Department of Chemistry		
Programme offered		B.Sc Chemistry
Programme Outcome		PO 1: Understand the basic concepts of chemical sciences and enable them with tools needed for the practice of chemistry. PO 2: Students should be able to interpret and analyse quantitative data, they should be able to recognize and apply the principles of atomic and molecular structure to predict chemical properties and chemical reactivity. PO 3: To known the role of chemistry in nature and society. PO 4: To be exposed to different techniques used in research and their application
Course code	Course Name	Course Outcome
CH1141	Inorganic Chemistry I	CO 1: The course helps the students to understand the structure of atom, periodicity and non-aqueous solvents. CO 2: The student will be able to appreciate how the inner structure of elements dictates the chemical properties of the elements and also how the elements are arranged in the periodic table. CO 3: The students will learn the properties and application of s-block elements, the H atom and their compounds
CH1221	Methodology and Perspectives of Sciences and General Informatics	CO 1: The students will get a basic understanding to do self-directed experimentation work and research in chemistry under the guidance of and supervision of a mentor. CO 2: The student should be able to write the research projects, its implementation and presentation of the outcome. Also, how to overcome the difficulties posed during experiments, handling different reactions and analytical methods etc. CO 3: Analytical chemistry helps the students to understand about the experimental parts of the theory and safety measures which could follow when doing experiments using chemicals.

CH1341	Inorganic Chemistry II	CO 1: The course provides a fundamental to detailed knowledge in chemical bonding and compounds of non-transition elements and gives an elementary idea about Nano materials. CO 2: The student will also get a strong idea about nuclear chemistry.
CH1441	Organic Chemistry I	CO 1: The student should get an idea about the behaviour of aliphatic and aromatic compound and the fundamental concepts about reaction mechanism of organic compounds. CO 2: The course provides an insight in to stereo chemical aspects, photochemical reactions and aromaticity of compounds.
CH1442	Inorganic Qualitative Analysis	CO 1: The students will get idea about the systematic qualitative analysis by microscale methods of a mixture containing two acidic and two basic radicals. CO 2: Get an idea about identification and conformation of mixtures
CH1541	Physical Chemistry I	CO 1: Upon completion of this course, the students will gain an exposure and practice in the areas of physical chemistry. CO 2: The students are able to get concepts about gas, liquid properties and principles of thermodynamics and group theory. CO 3: The laws of thermodynamics forms the appropriate organizational tool to understand the chemistry of bulk systems.
CH1542	Inorganic Chemistry III	CO 1: This course helps the students to learn the important multidisciplinary areas of bio inorganic chemistry and organometallic chemistry. CO 2: The students will gain a thorough understanding of the classification of several organometallic reactions and able to identify the applications of organometallic compounds. CO 3: This also helps the students about analytical methods and techniques and general principle of isolation of elements helps the students to understand the isolation of elements from their ores

CH1543	Physical Chemistry II	CO 1: The students will be able to explain the concepts of thermodynamics, quantum mechanics and spectroscopy to chemical, physical and biochemical systems. CO 2: Students will be equipped to derive mathematical relationships in these areas of chemistry. CO 3: Students will evaluate the physical and chemical systems by non-spectroscopic techniques.
CH1544	Inorganic volumetric analysis	CO 1: The students will get idea about the systematic qualitative analysis by microscale methods of a mixture containing two acidic and two basic radicals CO 2: Get an idea about identification and confirmation of mixtures. CO 3: The students will be experienced in inorganic preparations. CO4: The students will get an exposure about acidimetry, alkalimetry, permanganometry etc.
CH1545	Physical chemistry experiments	CO 1: The students will be experienced in the determination of partition coefficient of iodine between CCl4 and water, critical solution temperature of phenol - water system, conductometric titrations, potentiometric titrations, calorimetric experiments, kinetics of ester hydrolysis etc.
CH1641	Organic Chemistry II	CO 1: The students will get an idea about the preparation, properties and mechanism of organic reactions. CO 2: Organic chemistry leaning should give the student a knowledge about reactions, reagents and products. CO3: They are getting ideas about reactive site, nucleophile, electrophiles, the movement of arrows etc. CO 4: The course also gives a sufficient knowledge about the structural elucidation of organic compounds from spectra. This course also gives other novel areas such as supramolecular chemistry and green chemistry

CH1642	Organic Chemistry III	CO 1: The students will get an idea about the preparation, properties and mechanism of organic reactions. CO 2: The students get an idea about carbohydrates, amino acids, proteins, nucleic acids, alkaloids, polymers and their properties
CH1643	Physical Chemistry III	CO 1: The students learn the basics of electrochemistry and its application to modern industry and technology. CO 2: The course provides the different types of reactions and the various factors that determine the rate of the reactions. CO3: The course gives an understanding about the phase diagrams of one two and three component systems and elementary ideas of photochemistry
CH1644	Organic chemistry experiments	CO 1: The students should be able to develop laboratory skills. CO 2: Apply principles of separation and isolation of organic compounds
CH1645	Gravimetry	CO 1: Gravimetry gives the basic concepts of analytical methods. CO 2: Also get idea about the precipitation co-precipitation and post precipitation possibilities
CH1661.1	Supramolecular, Nano Particles and Green Chemistry	CO 1: Supramolecular chemistry gives idea about chemistry beyond molecules. CO 2: The learners should get knowledge about the importance of self-assembly. CO 3: Relevance of supramolecular chemistry to mimic biological systems. CO 4: Green chemistry knowledge should equip the student to handle environmentally benign reactions and the minimum use of hazardous chemicals and proper way of chemical waste management
CH1646	Project and Factory visit	CO 1: The students should develop an aptitude for research in chemistry, learn research methodology and literature search. To inculcate proficiency to identify appropriate research topic and presentation.
Complementary courses		
Programme Outcome:		PO 1: These courses will give a deep insight about chemistry to students from other disciplines there by enabling them, to understand the concepts associated

		with the representative subject with more clarity.
Course code	Course Name	Course Outcome
CH1131 .1	Theoretical Chemistry (Complementary Chemistry)	CO1: The students can thoroughly understand the concept of Atoms. They can also understand the Bohr concept and also the Quantum numbers. CO2: After studying the module of chemical bonding they can understand the common themes such as Ionic, covalent and metallic descriptions of chemical bonding. CO3: This helps the students to describe the phenomenon of radioactivity and its basics. It also helps them to explain how they are used in various fields including agriculture and medicine. CO4: Analytical principles emphasises the role of Analytical Chemistry in basic science. This helps them to evaluate quantitative and qualitative analysis.
CH1231 .1	Physical Chemistry I (Complimentary Chemistry)	CO1: The student can understand the basic concepts of thermodynamics. It also helps them to learn how they can be applied in various applications. CO2: The student will be able to understand the concepts of chemical equilibrium. It helps them to describe the concept of free energy and reaction rates. CO3: The student will be able to describe the properties of acids and bases. It also helps them to understand the concept of pH. CO4: After studying this module the student will be able describe various thermochemical aspects. It also helps them to describe the nature of energy.

CH1131 .4	Theoretical Chemistry (Complimentary Chemistry)	CO1: The students can thoroughly understand the concept of atoms. They can also understand the Bohr concept and also the Quantum numbers. CO2: After studying the module of chemical bonding they can understand the common themes such as Ionic, covalent and Metallic descriptions of chemical bonding. CO3: Analytical principles emphasises the role of Analytical Chemistry in basic science. This helps them to evaluate quantitative and qualitative analysis. CO4: After studying the environmental chemistry the students can understand the chemistry and toxicology of substances. They can also use the analytical skills to quantify the level and effects of toxicity in environment.
CH1231 .4	Inorganic and bioinorganic Chemistry (Complimentary Chemistry)	CO1: The students will get a firm foundation in the fundamentals on inorganic chemistry. They will also be able to explore new compounds and the applications in organometallic compounds. CO2: This helps them to understand the principles underlying fission and fusion, atomic bomb, nuclear bomb etc. They will also be aware of the Nuclear power plants their working principle etc. CO3: This helps to know the examples of coordination compounds and also the properties of them. This deals with the theories behind this and its vast applications and importance. CO4: This helps to describe the importance of metals in biological systems. Their biological functions are also studied.

CH1331.1	Physical Chemistry II (Complimentary Chemistry)	CO1: The student will be able to understand the concept of different velocities of gases. It helps them to understand various aspects like liquefaction of gases, joule Thomson effect. CO2: This module gives them a clear understanding of the solid state. It gives them an idea about the structure of crystals and applications like diffraction of x-rays by crystals. CO3: Student will be able to understand the fundamentals of electro chemistry. The syllabus is designed in such a way that they will be able to apply it practically. CO4: The student will be able to understand concepts of catalysis. Also, they will understand the basics fundamentals of photochemistry. CO5: The student will be able to determine the unit of rate constant. It helps them to describe how rate of a reaction change with time and various other aspects. CO6: After the module the student will be able to define the basic concepts of group theory like the various elements of symmetry. It gives them an idea of how to write a group multiplication table and understand the concept of point group.
CH1331 .4	Organic Chemistry	CO1: After studying this module student can predict the reaction mechanism involved in a chemical reaction. They can firmly understand the concepts of Inductive mechanism, Hyper conjugation, resonance etc. CO2: This helps them to understand the basic concepts such asIsomers, Chiral, Achiral molecules etc. CO3: This helps them to understand the basic concepts also the major types of carbohydrates and examples for each food Source. Also gets a view about the reactions involved in carbohydrates. CO4: This describes the structure of amino acids, their physical and chemical properties. Also describes the primary, secondary, tertiary and quaternary structure in proteins.

