PROVIDENCE WOMEN'S COLLEGE, CALICUT

PROGRAMME OUTCOMES

AND

COURSE OUTCOMES

CHOICE BASED CREDIT SEMESTER SYSTEM

(CBCSS)

(2019 Admission Onwards)

UNDERGRADUATE PROGRAMME OUTCOMES
BA/BSc/BCom/BBA

PO 1	**Critical Thinking**: Take informed actions after identifying the assumptions that frame sudens' thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at their ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Problem Solving:** Understand and solve problems of relevance to society to meet the specified needs using the knowledge, skills and attitudes acquired.
PO 3	**Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
PO 4	**Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO 5	**Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.
PO 6	**Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes

B.Sc Botany

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOMES-CORE COURSES

SEMESTER 1

BOT1B01T: Angiosperm Anatomy, Reproductive Botany and Palynology

COs	COURSE OUTCOMES
CO1	Demonstrate the ability to differentiate plant organs by observing anatomical features.
CO2	Understand the non-living inclusions of plants and their significance.
CO3	Differentiate tissues and their functions.
CO4	Illustrate primary and secondary (normal and anomalous) structures of plant organs.
CO5	Explain various developmental details of angiosperms.
CO6	Realize the significance and applications of palynology.

SEMESTER 2

BOT2B02T: Microbiology, Mycology, Lichenology and Plant Pathology

COs	COURSE OUTCOMES
CO1	Understand basics of microbial life and their economic importance.
CO2	Develop general awareness on the diversity of microorganisms, fungi and lichens.
CO3	Analyse the ecological role played by bacteria, fungi and lichens
CO4	Identify plant diseases and find out control measures.
CO5	Realize the significance of plant diseases as far as crop production is concerned.

SEMESTER 3

BOT3B03T: Phycology, Bryology and Pteridology

COs	COURSE OUTCOMES
CO1	Appreciate the diversity and evolutionary significance of lower plant groups.
CO2	Classify algae, bryophytes and pteridophytes.
CO3	Understand the economic and ecological importance of lower plant groups.

SEMESTER 4

BOT4B04T: Methodology and Perspectives in Plant Science

COs	COURSE OUTCOMES
CO1	Develop scientific temper and problem-solving skills.
CO2	Undertake scientific projects and prepare project reports
CO3	Summarize, organize and display quantitative data and derive conclusions
CO4	Prepare permanent slides, applying the histochemical techniques

SEMESTER 5

BOT5B06T: Gymnosperms, Palaeobotany, Phytogeography and Evolution

COs	COURSE OUTCOMES
CO1	Understand the role of gymnosperms as a connecting link between pteridophytes and angiosperms
CO2	Appreciate the process of organic evolution.
CO3	Realize the importance of fossil study.
CO4	Understand the climatic conditions of the past and realize the changes happened
CO5	Recognize the phytogeographic zones of India.

BOT5B07T: Angiosperm Morphology and Systematics

COs	COURSE OUTCOMES
CO1	Appreciate the diverse morphology of angiosperms.
CO2	Identify and classify plants based on taxonomic principles.
CO3	Make scientific illustrations of vegetative and reproductive structures of plants.
CO4	Develop the skill of scientific imaging of plants.
CO5	Realize the importance of field study.
CO6	Change their attitude towards over exploitation of rare/endemic plants.

BOT5B08T: Tissue Culture, Horticulture, Economic Botany and Ethnobotany

COs	COURSE OUTCOMES
CO1	Critically evaluate the advantages of tissue culture and horticulture over conventional methods of propagation.
CO2	Apply various horticultural practices in the field.
CO3	Experiment on the subject and try to become entrepreneurs.
CO4	Identify the economically important plants.

BOT5B09T: Cell Biology and Biochemistry

COs	COURSE OUTCOMES
CO1	Appreciate the ultra-structure of a plant cell.
CO2	Enumerate the functions of each cell organelle.
CO3	Draw and explain the structure of biomolecules.

SEMESTER 6

BOT6B10T: Genetics and Plant Breeding

COs	COURSE OUTCOMES
CO1	Appreciate the facts behind heredity and variations.
CO2	Understand the basic principles of inheritance.
CO3	Solve problems related to classical genetics.
CO4	Predict the pattern of inheritance.
CO5	Understand various plant breeding techniques.
CO6	Realize the role of plant breeding in increasing crop productivity.

BOT6 B11T: Biotechnology, Molecular Biology and Bioinformatics

COs	COURSE OUTCOMES
CO1	Analyse the role of biotechnology in daily life.
CO2	Understand the basic aspects of bioinformatics.
CO3	Explain the concepts in molecular biology.

BOT6B12T: Plant Physiology and Metabolism

COs	COURSE OUTCOMES
CO1	Identify the physiological responses of plants.
CO2	Analyse the role of external factors in controlling the physiology of plants.
CO3	Explain the metabolic processes taking place in each cell.
CO4	Appreciate the energy fixing and energy releasing processes taking place in cells.

BOT6B13T: Environmental Science

COs	COURSE OUTCOMES
CO1	Realize the importance of ecological studies.
CO2	Develop environmental concern in all their actions and practise Reduce, Reuse and Recycle.

CO3	Try to reduce pollution and environmental hazards and change their attitude towards throwing away plastic wastes.
CO4	Spread awareness of the need of conservation of biodiversity and natural resources.
CO5	Analyze the reasons for climate change and find out ways to combat it.

CORE ELECTIVE COURSE

BOT6 B14T (E3): Elective-3: Genetics and Crop Improvement

COs	COURSE OUTCOMES
CO1	Understand various techniques employed for increasing crop productivity.
CO2	Identify diseases affecting crop plants.
CO3	Attain general awareness on various crop research stations of the country.

COURSE OUTCOMES-COMPLIMENTARY COURSES

SEMESTER 1

BOT1C01T: ANGIOSPERM ANATOMY AND MICROTECHNIQUE

COs	COURSE OUTCOMES
CO1	Explain the types, structure and functions of plant tissues.
CO2	Explain primary and secondary (normal and anomalous) structures of plant organs.
CO3	Identify plant organs by observing anatomical features.
CO4	Illustrate primary and secondary (normal and anomalous) structures of plant organs.
CO5	Apply the histochemical techniques in laboratory works.

SEMESTER 2

BOT2C02T: CRYPTOGAMS, GYMNOSPERMS AND PLANT PATHOLOGY

COs	COURSE OUTCOMES
CO1	Analyze the role of the lower plants in the process of evolution.
CO2	Explain the ecological significance of lower plants.
CO3	Identify plant diseases and take remedial measures to control them.

SEMESTER 3

BOT3C03T: MORPHOLOGY, SYSTEMATIC BOTANY, ECONOMIC BOTANY, PLANT BREEDING AND HORTICULTURE

COs	COURSE OUTCOMES
CO1	Appreciate the diverse morphology of angiosperms.
CO2	Identify and classify plants based on taxonomic principles
CO3	Make scientific illustrations of vegetative and reproductive structures of plants
CO4	Identify the economically important plants
CO5	Understand the basic principles of plant breeding
CO6	Apply various horticultural practices in the field.

SEMESTER 4

BOT3C03T: PLANT PHYSIOLOGY, ECOLOGY AND GENETICS

COs	COURSE OUTCOMES
CO1	Explain the physiological processes in plants.
CO2	Understand the basic principles of heredity and variation.
CO3	Realize the importance of ecology.
CO4	Spread awareness of the necessity of conservation of biodiversity and natural resources
CO5	Solve problems related to classical genetics

COURSE OUTCOMES-OPEN COURSE

SEMESTER 5

BOT5D02T: APPLIED BOTANY

COs	COURSE OUTCOMES
CO1	1.Develop general awareness on applied aspects of Plant science.
CO2	2.Realize the role of plants in everyday life.
CO3	3.Apply vegetative propagation methods in everyday life.
CO4	4.Realize the economic importance of plants

B.Sc Chemistry

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOMES- CORE COURSE

SEMESTER 1

CHE1B01: Theoretical and Inorganic Chemistry

COs	COURSE OUTCOMES
CO1	To apply the methods of a research project.
CO2	To understand the principles behind volumetry.
CO3	To analyse the characteristics of different elements.
CO4	To distinguish between different acid base concepts.
CO5	To analyse the stability of different nuclei.

SEMESTER 2

CHE2B02: Theoretical and Inorganic Chemistry

COs	COURSE OUTCOMES
CO1	To understand the importance and the impact of quantum revolution in science.
CO2	To understand and apply the concept that the wave functions of hydrogen atoms are nothing but atomic orbitals.
CO3	To understand that chemical bonding is the mixing of wave functions of the two combining atoms.
CO4	To understand the concept of hybridization as a linear combination of orbitals of the same atom.
CO5	To inculcate an atomic/molecular level philosophy in the mind.

SEMESTER 3

CHE3B03: PHYSICAL CHEMISTRY

COs	COURSE OUTCOMES
CO1	To understand the properties of gaseous state and how it links to thermodynamic systems.
CO2	To understand the concepts of thermodynamics and it's relation to statistical thermodynamics.
CO3	To apply symmetry operations to categorize different molecules.

SEMESTER 4

CHE4B04: ORGANIC CHEMISTRY– I

COs	COURSE OUTCOMES
CO1	To apply the concept of stereochemistry to different compounds.
CO2	To understand the basic concepts of reaction mechanism
CO3	To analyse the mechanism of a chemical reaction.
CO4	To analyse the stability of different aromatic systems.

CHE4B05(P): INORGANIC CHEMISTRY PRACTICAL – I

COs	COURSE OUTCOMES
CO1	CO1 To enable the students to develop skills in quatitative analysis and preparing inorganic complexes.
CO2	To understand the principles behind quantitative analysis.
CO3	To apply appropriate techniques of volumetric quantitative analysis in estimations.
CO4	To analyse the strength of different solutions.

SEMESTER 5

CHE5B06: INORGANIC CHEMISTRY – III

COs	COURSE OUTCOMES
CO1	To understand the principles behind quanlitative and quantitative analysis.
CO2	To understand basic processes of metallurgy and to analyse the merits of different alloys.
CO3	To understand the applications of different inorganic polymers.
CO4	To analyse different polluting agents.
CO5	To apply the principles of solid waste management.

CHE5B07: ORGANIC CHEMISTRY – II

COs	COURSE OUTCOMES
CO1	To understand the difference between alcohols and phenols.
CO2	To understand the importance of ethers and epoxides.

CO3	To apply organometallic compounds in the preparation of different functional groups.
CO4	To apply different reagents for the interconversion of aldehydes, carboxylic acids and acid derivatives.
CO5	To apply active methylene compounds in organic preparations.

CHE5B08: PHYSICAL CHEMISTRY – II

COs	COURSE OUTCOMES
CO1	To apply the concept of kinetics, catalysis and photochemistry to various chemical and physical processes.
CO2	To characterise different molecules using spectral methods.
CO3	To understand various phase transitions and its applications.

SEMESTER 6

CHE6B09: INORGANIC CHEMISTRY – IV

COs	COURSE OUTCOMES
CO1	CO1 To understand the principles behind different instrumental methods.
CO2	To distinguish between lanthanides and actinides.
CO3	To appreciate the importance of CFT.
CO4	To understand the importance of metals in living systems.
CO5	To distinguish geometries of coordination compounds.

CHE6B10: ORGANIC CHEMISTRY – III

COs	COURSE OUTCOMES
CO1	To elucidate the structure of simple organic compounds using spectral techniques.
CO2	To understand the basic structure and tests for carbohydrates.
CO3	To understand the basic components and importance of DNA.
CO4	To understand the basic structure and applications of alkaloids and terpenes.
CO 5	To distinguish different pericyclic reactions.

CHE6B11: PHYSICAL CHEMISTRY – III

COs	COURSE OUTCOMES
CO1	To understand the basic concepts of electrochemistry.
CO2	To understand the importance of colligative properties.
CO3	To relate the properties of materials/solids to the geometrical properties and chemical compositions.

CHE6B12: Advanced and Applied Chemistry

COs	COURSE OUTCOMES
CO1	To understand the importance of nanomaterials.
CO2	To appreciate the importance of green approach in chemistry.
CO3	To understand the uses and importance of computational calculations in molecular design.
CO4	To understand the role of chemistry in human happiness index and life expectancy.

CHE6B13(E2): POLYMER CHEMISTRY

COs	COURSE OUTCOMES
CO1	To understand various classification of polymers and types of polymerisation methods.
CO2	To understand the important characteristics of polymers such as average molecular weight, glass transition temperature, viscoelasticity and degradation.
CO3	To appreciate the importance of processing techniques.
CO4	To characterise different commercial polymers and to understand the significance of recycling**.**

CHE6B13(E3): MEDICINAL AND ENVIRONMENTAL CHEMISTRY

COs	COURSE OUTCOMES
CO1	To understand the importance of drugs in human health.
CO2	To understand the facts about common diseases and treatment.
CO3	To identify the presence of toxic substances in atmosphere.
CO4	To apply chemistry in treatment of water and sewage.

CHE6B14(P): PHYSICAL CHEMISTRY PRACTICAL

COs	COURSE OUTCOMES
CO1	To enable the students to develop analytical skills in determining the physical properties (physical constants).
CO2	To develop skill in setting up an experimental method to determine the physical properties.
CO3	To understand the principles of Conductometry.

CHE6B15(P): ORGANIC CHEMISTRY PRACTICAL

COs	COURSE OUTCOMES
CO1	To enable the students to develop analytical skills in organic qualitative analysis.
CO2	To develop talent in organic preparations to ensure maximum yield.
CO3	To apply the concept of melting or boiling points to check the purity of compounds.
CO 4	To analyse and characterise simple organic functional groups.
CO 5	To analyse individual amino acids from a mixture using chromatography.

CHE6B16(P): INORGANIC CHEMISTRY PRACTCAL-II

COs	COURSE OUTCOMES
CO1	To enable the students to develop analytical skills in inorganic quantitative analysis.
CO2	To understand the principles behind gravimetry and to apply it in quantitative analysis.
CO3	To understand the principles behind colorimetry and to apply it in quantitative analysis.

CHE6B17(P): INORGANIC CHEMISTRY PRACTCAL-III

COs	COURSE OUTCOMES
CO1	CO1 To enable the students to develop skills in inorganic quanlitative analysis.
CO2	To understand the principles behind inorganic mixture analysis and to apply it in quanlitative analysis.
CO3	To analyse systematically mixtures containing two cations and two anions.

CHE6B18(Pr): PROJECT WORK

COs	COURSE OUTCOMES
CO1	To understand the scientific methods of research project
CO2	To apply the scientific method in life situations.
CO3	To analyse scientific problems systematically.

COURSE OUTCOMES- COMPLIMENTARY COURSES

SEMESTER 1

CHE1C01: GENERAL CHEMISTRY

COs	COURSE OUTCOMES
CO1	To understand and to apply the theories of quantitative and qualitative analysis.
CO2	To understand the theories of chemical bonding.
CO3	To appreciate the uses of radioactive isotopes.
CO4	To understand the importance of metals in biological systems.

SEMESTER 2

CHE2C02: PHYSICAL CHEMISTRY

COs	COURSE OUTCOMES
CO1	To understand the importance of free energy in defining spontaneity.
CO2	To realise the theories of different states of matter and their implication.

CO3	To understand the basic principles of electrochemistry

SEMESTER 3

CHE3C03: ORGANIC CHEMISTRY

COs	COURSE OUTCOMES
CO1	To understand the basic concepts involved in reaction intermediates.
CO2	To realise the importance of optical activity and chirality.
CO3	To appreciate the importance of functional groups and aromatic stability.
CO4	To understand the basic structure and importance of carbohydrates, nucleic acids, alkaloids and terpenes.

SEMESTER 4

CHE4C04: PHYSICAL AND APPLIED CHEMISTRY

COs	COURSE OUTCOMES
CO1	To understand the basic concepts behind colloidal state and nano chemistry
CO2	To understand the importance of green chemistry and pollution prevention.
CO3	To appreciate the importance of different separation methods and spectral techniques.
CO4	To understand the extent of chemistry in daily life.

CHE4C05(P): CHEMISTRY PRACTICAL

COs	COURSE OUTCOMES
CO1	To understand the basic concepts of inter group separation.
CO2	To enable the students to develop analytical and preparation skills.

COURSE OUTCOMES- OPEN COURSE

SEMESTER 5

CHE5D01: ENVIRONMENTAL CHEMISTRY

COs	COURSE OUTCOMES
CO1	Recall the technical/scientific terms involved in pollution.
CO2	Understand the causes and effects of air pollution.
CO3	Understand the sources, types and effects of water pollution.
CO4	Describe water quality parameters.
CO5	Know soil, noise, thermal and radioactive pollutions and their effects.
CO6	Study various pollution control measures.
CO7	Understand the basics of green chemistry.

B.Sc COMPUTER SCIENCE

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME - CORE COURSE

SEMESTER 1

BCS1B01 – Computer Fundamentals and HTML

COs	COURSE OUTCOME
CO1	Familiar with fundamental concepts of Computer hardware and software
CO2	Have a knowledge of different Number System, Digital Codes and Boolean Algebra
CO3	Understand the problem-solving aspect
CO4	Demonstrate the algorithm and flow chart for the given problem
CO5	Design a webpage with CSS

SEMESTER 2

BCS2B02 – Problem Solving Using C

COs	COURSE OUTCOME
CO1	Interpret the basic principles of C Programming.
CO2	Acquire decision making and looping concepts.
CO3	Design and develop modular programming.
CO4	Explore usage of arrays, strings, structures, union and files.
CO5	Effective utilization of pointers and dynamic memory allocation.

BCS2B03 – Programming Laboratory I – HTML and Programming in C

COs	COURSE OUTCOME
CO1	Analyze a web page and identify its elements and attributes.
CO2	Create web pages using HTML5 and Cascading Style Sheets.
CO3	Design and develop a webpage with Hyperlinks
CO4	Enhance their analyzing and problem solving skills and use the same for writing programs in C.
CO5	To write diversifying programs using C

SEMESTER 3

A11 – Python Programming

COs	COURSE OUTCOME
CO1	Explain basic principles of Python programming language.
CO2	Implement decision making and loop statements in Python.

CO3	Implement GUI applications using Python.
CO4	Explain modular programming concepts using Python.
CO5	Familiarize with List, Tuple, Dictionary concepts in Python.

