
- ✓ Able to use modern engineering tools necessary for software project management, time management and software reuse.

MCS3C16: Research Methodology
- ✓ Understand some basic concepts of research and its methodologies

MCS4E06: Digital Image Processing
- ✓ The students would get a firm foundation in 2-D signal processing and be able to handle real-world image processing problems and develop image processing software.

BSc Computer Science

Program Outcomes

- Serve as the Programmers with the sound knowledge of practical and theoretical concepts for developing software.
- Apply knowledge of Computer Science to identify, analyze problems and to provide effective solution in the area of Computing.
- Develop criteria to organize and present different type of works in academic and professional environments.
- Function effectively on teams to accomplish a common goal and demonstrate professional behavior.
- Improve their computer literacy, their basic understanding of operative systems and a working knowledge of software commonly used in academic and professional environments.

Program Specific Outcomes

- Professionally trained in the areas of programming, multimedia, animation, web designing, networking and to acquire knowledge in various domain based electives.
- Effectively communicating computing concepts and solutions to bridge the gap between computing industry experts and business leaders to create and initiate innovation.
- The ability to employ modern computer languages and applications for their successful career, to create platforms to become an entrepreneur and a relish for higher studies.

Course Outcome

1B01CSC: Introduction to Computers & Programming Languages
- ✓ To enable students to use digital knowledge resources in learning.

2B02CSC: Advanced Programming in C
- ✓ On successful completion of this subject the students have the programming ability in C Language.

3A12CSC: Digital Electronics
- ✓ Students get a basic understanding of analog electronics, digital electronics and microcontrollers.

3B04CSC: Data Structure
- ✓ To enable students develop ability to select appropriate data structure for a given problem.

4A13CSC: Database Management System
- ✓ To introduce basic concepts of data bases, and related techniques and tools.
- ✓ Develop a Skill in writing queries using PL/SQL.

4A14CSC: Operating System
- ✓ To acquire the fundamental knowledge of the operating system architecture and components and to know the various operations performed by the operating system.

4B05CSC: C# and .NET Programming
- ✓ To enable students familiarize simple, modern, general-purpose, object-oriented programming language.

5B08CSC: Software Engineering
- ✓ Students who complete the course will be proficient in the basic techniques and tools for carrying out formal verification of software systems.

5B09CSC: Web Technology
- ✓ To enable students to program for the World Wide Web using HTML, JavaScript, PHP and MySQL..

5B10CSC: Java Programming

✓ To expose the students to the basic features of Java programming language

5B11CSC: Linux Administration
  ✓ The student will be able to use UNIX/Linux command line (shell) commands to navigate and manage.

6B13CSC: System Software
  ✓ To provide the students with an insight into Design of assemblers and macro processors

6B14CSC: Data Communication & Networks
  ✓ To enable students to acquire knowledge various components used in a data communication system.

6B15CSC: Computer Organization
  ✓ Be familiar with the representation of data, addressing modes, instructions sets.

Complementary Course

1C01CSC: Fundamentals of Computers & Programming Languages
  ✓ On completion of the course students will be able to Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.

2C02CSC: Programming in C
  ✓ On successful completion of this subject the students have the programming ability in C Language.

3C03CSC: Database Management System
  ✓ To introduce basic concepts of data bases, and related techniques and tools.

4C04CSC: Visual Programming
  ✓ At the end of this course, the student will understand an overview of computers and computer programming.

PG and Research Department of Mathematics

The mission of the mathematics program is to provide high quality education in pure and applied mathematics in order to prepare students for graduate studies, research or professional careers in mathematical sciences and related fields.

Programme outcome
  ✓ Have the skills needed to pursue careers in education, business, and/or industry.
  ✓ Be prepared for continued study of mathematics or statistics at the post graduate level and more.
  ✓ Experience Mathematics outside of regular course work.
  ✓ Communicate Mathematics effectively
  ✓ Demonstrate a computational ability in solving a wide array of mathematical problem
  ✓ Differentiate between valid and invalid mathematical reasoning
  ✓ Develop mathematical ideas from basic axioms.
  ✓ Utilize Mathematics to solve theoretical and applied problems.
  ✓ Identify applications of Mathematics in other disciplines and in society.

