T.K.M College of Arts and Science, Kollam

Re-accredited by NAAC with "B++" Grade

(Affiliated to University of Kerala, Thiruvananthapuram)

COURSE OUTCOMES OF POSTGRADUATE PROGRAMMES

(2017 Admission onwards)

TKM College of Arts & Science Kollam - 691005 Kerala

Ph : 0474 - 2712240, 2711817, Fax : 0474 - 2711817

Email : tkmarts@gmail.com

POSTGRADUATE PROGRAMMES - MA/MSc/MCom

Name of the program: MSc Mathematics			
Course Code L/P Credits	**Course name**	**Course outcomes**	
Semester 1			
MM 211	**Linear Algebra**	**CO1**	Explain basic structure of finite dimensional vector spaces
		CO2	Describe linear maps and identify its one to one correspondence with matrices.
		CO3	Identify the existence of invariant subspaces of finite dimensional vector spaces.
		CO4	Describe characteristic polynomial and minimal polynomial of an operator.
		CO5	Explain the condition for an operator to have a basis consisting of generalized eigenvectors.
		CO6	Discuss trace and determinant of a matrix and linear operator.
MM 212	**Real Analysis I**	**CO1**	Discuss functions of bounded variation and their properties
		CO2	Define Riemann- Stieltjes integral and derive various results involving them

		CO3	Describe Pointwise as well as uniform convergence of sequences of functions
		CO 4	Understand total derivatives and derive theorems involving them.
		CO 5	Derive Inverse function theorem and Implicit function theorem
MM 213	**Ordinary Differential Equations**	**CO1**	Understand metric space and topological space
		CO2	Compare convergence of sequences in different topological spaces
		CO3	Understand compact and connected space
		CO4	Explain basic results on compact and connected space
Semester 2			
MM 221	**Abstract Algebra**	**CO1**	Classify finite abelian groups using the Fundamental theorem of finite abelian groups.
		CO2	Apply Sylow theorem and non simplicity tests to classify simple groups.
		CO3	Discuss extension fields and its characterization.
		CO4	Classify finite fields and explain its structure.
		CO5	Explain fundamental theorem of Galois theory
		CO6	Illustrate the insolvability of quintic.
		CO7	Explain cyclotomic polynomials and constructible regular n-gons.
MM 222	**Real Analysis II**	**CO1**	Define Lebesgue outer measure, measurable sets and measurable functions and derive basic theorems involving them

		CO2	Define integration and compare Riemann and Lebesgue integrals
		CO3	Discuss about measure spaces and integration with respect to a measure
		CO4	Understand the Lp spaces and its completeness
		CO 5	Derive Hahn decomposition, Jordan decomposition and Radon - Nykodym Theorems
MM 223	**Topology II**	**CO1**	Explain T0,T1,T2,Normal and regular spaces
		CO2	Understand separation by continuous function
		CO3	Explain Tychnoff theorem
		CO4	Understand the construction of fundamental groups of topological space
MM 224	**Partial Differential Equations and Calculus of Variation**	**CO1**	Classify partial differential equations.
		CO2	Interpret the solution of the partial differential equation.
		CO3	Solve integral equations of several types.
		CO4	Understand problems in calculus of variations
Semester 3			
MM 231	**Complex Analysis**	**CO1**	Describe the Cauchy - Riemann equations, analytic functions, entire functions
		CO2	Apply power series to represent an analytic function and to calculate the radius of convergence.
		CO3	Apply the Cauchy integral theorem to evaluate complex contour integrals.
		CO4	Classify singularities and find residues to evaluate complex integrals using the residue theorem.