A12 – Sensors and Transducers

COs	COURSE OUTCOME
CO1	Explain resistance, inductance and capacitance transducers.
CO2	Perceive the concepts of temperature transducers.
CO3	Perceive the concepts level transducers and pressure.
CO4	Explain flow transducers, electromagnetic transducers, radiation sensors and sound transducers.

BCS3B04 – Data Structures Using C

COs	COURSE OUTCOME
CO1	To be familiar with fundamental data structures and with the manner in which these data structures can best be implemented; become accustomed to the description of algorithms in both functional and procedural styles.
CO2	To have a knowledge of complexity of basic operations like insert, delete, search on these data structures.
CO3	Ability to choose a data structure to suitably model any data used in computer applications.
CO4	Design programs using various data structures including hash tables, binary and general search trees, graphs etc.
CO5	Implement and know the applications of algorithms for sorting, pattern matching.

SEMESTER 4

A13 – Data Communication and Optical Fibers.

COs	COURSE OUTCOME
CO1	To acquaint with the structure of Data Communications System and its components.
CO2	Familiarize with different network technologies and transmission media.
CO3	To gain knowledge of the different multiplexing techniques, Telephone system, Mobile system – GSM
CO4	To become familiar with the functions of a Datalink layer and Switching
CO5	To acquire the knowledge of Optical Fiber Cable and its working

A14 – Microprocessors – Architecture and Programming

COs	COURSE OUTCOME
CO1	To study general architecture of microprocessor.
CO2	To write assembly language programs, both simple and interfacing programs
CO3	To know how to interface peripheral devices with 8085.
CO4	To study the architecture of 8086 microprocessor.

BCS4B05 – Database Management System and RDBMS

COs	COURSE OUTCOME
CO1	Gain knowledge of database systems and database management system software
CO2	Ability to model data in applications using conceptual modeling tools such as ER diagrams and design database schemas based on the model.
CO3	Formulate using SQL solutions to a broad range of query and data update problems.
CO4	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
CO5	Be acquainted with the basics of transaction processing and concurrency control.

BCS4B06 – Programming Lab II – Data Structures and RDBMS

COs	COURSE OUTCOME
CO1	Make use of typical data definitions and manipulation commands.
CO2	Test the implementation of nested and join queries.
CO3	Develop simple application using views, sequences and synonyms.
CO4	Inspect and implement applications that require front-end tools.
CO5	Familiarizing with different data structures tools like searching, sorting, linked list etc.

SEMESTER 5

BCS5B07 – Computer Organization and Architecture

COs	COURSE OUTCOME
CO1	To make students understand the basic structure, operation and characteristics of a digital computer.
CO2	To familiarize with computer instruction and interrupt design.
CO3	To make students know the different types of control unit and addressing modes.
CO4	To familiarize with the memory organization including cache memories and virtual memory.

CO5	To understand the I/O devices and standard I/O interfaces.

BCS5B08 – Java Programming

COs	COURSE OUTCOME
CO1	To review on concept of OOP.
CO2	To learn Java Programming Environments.
CO3	To practice programming in Java
CO4	To learn GUI application development in JAVA

BCS5B09 – Web Programming using PHP

COs	COURSE OUTCOME
CO1	To understand basics of the Internet and World Wide Web.
CO2	To learn basic skill to develop responsive web applications.
CO3	To acquire the knowledge of HTML and CSS.
CO4	To understand basic concept of client side scripting language – javascript.
CO5	To understand the server side scripting language – PHP.
CO6	To learn about the integration of PHP and PostgreSQL.

BCS5B10 – Principles of Software Engineering

COs	COURSE OUTCOME
CO1	Ability to apply software engineering principles and techniques.
CO2	To produce efficient, reliable, robust and cost-effective software solutions.
CO3	Familiarize with Unified Modeling Language.
CO4	Acquire the basics of software testing and maintenance phase.

SEMESTER 6

BCS6B11 – Android Programming

COs	COURSE OUTCOME
CO1	To gain knowledge of developing end user application using Android SDK.
CO2	To familiarize with Android resources.
CO3	To acquaint with user interfaces development in Android.
CO4	To acquire knowledge about creating menus and operating files in Anddroid.

BCS6B12 – Operating Systems

COs	COURSE OUTCOME
CO1	To familiarize with the objectives, functions and types of Operating Systems.
CO2	To have a basic knowledge about process, threads and deadlock.
CO3	To understand the knowledge of Linux shell programming.
CO4	To learn about CPU scheduling and memory management.

BCS6B13 – Computer Networks

COs	COURSE OUTCOME
CO1	To understand about different network terminologies.
CO2	To familiarize with different layers of network.
CO3	To understand the functions of data link layer and network layer.
CO4	To familiarize with the functions of transport layer.
CO5	To understand the concept of network security and cryptography.

BCS6B14 – Programming Laboratory III – Java and PHP Programming

COs	COURSE OUTCOME
CO1	To learn about the Object Oriented Concepts in Java Programming.
CO2	To understand the practical knowledge of Web programming using PHP.

BCS6B15 – Programming Laboratory IV – Android and Linux Shell Programming

COs	COURSE OUTCOME
CO1	To learn the practical knowledge of Android Programming.
CO2	To familiarize with the practical knowledge of shell programming.

BCS6B16d – Computer Graphics

COs	COURSE OUTCOME
CO1	Familiarize with basics of Computer Graphics.
CO2	To acquire knowledge of different line, circle drawing algorithms.

BCS6B17 – Project Work and Industrial Visit

COs	COURSE OUTCOME
CO1	To acquire the implementation level knowledge and interaction with industry.

COURSE OUTCOME - OPEN COURSE

SEMESTER 5

BCS5D01 – Introduction to Computers and Office Automation

COs	COURSE OUTCOME
CO1	Understand different types of computers.
CO2	Learn documentation using Word Processing software such as MS Word and Open Office Writer
CO3	Learn calculation using Spread Sheet MS Excel.
CO4	Learn presentation using Open Office Impress/MS Power Point.

COURSE OUTCOME - COMPLIMENTARY COURSE

SEMESTER 1

MT1C01 – Mathematics - 1

COs	COURSE OUTCOME
CO1	Algebra and Geometry provide us very useful tools for expressing relationship between static quantities, the concepts necessary to explore the relationship between moving/changing objects are provided in calculus.
CO2	The course turn out to be a powerful tool in solving problems in physics, chemistry, biology, engineering, economics and other fields.

STA1C01 – Introductory Statistics

COs	COURSE OUTCOME
CO1	Students will understand the Indian statistical system and how statistics plays an important role in various fields.
CO2	By the end of the course, students will be able to summarize the data in a diagrammatic and graphical way, obtain descriptive statistics and make possible appropriate interpretations.
CO3	Students will acquire a brief insight into how information can be obtained from two or more data sets with the help of correlation and regression.
CO4	Students will get exposure to the areas of time series, index numbers and also to their uses.

SEMESTER 2

MT1C02 – Mathematics - 2

COs	COURSE OUTCOME
CO1	Creates a phenomenal interest in science, engineering, mathematics and economics. Gives an idea in how we model the growth of a biological population, the spread of a disease, the radioactive decay of atoms, and the study of heart transfer problems and in applications such as the study of shapes of cables hanging under their own weight.
CO2	Virtually every area of mathematics relies on or extends the tools of this course.
CO3	The course gives the students an opportunity to learn the fundamentals of linear algebra by capturing the ideas geometrically, by justifying them algebraically and by preparing them to apply it in several different fields such as data communication, computer graphics, modeling etc.

STA2C02 – Probability Theory

COs	COURSE OUTCOME
CO1	Students will understand various approaches to probability and will be able to compute probabilities.
CO2	Students will be able to connect the random occurrences happening around them with a random variable.
CO3	Students will acquire knowledge about how information is acquired using the basic statistical equations has been depicted.
CO4	The course will develop a strong theoretical base for the upcoming courses and students will be able to understand the subject more deeply.

SEMESTER 3

MT1C03 – Mathematics - 3

COs	COURSE OUTCOME
CO1	Creates a phenomenal interest in science, engineering, mathematics and economics. Gives an idea in how we model the growth of a biological population, the spread of a disease, the radioactive decay of atoms, and the study of heart transfer problems and in applications such as the study of shapes of cables hanging under their own weight.
CO2	Understand several contexts of appearance of multivariable functions and their representation using graph and contour diagrams and to formulate and work on the idea of limit and continuity for functions of several variables.
CO3	Understand the notion of partial derivative, their computation and interpretation. Understand chain rule for calculating partial derivatives.
CO4	Get the idea of directional derivative, its evaluation, interpretation and relationship with partial derivatives. Understand the concept of gradient, a few

	of its properties, application and interpretation.
CO5	To understand the difference between differentiability and analyticity of a complex function and construct examples and understand necessary and sufficient condition for checking analyticity.
CO6	To know a few elementary analytic functions of complex analysis and their properties and to understand definition of complex integral, its properties and evaluation.
CO7	To know a few fundamental results on contour integration theory such as Cauchy's theorem.

STA3C03 – Probability Distribution and Sampling Theory

COs	COURSE OUTCOME
CO1	Understand the applications of theoretical discrete and continuous distributions.
CO2	Students will know about various limit theorems and sampling distributions
CO3	Students will be equipped with various Sampling techniques used in conducting sample surveys.
CO4	The course will build an interest in students to explore more about distribution functions.

SEMESTER 4

MT1C04 – Mathematics - 4

COs	COURSE OUTCOME
CO1	Identify the number of areas where the modeling process results in a differential equation.
CO2	What an ODE is, what it means by its solution, how to classify Des, what it means by an IVP and so on.
CO3	To solve Des that are in linear, separable and in exact forms and also to analyze the solution.
CO4	Realize the basic differences between linear and nonlinear Des and also basic results that guarantees a solution in each case.
CO5	To approximate the solution successively of a first order IVP.

STA4C04 – Statistical Inference and quality Control

COs	COURSE OUTCOME
CO1	To equip the students with the theory essential for the estimation of unknown parameters and understand the criteria of good estimators.
CO2	They will be equipped with the concept of testing of hypothesis and will be able to identify a suitable test of significance to test a given hypothesis.
CO3	Students will understand the various non-parametric test used and they will be able to choose the best non-parametric test for a given data.

CO4	To provide insight into quality assessmenttechniques.s

B.SC MATHEMATICS

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME- CORE COURSE

SEMESTER 1

MT1B01: Basic Logic and Number Theory

COs	COURSE OUTCOME
CO 1	Enables one to think systematically, to express ideas in precise and concise mathematical terms and also to make valid arguments, how to use logic to arrive at the correct conclusion in the midst of confusing and contradictory statements is also illustrated.
CO 2	It is an ideal course for a beginner to illustrate how mathematicians do their normal business.
CO 3	By the end of the course, the students will be able to enjoy and master several techniques of problem solving such as recursion, induction etc., the importance of pattern recognition in mathematics, the art of conjecturing and a few applications of number theory.
CO 4	Enthusiastic students will have acquired knowledge to read and enjoy on their own a few applications of number theory in the field of art, geometry and coding theory.

SEMESTER 2

MT2B02: Calculus of Single variable-1

COs	COURSE OUTCOME
CO 1	Algebra and Geometry provide us very useful tools for expressing the relationship between static quantities, the concepts necessary to explore the relationship between moving/changing objects are provided in calculus.
CO 2	The course turns out to be a powerful tool in solving problems in physics, chemistry, biology, engineering, economics and other fields.

SEMESTER 3

MT2B03: Calculus of Single variable-2

COs	COURSE OUTCOME
CO 1	Creates a phenomenal interest in science, engineering, mathematics and economics. Gives an idea in how we model the growth of a biological population, the spread of a disease, the radioactive decay of atoms, and the study of heat transfer problems and in applications such as the study of shapes of cables hanging under their own weight.

SEMESTER 4

MT2B04: Linear Algebra

COs	COURSE OUTCOME
CO 1	Virtually every area of mathematics relies on or extends the tools of this course.
CO 2	The course gives the students an opportunity to learn the fundamentals of linear algebra by capturing the ideas geometrically, by justifying them algebraically and by preparing them to apply it in several different fields such as data communication, computer graphics, modelling etc.

MT2B05: Theory of Equations and Abstract Algebra

COs	COURSE OUTCOME
CO 1	To observe the connection emerging between classical algebra and modern algebra.
CO 2	Prepare the students to apply algebra in several different fields such as data communication, computer graphics, modelling etc.
CO 3	To provide the learner with the skills, knowledge and competencies to carry out their duties and responsibilities in a pure Mathematic environment.
CO 4	To gain an insight into powerful ideas and learning techniques which are applicable across a wide range of mathematics and science

SEMESTER 5

MT2B06: Basic Analysis

COs	COURSE OUTCOME
CO 1	To provide students with a level of mathematical sophistication that will prepare them for further work in mathematical analysis and other fields of knowledge.
CO 2	To develop their ability to analyse and prove statements of mathematics using logical arguments.

MT2B07: Numerical Analysis

COs	COURSE OUTCOME
CO 1	To provide techniques and algorithms to find approximate numerical solution to problems in several areas of mathematics where it is impossible or hard to find the actual/closed form solution by analytical methods and also to make an error analysis to ascertain the accuracy of the approximate solution.

MT2B08: Linear Programming

COs	COURSE OUTCOME
CO 1	It is a mathematical modelling process, for statisticians and economists it is useful for planning many economic activities such as transport of raw materials and finished products from one place to another with minimum cost and for military heads it is useful for scheduling the training activities and deployment of army personnel.
CO 2	To nurture the linear programming skills of students via. Algorithmic solution of small-scale problems, both in the general sense and in the specific applications where these problems naturally occur.

MT2B09: Introduction to Geometry

COs	COURSE OUTCOME
CO 1	Contribute thinking skills of logic, deductive reasoning and skills in problem solving.
CO 2	To simplify the treatment of geometry and to solve a wide variety of geometric problems.
CO 3	To get a realistic view of a three-dimensional object/scene depicted on a flat surface, a right impression of height, width, depth and position in relation to each other of the objects.
CO 4	Understand several basic facts about parabola, hyperbola and ellipse (conics) such as their equation in standard form, focal length properties, and reflection properties, their tangents and normal.
CO 5	Recognise and classify conics and understand Kleinian view of Euclidean geometry.

SEMESTER 6

MT2B10: Real Analysis

COs	COURSE OUTCOME
CO 1	State the definition of continuous functions, formulate sequential criteria for continuity and prove or disprove continuity of functions using this criteria.
CO 2	Understand several deep and fundamental results of continuous functions on intervals such as boundedness theorem, maximum-minimum theorem, intermediate value theorem, preservation of interval theorem and so on.
CO 3	Realise the difference between continuity and uniform continuity and equivalence of these ideas for functions on closed and bounded interval.
CO 4	Understand the significance of uniform continuity in continuous extension theorem.
CO 5	Develop the notion of Riemann integrability of a function using the idea of tagged partitions and calculate the integral value of some simple functions using the definition.

CO 6	Formulate Cauchy criteria for integrability and a few applications of it. In particular they learn to use Cauchy criteria in proving the non integrability of certain functions.
CO 7	Understand two forms of fundamental theorem of calculus and their significance in the practical problem of evaluation of an integral
CO 8	Understand the difference between pointwise and uniform convergence of sequences and series of functions. Learn and find out examples/counter examples to prove or disprove the validity of several mathematical statements that arise naturally in the process/context of learning.
CO 9	Learn the properties of and relationship among two important improper integrals namely beta and gamma functions that frequently appear in mathematics, statistics, science and engineering.

MT2B11: Complex Analysis

COs	COURSE OUTCOME
CO 1	To understand the difference between differentiability and analyticity of a complex function and construct examples and understand necessary and sufficient condition for checking analyticity
CO 2	To know a few elementary analytic functions of complex analysis and their properties and to understand definition of complex integral, its properties and evaluation.
CO 3	To know a few fundamental results on contour integration theory such as Cauchy's theorem, Cauchy-Goursat theorem and their applications.
CO 4	To understand and apply Cauchy's integral formula and a few consequences of it such as Liouville's theorem, Morera's theorem and so forth in various situations.

MT2B012: Calculus of Multi variable

COs	COURSE OUTCOME
CO 1	Understand several contexts of appearance of multivariable functions and their representation using graph and contour diagrams and to formulate and work on the idea of limit and continuity for functions of several variables.
CO 2	Understand the notion of partial derivative, their computation and interpretation. Understand chain rule for calculating partial derivatives
CO 3	Get the idea of directional derivative, its evaluation, interpretation, and relationship with partial derivatives. Understand the concept of gradient, a few of its properties, application and interpretation.
CO 4	Understand the use of partial derivatives in getting information of tangent plane and normal line. Calculate the maximum and minimum values of a multivariable function using second derivative test and Legrange multiplier method.

MT2B13: Differential Equations

COs	COURSE OUTCOME
CO 1	Identify a number of areas where the modelling process results in a differential equation.
CO 2	What an ODE is, what it means by its solution, how to classify DEs, what it means by an IVP and so on.
CO 3	To solve DEs that are in linear, separable and in exact forms and also to analyse the solution.
CO 4	Realise the basic differences between linear and non linear DEs and also basic results that guarantees a solution in each case.
CO 5	To approximate the solution successively of a first order IVP.

COURSE OUTCOME- COMPLIMENTARY COURSE

SEMESTER 1

MT1C01: Mathematics-1

COs	COURSE OUTCOME
CO 1	Algebra and Geometry provide us very useful tools for expressing the relationship between static quantities, the concepts necessary to explore the relationship between moving/changing objects are provided in calculus.
CO 2	The course turns out to be a powerful tool in solving problems in physics, chemistry, biology, engineering, economics and other fields.

SEMESTER 2

MT1C02: Mathematics-2

COs	COURSE OUTCOME
CO 1	Creates a phenomenal interest in science, engineering, mathematics and economics. Gives an idea in how we model the growth of a biological population, the spread of a disease, the radioactive decay of atoms, and the study of heat transfer problems and in applications such as the study of shapes of cables hanging under their own weight.
CO 2	Virtually every area of mathematics relies on or extends the tools of this course.
CO 3	The course gives the students an opportunity to learn the fundamentals of linear algebra by capturing the ideas geometrically, by justifying them algebraically and by preparing them to apply it in several different fields such as data communication, computer graphics, modelling etc.