Programme specific outcome of the PhD program in Mathematics
 The Department of Mathematics offers excellent opportunities for research in both pure and applied mathematics to its PhD students. They may choose from a variety of topics: Algebra , Graph Theory, Number Theory and Topology. Identify, formulate, research literature, and analyze complex problems reaching substantiated conclusions using principles of mathematical sciences. A research oriented learning that develop analytical and integrative problem-solving approaches. The students after completing the PhD program, depending on

their choice of the research area, are well prepared for a variety of jobs both in the industry and in academic institutions.

Programme specific outcome of M.Sc Program in Mathematics

A graduate with a Master's degree in Mathematics has knowledge of advanced models and methods of mathematics, including some from the research frontier of the field, and expert knowledge of a well-defined field of study, based on the highest international level of research in mathematics. The graduate has specific skills in independently comprehending, analyzing, modeling, and solving given problems at a high level of abstraction based on logical and structured reasoning. The graduate is able to use computer calculations as a tool to carry out scientific investigations and develop new variants of the acquired methods, if required by the problem at hand. Students' knowledge and understanding is assessed by a combination of examinations, coursework assignments and presentations.

Programme specific outcome of B.Sc program in Mathematics

On completion of this programme the successful student will have knowledge and understanding of core areas of pure mathematics including geometry, algebra, mathematical analysis and discrete mathematics, core areas of applied mathematics including statistics, operational research and differential equations, several specialized areas of advanced mathematics and its applications, the correct use of mathematical language to express both theoretical concepts and logical argument and the use of computers both as an aid and as a tool to study problems in Mathematics. Students gain knowledge and understanding through lectures, workshops and computer laboratory sessions where topics are introduced and explored thoroughly before moving forward. Students' knowledge and understanding is assessed by a combination of examinations, coursework assignments and presentations.

COURSE OUTCOMES

BSc MATHEMATICS

CORE COURSE

1B01 MAT Differential Calculus

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

- Compute limits and derivatives of algebraic, trigonometric, inverse trigonometric function, Hyperbolic function and piece-wise defined functions.
- Compute Polar co-ordinates, Cylindrical polar coordinates, Spherical polar co-ordinates, Sphere, cylinder and cone
- Describe and apply Leibniz's theorem
- Represent functions using power series expansions, including Taylor series, and solve related problems.
- Define Polar curves, Derivative of arc, curvature, Evolute and involute, properties of functions, L Hospital's rule - Indeterminate forms.
- Differentiate, and integrate functions represented using power series expansions, including Taylor series, and solve related problems.

2B02 MAT Integral Calculus

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

- Define Riemann sum and definite integrals, Mean Value theorem for definite integrals and Fundamental theorem of calculus
- Evaluate double and triple integrals for area and volume.

3B03 MAT Elements of Mathematics I

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

- Describe Finite and Infinite sets, Countable and uncountable sets, Cantor's theorem, Arguments, Logical implications, Propositional functions, Quantifiers, Negation of quantified statements.

- Solve equations using division algorithm and Euclidean algorithm.
- Describe the theory of congruence and basic properties of congruence.

4B04 MAT Elements of Mathematics II

Upon successful completion of this course, a student will be able to:
- Describe relation, partitions, partially ordered set, lattices and properties of lattices.
- Determine Rank of a matrix – Elementary transformation, reduction to normal form, row reduced echelon form and computing the inverse of a nonsingular matrix using elementary row transformation.

5B05 MAT Real Analysis

Upon successful completion of this course, a student will be able to:
- Describe the algebraic property of real numbers and the completeness property of R.
- Use the definitions of convergence as they apply to sequences, series, and functions.
- Determine the continuity, differentiability, and integrability of functions defined on subsets of the real line.
- Apply the Mean Value Theorem and the Fundamental Theorem of Calculus to problems in the context of real analysis.
- Recognize the difference between pointwise and uniform convergence of a sequence of functions.

5B06 MAT Abstract Algebra

Upon successful completion of this course, a student will be able to:
- Describe basic facts, methods and ideas related to the algebraic structures of groups, rings, fields and integral domains.
- Do more specialized study in algebra
- Use the concepts of isomorphism and homomorphism for groups and rings.