		CO5: This helps to understand the various nucleic acids and their reactions. Also understands the basic concepts of lipids. CO6: Helps them to understand monomers, polymers and polymerization. Also helps them to understand the polymeric materials related with their daily life.
CH1431 .1	Spectroscopy and Material Chemistry (Complimentary Chemistry)	CO1: At the end of this module the student will be able to understand the fundamentals of spectroscopy. It helps them to explain the basic principles of IR, microwave and UV- Vis spectroscopy. CO2: At the end of this module the student will be able to explain the basic principles of Raman and NMR spectroscopy. It also enables them to use the fundamental concepts in simple molecules. CO3: The student will be able to understand the fundamentals of coordination chemistry, the theories governing it, their drawbacks. It also helps them to understand how coordination complexes find application in qualitative and quantitative analysis. CO4: This module is designed with the aim of giving the students a basic understanding in the general principles and extraction of metals. CO5: This will help the student to get a basic understanding on the evolution of Nano science, preparation of Nano particles, tools for measuring Nano structure. It also gives them an idea of how Nano particles can be used in various applications. CO6: This module helps the students to understand the aspects of magnetic materials, conducting polymers and liquid crystals. This module covers the basic aspects including their classification, synthesis and application.

CH1431 .4	Physical Chemistry (Complimentary Chemistry)	CO1: This helps the students to know the aspects of first order, second order, pseudo order reactions. Also helps to understand the order and molecularity of a reaction. CO2: This describes the difference between completion for irreversible and reversible chemical reactions. Also describes a system at chemical equilibrium. CO3: This explains definition, classification, preparation, Important properties, Applications etc. CO4: This helps the students for understanding instrumentation, various principles underlying them and its applications. CO5: This also explains its working principle, relevant terms, Instrumentation, etc., CO6: This interprets the nature of solutions, focused approach including the underlying assumptions etc.
CH1432 .1	Lab for Physics Majors (Complimentary Chemistry)	CO1: The knowledge on inorganic chemistry will be utilised for the identification of inorganic radicals present in a mixture. CO2: The knowledge gained on analytical chemistry will be utilised for the quantitative estimation of various inorganic ions
CH1432 .4	Lab for Zoology Majors (Complimentary Chemistry)	CO1: The students will be able to develop their laboratory skills Also develops their ability to analyse an organic compound by experiment, observation, inference etc. CO2: They will also develop their skills in volumetric analysis. By repeating the experiments will get an idea about equivalence point end point, titrations etc. Also understands to do acidimetry, alkalimetry, permanganometry etc.
Department of Commerce		
Programme offered		B.Com, M.Com
Programme Outcome		PO 1: Equipping the students to cope with the emerging trends and challenges in the industrial and business world

Course Code	Title of Courses	Course Outcome
CO 1121	Methodology and Perspectives of Business Education	CO1: To create a basic awareness about the business environment and the role of business in economic development. CO2: To provide a holistic, comprehensive and integrated perspective to business education CO3: To give a fundamental understanding about ethical practices in business.
CO 1141	Environmental Studies	CO1: To enable the students to acquire basic ideas about environment and emerging issues about environmental problems. CO2: To give awareness about the need and importance of environmental protection
CO 1142	Management Concepts and Thought	CO1: To equip learners with knowledge of management concepts and their application in contemporary organizations CO2: To facilitate overall understanding of the different dimensions of the management process.
CO 1131	Managerial Economics	CO1: To familiarise students with the economic principles and theories underlying various business decisions. CO2: To equip the students to apply the economic theories in different business situations.
CO 1221	Informatics and Cyber Laws	CO1: To review the basic concepts and fundamental knowledge in the field of informatics and to create an awareness about the nature of the emerging digital knowledge society and the impact of informatics on business decisions. CO2: To create an awareness about the cyber world and cyber regulations.
CO 1241	Financial Accounting	CO1: To familiarize the students with different methods of depreciation. CO2: To equip the students to prepare the accounts of specialised business enterprises.
CO1242	Business Regulatory Framework	CO1: To provide a brief idea about the framework of Indian business Laws, CO2: To enable the students to apply the provisions of business laws in business activities

CO 1231	Business Mathematics	CO1: To familiarise the students with the basic mathematical tools. CO2: To impart skills in applying mathematical tools in business practice
CO 1341	Entrepreneurship Development	CO1: To familiarize the students with the latest programmes of Government in promoting small and medium industries. CO2: To impart knowledge regarding starting of new ventures.
CO 1342	Advanced Financial Accounting	CO1: To create awareness of accounts related to dissolution of partnership firms. CO2: To acquaint students with the system of accounting for different branches and departments. CO3: To enable students to prepare accounts of consignments.
CO 1361.5	Computer application for publications	CO 1: To update and expand skills in electronic data processing and computer application in business operations. CO 2: To give functional knowledge in the field of free software. CO 3 : To develop practical skills in document preparation, publishing and business presentation.
CO 1361.2	Principles of co-operation	CO 1: To give knowledge about the development of co-operative movement in India and abroad. CO 2: To inculcate the principles of co-operation among the students. CO 3:To acquaint the students with the management and working of co-operatives.
CO 1331	E-Business	CO1: To provide students a clear-cut idea of e-commerce and e-business and their types and models. CO2: To acquaint students with some innovative e-business systems. CO3: To impart knowledge on the basics of starting online business.
CO 1441	Indian Financial Market	CO1: To provide a clear-cut idea about the functioning of Indian Financial Market in general and Capital market operations in particular.
CO1442	Banking and Insurance	CO1: To provide a basic knowledge about the theory and practice of banking CO2: To provide a basic understanding of Insurance business. CO3: To familiarize the students with the changing scenario of Indian Banking and Insurance.

CO 1443	Corporate Accounting	CO1: To create awareness about corporate accounting in conformity with the provisions of Companies Act, IAS and IFRS. CO2: To help the students in preparation of accounts of banking and insurance companies. CO3: To enable the students to prepare and interpret financial statements of joint stock companies.
CO 1461.5	Software for data management	CO 1 :To update and develop theoretical and technical expertise in applying software for data management. CO 2: To familiarise the students with the basics of Software for data management. CO 3 :To equip the students to meet the demands of the industry. CO 4 : To develop practical skills in spread sheet application, statistical software and database application.
CO1461.2	Co-operative management and administration	CO 1 : To provide knowledge about the system of management and administrative set up of co-operatives. CO 2 : To familiarise the students with the principles and practice of co-operative management and administration. CO 3 : To enable the students to identify the issues in the process of management and administration of co-operatives.
CO 1431	Business Statistics	CO1: To enable the students to gain understanding of statistical techniques those are applicable to business. CO2: To enable the students to apply statistical techniques in business.
CO 1541	Fundamentals of Income Tax	CO1: To familiarize the students about the fundamental concepts of Income Tax. CO2: To enable the students to acquire the basic skills required to compute the tax liability of individual assesse with more emphasis on Income from Salaries and Income from House property.
CO 1542	Cost Accounting	CO1: To familiarize the students with cost and cost accounting concepts. CO2: To make the students learn cost accounting as a distinct stream of accounting

CO 1543	Marketing Management	CO1: To provide an understanding of the contemporary marketing process in the emerging business scenario. CO2: To study various aspects of application of modern marketing techniques for obtaining acompetitive advantage in business organizations.
CO 1561.2	Co-operative legal system	CO 1 :To give knowledge of the legal system prevailing in India for the management and administration of co-operatives. CO 2 : To give an insight into the prevailing co-operative legal system. CO 3 : To enable the students to understand the legal framework of co-operation.
CO 1561.5	Web designing and production for business	CO 1 : To expose students to environment for web designing and developing CO 2 : To impart functional knowledge in the field of Web design CO 3 : To develop practical skills in Web deigning and production for business organisations.
CO 1641	Auditing	CO1: To provide students the knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards. CO2: To familiarize students with the audit of Companies and the liabilities of the auditor.
CO 1642	Applied Costing	CO1: To acquaint the students with different methods and techniques of costing. CO2: To enable the students to apply the costing methods and techniques in different types of industries.
CO 1643	Management Accounting	CO1: To enable students to acquire sound knowledge of concepts, methods and techniques of management accounting. CO2: To make the students develop competence with management accounting usage in managerial decision making and control.
CO 1651.3	Management of Foreign Trade	CO1: To acquaint the students with India’s foreign trade. CO2: To familiarise the students with international trade and services.