SEMESTER 3

MT1C03: Mathematics-3

COs	COURSE OUTCOME
CO 1	Creates a phenomenal interest in science, engineering, mathematics and economics. Gives an idea in how we model the growth of a biological population, the spread of a disease, the radioactive decay of atoms, and the study of heat transfer problems and in applications such as the study of shapes of cables hanging under their own weight.
CO 2	Understand several contexts of appearance of multivariable functions and their representation using graph and contour diagrams and to formulate and work on the idea of limit and continuity for functions of several variables.
CO 3	Understand the notion of partial derivative, their computation and interpretation. Understand chain rule for calculating partial derivatives
CO 4	Get the idea of directional derivative, its evaluation, interpretation, and relationship with partial derivatives. Understand the concept of gradient, a few of its properties, application and interpretation.
CO 5	To understand the difference between differentiability and analyticity of a complex function and construct examples and understand necessary and sufficient condition for checking analyticity
CO 6	To know a few elementary analytic functions of complex analysis and their properties and to understand definition of complex integral, its properties and evaluation.
CO 7	To know a few fundamental results on contour integration theory such as Cauchy's theorem

SEMESTER 4

MT1C04: Mathematics-4

COs	COURSE OUTCOME
CO 1	Identify a number of areas where the modelling process results in a differential equation.
CO 2	What an ODE is, what it means by its solution, how to classify DEs, what it means by an IVP and so on.
CO 3	To solve DEs that are in linear, separable and in exact forms and also to analyse the solution.
CO 4	Realise the basic differences between linear and non linear DEs and also basic results that guarantees a solution in each case.
CO 5	To approximate the solution successively of a first order IVP.

COURSE OUTCOME: OPEN COURSE

SEMESTER 5

MT5D01: Applied Calculus

COs	COURSE OUTCOME
CO 1	Algebra and Geometry provide us very useful tools for expressing the relationship between static quantities, the concepts necessary to explore the relationship between moving/changing objects are provided in calculus.
CO 2	The course turns out to be a powerful tool in solving problems in physics, chemistry, biology, engineering, economics and other fields.

SEMESTER 6

ELECTIVE COURSE

MT6B14(E01): Graph Theory

COs	COURSE OUTCOME
CO 1	Understand and apply the fundamental concepts in graph theory
CO 2	Apply graph theory-based tools in solving practical problems
CO 3	Improve the proof writing skills and analyze properties of graphs
CO 4	Understand trees and their properties
CO 5	Distinguish between Eulerian and Hamiltonian graphs
CO 6	Analyze planar graphs.

B.SC PHYSICS

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOMES- CORE COURSE

SEMESTER 1

PHY1B01: METHODOLOGY OF SCIENCE AND BASIC MECHANICS

COs	COURSE OUTCOMES
CO1	Understand the features, methods and limitations of science.
CO2	Understand and apply the basic concepts of Newtonian Mechanics to physical systems.
CO3	Understand and apply the basic idea of work-energy theorem to physical systems.
CO4	Understand and apply the rotational dynamics of rigid bodies.
CO5	Understand the basic ideas of elasticity.

SEMESTER 2

PHY2B02: MECHANICS

COs	COURSE OUTCOMES
CO1	Understand the features of non-inertial systems and fictitious forces.
CO2	Understand and analyze the features of central forces with respect to planetary motion.
CO3	Understand the basics ideas of harmonic oscillations.
CO4	Understand and analyze the basics concepts of wave motion .

SEMESTER 3

PHY3B03: ELECTRODYNAMICS I

COs	COURSE OUTCOMES
CO1	Understand and apply the fundamentals of vector calculus.
CO2	Understand and analyze the electrostatic properties of physical systems.
CO3	Understand the mechanism of electric field in matter.
CO4	Understand and analyze the magnetic properties of physical systems.
CO5	Understand the mechanism of magnetic field in matter.

SEMESTER 4

PHY4B04: ELECTRODYNAMICS II

COs	COURSE OUTCOMES
CO1	Understand the basic concepts of electrodynamics.
CO2	Understand and analyze the properties of electromagnetic waves.
CO3	Understand the behavior of transient currents.
CO4	Understand the basic aspects of ac circuits.
CO5	Understand and apply electrical network theorems

SEMESTER 5

PHY5B06: COMPUTATIONAL PHYSICS

COs	COURSE OUTCOMES
CO 1	Understand the Basics of Python programming.
CO 2	Understand the applications of Python modules.
CO 3	Understand the basic techniques of numerical analysis.
CO 4	Understand and apply computational techniques to physical problems

PHY5B07: QUANTUM MECHANICS

COs	COURSE OUTCOMES
CO 1	Understand the particle properties of electromagnetic radiation. Describe Rutherford – Bohr model of the atom.
CO 2	Understand the wavelike properties of particles.
CO 3	Understand and apply the Schrödinger equation to simple physical systems. Apply the principles of wave mechanics to the Hydrogen atom

PH5B08: OPTICS

COs	COURSE OUTCOMES
CO 1	Understand the fundamentals of Fermat‟s principles and geometrical optics.
CO 2	Understand and apply the basic ideas of interference of light.
CO 3	Understand and apply the basic ideas of diffraction of light.
CO 4	Understand the basics ideas of polarization of light. Describe the basic principles of holography and fibre optics.

PHY5B09: ELECTRONICS (ANALOG & DIGITAL)

COs	COURSE OUTCOMES
CO 1	Understand the basic principles of rectifiers and dc power supplies.
CO 2	Understand the principles of transistor.
CO 3	Understand the working and designing of transistor amplifiers and oscillators.
CO 4	Understand the basic operation of Op –Amp and its applications.
CO 5	Understand the basics of digital electronics.

PHY5D01(1): NON-CONVENTIONAL ENERGY SOURCES

COs	COURSE OUTCOMES
CO 1	Understand the importance of non-conventional energy sources.
CO 2	Understand basic aspects of solar energy.
CO 3	Understand basic principles of wind energy conversion.
CO 4	Understand the basic ideas of geothermal and biomass energy and recognize their merits and demerits.
CO 5	Understand the basic ideas of oceans and chemical energy resources and recognize their merits and demerits.

SEMESTER 6

PHY6B10: THERMODYNAMICS

COs	COURSE OUTCOMES
CO 1	Understand the zero and first laws of thermodynamics.
CO 2	Understand the thermodynamics description of the ideal gas.
CO 3	Understand the second law of thermodynamics and its applications.
CO 4	Understand the basic ideas of entropy.
CO 5	Understand the concepts of thermodynamic potentials and phase transitions

PHY6B11: STATISTICAL PHYSICS, SOLID STATE PHYSICS, SPECTROSCOPY & PHOTONICS

COs	COURSE OUTCOMES
CO 1	Understand the basic principles of statistical physics and its applications.
CO 2	Understand the basic aspects of crystallography in solid state physics.

CO 3	Understand the basic elements of spectroscopy.
CO 4	Understand the basics ideas of microwave and infra-red spectroscopy.
CO 5	Understand the fundamental ideas of photonics.

PHY6B12: NUCLEAR PHYSICS AND PARTICLE PHYSICS

COs	COURSE OUTCOMES
CO 1	Understand the basic aspects of nuclear structure and fundamentals of radioactivity. Describe the different types of nuclear reactions and their applications .
CO 2	Understand the principle and working of particle detectors. Describe the principle and working of particle accelerators.
CO 3	Understand the basic principles of elementary particle physics

PHY6B13: RELATIVISTIC MECHANICS AND ASTROPHYSICS

COs	COURSE OUTCOMES
CO 1	Understand the fundamental ideas of special relativity.
CO 2	Understand the basic concepts of general relativity and cosmology.
CO 3	Understand the basic techniques used in astronomy. Describe the evolution and death of stars. Describe the structure and classification of galaxies.

PHY6B14 (EL2): NANOSCIENCE AND TECHNOLOGY

COs	COURSE OUTCOMES
CO 1	Understand the elementary concepts of nanoscience.
CO 2	Understand the electrical transport mechanisms in nanostructures.
CO 3	Understand the applications of quantum mechanics in nanoscience.
CO 4	Understand the fabrication and characterization techniques of nanomaterials. Enumerate the different applications of nanotechnology.

PHY4B05: PRACTICAL I

COs	COURSE OUTCOMES
CO 1	Apply and illustrate the concepts of properties of matter through experiments.
CO 2	Apply and illustrate the concepts of electricity and magnetism through experiments.

CO 3	Apply and illustrate the concepts of optics through experiments.
CO 4	Apply and illustrate the principles of electronics through experiments.

PHY6B15: PRACTICAL II

COs	COURSE OUTCOMES
CO 1	Apply and illustrate the concepts of properties of matter through experiments.
CO 2	Apply and illustrate the concepts of electricity and magnetism through experiments.
CO 3	Apply and illustrate the concepts of optics and spectroscopy through experiments.
CO 4	Apply and illustrate the principles of heat through experiments.

PHY6B16: PRACTICAL III

COs	COURSE OUTCOMES
CO 1	Apply and illustrate the principles of semiconductor diode and transistor through experiments.
CO 2	Apply and illustrate the principles of transistor amplifier and oscillator through experiments.
CO 3	Apply and illustrate the principles of digital electronics through experiments.
CO 4	Analyze and apply computational techniques in Python programming.

PHY6B17(P): PROJECT

COs	COURSE OUTCOMES
CO 1	Understand research methodology.
CO 2	Understand and formulate a research project. Design and implement a research project. Identify and enumerate the scope and limitations of a research project.

COURSE OUTCOMES- COMPLEMENTARY COURSES

SEMESTER 1

PHY1C01: PROPERTIES OF MATTER & THERMODYNAMICS

COs	COURSE OUTCOMES
CO 1	Understand the basic principles of elasticity.
CO 2	Understand the concepts of surface tension.
CO 3	Understand the aspects of viscosity.
CO 4	Understand the basic principles of thermodynamics.

SEMESTER 2

PHY2C02: OPTICS, LASER & ELECTRONICS

COs	COURSE OUTCOMES
CO 1	Understand the basic concepts of interference and diffraction.
CO 2	Understand the concepts of polarization.
CO 3	Understand the fundamentals of electronics.
CO 4	Understand the important principles of laser physics.

SEMESTER 3

PHY3C03: MECHANICS, RELATIVITY, WAVES AND OSCILLATIONS

COs	COURSE OUTCOMES
CO 1	Understand the basic ideas of reference and the principles of conservation of energy and momentum.
CO 2	Understand the concepts of relativity. Understand the basic ideas of oscillations and waves.
CO 3	Understand the basic ideas of modern physics

SEMESTER 4

PHY4C04: ELECTRICITY, MAGNETISM AND NUCLEAR PHYSICS

COs	COURSE OUTCOMES
CO 1	Understand the basic ideas of static and current electricity.
CO 2	Understand the concepts of magnetism. Describe the fundamental concepts of nuclear physics.
CO 3	Understand the basic ideas of cosmic rays and elementary particles.

PHY4C05: PHYSICS PRACTICAL I

COs	COURSE OUTCOMES
CO 1	Apply and illustrate the concepts of properties of matter through experiments. Apply and illustrate the principles of electronics through experiments.
CO 2	Apply and illustrate the concepts of electricity and magnetism through experiments.
CO 3	Apply and illustrate the concepts of optics through experiments.
CO4	Apply and illustrate the principles of electronics through experiments.

B.Sc. ZOOLOGY COURSE OUTCOMES

[CORE COURSE & COMPLEMENTARY COURSES]

COURSE OUTCOME: CORE COURSE

SEMESTER 1

ZOL1B01T: ANIMAL DIVERSITY: NON-CHORDATA PART- I

COs	Course Outcome
CO1	Describe the principles of classification and nomenclature
CO2	Explain the five-kingdom classification of living organisms
CO3	Understand the concepts of classification of animals
CO4	Explain the classification with examples and characteristic features of kingdom Protista and describe the morphology and structural organization of *Paramecium*
CO5	Describe the characteristic features of subkingdom Mesozoa
CO6	Explain the classification of phylum Porifera and elucidate the salient features of each class
CO7	Describe the characteristic features of phylum Cnidaria and Ctenophora, illustrate the classification of phylum Cnidaria down to classes and explain the structural organization of *Obelia*
CO8	Explain the salient features of phylum Platyhelminthes and illustrate its classification down to classes.
CO9	Explain the characteristic features and classification of super-phylum Aschelminthes and phylum Nematoda
CO10	Elucidate the characters of Pseudocoelomate minor phyla Rotifera and Gastrotricha

ZOL1B01T: ANIMALDIVERSITY: NON-CHORDATA

COs	Course Outcome Statements
CO1	Describe the principles of classification and nomenclature
CO2	Explain the five-kingdom classification of living organisms
CO3	Understand the concepts of classification of animals
CO4	Explain the classification with examples and characteristic features of kingdom Protista and describe the morphology and structural organization of *Paramecium*

CO5	Describe the characteristic features of subkingdom Mesozoa
CO6	Explain the classification of phylum Porifera and elucidate the salient features of each class
CO7	Describe the characteristic features of phylum Cnidaria and Ctenophora, illustrate the classification of phylum Cnidaria down to classes and explain the structural organization of *Obelia*
CO8	Explain the salient features of phylum Platyhelminthes and illustrate its classification down to classes
CO9	Explain the characteristic features and classification of super-phylum Aschelminthes and phylum Nematoda

SEMESTER 3

ZOL3B03T: ANIMAL DIVERSITY: CHORDATA PART – I

COs	Course Outcome
CO1	Explain the characteristics of chordates and outline classification of the phylum Chordata
CO2	Describe the salient features and affinities of subphylum Urochordata and its classification down to classes; elucidate the morphology and structural organization of *Ascidia*
CO3	Explain the salient features and affinities of subphylum Cephalochordata with reference to *Branchiostoma*
CO4	Describe the salient features of subphylum Vertebrata, illustrate its classification down to classes and elucidate the characteristics of division Agnatha
CO5	Enumerate the salient features of superclass Pisces and illustrate its classification down to orders and the morphology and structural organization of *Mugil cephalus*
CO6	Describe the salient features and affinities of class Amphibia and its classification up to orders; explain the morphology and organ systems of *Hoplobatrachus tigerinus*
CO7	Elucidate the characteristic features of the class Reptilia and its classification down to orders; describe the morphology and organ systems of *Calotes versicolor*

SEMESTER 4

ZOL4B04T: ANIMAL DIVERSITY: CHORDATA PART-II

COs	Course Outcome
CO1	Describe the classification of class Aves down to orders, salient features of each order with suitable examples

CO2	Describe the external characters and functional systems of *Columba livia*
CO3	Enumerate the salient features and classification of class Mammalia down to orders with suitable examples
CO4	Elucidate the external characters and functional systems of *Oryctolagus cuniculus*
CO5	Compare the circulatory, excretory and nervous systems of vertebrates

ZOL4B05P: PRACTICAL – I: ANIMAL DIVERSITY

COs	Course Outcome
CO1	Identify and describe specified protists and acoelomate & pseudocoelomate non- chordates and perform the culture of selected protists; understand the histological features of coelenterate, platyhelminth and nematode.
CO2	Identify and describe specified coelomate non-chordates and the transverse sections of annelids; Perform mounting of the specified organs of selected non-chordates.
CO3	Identify and describe specified chordates and specified bones of chordates; Prepare key for identification of venomous snakes; Perform mounting and dissection of specified organ systems of chordates.
CO4	Identify and describe selected vertebrates and specified bones of vertebrates.

SEMESTER 5

ZOL5B06T: CELL BIOLOGY AND GENETICS

COs	Course outcome Statements
CO1	Understand the principles and applications of various types of light microscopes, electron, Scanning-tunnelling and Atomic force microscope and illustrate the histological and histochemical processing of tissues.
CO2	Explain the basic structure of a eukaryotic cell and the structure and functions of plasma membrane, mitochondria, lysosome, cytoskeletal elements and interphase nucleus.
CO3	Illustrate the nucleosome organization of chromatin and higher order structures; structure of chromosomes and giant chromosomes.
CO4	Enumerate eukaryotic cell cycle and cell division by amitosis, mitosis and meiosis

CO5	Explain the causes of transformation, characteristics of transformed cells and the role of protooncogenes and tumor suppressor genes in malignant transformation; mechanism and significance of apoptosis
CO6	Enumerate allelic and non-allelic gene interactions; supplementary, complementary, polymeric, duplicate and modifying genes and polygenic inheritance.
CO7	Illustrate multiple allelism and solve problems related to blood group inheritance.
CO8	Explain characteristics of linkage groups and linkage map; crossing over and calculation of recombination frequency; sex-linked, sex-influenced and sex-limited characters; sex differentiation and disorders of sexual development.
CO9	Describe the mechanisms of sex determination including chromosomal, genic, haploid-diploid mechanisms; the hormonal and environmental influence on sex determination and gynandromorphism
CO10	Explain mutagenesis, mutagens and chromosomal and gene mutations.
CO11	Enumerate the classification and grouping of human chromosomes; numerical and mutational human autosomal and sex chromosomal anomalies; polygenic human traits and genetic counseling.

ZOL5B07T: BIOTECHNOLOGY, MICROBIOLOGY AND IMMUNOLOGY

COs	Course Outcome
CO1	Illustrate the steps in genetic engineering and animal cell culture
CO2	Explain transfection methods, transgenic animals and ethical issues of transgenic animals
CO3	Enumerate the applications of biotechnology
CO4	Understand the biological diversity of microbial forms and the various techniques for handling microbes in the laboratory
CO5	Enumerate the basic structure and life cycle of bacteria and virus
CO6	Understand the industrial and medical importance of microorganisms
CO7	Describe different types of immunity and the cells and organs of the immune system
CO8	Explain antigen, antibody, immunity and major histocompatibility complex
CO9	Enumerate autoimmune and immunodeficiency diseases and immunology of tumor and organ transplantation

ZOL5B08T: BIOCHEMISTRY AND MOLECULAR BIOLOGY

COs	Course Outcome statements
CO1	Understand the elements of biological importance and the non-covalent interactions that stabilize biomolecules.
CO2	Describe the classification, types, structure, reactions and biological roles of carbohydrates, and diabetes Type I and II
CO3	Enumerate the properties and classification of amino acids and their standard abbreviations; hierarchial levels of protein structure, classification, separation, purification and sequencing of proteins.
CO4	Explain the classification and functions of lipids and fatty acids; chemistry and structure of nucleic acids and sequencing of DNA
CO5	Understand the classification, nomenclature and properties of enzymes; enzyme action, co-enzymes, cofactors, isozymes, ribozymes and allosteric enzymes
CO6	Explain glycolysis, Kreb's cycle, glycogenesis, glycogenolysis, gluconeogenesis, HMP pathway; amino acid and fatty acid oxidation and oxidative phosphorylation
CO7	Describe the mechanism of DNA duplication and the role of enzymes.
CO8	Understand the concept of gene and gene expression; genetic code and wobble hypothesis.
CO9	Explain the mechanism of transcription and post-transcriptional modification of hnRNA.
CO10	Enumerate the processes of translation and post-translational modification and targeting of peptide.
CO11	Describe the regulation of *trp* operon, C-value, repetitive DNA, satellite DNA, selfish DNA, overlapping genes, pseudogenes, cryptic genes, transposons and retrotransposons.
CO12	Explain the structure and life cycle of bacteriophages and the gene transfer mechanisms in bacteria.