5B07 MAT Differential Equations, Laplace Transform and Fourier series

Upon successful completion of this course, a student will be able to:
- Solve and apply differential equations of first and second order.
- Solve linear differential equations using the Laplace transform technique.
- Describe and determine Periodic functions. Trigonometric series, Fourier series, Half range expansion, Fourier integrals.

5B08 MAT Vector Calculus

Upon successful completion of this course, a student will be able to:
- Compute scalar and cross product of vectors in 2 and 3 dimensions.
- Gradient vector fields and constructing potentials.
- Describe directional derivatives and gradient vectors, tangent planes and differentials, extreme values and saddle points, Lagrange multipliers, Partial derivatives with constrained variables, Taylor's formula for two variables, divergence and curl of a vector field.
- Compute surface area and surface integrals using stokes' theorem and divergence theorem

5B09 MAT Graph Theory

Upon successful completion of this course, a student will be able to:
- To introduce the basic concepts in Graph theory.
- To create the ability to understand and appreciate mathematical arguments or proof logically.
- Students will be able to model and solve real-world problems using graphs and trees, both quantitatively and qualitatively.

5D03 MAT (Open Course) Quantitative Arithmetic and Reasoning

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

- Helps to improve the confidence for attending arithmetic and reasoning questions.
- Solve problems for different competitive exams like PSC, Bank exams….
- Solve problems from Average, Problems on ages, Profit and loss, Ratio and proportion, Chain rule, Time and work, Time and distance, Problems on Trains, Boats and streams, Calendar, Clocks, Permutations and combinations, Heights and distances using simple methods.

6B10 MAT Linear Algebra
Upon successful completion of this course, a student will be able to:
- Solve systems of linear equations.
- Analyze vectors in R^n geometrically and algebraically.
- Recognize the concepts of the terms span, linear independence, basis, and dimension, and apply these concepts to various vector spaces and subspaces,

6B11 MAT Numerical Methods and Partial Differential Equations
Upon successful completion of this course, a student will be able to:
- Derive numerical methods for approximating the solution of problems of continuous mathematics.
- Analyze the error incumbent in any such numerical approximation.
- Implement a variety of numerical algorithms using appropriate technology, and
- Compare the viability of different approaches to the numerical solution of problems arising in roots of solution of non-linear equations, interpolation and approximation, numerical differentiation and integration, solution of linear systems.
- Familiar with PDEs and
- Describe Basic concepts of PDEs, D'Alembert's solution of the wave equation, Heat equation.

6B12 MAT Complex Analysis
Upon successful completion of this course, a student will be able to:
- Represent complex numbers algebraically and geometrically,
- Define and analyze limits and continuity for complex functions as well as consequences of continuity,
- Apply the concept and consequences of analyticity and the Cauchy-Riemann equations and of results on harmonic and entire functions including the fundamental theorem of algebra,
- Analyze sequences and series of analytic functions and types of convergence,
- Evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula, and
- Represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem.

6B13 MAT Mathematical Analysis and Topology
Upon successful completion of this course, a student will be able to:
- Describe Riemann integral, properties of Riemann integral, the Fundamental theorem of calculus, and approximate integration.
- Familiar with sequence & series of functions: Point wise and uniform convergence.
- Describe elementary concepts of metric spaces and topological spaces.

6B14A MAT Operations Research
Upon successful completion of this course, a student will be able to:
- Formulate and model a linear programming problem from a word problem and solve them graphically and using simplex method.
- Place a Primal linear programming problem into standard form and use the Simplex Method or Revised Simplex Method to solve it,

- Find the dual, and identify and interpret the solution of the Dual Problem from the final tableau of the Primal problem,
- Explain the concept of complementary slackness and its role in solving primal/dual problem pairs,
- Formulate and solve problems and such as, the assignment problem, the transportation problem, sequencing problem and problems from games and strategies.