CO 1661.5	Computerised accounting	CO 1 :To update and expand the skills in the application of accounting packages. CO 2: To expose the students to computer application in the field of Accounting. CO 3 : To develop practical skills in the application of Tally Package.
CO1661.2	Co-operative accounting	CO 1 :To impart knowledge about the system of maintaining books and accounts in co-operatives and to develop the skill in undertaking co-operative audit. CO 2 : To familiarise the students with the special features of accounting and audit in co-operatives. CO 3 : To enable the students to understand the procedures of co-operative audit.
M.Com		
Programme Outcome		PO 1: Demonstrate knowledge of key concepts and theories underlying qualitative decision making. PO2: Compare International markets and environment through the lens of commerce discipline. PO 3: Apply critical and analytical skills and methods to the identification, evaluation and resolution of complex problems. PO 4: Inculcate a global mind set of entrepreneurship and managerial skills.
CO 211	Business Ethics and Corporate Governance	CO1: To convey basic understandings on the theories of Business Ethics. CO2: To provide a understanding on Corporate Governance practices and the provisions of the Companies Act relating to corporate governance
CO 212	Legal Framework for Business	CO1: To enable student acquire updated knowledge and develop understanding of the regulatory framework for business. CO2: To make students aware of opportunities available in various legal compliances so as to enable them employable. CO3: To expose students in emerging trends in good governance practices including governance.

CO 213	Research Methodology	CO1: To provide an insight into the fundamentals of social science research. CO2: To understand the need, significance and relevance of research and research design. CO3: To acquire practical knowledge and required skills in carrying out research.
CO 214	Planning and Development Administration	CO1: To generate an overall insight on planning process in Indian Economy CO2: To make the students aware about new planning initiatives in India
CO 215	Advanced Corporate Accounting and Reporting	CO1: To acquaint the students about important accounting standards. CO2: To gain ability to prepare financial statements including consolidated financial statements of group companies and financial reports of various types of entities by applying relevant accounting standards. CO3: To expose the students to advanced accounting issues and practices such as insurance claims, investment accounting and liquidation of companies.
CO 221	E-Business & Cyber Laws	CO1: To equip the students with the emerging trends in business. CO2: To equip the students to introduce and explore the use of information technology in all aspects of business. CO3: To familiarise with the students cyber world and cyber regulations
CO 222	Strategic Management	CO1: To create a conceptual awareness on various strategies. CO2: To familiarise students with the formulation, implementation and evaluation of strategies
CO 223	Quantitative Techniques and Financial Econometrics	CO1: To impart expert knowledge in the application of Quantitative Techniques and Business Econometrics in research. CO2: To impart knowledge in the use of SPSS in processing and analysis of data.
CO 224	International Business	CO1: To introduce the concept of international business and to create awareness on the changes in the international business arena
CO 225	Investment Management	CO1: To provide a general understanding about investment avenues and personal finance. CO2: To give a broader understanding about behavioural finance and how it equips to decide personal investment.

CO 231U	Income Tax Planning and Management	CO1: To impart deep knowledge about the latest provisions of Income Tax Act. CO2: To develop application and analytical skill of the provisions of Income Tax Law for Income Tax planning and Management.
CO 232F	Security Analysis and Portfolio Management	CO1: To provide a comprehensive understanding on the principles of security analysis and develop the skill in portfolio management. CO2: Equip the students to value the real worth of securities
CO 233 F	International Financial Management	CO1: To familiarise the students with the international financial markets and instruments. CO2: To convey an understanding about foreign exchange risk management
CO 234F	Strategic Cost and Management Accounting	CO1: To comprehend and familiarize the established techniques, methods and practices in Strategic Cost and Management Accounting to the students. CO2: To introduce the evolving Strategic approaches and techniques in Cost and Management field and to developed industrial behaviour among the students in the emerging business areas.
CO 241W	Goods and Service Tax & Customs Duty- Law and Practice	CO1: To gain expert knowledge of the principles and law relating to Goods and Service Tax and Customs Act. CO2: To impart skill in applying and analysing the provisions of Goods and Service Tax Act and Customs Act in handling practical situations.
CO 242F	Risk Management and Derivatives	CO1: To understand the risk management process and its application. CO2: To give a broader awareness on derivatives and its applications
CO 243F	Accounting Standards	CO1: To acquaint the students to understand the structure, process and organizational set up involved in evolving accounting standards in India. CO2: To enable the students to apply some key standards while preparing and presenting the financial statements
CO 244S	Management Optimization Techniques	CO1: To convey basic principles and application of optimization tools of resource utilization. CO2: To provide an insight into optimal project implementation Techniques under deterministic and probabilistic conditions.

Department of Mathematics		
Programme offered		B.Sc Mathematics, M.Sc Mathematics
Programme Outcome		PO1: The degree programme will provide both mathematical knowledge and communication skills. PO2: Applied Mathematics can lead to many career opportunities. PSO3: Mathematics is a building block for everything in our daily lives including mobile devices, architecture, money, in sports etc. PO4:Mathematics is a powerful tool with many applications, so in this programme students could acquire basic knowledge in various branches of Mathematics. PO5:- The resources gives sensible thinking, problem- solving capabilities and the capability to think in subjective ways. PO6:- Provides an effective communication skill.
MM 1141	Methods of Mathematics	CO1: Understanding the concepts of fundamental methods of solving problems like limit, continuity and differentiation. CO2: Finding absolute maximum and minimum of functions. CO3: Understanding application of extrema problems to Economics CO4: Understanding various Integration Techniques. CO5: Finding Area under a curve through integration, work done, Pappu's Theorem and understanding the concept of hyperbolic functions and their applications
MM 1221	Foundations of Mathematics	CO1: Understanding the concepts of sets, functions and the way in which a mathematician formally makes statements and proves or disproves it. CO2: Visualize some of the properties of graphs of elementary functions CO3: Understanding foundations of co-ordinate geometry. CO4: Understand the application of polar coordinates in Astronomy. CO5: Understanding three-dimensional

		rectangular co-ordinate system and basic operations on vectors
MM 1341	Elementary Number Theory and Calculus I	CO1: Understanding the fundamental facts in elementary Number Theory CO2: Understand the physical and geometrical interpretations of vectors. CO3: Explain more properties of curves in three-dimension space using the concepts of differentiability. CO4: Visualising functions of more than one variable, sketching, contours and level surface plotting. CO5: Understanding limits and continuity of multivariable functions, partial derivatives and its geometrical interpretation. CO6: Solving extremum problems with constraints using Lagrange multipliers
MM 1441	Elementary Number Theory and calculus-II	CO1: Defining the congruence relation and the congruence classes in integers CO2: Understanding Chinese remainder theorem and its applications. CO3: Finding double and triple integrals and their applications CO4: Evaluating the integrals of vector valued functions. CO5: Understanding the concept of Divergence Theorem, Gauss Law, Stoke's Theorem an its applications
MM 1541	Real Analysis-I	CO1: Understands the existence of irrational numbers. CO2: state the completeness axiom of the reals and do simple calculations with suprema and infima of bounded sets. CO3: Proving the uncountability of R. CO4: calculate limits of sequences using the algebra of limits for sequences and the standard list of basic sequences, limits of sequences and to prove Bolzano Weierstrass theorem. CO5: state various convergence tests for series (e.g. comparison test or the ratio test) and use them to detect convergence or divergence of series. CO6: Understands abstract metric spaces. CO7: Understands the construction of Cantor set. CO8: Understands the open and closed sets in R and their complements.

		CO9: Understands the compactness, open covers, perfect and connected sets in R CO10: Proves the Baire's Theorem
MM 1542	Complex Analysis I	CO1: Understands the algebra of Complex numbers, point representation and its vector and polar form. CO2: Understands the concept of limit and continuity of functions of complex variable CO_r: Prove the Cauchy-Riemann equations. CO3: Understanding polynomials and rational functions, the exponential, trigonometric, hyperbolic, the logarithmic functions and inverse trigonometric functions. CO4: Gets the knowledge of contour integrals and proves Cauchy's Integral formula. Also discusses about its applications in evaluating integrals. CO5:Understands the Bounds of Analytic functions
MM 1543	Abstract Algebra – Group Theory	CO1: Acquire fundamental concept of Group theory CO2: Enhance capacity for mathematical reasoning CO3: Develop problem solving skill CO4: Students can connect the theory of groups to problems in other discipline CO5: Defining and analysing various permutation groups CO6: Understanding Cosets, Lagrange's theorem and fundamental theorem of Isomorphism CO7: Solve boundary value problem
MM 1544	Differential Equations	CO1: Understands first order differential equations and various methods to solve them CO2: Understanding the existence and uniqueness of solutions theorem CO3: Understands second order differential equations and various methods to solve them

MM 1545	Mathematics software- LATEX & Sage Math	CO1: Enables to prepare a project report in Mathematics using LATEX CO2: Typesets a simple article, prepares a table, inserts figures in the document and adds bibliography CO3: Understands to start Sage Math, use Sage Math cloud CO4: Do simple calculations using Sage Math calculator and by basic function. CO5: Plots the graphs of simple functions CO6: Understands matrix algebra, defining functions, operations on polynomials, complex number arithmetic, differentiation of functions CO7: Understands the concepts of combinatorics and number theory, vector calculus
MM 1551.1	Operations Research	CO1: Formulate a linear programming problem and solve it using graphical method or simplex method. CO2: Solve transportation problem and assignment problem. CO3: Analyse project networks using PERT and CPM.
MM1646	Project	CO1: Computational understanding of mathematics to a broad understanding encompassing logical reasoning, generalization, abstraction, and formal proof. CO2: Create and verify their own conjectures, rather than simply using provided formulas, rules and theorems in multiple courses throughout the mathematics curriculum. CO3: Construct clear and well-supported mathematical arguments to explain mathematical problems, topics, and ideas in writing.