ZOL5B09T: METHODOLOGY IN SCIENCE, BIOSTATISTICS AND BIOINFORMATICS

COs	Course Outcome Statements
CO1	Explain science, its importance, disciplines and the major steps in formulating a hypothesis, various hypothesis models, theory, law and importance of animal models, simulations and virtual testing
CO2	Illustrate the principles and procedures in designing experiments and elaborate

	the requirements for carrying out experiments
CO3	Describe the ethical concerns in practicing science
CO4	Understand the Scope and role of statistics; methods and procedures of sampling; Construction of tables, charts and graphs
CO5	Calculate central tendency and measures of dispersion and application of its knowledge on hypothesis testing as well as in problem solving
CO6	Enumerate major biological databases and database search engines.
CO7	Perform DNA and protein sequence analysis, including sequence alignment and sequence similarity search using BLAST, FASTA, CLUSTAL W and CLUSTAL X
CO8	Understand molecular phylogenetics and tools and methods for construction of phylogenetic trees
CO9	Explain genome sequencing technologies, functional genomics, proteomic technologies and molecular docking and drug design

ZOL6B15P: PRACTICAL II*A: CELL BIOLOGY, GENETICS, BIOTECHNOLOGY, MICROBIOLOGY AND IMMUNOLOGY

COs	Course Outcome Statements
CO1	Perform experiments in cell biology and genetics including demonstration of Barr body in buccal epithelial cells of man, polytene chromosome in the salivary glands of *D. Melanogaster* larva, mitotic division in onion root tip cells, micrometry of microscopic objects, prepare whole mounts of microscopic objects, and calculate mitotic and metaphase index from slides.
CO2	Enumerate the inheritance of major human genetic traits, pedigree chart, normal and abnormal human karyotypes, phenotypic differences of male and female Drosophila and solve problems on Monohybrid, dihybrid crosses, blood groups and sex-linked inheritance.
CO3	Understand electrophoresis, PCR, Northern blotting, Southern blotting and Western blotting, DNA sequencing and fingerprinting and isolation of genomic DNA.
CO4	Perform gram staining and preparation of culture media for bacteria and demonstrate bacterial motility by standard laboratory protocols.
CO5	Understand the detection of human blood groups and organs of immune system
CO6	Perform standard biochemical tests for the detection of reducing and nonreducing sugars, polysaccharides, proteins and lipids.
CO7	Understand the staining of mitochondria, tissue homogenization and isolation of nuclei, effect of colchicines of cell division, extraction of DNA and polyacrylamide and agaros egel electrophoresis
CO8	Solve basic problems in biostatistics and Bioinformatics

COURSE OUTCOME – OPEN COURSE

ZOL5D02T: NUTRITION, HEALTH AND HYGIENE

COs	Course Outcome Statements
CO1	Describe the basic concepts in nutrition
CO2	Demonstrate the understanding of nutrients and energetics
CO3	Enumerate the vitamins and minerals and their roles in human nutrition
CO4	Explain balanced diet, RDA and factors that affect it and meal planning for various categories of people
CO5	Illustrate diet therapy and dietary management of various conditions
CO6	Explain health, fitness and hygiene
CO7	Describe the major communicable, non-communicable, congenital and sexually transmitted human diseases
CO8	Perform first aid management in emergency situations

SEMESTER 6

ZOL6B10T: PHYSIOLOGY AND ENDOCRINOLOGY

COs	Course Outcomes
CO1	Describe the regulation of digestion in man, nutrition in pregnancy and infancy, nutritional disorders, balanced diet, starvation, fasting and obesity.
CO2	Understand the mechanism of transport and exchange of respiratory gases and its neurophysiological control and physiological problems in diving mammals, new-born and aged individuals.
CO3	Describe functions, composition, coagulation, transfusion, agglutination and clinical analysis of blood, haemoglobinopathies, types of heart and common cardio-vascular problems.
CO4	Understand the osmoregulatory mechanisms in animals; excretion and its hormonal control and common renal disorders in man.
CO5	Explain the ultrastructure of skeletal muscles and biochemical events and energetics of muscle contraction.
CO6	Understand the different types of nerve cells, glial cells and nerve fibres, and the mechanism of nerve impulse transmission
CO7	Understand the types, physiology and significance of bioluminescence, and the structure and functions of electric organs.
CO8	Describe invertebrate neuro-endocrine organs and hormones, vertebrate endocrine glands, their hormones and

	functions
CO9	Understand the concept of neurosecretion and the mode of action of peptide and steroid hormones.

ZOL6B11T: REPRODUCTIVE AND DEVELOPMENTAL BIOLOGY

COs	Course Outcome
CO1	Explain the reproductive strategies in invertebrates and vertebrates and structural and functional features of human reproductive system
CO2	Describe process of fertilization, pregnancy, gestation, placentation, parturition and lactation in humans.
CO3	Explain the scope of reproductive technologies in infertility management; prenatal diagnostic techniques and methods of fertility control
CO4	Understand the phases and theories of development, and classification of eggs
CO5	Enumerate the types of cleavage, arrangement of blastomeres, germ layers and their derivatives, cell lineage in Planocera and different types of blastula.
CO6	Illustrate the early developmental process of egg in Amphioxus, frog, chick and man
CO7	Explain the basics of cell differentiation and its genetic control, stem cells and applications of stem cell technology
CO8	Describe parthenogenesis, types, and significance
CO9	Explain fate map construction, Spemann's constriction experiments on amphibian embryos, organizers in development, embryonic induction, gradient experiments in sea urchin eggs, cloning experiments in sheep and teratogenesis

ZOL6B12T: ENVIRONMENTAL AND CONSERVATION BIOLOGY

COs	Course outcome statements
CO1	Explain the structure of ecosystem and its functioning through energy flow and nutrient cycling.

CO2	Enumerate biogeochemical cycles and understand the concept of limiting factors.
CO3	Describe the ecology of population, community and habitat as a self-regulating System.
CO4	Understand various types of population interactions and appraise the co-evolution.
CO5	Comprehend the diverse environmental and sustainability challenges ranging from local to global and the establishment of perfect harmony between economic development, social issues and environmental conservation.
CO6	Enumerate the several tools and techniques employed for studies on populations, communities and ecosystems.
CO7	Understand the threats to biodiversity, and strategies adapted for the conservation of diversity of organisms.
CO8	Describe the various international strategies for conserving biodiversity.
CO9	Describe the toxic chemicals, their toxicity levels and the health hazards caused by them.

ZOL6B13T: ETHOLOGY, EVOLUTION AND ZOOGEOGRAPHY

COs	Course Outcome
CO1	Describe the patterns and mechanisms of animal behaviour.
CO2	Illustrate biological rhythms and the chemical basis of communication.
CO3	Identify major evolutionary transitions over time, and explain the tools and evidences that support current hypotheses of the history of life on earth.
CO4	Describe the evidences for evolution and its required corollaries.
CO5	Explain the various theories of evolution.
CO6	Describe the mechanisms by which evolution occurs.
CO7	Recognize the significance of reproductive isolation in reducing gene flow between populations, biological and morphological species concepts and distinguish between prezygotic and postzygotic barriers to reproduction.
CO8	Review the events in human evolution.

CO9	Explain ecological and historical foundations for understanding the distribution and abundance of species, and their changes over time and comprehend the basic principles of biogeography as a discipline.

ZOL6B14BE03T: APPLIED ENTOMOLOGY

COs	Course Outcome
CO1	Describe the branches of entomology and insect services.
CO2	Identify and explain the lifecycle, damages and control of insect pests of crop plants and domestic animals.
CO3	Review the insect control strategies.
CO4	List and describe the useful insects and the products derived from bees, silkworms and lac insects.

ZOL6B16P: Practical III*A & Practical III*B

Physiology, Endocrinology, Reproductive & Developmental Biology

Environmental & Conservational Biology, Ethology, Evolution, Zoogeography & Elective course

COs	Course Outcome Statements
CO1	Perform standard laboratory experiments for the estimation of Hb, presence of hCG/abnormal constituents in urine, detection of blood pressure, bleeding and clotting time and identification of formed elements in blood.
CO2	Identify selected stages in the development of frog and chick and chosen larval forms of invertebrates and vertebrates.
CO3	Carry out experiments of laboratory standards to estimate water quality parameters including, dissolved Oxygen, Carbon dioxide, hardness and pH; determination of adulteration of selected food items and identify marine planktons and soil organisms.
CO4	Demonstrate the behavioural response of earthworm/dipteran larva to selected stimuli
CO5	Describe homologous , analogous and vestigial organs, connecting links, adaptive radiation and evolution of man
CO6	Illustrate zoogeographical realms, Wallace line, Weber line, Wallacea and the distribution of *Peripatus*, lung fishes, *Sphenodon*, monotremes and marsupials.
CO7	Identify the normal and selected abnormal human karyotypes and inheritance of chosen traits from pedigree charts, ornamental and other culture fishes and chosen beneficial and harmful insects.

ZOL1C01T: Animal Diversity &Wild Conservation

COs	Course Outcome
CO1	Describe the general characters of protists and salient features of phylum –Rhizopoda, Ciliophora, Dinoflagellata and Apicomplexa.
CO2	Enumerate the salient features and examples of Phylum – Porifera, Coelenterata, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Onychophora, Mollusca and Echinodermata, and the structural organization of *Peneaus* sp.
CO3	Describe the characteristic features and classification of phylum Chordata with examples and, structural organization of *Oryctolagus cuniculus.*
CO4	Explain levels of biodiversity, threats to biodiversity, biodiversity hotspots, importance and strategies for conservation of wildlife and sustainable development.

COURSE OUTCOME- COMPLEMENTARY COURSE

SEMESTER 2

ZOL2C02T: ECONOMIC ZOOLOGY

COs	Course Outcome
CO1	Explain parasitism and the major protist, cestode, trematode and nematode parasites of man and major insect vectors of human diseases and their control
CO2	Understand major beneficial and harmful insects, damages caused to host plants and their control measures.
CO3	Understand pisciculture, prawn, mussel and pearl culture.

SEMESTER 3

ZOL3CO3T: PHYSIOLOGY & ETHOLOGY

COs	Course Outcome
CO1	Describe the structure of plasma membrane and the various trans-membrane transport mechanisms.
CO2	Enumerate the constituents of normal diet and the mechanism of digestion and absorption of carbohydrates, proteins and lipids and the regulation ofgastrointestinal function.
CO3	Explain the mechanism of transport of respiratory gases, control of respiration, respiratory problems and artificial ventilation.

CO4	Explain the structure and working of human heart and mechanism of regulation of heart beat; constituents of human blood and blood transfusion and cardiovascular problems.
CO5	Illustrate the structure of human kidney, the mechanism of urine formation, hormonal control of kidney function and kidney disorders; osmoregulation and urea cycle.
CO6	Enumerate the structure of myofibrils and myofilaments; muscle contractile and regulatory proteins and mechanism of muscle contraction.
CO7	Explain different types of nerve cells and glial cells, maintenance of resting membrane potential, generation and propagation of action potential and synaptic Transmission.
CO8	Describe innate behavior, learned behavior, patterns of behavior and factors that affect behavior
CO9	Enumerate biological rhythms, communication in animals and social organization in mammals.

SEMESTER 4

ZOL4C04T: GENETIC IMMUNOLOGY

COs	Course Outcome statements
CO1	Describe human karyotype, chromosomal anomalies and polygenic inheritance
CO2	Explain the mechanisms of sex determination
CO3	Enumerate the concept of genes, gene expression, genetic code, transcription and translation.
CO4	Illustrate the mechanism of recombinant DNA technology and its practical applications.
CO5	Explain the types of cancer, causes of transformation and characteristics of transformed cells.
CO6	Identify the cells and organs of immune system, antigens and antibodies.
CO7	Enumerate antigen-antibody interaction, generation of B-cell and T-cell response and major immunotechniques.
CO8	Explain primary and secondary immunodeficiency diseases, autoimmune diseases, vaccination and vaccines.

ZOL4C05P: PRACTICALS

COs	Course Outcome statement
CO1	Identify the salient features of the phylum; taxonomic position, habit, habitat, adaptations/importance of selected protists, non-chordates and chordates
CO2	Describe major human parasites and economically important insects, molluscs and fishes
CO3	Perform detection of human blood groups and prepare human blood smear as per laboratory standards; mounting of specialized organs of selected non- chordates and chordates, and demonstrate the presence of biomolecules in samples by standard laboratory protocols
CO4	Illustrate the normal and selected abnormal human karyotypes and mode of inheritance of selected human genetic disorders and perform the dissection of earthworm and sardine to demonstrate the alimentary canal and *Penaeus* to demonstrate the nervous system.

B.SC PSYCHOLOGY

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME- CORE COURSE

SEMESTER 1

PSY1B01: BASIC THEMES IN PSYCHOLOGY- I

COs	COURSE OUTCOME
CO 1	To generate interest in Psychology
CO 2	To make familiar the basic concept of the field of Psychology with an emphasis on applications of Psychology in everyday life.
CO 3	To understand the basics of various theories in Psychology
CO 4	To provide basic knowledge about systems and processes like attention, learning and Consciousness.

SEMESTER 2

PSY2B01: BASIC THEMES IN PSYCHOLOGY- II

COs	COURSE OUTCOME
CO 1	To generate interest in Psychology.
CO 2	To make familiar the basic concept of the field of Psychology with an emphasis on the applications of Psychology in everyday life
CO 3	To understand the basics of various theories in Psychology
CO 4	To provide basic knowledge about systems and processes like cognition, memory, motivation and emotion.

SEMESTER 3

PSY3B01: PSYCHOLOGICAL MEASUREMENT AND TESTING

COs	COURSE OUTCOME
CO 1	To offer foundation on psychological measurement and testing
CO 2	To provide the basis of test construction and to build up skills on developing psychometric test
CO 3	To familiarize the uses of psychological tests
CO 4	To make aware of ethical principals in testing

PRACTICAL I: EXPERIMENTAL PSYCHOLOGY

COs	COURSE OUTCOME
CO 1	To nurture the ability in students to understand himself/herself and other persons.
CO 2	To develop the skills of testing and scientific reporting in psychology.
CO 3	To familiarize the students to various psychological tests and assessment tools.
CO 4	To generate an interest in working of the community with a psychological outlook

SEMESTER 4

PSY4B01: INDIVIDUAL DIFFERENCES

COs	COURSE OUTCOME
CO 1	To provide theoretical knowledge about systems and processes like intelligence and personality
CO 2	To understand the history of intelligence and Personality Testing
CO 3	To familiarize the student with various types of tests in Psychology

PSY4B02: EXPERIMENTAL PSYCHOLOGY PRACTICAL I

COs	COURSE OUTCOME
CO 1	To nurture the ability in students to understand himself/herself and other persons.
CO 2	To develop the skills of testing and scientific reporting in psychology.
CO 3	To familiarize the students to various psychological tests and assessment tools.
CO 4	To generate an interest in working of the community with a psychological outlook

SEMESTER 5

PSY5B01: ABNORMAL PSYCHOLOGY-I

COs	COURSE OUTCOME
CO 1	To enable students to understand the concepts of abnormal behavior.
CO 2	To develop awareness about different types of anxiety and stress disorders
CO 3	To encourage the students to know different therapeutic techniques in management of anxiety and stress disorders

PSY5B02: SOCIAL PSYCHOLOGY

COs	COURSE OUTCOME
CO 1	To Understand and explain behaviour in social settings Explain the psychological aspects of various social phenomena
CO 2	To create awareness about the management of human behaviour in group setting

PSY5B03: DEVELOPMENTAL PSYCHOLOGY –I

COs	COURSE OUTCOME
CO 1	To study human development in Psychological Perspectives
CO 2	To create awareness about major psychological changes along with physical and cognitive Development

PSY5B04: PSYCHOLOGICAL COUNSELLING

COs	COURSE OUTCOME
CO 1	To acquire theoretical knowledge in the areas of psychological counselling
CO 2	To understand the applications of counselling in various settings
CO 3	To practice counselling techniques through role plays

PSY5B05: HEALTH PSYCHOLOGY

COs	COURSE OUTCOME
CO 1	To understand the psychological, behavioral and cultural factors contributing to physical and mental health.
CO 2	To study the management of different illnesses

SEMESTER 6

PSY6B01: ABNORMAL PSYCHOLOGY-II

COs	COURSE OUTCOME
CO 1	To develop awareness about major psychological disorders
CO 2	To acquaint the students with causes of major psychological disorders

PSY6B02: APPLIED SOCIAL PSYCHOLOGY

COs	COURSE OUTCOME
CO 1	To familiarize the theoretical concept and research methods in applied psychology.
CO 2	To give knowledge about application of social psychology in different areas like clinical, Educational, health and media.
CO 3	To understand the major social issues in India.

PSY6B03: DEVELOPMENTAL PYCHOLOGY –II

COs	COURSE OUTCOME
CO 1	To study emotional and social development of life span periods.
CO 2	To study the vocational development and adjustments in adulthood.
CO 3	To understand the period of late adulthood.

PSY6B04: LIFE SKILL EDUCATION: APPLICATIONS AND TRAINING.

COs	COURSE OUTCOME
CO 1	To promote life skill education
CO 2	To develop abilities for adaptive and positive behavior
CO 3	To enhance self-confidence and self-esteem

PSY6B05-04: EDUCATIONAL PSYCHOLOGY

COs	COURSE OUTCOME
CO 1	To promote an understanding of the application of psychological principles in the process of education.
CO 2	To familiarise the students with the characteristics of normal and exceptional children.
CO 3	To provide the ways and methods of teaching and classroom management.