Complimentary Courses

1C01 MAT

Upon successful completion of this course, a student will be able to:
- Describe and apply Leibniz's theorem, Rolle'stheorem,Lagrange's mean value theorem.
- Compute limit of indeterminate forms.
- Define Partial differentiation, Derivative of arc, curvature, radius of curvature, Centre of curvature, Evolute and involute, properties of evolute, indeterminate forms and their limits.
- Compute Polar co-ordinates, Cylindrical polar coordinates, Spherical polar co-ordinates

2C02 MAT

Upon successful completion of this course, a student will be able to:
- Compute integration of trigonometric functions, area of plane region and length of plane region.
- Evaluate double and triple integrals for area and volume.
- Solve systems of linear equations
- Recognize the concepts of the terms span, linear independence, basis, and dimension, and apply these concepts to various vector spaces and subspaces,
- Describe eigen values, eigen vectors,symmetric, skew Symmetric and orthogonal matrices, eigen bases, diagonalization, qudratic forms, Cayley-Hamilton theorem and its simple applications.

3C03 MAT

Upon successful completion of this course, a student will be able to:
- Solve and apply differential equations of first and second order.
- Solve linear differential equations using the Laplace transform technique.
- Describe and determine Periodic functions. Trigonometric series, Fourier series, Half range expansion.
- Familiar with PDEs and
- Describe basic concepts of PDEs, D'Alembert's solution of the wave equation, Heat equation.

4C04 MAT

Upon successful completion of this course, a student will be able to:
- Compute scalar and cross product of vectors in 2 and 3 dimensions.
- Gradient vector fields and constructing potentials.
- Describe directional derivatives and gradient vectors, tangent planes and differentials, extreme values and saddle points, Lagrange multipliers, Partial derivatives with constrained variables, Taylor's formula for two variables, divergence of a vector field and curl of a vector field.
- Compute surface area and surface integrals using stokes' theorem and divergence theorem
- Derive numerical methods for approximating the solution of problems of continuous mathematics.
- Analyze the error incumbent in any such numerical approximation.

- Implement a variety of numerical algorithms using appropriate technology, and
- Compare the viability of different approaches to the numerical solution of problems arising in roots of solution of non-linear equations, interpolation and approximation, numerical differentiation and integration, solution of linear systems.

MSc MATHEMATICS

FIRST SEMESTER

MAT1C01 Basic Abstract Algebra

Upon successful completion of this course, a student will be able to:
- Describe Direct Products and finitely generated Abelian Groups, Group Action on a Set and Applications ofSylow Theorems.
- Describe Field of Quotients of the Integral Domain, Isomorphism Theorems, Series of Groups, Free Abelian Groups, Field of Quotients of the Integral Domain, Ring of Polynomials, Factorization of Polynomials over a Field, Homomorphisms and FactorRings, Prime and Maximal Ideals.
- Read and write mathematical proofs and do computations related to the above topics.
- Assess properties implied by the definitions of groups and rings,
- Use the concepts of isomorphism and homomorphism for groups and rings, and
- Produce rigorous proofs of propositions arising in the context of abstract algebra.
- **MAT1C02 Linear Algebra**

Upon successful completion of this course, a student will be able to:
- Solve systems of linear equations,
- Analyze vectors in R^n geometrically and algebraically,
- Recognize the concepts of the terms span, linear independence, basis, dimension, ,linear transformations, the algebra of linear transformations,Isomorphism, Representation of transformation by matrices, linear functional, the transpose of a linear transformation. elementary canonical forms, the primary decomposition theorem,the rational and jordan forms, Inner Product Spaces, and apply these concepts to various vector spaces and subspaces
- Analyze finite and infinite dimensional vector spaces and subspaces over a field and their properties, including the basis structure of vector spaces,
- Use the definition and properties of linear transformations and matrices of linear transformations and change of basis, including kernel, range and isomorphism,
- Compute with the characteristic polynomial, eigenvectors, eigenvalues and eigenspaces, as well as the geometric and the algebraic multiplicities of an eigenvalue and apply the basic diagonalization result,
- Compute inner products and determine orthogonality on vector spaces, including Gram-Schmidt orthogonalization, and
- Identify self-adjoint transformations and apply the spectral theorem and orthogonal decomposition of inner product spaces, the Jordan canonical form to solving systems of ordinary differential equations.