MM 1641	Real Analysis-II	CO1: State the definition of continuous functions and verify or disprove this in easy examples, formulate characterizations of continuity in terms of convergent sequences and in terms of limits of functions, CO2: State the intermediate value theorem and the boundedness theorem and apply them to solve equations, CO3: State the definition of differentiable functions and to verify or disprove this in easy examples, monotone functions et CO4: Calculate derivatives using the chain rule, the algebra of differentiable functions and the rule on derivatives of compositional inverses CO5: State Rolle's theorem, the Mean Value Theorem and L'Hospital's Rule and to apply them to recognise the shape of functions (e.g. existence of local extrema, subjectivity of the derivative) and to calculate limits, CO6: State the definition of Riemann Integrability and derive the Cauchy criteria. CO7: Establish the integrability using various results, like squeeze theorem. CO8: Derive the relation between integration and differentiation via fundamental theorem of calculus
MM 1642	Complex Analysis II	CO1: Compute the Taylor and Laurent expansions of simple functions, determining the nature of the singularities CO2: Understands about the point at infinity CO3: Prove the Cauchy Residue Theorem and use it to evaluate improper integrals CO4: Understands the geometric considerations of conformal mapping CO5: Gets the knowledge of Mobius Transformations
MM 1643	Abstract Algebra – Ring Theory	CO1: Explain fundamental concepts of homomorphism of Groups CO2: Develop the notion of Ring theory CO3: handle Factor ring CO4: use the theory of rings to problems in other discipline

MM 1644	Linear Algebra	CO1: Understands the basics of Linear Algebra and matrix theory through geometry CO2: Demonstrate understanding of linear independence, span, and basis. CO3: Determine eigenvalues and eigenvectors and solve eigenvalue problems CO4: Apply principles of matrix algebra to linear transformations
MM1645	Integral Transforms	CO1: Understands Laplace Transforms and its properties CO2: Understands its applications to Non- homogeneous Linear ODE CO3: Understands the Fourier series representation of periodic functions, odd and even functions, Half range expansions CO4: Understands Fourier integrals and its properties CO5: Understands Fourier Transform and its properties
MM 1661.1	Graph Theory(Elective)	CO1: Understands the Fundamental Concepts of graph CO2: Understands the trees and Connectedness of graphs CO3: Understands Euler tours and Hamiltonian cycles CO4: Understands the concept of Chinese postman problem, Travelling salesman problem CO5: Understands the idea of planar graphs CO6: Gets the knowledge of Platonic bodies and Kuratowski‟s Theorem
M. Sc. Mathematics		

Programme Outcome		PO1:-The Master's degree programme will provide both mathematical knowledge and communication skills. PO2 :- Mathematics is a powerful tool with many applications , so in this programme students could acquire basic knowledge in various branches of Mathematics . PO3:- The resources gives sensible thinking, problem- solving capabilities and the capability to think in subjective ways . PO4:- Provides an effective communication skill that can be applied to their jobs. PO5:- Could enter higher level careers. P06:- Will expand their knowledge of fields related to their current areas of professional specialization.
Course code	Course Name	Course Outcome
MM 211	Linear Algebra	CO1: Analyse finite dimensional vector spaces and subspaces over a field and their properties including the basis structure of vector spaces CO2: Use the definition and properties of linear maps and matrices of linear map including null space, range, invertibility and to apply Rank Nullity theorem to find dimension of null space and range space CO3: Compute eigenvalues, eigen vectors, eigen spaces and invariant subspaces of linear operators and analysing equivalent condition for a set of vectors to give an upper triangular operator. CO4: Find characteristic polynomial and minimal polynomial of certain operators. Prove Cayley Hamilton theorem. CO5: Define trace and determinant of a matrix and linear operator
MM 212	Real Analysis – I	CO1: Characterization of functions in terms of monotone functions CO2: Extension of Riemann Integration CO3: Point wise and Uniform convergence of functions CO4: Partial Derivatives and Directional derivatives of multivariable scalar functions

MM 213	Differential Equations	CO1: Solve second order differential equations CO2: Solve second order and first order differential equations using power series CO3: Understand some special functions? Bessel and Legendre functions CO4: Solve First and second order partial differential equations CO5: Derive wave equation CO6: Solve boundary value problem
MM 214	Topology – I	CO1: Understand the concept of topological and metric spaces CO2: Distinguishes the topological properties CO3: Apply the properties of connectedness CO4: Application of properties related to compactness CO5: Identify the condition under which a topological space should be considered as a subspace of a compact topological space
MM 221	Abstract Algebra	CO1: Understand the elementary concepts of group theory, ring theory and field theory CO2: Prove fundamental theorem and apply the theorem to classify abelian groups CO3: Demonstrate knowledge and understanding of different type of integral domains CO4: Understand factorization of polynomials and apply reducibly tests CO5: Understand the fundamental theorem of field theory and Galois theory CO6: Characterize extensions and find Galois fields of certain polynomials
MM 222	Real Analysis-II	CO1: Characterization of functions in terms of monotone functions CO2: Extension of Riemann Integration CO3: Point wise and Uniform convergence of functions CO4: Partial Derivatives and Directional derivatives of multivariable scalar functions

MM 223	Topology-II	CO1: Compare topologies. CO2: Understand the idea of quotient space. CO3: Know the separation properties and metrization CO4: Understand the idea of fundamental group. CO5: Describe the structure of topological spaces by algebraic means.
MM 224	Scientific Programming with Python	CO1: Use Anaconda's IDE Spyder to open, write, debug, and run Python programs, CO2: Decompose algorithmic processes into control structures (like loops and logical branches) and implement them in the Python programming language CO3: Identify and use the appropriate data types for variables, being critically aware of memory and complexity issues, CO4: Identify reusable building blocks of their code and restructure them into well-documented functions, CO5: Read from and write to external data sources and files, perform data manipulations on these, present and interpret the Result
MM 231	Complex Analysis-I	CO1: Demonstrate understanding and appreciation of deeper aspects of complex analysis CO2: Work with multi-valued functions (logarithmic, complex power) and determine branches of these functions CO3: Use the complex derivatives function CO4: Use and operate analytic functions CO5: Demonstrate knowledge of integration in the complex plane CO6: Use the Cauchy integral theorem and Cauchy integral formula CO7: Manipulate and use power series CO8: Understand residues and their use in integration CO9: Understand Mobius Transformations and Symmetric, Orientation Principle CO 10: Understand Maximum modulus theorems and Schwarz Lemma

MM 232	Functional Analysis-I	CO1: Handle infinite dimensional vector spaces CO2: Combine the idea from linear algebra and analysis CO3: Connect theoretical mathematics to applied mathematics CO4: Develop problem solving skill
MM233	Algebraic Topology	CO1: characterize geometrical properties like holes and connectivity of spaces using algebraic objects namely groups. CO2: Module 1-2: Calculate the Homology groups and characterize regular simple polyhedrons in R^3. CO3: Module 3: Using simplicial approximation theorem, analyse the homeomorphism between n-spheres and between Euclidean spaces. CO4: Module 4: Calculate Fundamental groups and observe the simple connectivity of n- sphere. CO5: Module 5: Prove the Borsuk-Ulam theorem and show that at any point of time there is atleast one pair of antipodal points on the surface of the earth having identical atmospheric pressures and identical temperatures.
MM 234	Elective-II Differential Geometry	CO1: Understand the concepts and language of differential geometry and its role in modern mathematics CO2: Analyse and solve problems using appropriate techniques from differential geometry CO3: Define n-surfaces and their properties CO4: Find parametrization of surfaces CO5: Express tangent spaces of surfaces CO6: Explain differential maps between surfaces and find derivatives of such maps.