COURSE OUTCOME- COMPLEMENTARY COURSE

SEMESTER 1

PS1C01: HUMAN PHYSIOLOGY

COs	COURSE OUTCOME
CO 1	To familiarizes the student of Psychology with the most essential and fundamental aspects of cell biology and basics of genetics that are essential for understanding the anatomy and physiology of the nervous system in general and of the CNS that they are to master in the following semesters.

SEMESTER 2

PS2C01: HUMAN PHYSIOLOGY

COs	COURSE OUTCOME
CO 1	To imparts extensive information to the Psychology student on the nervous system with special emphasis on the CNS. It also introduces the student to states of brain activities and techniques in neurophysiology

SEMESTER 3

PS3C01: HUMAN PHYSIOLOGY

COs	COURSE OUTCOME
CO 1	To familiarizes the student of Psychology with the sensory systems, pathways and perception of various senses. It also introduces the student to the endocrine system.

SEMESTER 4

PS4C01: HUMAN PHYSIOLOGY

COs	COURSE OUTCOME
CO 1	To familiarizes the student of Psychology with the most essential and fundamental aspects of physiological processes underlying psychological events like hunger, thirst, sexual behaviour and emotion. It also dwells on brain damage and Neuroplasticity

BA ECONOMICS

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME- CORE COURSE

SEMESTER 1

ECO1 B01: Microeconomics – I

COs	COURSE OUTCOME
CO 1	To illustrate how microeconomic concepts can be applied to analyse real-life situations.

SEMESTER 2

ECO2 B02: Macroeconomics – I

COs	COURSE OUTCOME
CO 1	To give a rigorous overview of macroeconomics to the undergraduate students.
CO 2	To give the necessary ideas and tools to understand the working of an economy at the aggregate level.
CO 3	To give an idea about the need for and the way in which government intervention is required in a modern economy.
CO 4	To enable the students to explain how output and employment are determined in classical and Keynesian systems.

SEMESTER 3

ECO3 B04: Microeconomics – II

COs	COURSE OUTCOME
CO 1	To introduce fundamental market concepts and structures.
CO 2	To give conceptual clarity to the student coupled with the use of the principles of Micro economic analysis to the decision making of firms and market.
CO 3	To enable students to apply the principles of micro economics, to the decision making of firms and the functioning of the market.

SEMESTER 4

ECO4 B06: Macroeconomics – II

COs	COURSE OUTCOME
CO 1	To give a rigorous overview of macroeconomics to the undergraduate students.
CO 2	To enable students to derive IS-LM curves and use the framework to explain the working of an economy.
CO 3	To explain the way fiscal and monetary policy works, using the ISLM framework.
CO 4	To explain the concept and measurement of inflation and unemployment
CO 5	To explain the trade-off between inflation and unemployment as predicted by the Phillips curve and its collapse after the stagflation of 1970s.

SEMESTER 5

ECO5 B07: Macro Economics – I

COs	COURSE OUTCOME
CO 1	To provide students with the basic ideas in classical and Keynesian macroeconomics.
CO 2	To learn the relationships and ideas in the measurement of national income, the theory of income determination, fiscal and monetary policies, the government and its role in the functioning of the economy, etc.

ECO5 B08: India's Economic Development: National and Regional

COs	COURSE OUTCOME
CO 1	To expose the learners to some of the key issues facing the Indian economy both at national and regional levels.
CO 2	To be sensitized about these issues, appreciate and learn to critically assess the role of the government in various economic spheres.
CO 3	To expose students to numerical information relating to various aspects of Indian economy and India's economic policies.
CO 4	To develop analytical skills, interpret the economic events and visualize the economic future of India.

ECO5 B09: Economics of Capital Market

COs	COURSE OUTCOME
CO 1	To give an exposure to the students of economics to the changing world of financial markets and to give them an opportunity to familiarize with the basic concepts related to capital market which they read in newspapers and hear and see-through electronic media in their daily walks of life, and to understand the economics of capital market.

CO 2	To provide a platform to students of economics in developing the skills required to take up a career in financial sector and to provide them an opportunity to think of higher studies in finance which may open them the vast career opportunities in the field of finance.

ECO5 B10: International Economics

COs	COURSE OUTCOME
CO 1	To present before the students the questions, and answers, related to international economic relations
CO 2	To acquire skill that will help them to take rational decisions in issues related to international economics.

SEMESTER 6

ECO6 B11: Macroeconomics – II

COs	COURSE OUTCOME
CO 1	To familiarize the students in the application of principles of macroeconomic analysis to the day-to-day decision-making in the aggregate economy.
CO 2	To develop skill in economic reasoning
CO 3	To help them in understanding and solving aggregate economic problems.

ECO6 B12: Mathematical Economics

COs	COURSE OUTCOME
CO 1	To introduce students to the most fundamental aspects of mathematical economics and econometrics.
CO 2	To develop critical thinking, and problem-solving, empirical research and model building capabilities.
CO 3	To acquire mathematical skills which will help them to build and test models in economics and related fields.

ECO6 B13: Public Finance

COs	COURSE OUTCOME
CO 1	To introduce students to the application of the techniques, methods and principles of Economics to decision making in public finance.
CO 2	To learn how the principles of economics can be applied to sound decision making in public finance.
CO 3	To learn all the important economic issues that government agents face.

EC6 E01: Environmental Economics

COs	COURSE OUTCOME
CO 1	To develop a vision and achieve a mission of attaining a sustainable society by studying the subject of environmental economics.
CO 2	To make the students realize the causes and consequences of environmental problems in the contemporary world.
CO 3	To equip students with an in-depth understanding of the inter-relationship between the economy and environment.

EC6 B15(Pr): Project Work

COs	COURSE OUTCOME
CO 1	To provide exposure to the fundamentals of techniques and methods in social research.
CO 2	To familiarize the student with the quantitative and qualitative strategies of research in social science.
CO 3	To develop research project and work with a research problem.

BA ENGLISH

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME- CORE COURSE

SEMESTER 1

ENG1B01: INTRODUCING LITERATURE

COs	COURSE OUTCOME
CO 1	To introduce students to the language of literature, i.e., the meaning-making devices, verb phrases, collocations, linkers, sense groups and their functions in the literary text
CO 2	To train the students to identify the linguistic structures of poetic texts: symbols, metaphors, and other tropes and equip them in poetic conventions
CO 3	To recognize diverse points of view within a single text and to understand the rationale of polyphony
CO 4	To prepare students in reading literary/cultural texts closely, beyond the literal.
CO 5	To enable students to recognize the dominant voice/s within the text and its agendas
CO 6	To encourage questioning the text in order to perceive marginalized voices - the voices of the child, Dalit, transgender and female

SEMESTER 2

ENG2B02: APPRECIATING POETRY

COs	COURSE OUTCOME
CO 1	To introduce the students to the basic elements of poetry, including the stylistic and rhetorical devices employed in poetry, and to various genres of poetry.
CO 2	To facilitate students to attain various perspective in reading poetry like gender, race, caste, ethnicity, religion, region, environment and nation.
CO 3	To familiarize the learners with different forms of poetry written in British and American literature.
CO 4	To create an awareness among the learners about different forms and themes of poetry produced across the globe in the history of literature.

SEMESTER 3

ENG3B03: APPRECIATING PROSE

COs	COURSE OUTCOME
CO 1	To familiarize the students with different types of prose writing.
CO 2	To introduce to them the basic concepts of style and literary devices in prose.
CO 3	To acquaint them with cultural diversity and divergence in perspectives.
CO 4	To develop their critical thinking abilities and write creatively and critically.

ENG3B04: ENGLISH GRAMMAR AND USAGE

COs	COURSE OUTCOME
CO 1	a. To familiarize the students with the key concepts of English grammar and to use them more sensitively in their day-to-day communication needs.
CO 2	To help students towards a better language use through the understanding of the sentence patterns in English.
CO 3	To help the students develop a sense of English grammar, idioms, syntax, semantics and their usage.
CO 4	To develop the logical and analytical skills in the use of language for communication.
CO 5	To familiarize students with contemporary English usage

ENG3B04: APPRECIATING FICTION

COs	COURSE OUTCOME
CO 1	To help students discover the pleasures in reading fiction.
CO 2	To aid students gain an insight into the human condition and the complexities of life.
CO 3	To acquaint the students with different types of fiction and analyze them.

SEMESTER 4

ENG4B06: LITERARY CRITICISM

COs	COURSE OUTCOME
CO 1	To have an understanding of important texts and movements in the history of literary criticism.
CO 2	To examine how literary criticism shapes literature and culture across centuries.
CO 3	To recognize and critique the major arguments underlying critical writings.
CO 4	To relate critical perspectives to the history of eastern and western ideas.

SEMESTER 5

ENG5B07: APPRECIATING DRAMA AND THEATRE

COs	COURSE OUTCOME
CO 1	To introduce the students to the basic elements of drama, including the historical progress of drama in different continents.
CO 2	To foster an ability in the students for appreciating drama as an art form.
CO 3	To familiarize the students with the different genres and masters of drama.
CO 4	To facilitate the learners to critically go beyond the theatrical performances to the texts and approach them critically from various standpoints.

ENG5B08: LITERARY THEORY

COs	COURSE OUTCOME
CO 1	To introduce the students to the basic elements of drama, including the historical progress of drama in different continents.
CO 2	To foster an ability in the students for appreciating drama as an art form.
CO 3	To familiarize the students with the different genres and masters of drama.
CO 4	To facilitate the learners to critically go beyond the theatrical performances to the texts and approach them critically from various standpoints.

ENG5B09: LANGUAGE AND LINGUISTICS

COs	COURSE OUTCOME
CO 1	To lead to a greater understanding of the human mind, of human communicative action and relations through an objective study of language
CO 2	To familiarize students with key concepts of Linguistics and develop awareness of latest trends in Language Study
CO 3	To help students towards a better pronunciation and to improve the general standard of pronunciation in every day conversation and in reading.
CO 4	To help the students develop a sense of English grammar, syntax and usage.
CO 5	To improve writing and speech skills.

ENG5B10: INDIAN WRITING IN ENGLISH

COs	COURSE OUTCOME
CO 1	To provide an overview of the various phases of the evolution of Indian writing in English
CO 2	To introduce students to the thematic concerns, genres and trends of Indian writing in English
CO 3	To expose students to the pluralistic aspects of Indian culture and identity

ENG5B11: VOICES OF WOMEN

COs	COURSE OUTCOME
CO 1	To equip students to steer clear of misconceptions regarding women and to evolve a human perspective about them.
CO 2	To arouse a keen interest in analysing critically the diversity of women's experiences across the world and to marvel at their creative skills.
CO 3	To perceive gender as a social construct

SEMESTER 6

ENG6B12: CLASSICS OF WORLD LITERATURE

COs	COURSE OUTCOME
CO 1	To acquaint the students with the classic literatures and thereby composite cultures of the world
CO 2	To enable students to develop cross cultural perspectives
CO 3	To enhance the literary sensibility of students

ENG6B13: FILM STUDIES

COs	COURSE OUTCOME
CO 1	To appreciate film as an art form and its aesthetics.
CO 2	To understand how film connects with history, politics, technology, psychology and performance.
CO 3	To critically appraise the nature of representation on screen and how class, race ethnicity and sexuality are represented.
CO 4	To develop analytical skills so that the student can produce informed and thorough close readings of films.

ENG6B14: NEW LITERATURES IN ENGLISH

COs	COURSE OUTCOME
CO 1	To expose the students to diverse cultures and modes of expression.
CO 2	To enable them to explore issues of cultural plurality and hybridity
CO 3	To expose the learners to literary negotiations of colonization and decolonization, identity, inequality, marginalization and so on.

ENG6B17: WRITING FOR THE MEDIA

COs	COURSE OUTCOME
CO 1	To familiarize the students with the latest trends in media
CO 2	To understand the specificities and possibilities of the different kinds of media
CO 3	To impart necessary technical writing skills

BA HISTORY

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME- CORE COURSE

SEMESTER 1

TRENDS IN HISTORIOGRAPHY

COs	COURSE OUTCOME
CO 1	To the basic understanding regarding the development of History as a discipline. The emphasis will be on the major trends in the arena of Historical Writing and thought. The course will illustrate how the methodological and philosophical shifts have contributed for the development of History as a discipline.

SEMESTER 2

TRENDS IN INDIAN HISTORIOGRAPHY

COs	COURSE OUTCOME
CO 1	To the basic understanding regarding the development of historical consciousness in India. It will also provide a basic understanding regarding the major trends in the arena of Historical Writing and Thought in India. It will also expose the students to the major paradigms associated with the study of Indian History, which will help them to understand the Indian History Courses in the following semesters.

WORLD HISTORY-I

COs	COURSE OUTCOME
CO 1	To know a general time line and outline of ancient civilizations, including key events and cultural achievements of different ancient civilizations The course provides an overview of early cultures and meetings between cultures and similar Ability to recognize the multiple spatial and temporal contexts and to look at one's own society and civilization in contrast to other societies and civilizations.
CO 2	Ability to recognize the influence of global forces and identify their connections to local and national developments. trends across cultures Compares and contrasts past with current events, issues and problems

INDIAN HISTORY-I

COs	COURSE OUTCOME
CO 1	The main objective of this syllabus is to provide a broad historic outline about the process of socio-political formations in the north and south India up to 1300 CE. Four modules introduce four main process of the socio-political formations; the emergence of the first urbanization in the north western part of early India during bronze age, the socio-political formations of Indo-Gangetic plains in the Iron Age, the emergence of an empire under Mauryas in the north and Muvendars in the South and the formation of feudal cultures in the north and south.

WORLD HISTORY-II

COs	COURSE OUTCOME
CO 1	The course is prepared to create knowledge on medieval world through which students could be able to understand different state systems, its socio- cultural contributions and its impact on later society. Along with a study on medieval European state and society, it focuses on the socio-political and economic currents of medieval Central Asia, West Asia and East Asia. The course would provide an understanding on scientific and intellectual interactions that taken place between the East and the West in the medieval period. It also explains the pattern of medieval medicinal system and its efficacy in dealing contagious diseases of the period.

INDIAN HISTORY-II

COs	COURSE OUTCOME
CO 1	The course is framed to explicate the nature of state and society in Medieval India. It familiarizes the students with process of state formation; economic pattern of medieval India along with the social and cultural developments of the period. It explains the process of medieval trade related to Arabian Sea and Indian Ocean. Students could able to understand changing pattern of agrarian system in medieval India. A new phase in Indian History began with the advent of the Arabs in Sindh in A.D.712. The Arabs brought a new religion, a new culture and civilization to the Indian Sub-Continent. The new form of religious ideas, culture, fine arts etc. have lasting impact on India.

WORLD HISTORY-III

COs	COURSE OUTCOME
CO 1	Develop new perspectives on American War of Independence, English and French Revolution.
CO 2	Create a fresh look at Industrial Revolution and consequent development in all walks of modern world. It will peep into the colonialism and anti-colonial movements.
CO 3	Appreciate the mass mobilization in Third World countries and appreciate the democratic ideologies tagged along with it.

INDIAN HISTORY-III

COs	COURSE OUTCOME
CO 1	Realise the impact of colonialism and its presence in contemporary India
CO 2	Appreciate the values and ideologies of freedom struggle
CO 3	Trace the mass basis of Indian national movement
CO 4	Trace the dynamics of Indian economy that have rooted in both colonial and Native practices
CO 5	Understand the process of class formations in Modern India

KERALA HISTORY-I

COs	COURSE OUTCOME
CO 1	New thinking on major aspects of the evolution of Kerala history and culture in the light of new researches and findings.
CO 2	Realise the importance of landscape and seascape of Kerala and its climate and engage in the activities related to the balanced use of natural resources
CO 3	Realise the evolution of land relations in Kerala and its impact on social life
CO 4	Identify the trade items of Kerala related to Arabian Sea and Indian Ocean
CO 5	Realise the changes occurred in the landscape of Kerala especially its flora and fauna with the arrival of foreigners

METHODOLOGY OF WRITING OF HISTORY

COs	COURSE OUTCOME
CO 1	Enable the student to understand the techniques of writing History and the evolution of such a technique.
CO 2	Students will learn the theory and practice of historical research as practiced by professionals in the field including traditional and current research methodologies.
CO 3	It enables the student to develop a thesis/argument, evaluate its historical probability, and place that argument in a historiographical context.

CO 4	It helps to develop a historian's skills, including reading, writing, speaking, and critical inquiry and would be able to execute and guided independent research projects in accord with the research manuals.
CO 5	Distinguish between various forms of presentation of history and the basic elements of research in history.
CO 6	Prepare students for writing the local history projects.

INDIAN HISTORY-IV

COs	COURSE OUTCOME
CO 1	Realise the social and economic issues of contemporary India and engage in the socially useful productive works
CO 2	Define a pluralistic society and its relationship to our democratic principle
CO 3	Realise the importance of the constitution of India and recognize the contribution of leaders and personalities who prepared it.
CO 4	Aware of the environmental issues of the country and contributed to the sustainable development activities
CO 5	Identifying the cardinal principles of Foreign Policy of India and think highly of national leaders who contributed to the ideology of peaceful co -existence

KERALA HISTORY-II

COs	COURSE OUTCOME
CO 1	Identify the real nature of the colonial intervention in Kerala
CO 2	Trace the historical roots of progressive contemporary Kerala.
CO 3	Analyse critically the role of leaders and movements in the transformation of modern Kerala
CO 4	Familiarise with Kerala Model of Development and engage in the rebuilding process of Kerala economy
CO 5	Understand the issues in contemporary Kerala so as to be responsive to the same.

GENDER STUDIES

COs	COURSE OUTCOME
CO 1	Explain conventional social norms about male-female dichotomy and can device policies and strategies to foster gender equality and gender justice
CO 2	Contribute to creative interventions that may result in a world with less inequality
CO 3	Critically interrogate and actively engage in social processes related to the construction of gender
CO 4	Analyse social and cultural phenomena through the lens of gender in a way that appreciates a range of disciplinary perspectives

INDIAN HERITAGE AND PLURALITY OF CULTURES

COs	COURSE OUTCOME
CO 1	Realise the diverse nature of Indian culture
CO 2	Involve in nation building process with an understanding on multicultural system of the country
CO 3	Realise the values and ideologies of secular movements and ideologies of the Country

PROJECT/METHODOLOGY OF LOCAL HISTORICAL WRITING

COs	COURSE OUTCOME
CO 1	It enables the student to develop a thesis/argument, evaluate its historical probability, and place that argument in a historiographical context.
CO 2	It helps to develop a historian's skills, including reading, writing, speaking, and critical inquiry and would be able to execute and guided independent research projects in accord with the research manuals.
CO 3	Distinguish between various forms of presentation of history and the basic elements of research in history.