MAT1C03 Real Analysis

Upon successful completion of this course, a student will be able to:
- Describe the real line as a complete, ordered field,
- Determine the basic topological properties of subsets of the real numbers,
- Use the definitions of convergence as they apply to sequences, series, and functions,
- Determine the continuity, differentiability, and integrability of functions defined on subsets of the real line,

- Apply the Mean Value Theorem and the Fundamental Theorem of Calculus to problems in the context of real analysis, and
- Produce rigorous proofs of results that arise in the context of real analysis.
- Determine the Riemann integrability and the Riemann-Stieltjesintegrability of a bounded function and prove a selection of theorems concerning integration,
- Illustrate the effect of uniform convergence on the limit function with respect to continuity, differentiability, and integrability, and
- Illustrate the convergence properties of power series.
- Determine the continuity, differentiability, and integrability of functions defined on subsets of the real line,
- Apply the Mean Value Theorem and the Fundamental Theorem of Calculus to problems in the context of real analysis, and
- Recognize the difference between pointwise and uniform convergence of a sequence of functions,

MAT1C04 Basic Topology
Upon successful completion of this course, a student will be able to:
- Define and illustrate the concept of topological spaces and continuous functions,
- Define and illustrate the concept of product topology and quotient topology,
- Prove a selection of theorems concerning topological spaces, continuous functions, product topologies, and quotient topologies,
- Define and illustrate the concepts of the separation axioms,
- Define connectedness and compactness, and prove a selection of related theorems.

MAT1C05 Differential Equations
Upon successful completion of this course, a student will be able to:
- Find power series solutions of differential equations, and
- Find solution of Legendre Functions, Bessel Functions and System of first order equations
- Solve Non Linear Equations
- Describe the Existence and Uniqueness of Solutions and prove Picard's Theorem.
- Develop the ability to apply differential equations to significant applied and/or theoretical problems

SECOND SEMESTER
MAT2C06 Advanced Abstract Algebra
Upon successful completion of this course, a student will be able to:
- Learnt basic facts, methods and ideas related to the algebraic structures of groups, rings, fields and integral domains.
- Do more specialized study in algebra
- Understand the necessity of abstraction and how it widens the scope of application especially related to number theory.
- Assess properties implied by the definitions of groups and rings,
- Familiar with Unique Factorization Domains, Euclidean Domains, Gaussian Integers and Multiplicative Norms, Introduction to Extension Fields Algebraic Extensions, Geometric Constructions, Finite Fields, Automorphisms of Fields, The IsomorphismExtension Theorem, Splitting Fields, Separable Extensions. Galois Theory
- Read and write mathematical proofs and do computations related to the above topics.
- Produce rigorous proofs of propositions arising in the context of abstract algebra.

MAT2C 07 Measure and Integration
Upon successful completion of this course, a student will be able to:

- Define and illustrate the concept of measure on the real line, Lebesgue Outer measure, Measurable sets, Ragularity, MeasurableFunctions, Borel and Lebesgue Measurability.
- Familiar with integration of functions of a real variable and Riemann and LebesgueIntegrals.
- Illustrate the concept of extension of measure, Measure spaces, integration with respect to a measure, The LP Spaces, The inequalities of Holder and Minkowski and completeness of LP (μ)
- Do more specialized study in measure and integration.

MAT2C08 Topology
Upon successful completion of this course, a student will be able to:
- Define and illustrate the concept of topological spaces and continuous functions,
- Define and illustrate the concept of product topology and quotient topology,
- Prove a selection of theorems concerning topological spaces, continuous functions, product topologies, and quotient topologies.
- Prove a selection of theorems like Urysohn's Lemma and Tietze Extension Theorem, Tychonoff Theorems. Urysohn'sMetrization Theorem
- Familiar with Embeddings.
- Define and illustrate the concepts of the separation axioms,
- Define The Fundamental Group and Covering Spaces, Homotopy of paths, The Fundamental Group,The Fundamental Group of the Circle and Covering Spaces.