MM 232	**Functional Analysis I**	**CO1**	Understand Normed space and Banach space
		CO2	Define continuity and boundedness with reference to an operator in Banach space.
		CO3	Explain Hahn Banach theorem.
		CO4	Apply Open mapping and Closed graph theorem.
MM 233	**Algebraic Topology**	**CO1**	Summarize simplexes and complexes
		CO2	Provide orientation for geometric complexes and Identify homology groups
		CO3	Classify simple polyhedra
		CO4	Apply simplicial approximation theorem for classification ofvarious topological properties
		CO5	Identify a vector field in n-sphere and fundamental groups
		CO6	Understand covering path property and covering homotopy property of 1-sphere
		CO7	Identify simply connected domains and the relation between homology group and fundamental group
		CO8	Classify covering spaces and obtain fundamental groups
		CO9	Apply covering spaces and fundamental groups to various problems related to continuous maps between topological spaces
MM 234	**Fractal Geometry**	**CO1**	Understand the classical fractals.
		CO2	Define iterated function systems.

		CO3	Understand Mandelbrot and Julia sets.
		CO4	Calculate the fractal dimensions of classical fractals.
Semester 4			
MM 241	**Number Theory**	**CO1**	Understand arithmetical functions and dirichlet multiplication
		CO2	Understand the concept of Character of finite abelian groups
		CO3	Understand Dirichlet theorem on primes in arithmetic progression and its proof
		CO4	Understand quadratic reciprocity law and its generalization
		CO5	Identify the cyclic groups among group of units modulo n
MM 242	**Functional Analysis II**	**CO1**	Understand inner product spaces and their properties.
		CO2	Understand Hilbert space techniques and problems on adjoint operators.
		CO3	Apply the Riesz representation theorem.
		CO4	Define normal, adjoint, unitary and self adjoint operators.
MM 243	**Advanced Algebra**	**CO1**	Understand the theory of field extensions
		CO2	Establish the existence and uniqueness of field extensions
		CO3	Understand fundamental theorem of Galois theory and its proof

		CO4	Apply Galois theory to solve problems in group theory and field theory
MM 244	**Advanced Complex Analysis**	**CO1**	Describe the completeness of the space of analytic functions.
		CO2	Explain the properties of Riemann Zeta function
		CO3	Explain Weierstrass factorization Theorem.
		CO4	Explain the concept of Analytic Continuation and explain Schwarz Reflection Principle .

Name of the program: MSc Physics			
Course Code **L/P** **Credits**	**Course name**	**Course outcomes**	
Semester 1			
PH 211	**Classical Mechanics**	**CO1**	Learn the concepts of Lagrangian and Hamiltonian mechanics, generating functions, Poisson brackets, Hamilton Jacobi equations and action angle variables and use them to solve problems in mechanics.
6L+1T+0P		**CO2**	Equip the students to deal with the central force problem and analyze Kepler's laws.

		CO3	Inculcate the concepts of special and general theory of relativity and related problems
		CO4	Familiarize the theory of small oscillations and Euler's equations of motions of rigid bodies.
		CO5	Analyze nonlinear dynamical systems and to explain the concepts of classical chaos.
PH 212 **6L+1T+0 P**	**Mathematical Physics**	**CO1**	Apply and analyze the various vector and matrix operations and to perform complex analysis for solving physical problems.
		CO2	Demonstrate and utilize the concepts of Fourier series and its transforms.
		CO3	Explain and differentiate different probabilistic distributions.
		CO4	Apply partial differential equations and special functions for solving mathematical problems
		CO5	Illustrate and apply concepts of group theoretical operations and tensors
PH 213 **6L+1T+0 P**	**Basic Electronics**	**CO1**	Design and analyze different analogue and digital circuits.
		CO2	Summarize the knowledge of basic arithmetic and data processing circuits and memory devices.
		CO3	Explain various components in optical communications systems and microwave devices.
		CO4	Measure and analyze the different electronic signals
Semester 2			
PH 221	**Modern Optics & Electromagnetic theory**	**CO1**	Demonstrate the linear and nonlinear optical phenomena.
		CO2	Explain and discuss propagation of electromagnetic waves through different media