ARCHAEOLOGY

COs	COURSE OUTCOME
CO 1	Engaged in excavation process to recover historical traits and cultural sites
CO 2	Experimenting with various scientific dating methods
CO 3	Expertise in setting of Museum and conservation and preservation of artifacts

BA in Human Resource Management

(CORE, COMPLIMENTARY&OPEN COURSES)

COURSE OUTCOME-
CORE COURSES

SEMESTER-1

HRM 1B01: MANAGEMENT PRINCIPLES AND BUSINESS ETHICS

COs	Course Outcome
CO 1	Describe the different schools of management thought.
CO2	Apply the concepts of planning, organizing, staffing and controlling for effective management.
CO3	Showcase ethical and socially responsible behaviour in Management.
CO4	Aware and pursue the modern management practices in business

SEMESTER-2

HRM 2B02:HUMAN RESOURCE MANAGEMENT

COs	COURSE OUTCOME
CO1	Develop insights on various concepts and functions of Human Resource Management.
CO2	To Design and formulate various HRM processes such as Recruitment, Selection, Training, Development, Performance appraisals and Compensation Plans.
CO3	Equip themselves with the understanding of importance of HR Planning and related aspects.
CO4	Learn the latest trends in Human Resource Management.

SEMESTER -3

HRM 3B03: ORGANIZATIONAL BEHAVIOUR

COS	COURSE OUTCOME
CO1	Demonstrate the applicability of the concept of organizational behaviour to understand the behaviour of people in the organization.
CO2	Demonstrate the applicability of analysing the complexities associated with management of individual behaviour in the organization.
CO3	Define leadership and the different approaches to leadership.
CO4	Analyze the complexities associated with management of the group behavior in the organization. Define organizational culture and describe its common characteristics.

HRM 3B04:LABOUR WELFARE AND SOCIAL SECURITY

COS	COURSE OUTCOME
CO1	Acquaint the student with labour welfare concept and to understand the statutory and non-statutory welfare program.
CO2	Analyze the causes of work accident and occupational diseases and work accident and occupational diseases measures.
CO3	Make use of counselling skills to manage individual and collective problems at the preventive, remedial and developmental levels.
CO4	Understand the functioning International Labour Organization.
CO5	Understand and apply the strategies to the quality of work life.

SEMESTER-4

HRM 4B05: EMPLOYEE COUNSELLING

COS	COURSE OUTCOME
CO1	Demonstrate the knowledge in organisational psychology, including a discussion of its historical origins and development
CO2	Understand individual behaviour in organizations with regard to job satisfaction and occupational stress.
CO3	Understand and apply the basic skills required for managing counterproductive behaviour and stress at workplace.
CO4	Understand the recent trend in workplace counselling

HRM 4B06: COMPENSATION MANAGEMENT

COs	COURSE OUTCOME
CO1	Explain the definition, Meaning and Implications of Compensation
CO2	Understand the concept of wage, systems of wage payment, wage theories, wage policy and incentive system.
CO3	Understand the various employee retention strategies.

SEMESTER-5

HRM 5B07 : RESEARCH METHODOLOGY

COs	COURSE OUTOME
CO1	Have an understanding of various kinds of research, objectives of doing research, research process research designs and sampling.
CO2	Be able to formulate research problem and develop a sufficiently coherent research design.
CO3	Have basic knowledge on qualitative, quantitative as well as measurement & scaling techniques.
CO4	Have a basic awareness of data analysis, including descriptive & inferential measures.
CO5	Be able to write & develop independent thinking for critically analysing research reports.

HRM 5B 08 PERFORMANCE MANAGEMENT

COs	COURSE OUTCOME
CO1	Understand and apply performance management processes
CO2	Describe the types of performance appraisal tools and processes used in organisations.
CO3	Discuss organisational issues in the measurement of performance and the feedback of performance data.
CO4	Have an understanding of Indian and western thoughts on performance management

HRM 5B09: ORGANIZATIONAL DEVELOPMENT AND CHANGE MANAGEMENT

COs	COURSE OUTCOME
CO1	To improve the organization's capacity to handle its internal and external functioning and relationships.
CO2	To ensure that standardized methods and procedures are used for efficient and prompt handling of all changes, in order to minimize the impact of change-related incidents upon service quality, and consequently improve the day-to-day operations of the organization.

HRM 5B10: TRAINING AND DEVELOPMENT

COS	COURSE OUTCOME
CO1	Define the concept of training and development and its needs.
CO2	Have a basic knowledge about the various training methods and management development programme.
CO3	Describe the different models and framework for training evaluation.

SEMESTER-6

HRM 6B12 PRINCIPLES OF QUALITY MANAGEMENT SYSYTEM

COS	COURSE OUTCOMES
CO1	Explain the evolution, concept, dimensions and cost of quality.
CO2	Learn strategic planning and implementation of quality systems
CO3	Explain the concept of bench marking in quality aspect

HRM 6B 13: INDUSTRIAL RELATIONS

COS	COURSE OUTCOMES
CO1	Elaborate the concept of Industrial Relations.
CO2	Illustrate the role of trade union in the industrial setup.
CO3	Investigate solutions to industrial relations problems based on research and assessment of current practices.
C04	Outline the important causes & impact of industrial disputes.
CO5	Elaborate Industrial Dispute settlement procedures

HRM 6B14: INTRODUCTION TO STRATEGIC HRM

COS	COURSE OUTCOMES
CO1	Explain the concept, scope and nature of strategic HRM
CO2	Appreciate the strategic management process.
CO3	Define corporate social responsibility (CSR)

HRM 6B15: INTERNATIONAL HUMAN RESOURCES MANAGEMENT

COS	COURSE OUTCOMES
CO1	Demonstrate an understanding of key terms, theories/concepts and practices within the field of IHRM.
CO2	List and explain the differences between domestic and international HRM.
CO3	Describe the strategic and functional roles of HRM in various international contexts, especially in areas such as staffing, compensation, performance management, and industrial relations.

HRM 6B15:HRM 6B15 HUMAN RESOURCE INFORMATION SYSTEM

COS	COURSE OUTCOMES
CO1	Describe the role of information technology and information systems in business and the concepts and mechanism of HRIS.
CO2	Effectively engage in the planning, analysis, design, and implementation of an organization's Human Resource Information System.
CO3	Analyze the various technology architectures and HR software applications in conjunction with the data, information, and knowledge needs of an organization in order to selection technology solutions and develop effective HR processes.

HRM 6B15:DIVERSITY MANAGEMENT AT WORKPLACE

COS	COURSE OUTCOMES
CO1	Explain the concept of Work force diversity and its importance in global context.
CO2	Demonstrate where and how group identity, stereotyping, discrimination, exclusion and

CO3	cultural difference affect interpersonal relationships in an organisation. Develop a framework for effective diversity management.

HRM 6B15: TALENT MANAGEMENT

COS	COURSE OUTCOMES
CO1	Describe the concept of talent management.
CO2	Explore issues and possible solutions for retention of talent
CO3	Examine the process for identifying high potential talent and developing a pipeline of talent to serve organizational present and future needs.

OPEN COURSE

LEADERSHIP AND CHANGE MANAGEMENT

COS	COURSE OUTCOMES
CO1	Gain both a theoretical and practical understanding of leadership styles and change management processes within an organization
CO2	Demonstrate advanced understanding of principles, concepts, and methods of change management in organisations; the change management process and change planning

COMPLEMENTARY PAPERS

PUB1(2):Indian Administration

SEMESTER1(2)

COS	**COURSE OUTCOMES**
CO1	Examine the evolution of Indian Administration
CO2	Evaluate the administration at the union level
CO3	Evaluate the administration in the state level
CO4	Evaluate the administration in the district level
CO5	Explain and evaluate constitutional and structural mechanisms of civil service in India

ECO1(2)co1: Introductory Economics 1

COS	COURSE OUTCOMES
CO1	Understand demand and supply
CO2	Understand production and distribution
CO3	Examine national income concepts

BA TRAVEL AND TOURISM

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME- CORE COURSE

SEMESTER 1

TTM1B01: Principles and Practices of Tourism

COs	COURSE OUTCOME
CO 1	➢ To provides ample idea about the basic concepts of tourism, its practices and organizations.
CO 2	➢ To expose the students to the basic principles and practices of Tourism
CO 3	➢ To understand philosophies of tourism on an ethical platform

SEMESTER 2

TTM2B02: Tourism Products

Cos	COURSE OUTCOME
CO 1	➢ To acquire knowledge about the Products and Resources in Tourism Industry.

SEMESTER 3

TTM3B03: Air transportation and Airport Operations

Cos	COURSE OUTCOME
CO 1	➢ To enable the student to understand the air transportation system and to learn about the structure and facilities of airports along with acquitting with the airport operations.

TTM3B04: Indian Tourism Resources

Cos	COURSE OUTCOME
CO 1	➢ The module gives information on countries' tourist places of national and international importance.
CO 2	➢ It helps students know the background elements of tourism resources.

SEMESTER 4

TTM4B05: Travel Geography

Cos	COURSE OUTCOME
CO 1	➢ To provide details about basic components of geography in relation to travel and tourism.
CO 2	➢ To familiarize with IATA codes, time calculation and the major tourist attraction across the world.

TTM4B06: Introduction to Hospitality Business

Cos	COURSE OUTCOME
CO 1	➢ To explore various aspects of value creation through the hospitality industry.

SEMESTER 5

TTM5B07: Travel Agency and Tour Operations Management

Cos	COURSE OUTCOME
CO 1	➢ To provide knowledge about Travel Agency and Tour Operation Business
CO 2	➢ To understand the formalities and skills needed for this business.

TTM5B08: Accommodation Operation

Cos	COURSE OUTCOME
CO 1	➢ To familiarize the students with various hotel operations
CO 2	➢ To enhance their skill level of them to perform various duties and responsibilities in a hotel environment.

TTM5B09: Tourism Research Methodology

COs	COURSE OUTCOME
CO 1	➢ The main objective of the course is to provide the methods of research
CO 2	➢ It equips students to report writing in the field of tourism and the travel industry.

TTM5B10: Airline and Cargo Management

COs	COURSE OUTCOME
CO 1	➢ To Understand the structure and dynamics of the airline industry.
CO 2	➢ To Study the International airfares, regulations and formalities to travel.

TTM5B11: Principles and Practices of Management

COs	COURSE OUTCOME
CO 1	➢ The main objective of the course is to give details about the principles and applications of different management theories in various business establishments, particularly in the travel and tourism industry.

SEMESTER 6

TTM6B12: Marketing for Tourism and Hospitality

COs	COURSE OUTCOME
CO 1	➢ The course includes the operation techniques of tourism marketing to formulate marketing plans and promotional
CO 2	➢ The students are expected to attain a basic knowledge of marketing principles and study the suitability of alternative promotional approaches to tourism and other related organizations.

TTM6B13: Tourism Planning and Policies

COs	COURSE OUTCOME
CO 1	➢ The course aims to give a comprehensive idea about tourism planning and policies and their application.

TTM6B14: Emerging Concepts in Tourism

COs	COURSE OUTCOME
CO 1	➢ This module gives knowledge to the students about the various emerging concepts in Tourism.

TTM6B15: Event Management and MICE Tourism

COs	COURSE OUTCOME
CO 1	➢ As a result of participating in this module, students will understand the managerial and operational aspects pertaining to event and conference or Convention Management.
CO 2	➢ It also inspires and informs students on the dynamism of event management.

B.Com Finance

(CORE, COMPLIMENTARY, OPEN & COMMON COURSES)

COURSE OUTCOMES- CORE COURSE

SEMESTER 1

BCMIB01: BUSINESS MANAGEMENT

COs	COURSE OUTCOMES
CO 1	To understand the process of business management and its functions.
CO 2	To familiarize the students with current management practices
CO 3	To understand the importance of ethics in business
CO 4	To acquire knowledge and capability to develop ethical practices for effective

SEMESTER 2

BCM2B02: FINANCIAL ACCOUNTING

COs	COURSE OUTCOMES
CO 1	To equip the students with the skills of preparing financial statements for various types of organisations.
CO 2	To enable the students to acquire knowledge about financial reporting standards and to understand corporate accounting methods.

SEMESTER 3

BCM3BO3: BUSINESS REGULATIONS

COs	COURSE OUTCOMES
CO 1	To familiarize the students with certain statutes concerning and affecting business organizations in their operations.

BCM3 BO4 : CORPORATE ACCOUNTING

CO 2	To help the students to acquire conceptual knowledge of the fundamentals of corporate accounting and the techniques of preparing the financial statements.

SEMESTER 4

BCM4 BO5: COST ACCOUNTING

CO 1	To familiarize the students with the various concepts and elements of cost.
CO 2	To create cost consciousness among the students.
CO 3	To familiarize the students with corporate law and to make them aware of the importance of corporate governance in the management of organizations.

SEMESTER 5

BCM5 BO7: ACCOUNTING FOR MANAGEMENT

CO 1	To enable the students to understand the concept and relevance of Management Accounting.
CO 2	To provide the students an understanding about the use of accounting and costing data for planning, control, and decision making.

BCM5B08: BUSINESS RESEARCH METHODS

CO 3	To enable students for acquiring basic knowledge in business research methods and to develop basic skills in them to conduct survey research and case studies.

BCM5 B09: INCOME TAX LAW AND ACCOUNTS

CO 4	To impart basic knowledge and equip students with application of principles and provisions Income - tax Act, 1961 amended up to date.

SEMESTER 6

BCM6 B12: INCOME TAX AND GST

CO 1	To impart basic knowledge and equip students with application of principles and provisions Income - tax Act, 1961 and GST Act 2016

BCM6B13: AUDITING AND CORPORATE GOVERNANCE

CO 2	To provide knowledge of auditing principles and techniques and to familiarize the students with the understanding of issues and practices of corporate governance in the global and Indian context.

CORE SPECIALISATION

BCM5B10: FINANCIAL MARKETS AND SERVICES

CO 3	To provide basic knowledge about the structure, organization and working of financial system in India.

BCM5 B11: FINANCIAL MANAGEMENT

CO 4	To familiarize the students with the concepts, tools and Practices of financial management.
CO 5	To learn about the decisions and processes of financial management in a business firm.

BCM6B14: FUNDAMENTALS OF INVESTMENTS

CO 6	To familiarize the students with the world of investments.
CO 7	To provide a theoretical framework for the analysis and valuation of investments.

BCM6B15: FINANCIAL DERIVATIVES

CO 8	To acquire knowledge about financial derivatives and their features.
CO 8	To know about various risks associated with derivatives.

COURSE OUTCOMES- COMPLIMENTARY COURSES

SEMESTER 1

BCM1C01 : MANAGERIAL ECONOMICS

COs	COURSE OUTCOMES
CO 1	The objective of the course is to acquaint students with the basic principles of micro and macroeconomics for developing the understanding of theory of the firm, markets and the macro environment, which would help them in managerial decision-making processes.

SEMESTER 2

BCM2C02: MARKETING MANAGEMENT

CO 1	To provide basic knowledge about the concepts, principles, tools and techniques of marketing.
CO 2	To impart necessary knowledge which help the student to choose a career in the field of marketing.
CO 3	To expose the students to the latest trends in marketing.

SEMESTER 3

BCM3C03: HUMAN RESOURCES MANAGEMENT

CO 1	To familiarize the students with the different aspects of managing human resources in an organization.
CO 2	To equip the students with basic knowledge and skills required for the acquisition, development and retention of human resources.

SEMESTER 4

BCM4C04: QUANTITATIVE TECHNIQUES FOR BUSINESS

CO 1	To familiarize student with the use quantitative techniques in managerial decision making.

OPEN COURSE

SEMESTER 5

BCM5D02: BASICS OF ENTREPRENEURSHIP AND MANAGEMENT

CO 1	To enable the students to have an understanding of the basics of business, entrepreneurship and organizational management.

COURSE OUTCOMES- COMMON COURSES

SEMESTER 3

BCM3A11: BASIC NUMERICAL METHODS

CO 1	To acquire knowledge of numerical equations, matrix progressions, financial mathematics and descriptive statistic
CO 2	To understand numerical equations, matrix, progression, financial mathematics, descriptive statistics and their applications.

BCM3A12: PROFESSIONAL BUSINESS SKILLS

CO 3	To update and expand basic Informatics skills of the students
CO 4	To effectively utilize the digital knowledge resources for their study

SEMESTER 4

BCM4A13: ENTREPRENEURSHIP DEVELOPMENT

CO 1	To familiarize the students with the concept of entrepreneurship.
CO 2	To identify and develop the entrepreneurial talents of the students.
CO 3	To generate innovative business ideas in the emerging industrial scenario.

BCM4A14: BANKING AND INSURANCE

CO 4	To enable the students to acquire knowledge about basics of Banking and Insurance. To familiarize the students with the modern trends in banking.

BBA

(CORE, COMPLIMENTARY & OPEN COURSES)

COURSE OUTCOME-CORE COURSE

SEMESTER 1

BBA1B01: MANAGEMENT THEORY AND PRACTICES

COs	COURSE OUTCOME
CO 1	To develop conceptual knowledge of business management. the study approach also enables students to understand and analyse practical aspects of management to become skilled manager in a corporate business set up.

SEMESTER 2

BBA2B02: FINANCIAL ACCOUNTING

COs	COURSE OUTCOME
CO 1	To equip the students with skills for preparing books of accounts of business organisation. it also aims to enrich the students to prepare the financial statements of proprietary organisations. modules in this course also intent to provide knowledge to the students in respect of accounting of issue of securities, accounting for hire purchase transactions and the accounting of branches.

BBA2B03: MARKETING MANAGEMENT

COs	COURSE OUTCOME
CO 1	To orient the students with the marketing principles and also to familiarize them with the process of marketing in modern business firm.

SEMESTER 3

BBA3BO4: CORPORATE ACCOUNTING

COs	COURSE OUTCOME
CO 1	To acquaints the students with the knowledge about corporate accounting. The modules introduce the fundamental Indian accounting standard and equip the students with skills for preparing corporate accounts.

BBA3B05: FINANCIAL MANAGEMENT

COs	COURSE OUTCOME
CO 1	To enable students to understand the basic concepts of financial management and make them aware of major decisional areas of financial management.