MAT2C09 Complex Analysis
Upon successful completion of this course, a student will be able to:
- Represent complex numbers algebraically and geometrically,
- Define and analyze limits and continuity for complex functions as well as consequences of continuity,
- Apply the concept and consequences of analyticity and the Cauchy-Riemann equations and of results on harmonic and entire functions including the fundamental theorem of algebra,
- Analyze sequences and series of analytic functions and types of convergence,
- Evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula, and
- Represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem
- Familiar with compactness and convergence in the space of analytic functions, spaces of analytic functions, The Riemann mapping theorem, Weierstrass factorization theorem and the gamma function.

MAT2C10 Partial Differential Equations& integral equations
Upon successful completion of this course, a student will be able to:
- Be familiar with the modeling assumptions and derivations that lead to PDEs,
- Recognize the major classification of PDEs and the qualitative differences between the classes of equations, and
- Be familiar with solving first and second order PDEs and integral equations.

THIRD SEMESTER
MAT3C11 Number Theory
Upon successful completion of this course, a student will be able to:
- Define and interpret the concepts of divisibility, congruence, greatest common divisor, prime, and prime-factorization,
- Apply the Law of Quadratic Reciprocity and other methods to classify numbers as primitive roots, quadratic residues, and quadratic non-residues,

- Familiar with applications toDiophantine equations, cryptography,algebraic numbers, Quadratic and Cyclotomic fields.
- Formulate and prove conjectures about numeric patterns, and
- Produce rigorous arguments (proofs) centered on the material of number theory, most notably in the use of Mathematical Induction and/or the Well Ordering Principal in the proof of theorems.

MAT3C12 Functional Analysis
Upon successful completion of this course, a student will be able to:
- Define and interpret the concepts offundamentals of Normed Spaces.
- Familiar with bounded linear maps on Banach Spaces.
- Define and interpret the concepts inner product spaces,orthonormal sets, approximation andoptimization, projection and Riesz Representation Theorems.

MAT3C13 Complex Function Theory
Upon successful completion of this course, a student will be able to:
- Represent complex numbers algebraically and geometrically,
- Define and analyze limits and continuity for complex functions as well as consequences of continuity,
- Apply the concept and consequences of analyticity and the Cauchy-Riemann equations and of results on harmonic and entire functions including the fundamental theorem of algebra,
- Analyze sequences and series of analytic functions and types of convergence,
- Evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula, and
- Represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem
- Familiar with elliptic functions, the Weierstrasstheory,The Riemann Zeta function, harmonic and entire function in detail.

MAT3C14 Advanced Real Analysis
Upon successful completion of this course, a student will be able to:
- Define and interpret the concepts of sequence and series of functions, uniform convergence continuity, uniform convergence and nntegration, uniformconvergence and differentiation, equicontinous family of functions and the Stone-Weierstrasstheorem,
- Familiar with the algebraic completeness of the complex field and fourierseries.functions of several variables, the inverse function theorem, the implicit function theorem.
- Read and write mathematical proofs and do computations related to the above topics.
- Produce rigorous proofs of propositions arising in the context of real analysis.

MAT3E01 Elective- Graph Theory
Upon successful completion of this course, a student will be able to:
- To introduce the basic concepts in Graph theory.
- To create the ability to understand and appreciate mathematical arguments or proof logically.
- Helps to strengthen the ideas.
- Students will be able to model and solve real-world problems using graphs and trees, both quantitatively and qualitatively.

FOURTH SEMESTER
MAT4C15 Operator Theory
Upon successful completion of this course, a student will be able to:

- Define and interpret the concepts ofspectrum of a bounded operator,spaces of bounded linear functionals,spaces of bounded linear functional, bounded operators on Hilbert spaces

MAT4C16 Differential Geometry

Upon successful completion of this course, a student will be able to:
- Familiar with graphs and levels sets, vector fields, the tangent space, surfaces, vector fields on surfaces, curvature of plane, curvature of surfaces, parameterized surfaces, and local equivalence of surfaces.
- Produce rigorous proofs of propositions arising in the context of differential geometry.