6L+1T+0 P		**CO3**	Restate formulations and relativistic effects in electrodynamics
		CO4	Analyse the propagation of electromagnetic waves through waveguides
		CO5	Use radiation theory in developing different antennas.
PH 222 **6L+1T+0 P**	**Thermodynamics, Statistical Physics & Basic Quantum Mechanics**	**CO1**	Explain the basic thermodynamic relations, Maxwell's equations and its consequences.
		CO2	Equip the students to demonstrate and apply classical and quantum statistics in different physical phenomena.
		CO3	Distinguish the different phase transitions using Ising model
		CO4	Understand and apply foundations of quantum mechanics
PH 223 **6L+1T+0 P**	**Computer Science & Numerical Techniques**	**CO1**	Summarize computer hardware and its operating systems
		CO2	Explain internal architecture of microprocessors 8085 and create assembly language programing.
		CO3	To develop and compile programs in python and C++
		CO4	Apply numerical methods to solve physical problems
Semester 1 and 2 (Practicals)			
PH 251 **0L+1T+3 P**	**General Physics Practicals**	**CO1**	Observe and analyze various physical quantities
		CO2	Calculate error in various general physics experiments.
		CO3	Develop experimental skills
PH 252	**Electronics & Compute**	**CO1**	Design and construct various electronic circuits and its validation.

0L+1T+4 P	**r Science Practicals**	**CO2**	Calculate error in various electronics experiments.
		CO3	Develop experimental and programming skills
Semester 3			
PH 231 **6L+1T+0 P**	**Advanced Quantum Mechanics**	**CO1**	Extend the use of approximation methods viz variation, WKB, time dependent and time independent perturbations.
		CO2	Summarize different types of symmetry, conservation laws and quantum theory of scattering.
		CO3	Distinguish different approximation methods, to study the structure and properties of many electron systems.
		CO4	Compute eigenvalues of angular momentum and evaluation of CG coefficients.
		CO5	Infer the requirements of relativistic quantum mechanics.
PH 232 **6L+1T+0 P**	**Atomic and Molecular Spectroscopy**	**CO1**	Explain different symmetry operations and deduction of molecular structure.
		CO2	Distinguish and classify the different spectra shown by atoms and molecules
		CO3	Illustrate the various spectroscopic experimental techniques.
PH 233 E **6L+1T+0 P**	**Special Paper I-Advanced Electronics 1**	**CO1**	Summarize various techniques of digital and analog communication systems.
		CO2	Generalize the idea of information theory
		CO3	Illustrate various techniques for digital signal processing based Fourier and Z transform.
Semester 4			

PH 241 **6L+1T+0P**	**Condensed Matter Physics**	**CO1**	Discuss crystal physics, lattice vibrations, models of thermal properties and band theory of solids.
		CO2	Explain the theoretical concepts of semiconductors, dielectric, magnetic and superconducting materials.
		CO3	Describe the synthesis and characterization techniques of nanomaterials.
		CO4	Apply the concepts in condensed matter physics to meet the challenge
PH 242 **6L+1T+0P**	**Nuclear & Particle Physics**	**CO1**	Describe and analyze nuclear structure, models and reactions.
		CO2	Illustrate the mechanisms of nuclear fission and fusion reactions.
		CO3	Discuss various nuclear detectors and particle accelerators.
		CO4	Classify elementary particles and discuss their interactions.
PH 243E **6L+1T+0P**	**Special Paper II-Advanced Electronics II**	**CO1**	Demonstrate microprocessor architecture, programing and interfacing devices
		CO2	Outline the basic concepts of embedded systems, artificial intelligence and neural networks
		CO3	Illustrate fundamental data communications codes, radar and satellite communication systems.
Semester 3 and 4 (Practicals)			
PH 261 **0L+1T+3P**	**Advanced Physics Practicals**	**CO1**	Observe and analyze various physical quantities.
		CO2	Calculate error in various advanced physics experiments.
		CO3	Develop experimental and interpreting skills.