SEMESTER 4

BBA4B06: COST AND MANAGEMENT ACCOUNTING

COs	COURSE OUTCOME
CO 1	To acquaint the students with the basic concept sand tools of cost and management accounting

SEMESTER 5

BBA5B07: HUMAN RESOURCES MANAGEMENT

COs	COURSE OUTCOME
CO 1	To give a conceptual understanding of human resource practices in organizations.

BBA5 B08: BUSINESS RESEARCH METHODS

COs	COURSE OUTCOME
CO 1	To provide an insight into the fundamentals of business research and to acquire practical knowledge and required skills in carrying out research which they are expected to possess when they enter the industry as practitioners.

BBA5B09: OPERATIONS MANAGEMENT

COs	COURSE OUTCOME
CO 1	To familiarize the students with the concepts, tools and practices of operations management and to learn about the decisions and processes of operations management in a business firm.

SEMESTER 6

BBA6B12: ORGANISATIONAL BEHAVIOR

COs	COURSE OUTCOME
CO 1	To familiarize the students with the basic concepts of individual behaviour and organizational behaviour
CO 2	To enable the students to catch an idea about inter-personal and group behaviour
CO 3	To acquire knowledge regarding the organizational change and organizational development

BBA6B 14: PROJECT MANAGEMENT

COs	COURSE OUTCOME
CO 1	To enable the students to acquire basic knowledge of different facets of project management.

COURSE OUTCOME- ELECTIVE COURSE

SEMESTER 5

BBA5B10: HUMAN RESOURCES PLANNING AND DEVELOPMENT

COs	COURSE OUTCOME
CO 1	To give the students a deep understanding of process of hr planning, and
CO 2	To familiarize them with the methods for hr development.

BBA5 B11: INDUSTRIAL RELATIONS

COs	COURSE OUTCOME
CO 1	To develop necessary understanding among students of various labour management relation issues and policies in the Indian context in particular.

SEMESTER 6

BBA6B15: PERFORMANCE MANAGEMENT

COs	COURSE OUTCOME
CO 1	To gain a detailed understanding of organizational and managerial performance, and, to gain practical knowledge in setting up team management, target setting and achievement.

BBA6B16: MANAGEMENT TRAINING AND DEVELOPMENT

COs	COURSE OUTCOME
CO 1	To gain an in-depth understanding of the concepts, tools and techniques of management Training, and to learn to design and use methods for management development.

POSTGRADUATE PROGRAMME OUTCOMES
MA/MSc/MCom

POs	PROGRAMME OUTCOMES
PO 1	Develop an understanding of cultures
PO 2	Nurture critical thinking
PO 3	Promote value-based thinking
PO 4	Provide a window to research
PO 5	Enhance career opportunities

M.SC BOTANY

COURSE OUTCOME

SEMESTER 1		
COURSE CODE	COURSE TITLE	COURSE OUTCOME
BOT1C01	Phycology, Bryology, Pteridology and Gymnosperms	1. Appreciate the gradual process of evolution 2.Understand the significance and interrelationships of lower plants 3. Appreciate the wide range of lower plant diversity
BOT1C02	Mycology and Lichenology, Microbiology and Plant Pathology	1. Understand the diversity and ecological roles of fungi 2. Appreciate the role of lichens in succession and as a pollution indicator. 3. Become aware of various plant diseases and the role economic loss due to development of diseases
BOT1C03	Angiosperm Anatomy, Angiosperm Embryology, Palynology and Lab Techniques	1. Appreciate the intricate makeup of the anatomy of angiosperms and the evolutionary process which has led to the development of complex anatomy1 2. Understand the embryological and developmental aspects of angiosperms 3. Realise the role of palynology in all other fields
SEMESTER 2		
BOT2C04	Cell Biology, Molecular Biology and Biophysics	1. Understand the molecular structure of living things 2. Realise the role of complex biomolecules and thousands of chemical reactions taking place in each and every living cell 3. Develop skill to handle various instruments used for different research purposes
BOT2C05	Cytogenetics, Genetics, Biostatistics, Plant Breeding and Evolution	1. Develop awareness on the possibility of developing new crop varieties with desired qualities through plant breeding methods. 2. Realise the role played by millions of genes in organisms and appreciate the genetics of living things

		3. Understand the log process of organic evolution which lead to the Development of the present-day organisms
BOT2C06	Plant Ecology, Conservation Biology, Phytogeography and Forest Botany	1. Become aware of the immediate necessity of environmental conservation 2. Try to reduce pollution and conserve biodiversity 3. Understand the structure, ecology and various roles of forests
SEMESTER 3		
BOT3C08	Angiosperm Morphology, Angiosperm Taxonomy and Plant Resources	1. Try to find out the interrelationship among angiosperms and classify them based on special characters. 2. Understand the morphological peculiarities of angiosperms 3. Become aware of the wide range of available plant resources
BOT3C09	Biotechnology and Bioinformatics	1. Understand various biotechnological methods currently used for improvement of organisms. 2. Study various bioinformatics tools 3. Try to apply biotechnological methods for the benefit of mankind
SEMESTER 4		
BOT4E01	Elective 1: Genetics and crop improvement	1. Understand various methods used for improvement of existing crop varieties 2. Explain the role of genes in imparting various traits 3. Try understand the gene pool and to protect traditional crop varieties
BOT4E02	Elective 2: Pathology of spices and plantation crops	1. Realise the economic importance of spices and plantation crops in 2. Develop awareness on the significant economic loss due to plant diseases 3. Try to avoid plant diseases by all possible methods.

M.Sc. COMPUTER SCIENCE

COURSE OUTCOME

Course Code	Course title	Course Outcome
	SEMESTER 1	
CSS1C01	Discrete Mathematical Structures	1. To introduce discrete mathematics concepts necessary to understand basic foundation of Computer Science.
CSS1C02	Advanced Data Structures	1. To introduce basic and advanced data structures dealing with algorithm development and problem solving
CSS1C03	Theory of Computation	1. To provide the students with an understanding of basic concepts in the theory of computation
CSS1C04	The Art of Programming Methodology	1. To learn the art of designing algorithms and flowcharts. 2. To introduce the concept of algorithmic approach for solving real-life problems. 3. To develop competencies for the design and coding of computer programs. 4. To learn designing programs with advanced features of C.
CSS1C05	Computer organization Architecture	1. To familiarize with the digital fundamentals, computer organization, computer architecture and assembly language programming.
CSS1L01	Practical I	1. To practically implement the theory portions covered in The Art of Programming Methodology (CSS1C04) and Advanced Data Structures (CSS1C02).
CSS1A01	Introduction to Research (Ability Enhancement Audit Course)	1. Understand research terminology 2. Be aware of the ethical principles of research 3. Identify the components of a literature review process 4. Critically analyse published research 5. To introduce research methods in the field of computer Science

SEMESTER 2		
CSS2C06	Design and Analysis of Algorithms	1. To introduce the concept of algorithmic approach for solving real-life problems. 2. To teach basic principles and techniques of computational complexity. 3. To familiarize with parallel algorithms and related techniques.
CSS2C07	Operating System Concepts	1. Introduce the underlying principles of an operating system. 2. Exposure of multi programming, virtual memory and resource management concepts. 3. case study of public and commercially available operating systems
CSS2C08	Computer Networks	1. To provide the student with a top-down approach of networking starting from the application layer. 2. To introduce computer networking in the back drop of Internet protocol stack.
CSS2C09	Computational Intelligence	1. To introduce concepts of Artificial Intelligence and Machine Learning
CSS2C010	Principles of Software Engineering	1. To develop familiarity with software engineering principles and practices. 2. To have an understanding about the process of product/literature survey, techniques of problem definition, and methods of report writing
CSS2L02	Practical II	1. To practically implement the theory portions covered in the courses *Operating System Concepts* (CSS2C07) and *Computer Networks* (CSS2C08) and to extend the programming knowledge acquired through course *The Art of Programming Methodology* (CSS1C04).
CSS2A02	Term Paper (Professional Competency Audit Course)	1. To introduce the student to the techniques of literature survey. 2. To acquaint him/her with the process of presenting his/her work through seminars and technical reports.

SEMESTER 3		
CSS3C11	Advanced Database Management System	1. To understand the relational model, and know how to translate requirements captured in an Entity-Relationship diagram into a relational schema. 2. To reason about dependencies in a relational schema. 3. To understand normal form schemas, and the decomposition process by which normal forms are obtained. 4. To familiarize with advanced SQL' statements. 5. To understand advanced features of database technologies.
CSS3C12	Object Oriented Programming Concepts	1. To learn object-oriented concepts and programming concepts and methodologies and to learn its implementation using Java
CSS3C13	Principles of Compilers	1. To introduce the fundamental concepts and various phases of compiler design
CSS3E01a	Computer Graphics	1. To understand the fundamentals of the modern computer graphics. 2. To pipeline the mathematics of affine transformations in three dimensions. 3. To understand the common data structures to represent and manipulate geometry, colour and light representation and manipulation in graphics systems. 4. To have an exposure to programming in Open GL.
CSS3E01d	Advanced Web Technology	1. To introduce the advanced concepts of web development tools - Web 2.0, Web Services, Python, SQLite and MVC architecture.
CSS3L03	Practical III	1. To practically implement the theoretical aspects covered in Advanced Database Management System (CSS3C11) and Object-Oriented Programming Concepts (CSS3C12) and to extend the programming knowledge acquired through The Art of Programming Methodology (CSS1C04) to encompass object-oriented techniques.

SEMESTER 4		
CSS4E03c	System Security	1. To provide an understanding of the differences between various forms of computer security, where they arise, and appropriate tools to achieve them.
CSS4E04d	Storage Area Networks	1. Understand Storage Area Networks (SAN) characteristics and components. 2. Learn about the SAN architecture and management. 3. Understand about designing and building SAN.
CSS4P01	Project Lab Work	1. To give a practical exposure to the process of software development life cycle. 2. To develop a quality software solution by following the software engineering principles and practices. Students are also encouraged to take up a research-oriented work to formulate a research problem and produce results based on its implementation/simulation/experimental analysis.

MSc MATHEMATICS

COURSE OUTCOMES

Course Code	Course Title	Course Outcome	
SEMESTER 1			
MTH1C01	Algebra-I	CO 1	• Students learn about different types of groups. They also learn the applications of isomorphism, automorphism and inner automorphism to groups. • Students understand the concept of group action, orbits, stabilizers and their properties. • Students are introduced to Sylow's groups, simple groups, solvable groups and their applications. • Students learn different types of rings, ideals and their properties. • Students are introduced to Euclidean rings, polynomial rings, their properties and applications.
MTH1C02	Linear Algebra	CO 2	• Students study linear transformations, their properties, characteristics, matrix representation and diagonalizability. • Students learn about different canonical forms. • Students are introduced to Gram-Schmidt orthonormalization process. • Students understand the concept of singular value decomposition, its applications and examples. • Students also learn about bilinear and quadratic forms.
MTH1C03	Real Analysis	CO 3	• Students learn the definition and properties of Riemann-Stieltjes integral, uniform convergence of sequences and series of functions, and functions of several variables. • Students also learn to approximate continuous functions using polynomials. • Students will understand the concept of compactness, continuity and uniform continuity on the n- dimensional real space
MTH1C04	Discrete Mathematics	C04	• Students are introduced to logic, rules of inference, methods of proof and counting techniques. • Students learn modeling with recurrence relations, generating functions and difference equations with various examples. • Students also learn to represent relations using matrices and digraphs.

			• Students understand the concept of graph theory, types of graphs, their properties and applications. • Students study trees, their properties and algorithms for minimum spanning trees.
MTH1C05	Number Theory	C05	• Students learn about divisibility, distribution of primes and introduced to linear Diophantine equations. • Students understand the concept of linear and polynomial congruences with applications. • Students are introduced to quadratic residues, Legendre symbol, Jacobi symbol and their properties. • Students learn about sum of two squares, four squares
SEMESTER 2			
MTH2C06	Algebra II	C06	• Students are introduced to Nil and Jacobson radicals, operations on ideals and prime spectrum of a ring. • Students study about modules, their different types, properties and applications. • Students learnt about finite, algebraic, simple and separable extensions, and splitting fields. • Students are introduced to construction with straight edge and compass. • Students understand the concept of Galois theory
MTH2C07	Real Analysis II	C07	• Students revisit the concepts of limit, continuity and differentiability of functions. • Students learn about the different mean value theorems with examples. • Students study the numerical sequences and series of real numbers, their types and properties. • Students understand the various tests of convergence for sequences and series of numbers with examples
MTH2C08	Topology	C08	• To study and understand the nature of the convergence of the series and sequences, metric spaces and application of these spaces in embedding. To learn the concept of continuity and homeomorphism of the functions. • Students learn about compactness, its types and properties. • Students study the first and second axioms of countability.

			• Students are introduced to different separation axioms, their comparison, properties and characteristics. • Students understand the concept of para-compactness and metrizability.
MTH2C09	ODE &Calculus of variations	C09	• Recognize real world circumstances to identify when ordinary differential equations are appropriate, formulation of problems and solving the problems using multiple approaches. Outcome Assessment • Students will learn what an ordinary differential equation is, distinguish between linear and nonlinear ODEs and classify ODEs, what are initial and boundary value problems, what constitutes a solution. Students will learn to visualize and manipulate ODEs in graphical and symbolic form. • Students will understand the concept of existence and uniqueness of solutions. Learn to find the power series solution of linear differential equations. • Students will be introduced to system of ODEs and discuss graphical and analytical solution methods.
MTH2C10	Operations Research	C10	• To impart knowledge in concepts and tools of Operations Research • To understand mathematical models used in Operations Research. • To apply these techniques constructively to make effective business decisions
SEMESTER 3			
MTH3C11	Multivariable Calculus & Geometry	C11	• Visualize and sketch geometrical objects in 2- and 3-dimension, to manipulate the related issues of the chosen topics as outlined in "course content." • Describe the basic applications of the chosen topics and their importance in the modern science • Develop simple mathematical models, and apply multivariate calculus techniques learned from the chosen topics to solve simple problems • Report and communicate effectively with others and present mathematical results in a logical and coherent fashion • Articulate the power and beauty of mathematics, and solve problems independently and collaboratively as part of a team
MTH3C12	Complex Analysis	C12	• To study and understand the importance of entire and meromorphic functions, convex functions and their application in mathematical analysis of solutions obtained by the

			mathematical modeling of the problems existing in atmospheric, engineering, aerodynamics etc. Outcome Assessment • To learn the conformal mapping of the elementary functions. • Finding the radius of convergence of the power series solutions and plotting. • Evaluation of functions involving singularities and boundaries of different types and branch points. • Applications of complex valued functions in circles and concentric circles, understanding of conformal mapping using Reimann mapping theorem.
MTH3C13	Functional Analysis	C13	• Students are introduced to normed linear spaces and Banach spaces, their properties, characteristics and examples. • Students learn about continuous linear transformations, linear functionals and projections on Banach spaces. • Students study the definition, examples and properties of inner product spaces and Hilbert spaces. • Students understand the concepts of orthogonality and orthonormality in Hilbert spaces. They also learn operators and projections on Hilbert spaces.
MTH3C14	PDE & Integral Equations	C14	• Students will be able to define ordinary point, Legendre equation, Bessel equation, Fundamental matrix, Picard's theorem and oscillations of solutions. • Identify the results in systems of linear differential equations & Non- linear initial value problems. • Examine the solutions of systems of linear differential equations and Non- linear initial value problems . Analyze the oscillations of solutions of second order differential equations. • Apply power series method andsuccessive approximation method to evaluate the solutions of systems of linear differential equations and Nonlinear initial value problems
MTH3E03	Measure & Integration	C15	• Students study about Lebesgue outer measure, Lebesgue measure, Lebesgue measurable sets and their properties. • Students understand the definition and properties of measurable functions. • Students learn about Lebesgue integral and its characteristics.

			• Students also study the convergence theorems of Lebesgue integral
MTH3C15	Advanced Functional Analysis	C16	• Prove the continuity of concrete linear operators between topological vector spaces. • Given a linear operator, understand whether or not it is compact. • Find the essential spectra of linear operators. • Find the maximal spectra of concrete commutative Banach algebras. • Describe the functional calculi and the spectral decompositions of concrete self adjoint operators.
			SEMESTER 4
MTH4E08	Commutative Algebra	C17	• Knows basic definitions concerning elements in rings, classes of rings, and ideals in commutative rings. • Know constructions like tensor product and localization, and the basic theory for this. • Know basic theory for noetherian rings and Hilbert basis theorem. • Know basic theory for integral dependence, and the Noether normalization lemma. • Have insight in the correspondence between ideals in polynomial rings, and the corresponding geometric objects: affine varieties. • Know basic theory for support and associated prime ideals of modules, and know primary decomposition of ideals in noetherian rings. • Know the theory of Gröbner bases and Buchbergers algorithm. • Know the theory of Hilbert series and Hilbert polynomials.Know dimension theory of local rings.
MTH4E09	Differential Geometry	C18	• To get introduced to the concept of a regular parameterized curve in n • To Understand the concept of curvature of a space curve and signed curvature of a plane curve. • To be able to understand the fundamental theorem for plane curves. • To get introduced to the notion of Serret-Frenet frame for space curves and the involutes and evolutes of space curves with the help of examples.