MAT4E03 Elective- Fourier and Wavelet Analysis

Upon successful completion of this course, a student will be able to:
- Apply calculus, linear algebra, and mathematical transforms to real-world problems,
- Explain the connection between complex numbers and Fourier transforms to convolutions, filters, and their properties,
- Derive properties of orthogonal and bi-orthogonal wavelet transforms, and apply them to real-world problems,

B.Sc. ZOOLOGY

Program Outcome
- Develop a positive attitude towards sustainable development.
- Understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance.
- Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation .
- Understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevance in the day-to-day life.
- Acquire the skills in handling scientific instruments, planning and performing laboratory experiments.
- The skills of observations and drawing logical inferences from the scientific experiments.
- Analyze the given scientific data critically and systematically and to develop the ability to draw the objective conclusions.

Program specific outcomes:
At the completion of B. Sc. in Zoology the students are able to:
- Understand the nature and basic concepts of cell biology
- Understand the basic concepts of chordates and non-chordates   Understand the concepts of Goatery and Lac culture.
- Understand the various Applications of Biotechnology
- Understand the Lamarkism, Neo-Lamarkism and Darwinism.
- Understand the term ELISA technique and DNA finger printing.
- Understand the process of evolution.
- Able to identify and list out common animals.
- Explain various physiological changes in our bodies .
- Analyze the impact of environment on our bodies.
- Understand various genetic abnormalities.
- Develop respect for nature.
- Explain the role and impact of different environmental conservation programmes.

- Identify animals beneficial to humans.
- Identify various potential risk factors to health of humans.
- Explain the importance of genetic engineering.
    - Use tools of information technology for all activities related to zoology.

Course outcome

1B01ZLG PROTISTA AND NON-CHORDATA – I
- ➢ The course is designed to give the students a comprehensive idea of Protista and non-chordate diversity, structure and functions.
- ➢ This course is intended to give an idea of structural complexity of porifera, Cnidaria, Ctenophora & Helminthes and to get familiar with the non-chordate world that surrounds us.
- ➢ Understand the basis of life processes in the non-chordates and recognize the economically important invertebrate fauna.

2B02ZLG PROTISTA AND NONCHORDATA – II
- ➢ The course is designed to give the students a comprehensive idea of non-chordate diversity, structure and functions.
- ➢ The specimen studies are intended to provide an understanding of the Annelids, Arthropods, Molluscs &Echinoderms.
- ➢ Able to identify the invertebrates and classify them up to the class level with the basis of systematic.

3B03ZLG CHORDATA – I

The course is designed to give the students a comprehensive idea of chordate diversity, structure and functions. The course is intended to familiarise various fishes, amphibians and reptiles.

4BO4ZLG CHORDATA–II AND COMPARATIVE ANATOMY
- ➢ The course is designed to give the students a comprehensive idea of higher chordate diversity-birds and mammals, their structure and functions.
- ➢ Explain general characteristics and classification of different classes of vertebrates

5B05ZLG BIOCHEMISTRY AND ENDOCRINOLOGY
- ➢ The course is intended to give the student a basic understanding of the fundamental concepts in biochemistry and endocrinology, which can help in his/her understanding of other areas such as physiology.
- ➢ At the end of the course the student should have an idea regarding the basic physical and chemical reactions that underlies life processes.

5B06ZLG BIOPHYSICS, BIOSTATISTICS & METHODOLOGY
- ➢ The course is meant to introduce methodology and perspectives of science and the techniques in biophysics to help the students pursue systematically his/her interests in the chosen branch of science, i.e., zoology, in this programme.
- ➢ At the end of the course the student should be able to apply scientific methods independently in his area of pursuit.

5B07ZLG CELL BIOLOGY AND IMMUNOLOGY
- ➢ To give the students an overall knowledge of cell studies, which forms one of the foundation of biological sciences.
- ➢ The topics cover the basic concepts in cytology and the various means and methods used in the study of cell structures.
- ➢ Together with the practical, the student can develop basic skills in the field of microscopy and staining techniques.
- ➢ A few basic concepts in immunology have been added to introduce the student to this frontier area.