MM 241	Complex Analysis-II	CO1: Understand Spaces of Analtic functions, to prove Arsela Ascoli Theorem, Montels theorem and Hurwiz Theorem CO2: Understand Riemann Mapping Theorem CO3: Understand Gamma and Zeta functions, their properties and relationships CO4: Understand the Harmonic functions on a disc and concerned results CO5: Understand the factorization of entire functions having infinite zeros CO6: Demonstrate the concept of Analytic Continuation and prove related Theorems
MM 242	Functional Analysis-II	CO1: Handle inner product space CO2: Idea of approximation and optimization CO3. Expert in Banach algebra CO4. Problem solving skill
MM 243	Elective-III Field Theory	CO1: Define and able to give examples of splitting field, algebraic extension, Galois groups, solvable groups and solvability of polynomials by radicals. CO2: Understand the Fundamental Theorem of Galois Theory and Galois correspondence. CO3: Compute the Galois group of some field extensions. CO4: Explain how, one can use Galois theory to prove that polynomials of degree less than five are solvable by radicals, while the general quantic equation is not.
MM 244	Elective-IV Analytic Number Theory	CO1: Working with complex mathematical texts and abstract concepts CO2: Constructing logical arguments, communicating mathematical ideas clearly and succinctly, and explaining mathematical ideas to others CO3: Formulating the theory of arithmetical function and use it in deriving various identities and inequalities, CO4: Solving the system of congruence's and various congruence relations,

		CO5: Finding the square root modulo a positive integer CO6: Finding the primitive roots modulo integers.
MM 245	Dissertation/ Project	CO1: computational understanding of mathematics to a broad understanding encompassing logical reasoning, generalization, abstraction, and formal proof. CO2: create and verify their own conjectures, rather than simply using provided formulas, rules and theorems in multiple courses throughout the mathematics curriculum. CO3: construct clear and well-supported mathematical arguments to explain mathematical problems, topics, and ideas in writing.
Complementary courses B Sc		
Programme Outcome		PO1: Mathematics is a powerful tool with many applications, so in this programme students could acquire basic knowledge in various branches of Mathematics. PO2: The resources gives sensible thinking, problem- solving capabilities and the capability to think in subjective ways. PO3: Provides an effective communication skill.
Course code	Course Name	Course Outcome

MM1131.1	Calculus with applications in Physics-I	CO1: Understands the special points of a function, curvature and applies Rolle's Theorem and Mean value theorem on functions CO2: Understands integration by parts and reduction formula CO3: Understands the concept of infinite and improper integrals CO4:Applies the integration techniques to evaluate the area, volume etc CO5:Understands various types of Series such as arithmetic series, geometric series, the difference method, series involving natural numbers and transformation of series CO6: Understands Convergence of infinite series (Absolute and conditional convergence) and series containing only real positive terms; alternating series test CO 7: Understands Operations with series (Sum and product)Convergence of power series and Taylor series CO8: Understands Scalars and vectors, Addition and subtraction of vectors, Multiplication by a scalar, Basis vectors and components, Magnitude of a vector, Multiplication of vectors CO9: Understands Equations of lines, planes and spheres, using vectors to find distances from Point to line; point to plane; line to line and line to plane
MM 1231.1	Calculus with applications in Physics-II	CO1: Apply Integral calculus and vectors to problems in chemistry CO2: Use integration to find the area and volume of a surface of revolution CO3: Evaluate multiple integrals CO4: Solving first order and second order linear differential equations CO5: Identify the Equations of different types of conics in Cartesian and polar coordinates and sketch them

MM 1331.1	Calculus and Linear algebra	CO1: Solve special types of first order equations CO2: Solve second order linear differential equation, homogeneous and non-homogeneous equation. CO3: Solve second order equations by operator method. CO4: Solve Euler, Cauchy and Legender equations CO5: Solve system of linear equations CO6: Compute the rank of a matrix CO7: Determine whether a square matrix is diagonalizable and compute its diagonalization. CO8: Understand the relation between roots and coefficients of a polynomial and apply these relations to solve polynomial Equations CO9: Characterise roots of a polynomial. CO10: Calculate approximate roots of a polynomial equation using bisection and Newton Raphson method
MM 1431.1	Complex Analysis, Special Functions and Probability Theory	CO1: Demonstrate accurate and efficient use of complex analysis techniques CO2: Apply problem-solving using complex analysis techniques applied to diverse situations in physics, engineering and other mathematical contexts, CO3: Evaluate integrals using Cauchy's Residue integration method, CO4: Understands the Factorial Function, the Gamma Function; Recursion Relation, The Gamma Function of Negative Numbers, Some Important Formulas Involving Gamma Functions, Beta Functions, Beta Functions in Terms of Gamma Functions CO5: Understands the Basics of statistics such as Sample Space, Probability Theorems, Methods of Counting Random Variables CO6: Understands the Continuous Distributions, Binomial Distribution, The Normal or Gaussian Distribution and the Poisson Distribution

MM1131.2	Calculus with applications in Chemistry I	CO1:Understands the special points of a function, curvature and applies Rolle's Theorem and Mean value theorem on functions CO2: Understands the Basic operations of complex numbers, modulus and argument; multiplication; complex conjugate, Polar representation of complex numbers and de Moivers theorem CO3: Understands the trigonometric identities and finding the nth roots of unity; solving polynomial equations, Complex logarithms and complex powers, CO4: Applies the complex numbers to differentiation and integration, Definition of hyperbolic and trigonometric analogies; identities of hyperbolic functions; solving hyperbolic equations; inverses of hyperbolic functions; calculus of hyperbolic functions CO5: Understands Scalars and vectors, Addition and subtraction of vectors, Multiplication by a scalar, Basis vectors and components, Magnitude of a vector, Multiplication of vectors CO6: Understands Equations of lines, planes and spheres, using vectors to find distances from Point to line; point to plane; line to line and line to plane CO7: Understands integration by parts and reduction formula CO8: Understands the concept of infinite and improper integrals CO9: Applies the integration techniques to evaluate the area, volume etc.

MM 1231.2	Calculus with applications in Chemistry-II	CO1: Understands the total differential and total derivative, Exact and inexact differentials, theorems of partial differentiation, CO2: Understands the chain rule, Change of variables, Taylors theorem for many-variable functions CO3: Understands the Stationary values of many-variable functions, Stationary values under constraints CO4: Understands various types of Series such as arithmetic series, geometric series, the difference method, series involving natural numbers and transformation of series CO5: Understands Convergence of infinite series (Absolute and conditional convergence) and series containing only real positive terms; alternating series test CO6: Understands Operations with series (Sum and product)Convergence of power series and Taylor series CO7: Understands the Differentiation of vectors, Integration of vectors, Space curves, Vector functions of several arguments, Surfaces, Scalar and vector fields CO8: Gets the knowledge of Vector operators like Gradient, divergence and curl, Cylindrical and spherical polar coordinates CO9: Understands Double integrals, Triple integrals, Applications of multiple integrals (Areas and volumes),Change of variables in multiple integrals and properties of Jacobians

MM1331.2	Linear Algebra, Probability Theory and Numerical Methods	CO1: Understands row reduction of Matrices, Determinants, Cramer's rule for solving system of equations CO2: Understands vectors, lines and planes, linear combinations, linear functions, linear operators, linear dependence and independence, special matrices like Hermitian matrices and formulas, CO3: Understands linear vector spaces, eigen values and eigen vectors, diagonalizing matrices and applications of diagonalization CO4: Understands the Basics of statistics such as Sample Space, Probability Theorems, Methods of Counting Random Variables CO5: Understands the Continuous Distributions, Binomial Distribution, The Normal or Gaussian Distribution and the Poisson Distribution CO6: Understanding the Algebraic and transcendental equations Convergence of iteration schemes, CO7: Solves the Simultaneous linear equations using Gaussian elimination, Gauss-Seidel iteration; CO8: Evaluates integrals using Numerical integration techniques such as Trapezoidal rule; Simpsons rule; Gaussian integration; Monte Carlo methods CO9: Understands Finite differences, Differential equations; Taylor series solutions; prediction and correction; Runge-Kutta methods

MM 1431.2	Differential Equations, Vector Calculus and abstract Algebra	CO1: Understands the General form First-degree first order equations and solving using Separable-variable equations; exact equations; inexact equations, integrating factors; linear equations; homogeneous equations; isobaric equations; Bernoullis equation; solves Higher-degree first-order Clairaut's equation CO2: Solving Linear equations with constant coefficients; linear recurrence relations; Laplace transform method, Linear equations with variable coefficients such as The Legendre and Euler linear equations; CO3:Solves exact equations using partially known complementary function; variation of parameters; Green's functions; canonical form for second-order equations CO4: Solves general ordinary differential equations; non-linear exact equations; isobaric or homogeneous equations and solves equations homogeneous in x or y alone and equations having y = Area as a solution. CO5: Evaluate line, surface and volume integrals CO6: Acquire fundamental concept of Group theory CO7: Enhance capacity for mathematical reasoning CO8: Develop problem solving skill CO9: Students can connect the theory of groups to problems in other discipline
Department of Physics		
Programme offered		B.Sc Physics
Programme Outcome		PO 1: Understand various facts and concepts of Physics. PO 2: Develop scientific attitudes and values appropriate for rational reasoning and critical thinking. PO 3: Develop problem solving skill and skills to conduct wide range of scientific experiments. Identify their own area of interest.
Course code	Course Name	Course Outcome