			• To be able to compute the curvature and torsion of space curves. • To be able to understand the fundamental theorem for space curves. • To get introduced to the concept of a parameterized surface with the help of examples. • To Understand the idea of orientable/non-orientable surfaces. • To get introduced to the idea of first fundamental form/metric of a surface. • To Understand the normal curvature of a surface, its connection with the first and second fundamental form and Euler's theorem • To Understand the Weingarton Equations, mean curvature and Gaussian curvature.
MTH4E11	Graph Theory	C19	• To understand how graph theory have been. • To understand the concept of vertex connectivity and edge connectivity in graphs. • To develop the under-standing of Geometric duals in Planar Graphs. • To understand Koenigsberg Seven Bridge Problem. • To understand the concept of matrices in graphs like Incidence matrix, Adjacency matrix, Cycle matrix etc. • To understand the concept of digraphs, Euler digraphs and Hamiltonian digraphs. • To understand the idea of tournaments in digraphs and study some characterizations about tournaments. • To have an idea of matching in graphs and study some applications of matching in day to day life problems. • To introduce the idea of coloring in graphs. • To have an idea of automorphism groups of graphs

MSC PHYSICS

COURSE OUTCOMES- CORE COURSES

COURSE CODE	COURSE TITLE	COs	COURSE OUTCOME
		SEMESTER 1	
PHY1C01	CLASSICAL MECHANICS	CO 1	Explain the fundamental concepts in Lagrangian and Hamiltonian formulation in mechanics. Apply the concepts of Lagrangian, Hamiltonian, Action, Poisson brackets, canonical tranformations and their subsequent development to Heisenberg's matrix mechanics and Schrodinger's wave mechanics, to carry out numerical problems. Develop the analytical and mathematical skills for describing the dynamics of rigid bodies. It could be applied to practical situations. This can be applied spectroscopic analysis of samples. Explain the theory of small oscillations. Small oscillations are part and parcel of all bound physical systems. Elucidate the concepts in nonlinear dynamics and chaos. These techniques can be directly applied in nonlinear physics and also to verify various experimental results.
PHY1C02	MATHEMATICAL PHYSICS	CO 2	Describe coordinate systems appropriate for different physical problems. Applies it to solve Laplace's equation in different coordinate systems. Peform transformation operations and get the corresponding transformation matrices. Learns procedures for matrix diagonalisation. Distinguish the class of objects called tensors, their classifications and use. Understand differential equations of special nature and the ways to solve them. Identify differential equations of special nature and the ways to solve them. Illustrate special functions as solutions to problems in atomic, molecular nuclear, and solid state physics etc. and will put them in use. Distinguish Fourier series and integral transforms of different types and their properties. This will enable him/her to analyse or solve different mathematical problems in physical sciences.

PHY1C03	ELECTRODYNAMICS AND PLASMA PHYSICS	CO 3	Explain the significance of displacement current and Maxwell's equations and general electromagnetic wave equations, their solutions in terms of potentials and fields. Another basic concept of physics called gauge transformation will be understood. Multipole expansion of the potentials, fields and multipole moments of different orders will be learned.. Describe the propagation of electromagnetic waves through free space and the consequences of reflection from different types of boundaries. These have important consequences in wave propagation. Discusses propagation of electromagnetic waves through confined media like wave guides and cavity resonators. Enables to appreciate the magnificent results of the blending of relativity and electrodynamics and motivates to take up a course on quantum field theory, the study of fields, interactions and symmetries. Understand the criteria for a medium to be called plasma and the various properties of it. Understand
PHY1C04	ELECTRONICS	CO 4	Analyse characteristics of JFET and MOSFET and their specific applications. Analyse Distinguish the basic characteristics of light emitting and light sensing devices and illustrate the basic concepts behind integrating electronic and photonic devices suitably for microwave communication. Classify characteristics of op-amps and their implementation in various elementary level applications. Identify the basics of logic gates, flip flops and registers and the designing of counters, satisfying specific conditions. Understands RAM and D/A converter and basic features of specific microprocessors.
SEMESTER 2			
PHY2C05	QUANTUM MECHANICS	CO 5	Appreciate the importance and implication of vector spaces. Will be able to use Dirac ket and bra notations. Use operators and will be able to solve eigen value problems. Understand generalized uncertainty principle in quantum mechanics and the need for quantum mechanical formalism and its basic principles. Explain time evolution of quantum mechanical systems and learn different time evolution approaches -Schrodinger picture and Heisenberg picture. Apply different approaches in quantum dynamics to various fundamental problems. Develop a better understanding of the mathematical

			foundations of spin and angular momentum. Make use of spherical harmonics to compute Clebsch - Gordon coefficients. Apply Schrodinger's equation to central potentials problems, to solve various quantum mechanical problems. Understand invariance principles based on symmetry of the system and establish the associated conservation laws. These quantum mechanical concepts will be applied to analyse the ground state of Helium atom. Here it will be understood that all symmetry elements possess the mathematical property of groups.
PHY2C06	MATHEMATICAL PHYSICS-II	CO6	In general, physical phenomena are expressed in equations involving complex quantities. Some times we get complex solutions to equations. Solving such problems requires special procedures. On completing this module he/she will be gain the skill for solving and interpreting such problems. Acquire a preliminary training in group theory. All symmetry elements possess the mathematical property of groups. Concepts of group theory will help to solve problems in quantum mechanics. It is quantum mechanics that gives more stress on symmetry than classical mechanics. Apply the techniques of calculus of variation to diverse problems in physics. Apply Apply the Greens function technique to solve problems showing causality relationship
PHY2CO7	COMPUTATIONAL PHYSICS	CO 7	Write computer programs using core python Create Use advanced mathematical modules like Numpy and Pylab in python program for solving mathematical and physical problems and also to present the result visually using graphs and charts. Solve numerically mathematical problems like interpolation, curve fitting, integration etc. and to write python programs for these. Solve numerically mathematical problems like differential equations, Fourier transforms etc. and also to write python program for these. Analyse by simulating simple physical problems in physics like one-dimensional and two-dimensional motion, harmonic oscillator, radio active disintegration, chaos, solution of Schrodinger equation etc., using python programs by applying the knowledge acquired for the course.
PHY1L01 & PHY2L03	PRACTICAL	CO 8	

SEMESTER 3			
PHY3C09	QUANTUM MECHANICS –II	CO 9	Understand time independent perturbation theory and to apply it to harmonic and anharmonic oscillators, and learn the fine structure and hyperfine splitting of Hydrogen atom in the presence of external magnetic and electric fields. Understanding Apply methods like Ritz variational technique and WKB approximation to quantum mechanical systems. Interpret time dependent perturbation theory and apply it to describe radiative transitions in atoms. Understand Fermi's Golden rule and learn Born approximation. Explain the theory of scattering and apply the method of partial waves to scattering by central potential and square well potential. Identify the principles of relativistic quantum mechanics and apply to Dirac particles, Klein-Gordon equation. Also understand the concept of spinors and the non-relativistic limit and Hole theory.
PHY3C10	NUCLEAR AND PARTICLE PHYSICS	CO 10	Interpret the properties of nucleus, binding energy, angular momentum, two nucleon scattering, spin dependence, tensor force, partial wave concept and the theory of deuteron structure. Elucidate the theory of various types of nuclear decay, selection rules of transition, concept of parity and multipole moments. Compare various nuclear models and nuclear processes like fission and fusion. Will be able to apply it to various nuclear systems in the chart of nuclides. Demonstrate the working of one or two nuclear radiation detectors of different types and the signal processing and analysing units. Compare basic interactions and classify the elementary particles. Interactions are linked with the concept of symmetry and conservation laws. Understand Sakata model, Gellmann- Okubo mass formula, Quark mode and their significance.
PHY3C11	SOLID STATE PHYSICS	CO 11	Analyse the structure of materials based on X-ray diffraction and interpret it on the basis of the theory understood. Distinguish different excitations in crystals. Properties of quasiparticles could be explained. Arrive at proper explanation of for specific heat. Explain free electron model and interpret the properties of metals. Gain a deeper understanding of the energy bands based on the properties of carriers. Interpret properly the thermal, electrical and magnetic properties of materials. Will enable the student to understand the current research going on in the related areas. Illustrate using phase diagrams, phase

			transitions in materials leading to superconductivity and different types of superconductors.
PHY3E05	ELECTIVE I- EXPERIMENTAL TECHNIQUES	CO 12	Explain vacuum, Gauges to measure vacuum, types of pumps and their utility, cryogenics etc. Explain and demonstrate different thin film fabrication techniques, thickness measurement and application of thin films Explain different types of particle accelerators, their working and specific applications Explain methods of materials analysis by different nuclear techniques. Understand Be trained on defining X-ray techniques to characterise materials. Apply
SEMESTER 4			
PHY4C12	ATOMIC AND MOLECULAR SPECTROSCOPY	CO 13	Understand the behavior of atoms and molecules and their interactions with electromagnetic waves. Apply the behaviour of nonrigid rotor and understand the microwave spectroscopy Distinguish between Raman and IR spectroscopy and elucidate on the features of Raman spectrum. Explain electronic spectroscopy and applications Analyse Identify the structure of the sample from spin resonance and Mossbauer spectra Evaluate
PHY4E14	LASER SYSTEMS, OPTICAL FIBRES AND APPLICATIONS	CO 14	Understand the basic laser theory and the important laser systems. Analyse the fundamentals of non linear optics and its applications. Identify the applications of lasers in various disciplines. Apply Learn the importance of materials in nanoscale region and the quantum effect of nanomaterials. Identify applications of lasers in various disciplines. Apply Understand the basics of Optical Fibers and its applications. Understand
PHY4E20	ADVANCED CONDENSED MATTER PHYSICS	CO 15	Understand the concept of first principle approximation and the requirement of DFT and HF approximations in molecular modeling Analyse the phase diagrams in alloy formations and formulations of ternary and quaternary compositions of compounds. Understand different types of defects in crystals Understand Analyse the importance of materials in nanoscale region and the quantum effect of nanomaterials. Understand the importance of 2-dimentional materials and their applications in recent technology and development and growth of thin films by different techniques.

M.COM FINANCE

Course Code	Course Title	Course Outcome	
SEMESTER 1			
MCM1C01	Business Environment and Policy	CO 1	To familiarise students with the concepts of macro-economic in which a business organization operates.
		CO 2	To give an idea about the policies of the government and assess their impact on business.
MCM1C02	Corporate Governance and Business Ethics	CO 1	To familiarise the students with the knowledge of corporate ethics
		CO 2	To enable the students to understand the emerging trends in good governance practices.
		CO 3	To create corporate financial reports in the global in the global and Indian context.
MCM1C03	Quantitative Techniques for Business Decisions	CO 1	To acquaint students with important quantitative techniques, which enable sound business decision making
		CO 2	To make students learn the process of applying appropriate quantitative techniques for validating findings and interpreting results.
MCM1C04	Management Theory and Organisational Behaviour	C0 1	To provide a management decision making based on managerial accounting.
		CO 2	To give an insight knowledge on managerial decision to been done in an organisation. With various tools which is helpful in decision making using management accounts.
MCM1C05	Advanced Management Accounting	C0 1	To enable students to understand and apply tools, techniques, and concepts in managerial decision-making process.
		CO 2	To inculcate analytical skills in interpreting and diagnosing business problems
SEMESTER 2			
MCM2C06	Advanced Corporate Accounting	C01	To provide knowledge and skills in the theory and practice of corporate financial accounting
		CO 2	To provide insight in to some of the important accounting standards of IFRS /Ind AS

		CO 3	To enable problem solving abilities among students in matters of various corporate situations such as consolidation of group information, corporate restructuring and liquidation
MCM2C07	Advanced Strategic Management	C01	To provide knowledge about planning and strategic formation in an organisation.
		CO 2	To provide insight on decision making for an entity.
		CO 3	To get an idea for building a Strategic for organisation through various case study.
MCM2C08	Strategic Cost Accounting	CO 1	To enable the students to know the applications of Cost accounting tools, techniques and concepts in managerial decision-making process.
		CO 2	To provide students adequate knowledge of cost management and control techniques and to enable them to apply these for managing business
MCM2C09	International Business	C09	To get insight regarding the business dealings outside the domestic country, which familiarise the various term related to international business.
MCM2C10	Management Science	CO 1	1. To familiarize students with concepts of management science and tools supporting decision making
		CO 2	To enable students to apply Management science techniques in appropriate decision situations.
SEMESTER 3			
MCM3C11	Financial Management	C0 1	To acquaint the students with the basic analytical techniques and methods of financial management of business organization.
MCM3C12	Income Tax: Law, Practices and Tax Planning I	C0 1	To enable students to understand computation of income under various heads, taxable income of various entities, tax planning and procedure of assessment.
MCM3C13	Research Methodology	CO 1	To acquaint students with process and methodology of research
		CO 2	To enable students to identify research problems, collect and analyse data and present results.

MCM3EF01	Investment Management	CO 1	To establish a conceptual framework for the study of security analysis and portfolio management. This course will provide the students the ability to understand and utilize the skill of optimizing returns.
MCM3EF02	Financial Markets and Institution	CO 1	To provide the students a sound information and knowledge of broad framework of financial markets and institutions.
		CO 2	To impart the students an understanding of the inter-linkages and regulatory framework within which the system operates in India
SEMESTER 4			
MCM4C14	Financial Derivatives and Risk Management	CO 1	To make the students efficient in the area of derivatives, by giving them the knowledge of basics in options, futures, swaps etc.
MCM4C15	Income Tax: Law, Practice and Tax Planning	CO 1	To acquaint the students with theoretical and practical knowledge of assessment and tax planning of different assesses.
MCM4EF03	International Finance	CO 1	To understand the concept and significance of international finance
		CO 2	To understand the international financial markets and exchange theories
		CO 3	To get an idea about foreign exchange exposure and risk management
MCM4EF04	Advanced Strategic Financial Management	CO 1	To build an understanding among students about the concepts, vital tools and techniques used for financial decision making by a business firm.

MA ENGLISH LANGUAGE & LITERATURE

COURSE OUTCOME

Course Code	Course title	Course Outcome
	SEMESTER 1	
ENIC01	British Literature from the Age of Chaucer to the	1. To make the students aware of these literary periods and the trends of each 2. To introduce them to a bunch of English poetry 3. To make the students aware of these literary periods and the trends of each 4. To introduce them to a bunch of English poetry; drama; prose and fiction
ENIC02	British Literature: The 19th Century	1. To make the student thorough with the main writers and their works of the literary period 2. To introduce works of different authors and their styles. 3. To make the students capable of analysing these works
	SEMESTER 2	
EN2C03	British Literature: 20th Century	1. To instil in the students the ability to analyse these works from the political, historical and sociological perspectives
EN2C04	Criticism and Theory	1. To instil in the students a theory basis. 2. To make the students analyse and interpret literature based on the 3. To enhance the critical thinking of students by introducing to them a bunch of literary and political theories. 4. To make them thorough with the evolution of literary theories
	SEMESTER 3	
EN3C05	Twentieth Century British Literature: Post 1940	1. To know the trend of the writing of this period 2. To introduce poems, prose and drama of the period and to make them analysed in the light of the trend of the period. 3. To study how politics of the time influence the literary works and vice versa

EN3CO6	The English Language History and Structure	1. To enlighten the students with the evolutions of English language 2. To make them known how culture made changes to English Language from time to time
	SEMESTER 4	
EN4 CO7	Indian English Literature	1. To provide an overview of the various phases of the evolution of Indian writing in English. 2. To introduce students to the thematic concerns, genres and trends of Indian writing in English. 3. To expose students to the pluralistic aspects of Indian culture and identity
EN4CO8	Dissertation	1. To develop writing skills 2. To learn to integrate writing and thought and to apply the conventions of academic writing correctly. 3. To cultivate, in the students, an urge for research.

MA Politics and International Relations

SEMESTER 1

SEMESTER – I PIR1IB01- FOUNDATIONS OF POLITICAL SCIENCE

COs	COURSE OUTCOMES
CO1	Understand key aspects of conceptual analysis in Political Science.
CO2	Understand the ideological orientation of political science.
CO3	To understand the relationship between state and society and how they influence each other.
CO4	To acquire knowledge about Governmental Structure and Functioning.
C05	To critically analyse the effect of Globalisation in the Power structure of Politics.
CO6	To study and understand Political system through various theories.

SEMESTER 2

PIR 2IB02 – CONCEPTS OF POLITICAL SCIENCE

COs	COURSE OUTCOMES
CO1	To acquire sense of rights, equality, justice, Liberty and democracy.
CO2	Studying the concepts of Power, Authority and Legitimacy in the context of society.
CO3	To learn and analyse various forms of Democracy and instil a sense of Democratic values in self.
CO4	To understand the role of various Groups such as Pressure groups, interest groups etc in the Political decision making
CO5	Study and understand the evolution of Political Parties and their role in the Political and social systems
CO6	To understand how various themes such as environmentalism, globalisation, feminism influences contemporary politics.

SEMESTER 3

PIR3IB01 – INDIAN GOVERNMENT AND POLITICS

COs	COURSE OUTCOMES
CO1	Help students to understand the constitutional development in India and evolution of modern governmental structures.
CO2	Examine the essence of the Preamble, Fundamental Rights and Duties of Indian citizens with a study of the significance and status of Directive Principles.
CO3	To introduce salient features of Indian Constitution, Union Government, State governments, and Local Self- Governments.
CO4	Study of Indian judicial system, its functioning and recent trends.
CO5	Assess the nature of Indian Federalism with focus on Union-State Relations.

PIR3IB02 – WORLD CONSTITUTIONS: COMPARATIVE ANALYSIS

COs	COURSE OUTCOMES
CO1	To develop awareness and familiarize students about various types of political system and constitution of different countries.
CO2	Enable students to have knowledge on constitutionalism, federal and parliamentary form of government and role of executive, legislature, and judiciary in major states in the world.
CO3	Critically analyse the features of a liberal democratic and socialist political system with focus on UK, USA and the People's Republic of China.
CO4	Critically looking at the rights of the citizens of UK, USA and PRC from a comparative perspective.
CO5	Analyse the constitutional and political aspects of major countries and thereby broaden the international understanding of students.

SEMESTER 4

PIR4 IB01- ANCIENT AND MEDIEVAL POLITICAL THOUGHT

COs	COURSE OUTCOMES
CO1	To create in-depth knowledge about modern and medieval political thought among students.
CO2	Providing an insight into the major features of Ancient Western Political Thought with focus on Aristotle and Plato; Roman Political Thought: its contributions with special emphasis on the emergence of Roman law.
CO3	Analysing the evolution of Indian Political thought through Brahminic and Shamanic Traditions.
CO4	To discuss the key concepts - state, government, law, justice, etc, - of western and Indian political tradition.
CO5	Critically examine the Contributions of St. Thomas Aquinas to the evolution of Law and Justice.

PIR 4IB02 - ISSUES IN INDIAN POLITICS

COs	COURSE OUTCOMES
CO1	To sensitise students about the influence of socio-economic factors such as caste, religion and class influence in the Indian Political system.
CO2	Analyse trends in Indian electoral politics, various party systems, role and support base of national and regional parties and their policies and programmes.
CO3	To encourage discussions and debates about secularism, communalism and role of marginalised sections in the Indian society.
CO4	To create an awareness about Criminalisation of Politics, Corruption, Linguistic and Ethnic issues, New Social movements etc.
CO5	To analyse the role of Political parties in the development and sustenance of Democracy.