- ➢ Appreciate the contribution of great immunologists.
- ➢ Distinguish Innate immunity and Acquired Immunity
- ➢ Understand the importance of Immune system

5B08ZLG HEREDITARY SCIENCE
- ➢ The course offers a comprehensive understanding in genetics and human genetics, an area that includes certain applied frontier concepts of biological science.
- ➢ The topics introduce both basic concepts as well as applied aspects.
- ➢ At the end of the course the student should develop a clear idea regarding the fundamentals responsible for heredity and also the various methods of manipulating these factors for human welfare, understanding of the various factors that contribute to congenital problems and to what extend their incidence can be reduced, and in case of occurrence, be managed.

5B09ZLG COMPARATIVE ANIMAL PHYSIOLOGY AND HUMAN PHYSIOLOGY
- ➢ The course is designed to give the students a detailed understanding of the major physiological process.
- ➢ It is intended to convey concepts, which will kindle interests in the intricate mechanisms involved in the functioning of a living being.

6B10ZLG MOLECULAR BIOLOGY AND BIOINFORMATICS
- ➢ The course familiarizes students with molecular biology which is an applied frontier areas of biological science.
- ➢ The section on bioinformatics aims to understand and organize the information associated with these molecules to answer some of the larger questions in biology.

6B11ZLG ENVIORNMENTAL SCIENCE AND CONSERVATION BIOLOGY
- ➢ To create a solid base in the basic concepts of environmental studies and to give appreciation on diversity of life on earth.
- ➢ To provide an understanding of different levels of biological diversity.
- ➢ To realize the current status of biodiversity and to create interest for conservation of diversity.

6B12ZLG DEVELOPMENTAL BIOLOGY, TERATOLOGY AND GERENTOLOGY
- ➢ The course is designed to give the student a detailed understanding of the major steps in embryological development.
- ➢ It is intended to convey concepts, which will kindle interests in the intricate mechanisms involved in the development of animals.

6B13ZLG ETHOLOGY EVOLUTION AND ZOOGEOGRAPHY
- ➢ To introduce the students a comprehensive account of the important concepts in evolution and ethology.
- ➢ Topics are included to present both the classic as well as the modern views concerning the process of evolution.
- ➢ The student is expected get a broad idea about the mechanisms involved in the process of natural selection and evolution of animal.

6B14ZLG APPLIED ZOOLOGY
- ➢ To give the students an idea on the application of various organisms ranging from insects to farm animals to offer great employment opportunities.
- ➢ The course is also intended to create a knowledge on various aspects of threatening by pest insects and their control measures to improve agricultural field. Aquaculture, poultry and animal husbandry are the emerging profitable field.
- ➢ The knowledge on these can be applied in future as an employment venture.

5D02ZLG APICULTURE AND SERICULTURE
- ➢ The course is designed to introduce students to two important applied fields in zoology, which is of great potential in the rural economy of India

- ➢ Both beekeeping and silkworm rearing offer great employment opportunities in rural India and are major export oriented agro-industries.
- ➢ It aims to provide an introductory knowledge in these fields so that interested students can take on these fields as a profitable hobby or even as a self- employment venture.
- ➢ The knowledge gained can be used to replace the age-old practices in these fields with modern methods that are more productive and also give better quality products.

4BO1ZLG-P PRACTICAL I
- ➢ The course is intended to identify specimens, classification and to study characteristic features of nonchordata and Chordata.
- ➢ Get familiarise with endoskeleton of animals.
- ➢ It also helps to study dissections of cockroach, prawn, honeybee, earthworm etc.

6BO2ZLG-P PRACTICAL II
- ➢ Intended to study the microscopes, micrometry, microtomy, mitotic stages and Blood cells.
- ➢ This course will also help to estimate the amount of dissolved oxygen and carbon dioxide in water.
- ➢ It also gives an idea about PH of samples.

III 6BO3ZLG -P PRACTICAL III
- ➢ The course is intended to analyse sugar, protein, starch and lipid present in solutions.
- ➢ It also aims to calculate Mean, Median, Standard Deviation and graph preparation.
- ➢ It is also intended to familiarise various biological instruments used for calculating Blood Pressure, Pulse, Haemoglobin content etc.

6B15ZLG PROJECT WORK
- ➢ The course is intended to get research aptitude for students.
- ➢ They are supposed to observe, collect or culture animals.