PY1141	Basic Mechanics & Properties of matter	CO 1: Expose to the basic principles behind mechanics and properties of matter CO 2: Understand the concepts of moment of inertial and design its applications CO 3: Brings into limelight the meaning and applications of properties of matter like elasticity, viscosity, surface tension etc. CO 4: Introduce to higher courses related to mechanics and properties of matter CO 5: Obtain numerical solutions to problems related to mechanics & properties of matter
PY1241	Heat and Thermodynamics	CO 1: Understand the basic laws of heat transfer CO 2:Analyse the problems involving steady state heat conduction CO 3:Understand the concepts of internal energy, entropy, enthalpy and specific Volume thermodynamic properties CO 4:Obtain the concepts of various thermodynamic laws CO 5:Analyse numerical problems to consolidate the concepts of heat & thermodynamics
PY1341	Electrodynamics	CO 1: Understand the general aspects of electrodynamics through electrostatics and magneto statics CO 2:Introduce the vital laws of electrostatics and magnetostatics CO 3:Understand the concepts of electrodynamics through Maxwell's equations and to achieve the concept of inseparability of electric and magnetic effects CO 4:Understand the theoretical framework of transient and alternating currents CO 5:Obtain solutions to numerical and conceptual problems related to electrodynamics

PY1441	Classical and Relativistic Mechanics	CO 1:To solve the equations of motion of a particle in different force fields under Newtonian framework and extend it to a system of particles CO 2:Understand the concepts of collision and central force problems through the examples of different kinds of systems CO 3:Achieve the basic formations of Lagrangian and Hamiltonian mechanics CO 4:Obtain the concepts of transformation equations and to arrive at the concepts of Einstein's relativity theory CO 5:Obtain solutions to conceptual as well as numerical problems
PY 1442	Basic Physics Lab 1	CO 1:Develop experimental skill through a wide range experiments, those theoretical concepts are studied in first four courses CO 2:Improve the data analysis, mathematical and graphical skills with the experiments
PY1541	Quantum Mechanics	CO 1:Acquire basic properties of quantum world and how it differs from classical world CO 2:Identify mathematics as the language of quantum mechanics CO 3:Obtain the conceptual knowledge of quantum mechanical problems CO 4:Acquire foundations of further studies for solid state physics, spectroscopy CO 5:Obtain solutions to quantum mechanical problems
PY1542	Statistical Mechanics Research Methodology and Disaster Management	CO 1:Makes the students familiarise with the dynamical behaviour of systems CO 2:Identify the conceptual formulations when matter moving with high speed, comparable to the speed of light CO 3:Understand the special theory of relativity and their dynamical consequences CO 4:Forms strong basics for the study of general relativity and chaos CO 5:Obtain solutions to numerical and conceptual problems related to the topic.

PY1543	Electronics	CO 1:Understand the fundamentals of electronics and hence the proper working of electronic devices that are part of modern technologies used in day to day life CO 2:Helps to understand the role of diodes in rectification process and transistors in amplification CO 3:Analyse different electrical electronic circuits through circuit theory CO 4:Develop knowledge in Modulation, Feedback & Oscillator circuits, Special devices and Operational amplifiers CO 5: Develop skill to solve numerical problems in Modulation, Feedback & Oscillator circuits, Special devices and Operational amplifiers
PY1544	Atomic and Molecular Physics	CO 1:Acquire the ability to describe the spectra of one and two valence electrons CO 2:Explain the change in behaviour of atoms in applied external magnetic and electric fields CO 3:Explain rotational, vibrational and electronic spectra of molecules. CO 4:Solve numerical problems related to concept consolidation
(PY1551.1/ PY1551./ PY1551.3/ PY1551.4/ PY1551.5)	Open Course	CO 1:Provides a general background of the universe we live CO 2:Start to think through the historical purview of the development of astronomy and astrophysics CO 3:Understand the physical principles behind the planetary and stellar motions CO 4:Understand the conceptual framework of seasons CO 5:Obtain the scientific and historical purview of calendars
PY1641	Solid State Physics	CO 1:Gives a theoretical basis for Material science, a very wide branch where extensive research is going on. CO 2:Gets ideas of crystal structures CO 3:Gets a strong foundation of solid-state theories. CO 4:Try to explain thermal, electrical, optical and magnetic properties of materials CO 5:Obtain solutions to numerical problems in solid state physics

PY1642	Nuclear and Particle Physics	CO 1:Understand the structure of nucleus, nuclear forces and models, nuclear reactions and radioactivity CO 2:Understand the theory and working for the particle accelerators CO 3:Understands the origin of cosmic rays and their distribution with altitude, latitude and longitude CO 4:Enables students to understand the different nuclear energy sources and construction and working of nuclear reactors CO 5:Understand the classification of elementary particles
PY1643	Classical and Modern Optics	CO 1:Develop knowledge in Interference of light CO 2:Develop knowledge in Diffraction of light CO 3:Develop knowledge in Dispersion of light CO 4:Develop skill to solve numerical problems in Interference of light, Diffraction and Dispersion of light
PY1644	Digital Electronics & Computer Science	CO 1:Learns the basics of different digital circuits and gates CO 2:Obtain solutions to conceptual problems CO 3:Obtain the concepts of Boolean Algebra CO 4:Obtain ideas of computer programming CO 5:Write computer programmes independently
PY1645	Advance Physics Lab 2	CO 1:Develop experimental skill through a wide range experiments those theoretical concepts are studied in first four courses CO 2:Improve the data analysis, mathematical and graphical skills with the experiments
PY1646	Advance Physics Lab 2	CO 1:Develop experimental skill through a wide range experiments those theoretical concepts are studied in first four courses CO 2:Improve the data analysis, mathematical and graphical skills with the experiments

PY 1661.1/ PY 1661.2/ PY 1661.3/ PY 1661.4/PY 1661.5	Elective course	CO 1:Covers the topics of cosmology, stellar science, astronomy and astrophysics CO 2:Gets an idea about the satellite navigation systems CO 3:Gets an idea about atmospheric layers CO 4:Obtain concepts of solar energy outbursts
PY 1647	Project and Research Institute/ Science Museum Visit	CO 1:Provide evidence of an improvement in the methodological knowledge CO 2:Results in affective gains such as more positive feelings toward a topic
Complementary courses		
Programme Outcome:		PO 1: Understand various facts and concepts of Physics. PO 2: Develop scientific attitudes and values appropriate for rational reasoning and critical thinking. PO 3: Develop problem solving skill and skills to conduct wide range of scientific experiments. Identify their own area of interest.
Course code	Course Name	Course Outcome
PY1131.1	Mechanics & Properties of Matter	CO 1:Gets an idea about the properties of solids such as elastic properties, surface tension and viscosity CO 2:Exploit mathematical principles to obtain the properties of solids and fluids CO 3:Provides strong base to the application side of mathematics. CO 4:Obtain the basics of mechanics CO 5:Uses numerical problems to strengthen the concepts learned
PY1231.1	Thermal Physics & Statistical Mechanics	CO 1:Obtain theoretical basis of heat conduction processes CO 2:Derive the basic laws of thermal physics CO 3:Obtain the concepts of microstates, microstates, thermodynamic probability CO 4:Obtain the fundamental laws in statistical mechanics CO 5:Analyse numerical and conceptual problems

PY1331.1	Optics, Magnetism & Electricity	CO 1:Mathematically analyse interference, total internal reflection etc. CO 2:Obtain the expression for maximum and minimum intensities of different kinds of diffraction phenomena CO 3:Familiarize the basis laws and theorems regarding magnetism CO 4:Obtain a thorough idea regarding electric circuits CO 5:Analyse numerical problems to familiarize the principles studied.
PY1431.1	Modern Physics and Electronics	CO 1:Gets an idea of atomic structure CO 2:Familiarize the concepts of superconductivity CO 3:Obtain knowledge regarding spectroscopy CO 4:Study the circuits and mathematical analysis of circuits consisting of diodes, transistors and logic gates CO 5:Solve numerical problems
PY1432	Complementary Physics Practical	CO 1:Develop experimental skill through a wide range experiments, those theoretical concepts are studied in first four courses CO 2:Improve the data analysis, mathematical and graphical skills with the experiments
PY1131.2	Rotational Dynamics & Properties of Matter	CO 1:Understand rotational motion, which plays an important role in the Universe CO 2:Apply theorems to find out moment of inertia of various systems for designing flywheel, shaft etc. CO 3:Understand elasticity, bending moment and twisting couple for designing shape of girder CO 4:Develop knowledge in Dynamics of rigid bodies, Mechanics of solids, Viscosity CO 5:Develop skill to solve numerical problems in Dynamics of rigid bodies, Mechanics of solids, Viscosity
PY1231.2	Thermal Physics	CO 1:Develop knowledge in Diffusion and Transmission of Heat. CO 2:Understand Diffusion and Transmission of Heat with specific examples CO 3:Develop skill to solve numerical problems in Diffusion and Transmission of Heat

PY1331.2	Optics, Magnetism & Electricity	CO 1: Obtain theoretical and mathematical ideas of interference, Diffraction and Polarisation. CO 2:Get idea of laser and fibre optics CO 3:Obtain basic concepts of magnetism CO 4:Deduce AC circuits with various combinations of L, C & R. CO 5:Solve numerical problems regarding the topics studied.
PY1431.2	Atomic Physics, Quantum Mechanics and Electronics	CO 1:Gets idea of atom model theoretically CO 2:Obtain knowledge about superconductivity & spectroscopic techniques CO 3:Gets basis ideas of quantum mechanics CO 4:Analyse electronics circuits CO 5:Solve numerical problems regarding atomic structure and electronic
PY1432	Complementary Physics Practical	CO 1:Develop experimental skill through a wide range experiments, those theoretical concepts are studied in first four courses CO 2:Improve the data analysis, mathematical and graphical skills with the experiments
Department of Zoology		
Programme offered		B.Sc Zoology

Programme Outcome		PO 1: The students inculcate a love and understanding of the fascinating world of animal life. PO 2: Students get an in-depth knowledge of the diversity in form, structure and habits of Non-chordata and Chordata. PO 3: Students learn anatomy of permitted species PO 4: The students are introduced with the methodology and perspectives of Science in general so that they are enabled to systematically pursue higher studies and research in Zoology in relation to other disciplines of science. PO 5: Imparts basic knowledge on ecosystem and the necessity and measures for ecosystem conservation and disaster management PO 6: Students get basic ideas regarding the structure and functioning of cells and also about the aspects of genetic engineering PO 7: Students understand the principles of inheritance and the practical applications of biotechnology in medicine, agriculture, industry, pollution control, forensics and judiciary PO 8: Students get familiarized with various organ systems and their functions and their role in homoeostasis of body PO 9: Students get an in-depth knowledge on the biochemical aspects of metabolism enabling them to develop ideas on research in the field of advanced biochemistry PO 10: Enhance the students‟ concept on organic evolution and appreciate the different modes of energy efficient communication systems existing in the animal world.
Course code	Course Name	Course Outcome
ZO 1141	Animal Diversity – I	CO 1: The students learn the basics of systematics and understand the hierarchy of different categories. CO 2: Learn the diagnostic characters of different phyla through brief studies of examples. Obtain an overview of economically important invertebrate fauna

ZO 1241	Animal Diversity – II	CO 1: Learn the general characteristics and classification of different classes of vertebrates. CO 2: Understand the vertebrate evolutionary tree CO 3: Understand general aspects of applied interest in relation to vertebrates
ZO 1341	Experimental Zoology, Instrumentation, Biostatistics and Bioinformatics	CO 1: Learn the fundamental characteristics of science as a human enterprise CO 2: Understand how science works CO 3: Study to apply scientific methods independently
ZO 1441	Ecology, Habitat Destruction and Disaster Management	CO 1: Students get basic knowledge on ecosystems, food chain, food web and energy flow CO 2: Students acquire general awareness on pollution and their impacts CO 3: Students learn about various types of anthropogenic pressures on ecosystem, related degradation and management measures CO 4: Students get awareness of toxicants, their impacts on human health and environment and remedial measures CO 5: Create awareness about disasters, prevention and mitigation measures
ZO 1442	Practical I – Instrumentation, Animal Diversity – I and Animal Diversity – II	CO 1: Students learn anatomy through simple dissections and mountings of permitted species CO 2: Students get familiarized with various organ systems by examining approved animals CO 3: Emphasize the adage that seeing is believing by observing typical examples and economically important specimens CO 4: Students learn the working principle of different scientific instruments CO 5: Students become familiar with economically important species CO 6: Strengthen what students studied in theory by giving them an opportunity to have first-hand experience in lab as well outside

ZO 1541	Cell and Molecular Biology	CO 1: Students acquire sufficient knowledge on the fundamental structure, function and biochemistry of the cell CO 2: Understand the principles of Molecular Biology and gene manipulation CO 3: Students learn ultra-structure of prokaryotic and eukaryotic cells CO 4: Students understand the fundamental differences between prokaryotic and eukaryotic cells CO 5: Students learn the structure, replication and modification of the genetic material of eukaryotes CO 6: Students understand the mechanism of gene expression and gene regulation CO 7: Gets an awareness of bacterial recombination CO 8: Students acquire scientific knowledge on cancer and ageing
ZO 1542	Genetics and Biotechnology	CO 1: Learn the structure of gene CO 2: Get educated on the underlying genetic mechanism operating in human and state of the art of bio techniques CO 3: Students develop proper understanding on the relation between heredity and variation CO 4: Learn the mechanism of crossing over and inheritance patterns in human CO 5: Students become aware of different genetic syndromes and the possible ways to reduce its occurrence CO 6: Students understand the principles and techniques involved in DNA technology and get an overview of modern techniques like PCR, hybridoma technology, gene therapy and human cloning

ZO 1543	Immunology and Microbiology	CO 1: Students understand the scope and importance of clinical immunology CO 2: Students understand the principles and mechanisms of immunology CO 3: Learn the malfunctioning and disorders of the immune system CO 4: Students acquire knowledge on immunodeficiency diseases CO 5: Learn the transplantation and mechanism of graft retention and rejection CO 6: Students get a brief history of microbiology CO 7: Students get a broad understanding of the positive as well as negative aspects of microbes CO 8: Economic importance (applied aspects) of microbes in industry can be studied
ZO 1641	Physiology and Biochemistry	CO 1: Students develop a clear understanding of the correlation and coordination between the structure and function of different organs and organ systems of the body CO 2: Proper study on the physiology help students understand the physiology of different organ systems of the body CO 3: Students learn the correlation between diseases and the abnormal structure or improper functions of organs CO 4: Students understand the possible causes of abnormal physiology and the resultant diseases CO 5: Students understand the structure and function of biomolecules and their role in metabolism

ZO 1642	Developmental Biology and Experimental Embryology	CO 1: Students get a brief idea about the history of Developmental Biology CO 2: Provide the students a bird's eye view of sophisticated embryological techniques CO 3: Study the various stages involved in the development of organisms CO 4: Study the initial developmental procedures involved in Amphioxus, Frog and Chick CO 5: Procure information on state-of-the-art experimental procedures in embryology CO 6: Different control mechanisms of development including gene action are studied
ZO 1643	Ethology, Evolution and Zoogeography	CO 1: Study the physiological basis of behaviour CO 2: Study the different types of communication system among animals CO 3: Students get a concept on organic evolution CO 4: Students get knowledge on the distribution of animals in the biosphere
ZO 1651.1	Ornamental fresh water fish production	CO 1: Students learn the scientific method of setting up an aquarium CO 2: Students learn the culture breeding and marketing techniques of common indigenous ornamental fishes
ZO 1644	Practical II – Cell Biology, Genetics, Bioinformatics, Biotechnology, Immunology and Microbiology	CO 1: Students develop the skill to prepare and observe chromosomal arrangements during cell division CO 2: Students study chromosomal aberrations in man CO 3: Students gain broad knowledge on conventional biotechnological procedures CO 4: Students gain skill to perform routine blood analysis
ZO 1645	Practical III – Physiology and Biological Chemistry, Molecular Biology and Biostatistics	CO 1: Students learn clinical procedures for blood and urine analysis CO 2: Students become skilful in simple biochemical laboratory procedures

ZO 1646	Practical IV – Developmental Biology, Ecology, Ethology, Evolution and Zoogeography	CO 1: Students gain knowledge about the different developmental stages of animals CO 2: Students learn to estimate the amount of carbon dioxide and oxygen in water samples CO 3: Students learn to estimate productivity of aquatic ecosystems CO 4: Students learn to assess the water quality by studying various parameters CO 5: Study the ecological relationships and adaptations of animals
ZO 1647	Project and Field Study	CO 1: Students develop an aptitude for research in Zoology CO 2: Student inculcate proficiency to identify appropriate research topic and presentation
ZO 1551.1	Public Health and Hygiene	CO 1: Students learn the principles of nutrition and dietetics. CO 2: Students understands the ill effects of modern life style. C0 3:Students learn the advantage of personal hygiene and sanitation.
Department of History		
Programme offered		B A History
Programme Outcome		PO 1: An understanding of the past and in depth of knowledge concerned with specific historical periods PO 2: Giving an aid to the students for knowing an understanding about the cultures and traditions of the societies PO 3: Show students' familiarities with major events, personalities and issues related to the period being taught and studied PO 4: Understanding the Students an elementary awareness about the chronological sequence of world events and its social and cultural interaction with the humans through ages
Course code	Course Name	Course Outcome
HY 1141	Methodology and Perspectives of Social Science	CO - Familiarize the main concerns of Social Science disciplines Cultural formation of the Pre-Modern World
HY 1241	Cultural formation of the Pre-Modern World	C0 : Aware about the conceptual and general issues regarding culture and civilization of the ancient period

HY 1321	Informatics	CO : Computer awareness, internet usage, programming, cyber ethics, cyber laws
HY 1341	Evolution of Early Indian Society and Culture	CO – familiarize with the heritage of India
HY 1441	Medieval India Socio-Cultural Processes	CO – Equip with an idea on the Social – Cultural and administrative features during the medieval period
HY 1442	History of Modern World (Part 1)	CO – Familiarize about the changes in the history of modern world
HY 1541	Major Trends in Historical Thoughts and Writings	CO- Enable to understand the history of historical writings
HY 1542	Colonialism and Resistance Movements in India	CO – Analyse the circumstances that led to the establishment of colonialism in India and analyse the resistance movements against the British
HY 1543	History of Modern World (Part 2)	CO – Gets an idea about the First and Second World Wars and evaluate the achievements and failures of the international organizations
HY 1544	History of Pre-Modern Kerala	CO- Gets an idea on early and medieval Kerala History, Society, Polity and Economy
HY 1545	Making of Indian Nation	CO- Aware about the various stages in the Indian National movements
HY 1551.3	History of Human Rights Movement.	CO : UN declaration, Human rights, Individual, citizen, Needs of human rights, correct usage, Violation of human rights
HY 1641	Making of Modern Kerala	CO – Familiarize about European advances, Socio-Political agitations, social reform movements and the formation the State of Kerala
HY 1642	Major Trends in Indian Historical Thought and Writings	CO – To understand the origin and development of historical writings in India
HY 1643	Contemporary India	CO- Provide with a graphic account of the circumstances that led to the formation of Indian Union
HY 1644	The Twentieth Century Revolutions	CO – Introduce the four Major Revolutions of the 20th century (Russian, Chinese, Cuban and Vietnamese)
HY 1651.6	History of Human Rights Movement.	CO : UN declaration, Human rights, Individual, citizen, Needs of human

		rights, correct usage, Violation of human rights
HY 1645	Project Work	CO – to understand any social Problem relevant to the study of History
Department of English		
Programme offered		B A English
Programme Outcome		PO1. Apply the LSRW skills in the advancement of the career, higher studies and in all walks of their future life and minimise mother tongue influence. PO2. Develop a favourable attitude towards English literature and language. PO3. Gets a proper understanding of the environmental issues, its intensity and anticipates precautions for preventing it in future. PO4. The problems prevalent in the contemporary world and its awareness make them vigilant of the happenings in their surroundings. PO5. The courage to face the crucial situations in academic, professional and everyday life adds impetus in them. PO6. Comprehend the importance of five skills in language acquisition. PO7. Recognise the importance of reference skills, grammatical skills and the enrichment of vocabulary. PO8. The knowledge of the phonetic alphabets/symbols acquired helps the students to refer the dictionary for correct pronunciation.
Course code	Course Name	Course Outcome
EN1111.1	Listening, Speaking and Reading	CO1. Develop in the learners the ability to understand English in a wide range of contexts CO2. Enhances general standard of spoken English with the help of phonetic training CO3. Preparing the learners to face situations with confidence and to seek employment in the modern globalized world

EN1121	Writing on Contemporary issues	CO1. Enable student to develop an overall empathetic attitude towards Contemporary issues of modern world CO2. Encourage the students to read literary pieces critically. CO3. Sensitize the students to the major issues in the society and the world.
EN1212.1	Modern English Grammar and Usage	CO1. Helps the students improve their verbal communication skills. CO2. Equip students with necessary skill and knowledge to produce grammatically and idiomatically correct language help them minimize mother tongue influence.
EN1211.1	Environmental studies	CO1.Sensitize students towards the threats faced by environment CO2. To enable and ensure possible means &methods for environmental protection through student community.
EN1311.1	Writing and Presentation Skills	CO1. Students are trained in academic writing and other soft skills which will be helpful for them in shaping a successful career. CO2. Help them master writing techniques to meet academic and professional needs. CO3. Improves their reference skills, take notes, refer and document data and materials and to prepare and present seminar papers and project reports effectively.
EN1411.1	Readings in Literature	CO1. They are able to understand and appreciate literary discourse. CO2 Students are sensitized to the aesthetic, cultural and social aspects of literature. CO3 They get acquainted with the best pieces of literary writing and critically analyse literature as a cultural and interactive phenomenon.
EN 1141	Reading Poetry	CO1. Enhances the reading and critical skill. CO2. Sensitize students to the language, forms and types of poetry. CO3. Make them aware of the diverse poetic devices and strategies. CO4. Help them to read, analyze and appreciate poetry. CO5. Enhance the level of literary and aesthetic experience and to help them respond creatively.

EN1241	Reading Drama	CO1The students are equipped with different aspects of the theatre and its production. CO2. Sensitize them to the verbal and visual language of drama CO3. Enable the students to read, analyse and appreciate drama.
EN1341	Reading Fiction	CO1. They are capable of appreciating and understanding the production of fiction as a genre. CO2. The creativity of the students gets enriched through the vast canvas of fictional literature. CO3. Students identify the different fictional forms, analyse and appreciate fictional writings as well as write imaginatively.
EN1342	20th century Malayalam literature in English Translation	CO1. The students acquaint themselves with the world of Malayalam literature- its history till the present CO2. They can identify the vast body of 20th century Malayalam literature. CO3. They understand native Malayalam literature through the English opening up a way to translation studies.
EN 1441	Reading Prose	CO1. Sharpen critical and creative insight of the student. CO2. They are acquainted with cultural diversity and divergence in perspectives. CO3. The students are capable of analysing, understanding and appreciating prose writings.
EN 1421	Informatics	CO1. They are well trained in the usage of Digital Resources & information technology helpful in their studies. CO2. The students have updated and expand basic informatics skill and attitudes relevant to the emerging knowledge society. CO3. They are capable of understanding the nature of the emerging digital knowledge society
EN1541	Literary criticism	CO1. The students develop a better critical expertise. CO2. They compare and relate various critical traditions prevalent in literature from ancient times to the present. CO3.They can read and analyse literary texts from different perspectives.

EN1542	Indian Writing in English	CO1. The invaluable contribution of Indian writers to the arena of English literature is thoroughly understood by the students. CO2. The students are capable of tracing the development of Indian writing in English. CO3.They can explain the Indianness in Indian literature in English, read and appreciate Indian literature. CO4. They also analyse the strength and constraints of Indian English as a literary medium.
EN 1543	Film Studies	CO1. The students are well equipped in analyzing the dynamics of Cinema. CO2. The knowledge about its technicalities, film theories and viewing it through a critical perspective enhances a better understanding of the films at a universal level. CO3. They would better appreciate the popular media of films than they used to do. CO4. Enable them pursue higher studies and careers in film.
EN 1544	Linguistics and Phonetics	CO1. Sensitize them to the nuances of spoken and written forms of English CO2. They are able to overcome specific problems resulting from mother tongue interference CO3. They develop a neutral accent and improve their general standard of pronunciation and can speak globally intelligible English.
EN 1545	Post Colonial literatures in English	CO1. Students have gained adequate knowledge of Post Colonial literature, life and culture. CO2. They identify what is distinctly Post Colonial literature &read and appreciate Post Colonial literature with insight. CO3. Their aesthetic and intellectual faculties are found to be broadened.
EN 1641	world classics	CO1. They can critically evaluate and appreciate classical texts. CO2. They broaden their outlook and sensibility through the world of the classics in literature. CO3. They evaluate classical texts critically and assess their own culture and classics.

EN1642	Methodology and perspectives of Humanities	CO1. They get a clear sense of literature and can approach literature from a theoretical perspective. CO2. They gain a critical perspective in pursuing literary studies. CO3. They can make sense of literature and read literature critically from a theoretical perspective.
EN 1643	English for the Media	CO1. The students comprehend the nature and scope of the communication media CO2. They write headlines and articles for newspapers and magazines and design their content. CO3. They produce and present scripts and programmes for Radio and TV and can even design and write webs, blogs and advertisements.
EN1644	Women's Writing	CO1. The students understand the development of women's writing in various countries. CO2. They are familiar with the diverse concerns addressed by feminism and are motivated to critically analyse literary works from a feminist perspective. CO3. The students have a clear cut awareness of class, race and gender as social constructs and about how they influence women's lives.
Complementary courses		
Programme Outcome:		PO1. Identify the various language families. PO2. Draw comparisons on the literary history of English and other similar languages of importance in career development. PO3. Make them capable of using English effectively and intelligibly for future use and during job interviews. PO4. Recognise the importance of translation process and choose it as a profession. PO5. Make use of the research aptitude in an apt manner.
Course code	Course Name	Course Outcome

EN1131	History of English Literature 1	CO1. Students gain a wholesome understanding of British History. CO2. Students comprehend the social and political organisations in Britain. CO3. Students understand the culture of Britain & the kind of literature that emerged out of these conditions.
EN1231	History of English Literature 2	CO1. Provide them with an insight on different periods and the English literature of those times. CO2.The evolution of most important works in literature and the significant English writers enhance the students' knowledge and their impetus in higher studies.
EN1331	History of English Literature 3	CO1. Students have adequate knowledge of the later periods in English literature. CO2. The socio-political changes of the age and its impact on literary works and writers gives an anticipation of what can be expected from contemporary literary works
EN 1431	History of English language	CO1. Students have a better understanding of the origin and the development of English language. CO2. Students can identify the various language families& knows about the evolution of the English language.
EN 1551.1	Communicative applications in English (OPEN COURSE)	CO1. The students attain high level proficiency in all the four language skills. CO2. They are equipped for competitive examinations and various International English Language Tests. CO3. Their personality is fine tuned through their communication and presentation skills.
EN1661.1	Translation Studies	CO1. The students know the concepts and theories of translation and even undertake various translation works. CO2. The art of translation motivates most of them and this helps them to pursue translation as a profession.
EN 1645	PROJECT	CO1. The students have gained a proper insight of various aspects of research, its limitations and the vast arena of analysis. CO2. Their research attitude and aptitude is given vent to, motivating them and preparing them for the broad areas of research awaiting them.