		CO4	Analyze and point out results of experimental data
PH 262 **0L+0T+4 P**	**Advanced Electronics Practicals**	**CO1**	Design and construct various electronic circuits and its validation, observe and analyse the experimental results.
		CO2	Calculate error in various electronics experiments.
		CO3	Develop and test assembly language programs using microprocessors
PH201 **0L+0T+4 P**	**Project**	**CO1**	Understand research methodology
		CO2	Summarize and interpret the observations and results
		CO3	Prepare research article

Name of the program: MSc Chemistry			
Course Code **L/P** **Credits**	**Course name**	**Course outcomes**	
Semester 1			
CH 211 **Credits : 5**	**Inorganic Chemistry 1**	**CO1**	Explain the bonding in Coordination compounds using crystal field , ligand field theory and Molecular Orbital theory
		CO2	Describe the metal-ligand interactions in terms of Sigma and Pi bonding
		CO3	Apply Jahn- Teller Theorem and demonstrate evidence for J.T effect,static and dynamic J.T effect.

CH212 **Credits: 5**	**ORGANIC CHEMISTRY I**	**CO1**	Understand the mechanism of organic reactions
		CO2	Predict the products of a given reaction
		CO3	Design methods of synthesis for a given compound using the knowledge in reaction mechanisms
		CO4	Describe different types of mechanism of substitution, elimination, hydrolysis and addition reactions.
		CO5	Differentiate the rate, mechanism and stereochemistry influenced by solvent, substrate structure, intermediate stability
		CO6	Understand the stereochemistry of compounds and the importance of stereochemistry in organic reactions
		CO7	Identify the reactive intermediates in organic reactions, radical reactions and nature and stability of radicals
CH213 **Credits: 5**	**PHYSICAL CHEMISTRY I**	**CO1**	Outline the development of quantum mechanics and applications in simple systems.
		CO2	Recognize the nature of adsorption and propose theories and choose theoretical and instrumental methods of measurements of surface property
		CO3	Understand theory and mechanism of catalytic action.
		CO4	Correlate thermodynamic properties and apply them in systems.

		CO5	Understand theories, mechanism and kinetics of reactions and solve numerical problems.
Semester 2			
CH 221 **Credit : 5**	**Inorganic Chemistry II**	**CO1**	Identifying the term symbols of complexes and determine the splitting of terms in weak and strong Octahedral and tetrahedral fields
		CO 2	Explain the correlation diagrams for the complexes in Octahedral and Tetrahedral fields and the interpretation of electronic spectra
		CO 3	Describing the methods of separation and application of Lanthanides and Actinides.
		CO 4	Explain the TransUranium elements and their stabilities.
		CO 5	Discuss the beach sands of Kerala and their important components.
CH222 **Credits: 5**	**ORGANIC CHEMISTRY II**	**CO1**	Understand the types and mechanisms of pericyclic reactions
		CO2	Predict and rationalise the outcomes of pericyclic reactions including stereospecificity, regioselectivity, and stereoselectivity.
		CO3	Describe the fate of excited molecule based on Jabolonoski diagram
		CO4	Predict the course of an organic photochemical reaction and identify the product with the type of functional group.
		CO5	Understand the various types of photochemical reactions

		CO6	Determine the product of the photochemical reactions in acyclic and cyclic ketones, enes, dienes and arenes
		CO7	Analyze physical organic chemistry
		CO8	Identify the separation techniques used in separation and purification of organic mixtures
CH223 **Credits: 5**	**PHYSICAL CHEMISTRY II**	**CO1**	Understand theories of electrolytes and electrochemical reactions.
		CO2	Ascertain the application of electrochemistry in industrial fields.
		CO3	Understand the theories and applications behind various types of analytical techniques in electrochemistry.
		CO4	Acquire skill in solving numerical problems.
		CO5	Apply quantum mechanical principles in solving both real and imaginary spherical harmonics systems
		CO6	Acquire knowledge of basics of statistical mechanics and compare statistical methods.
CH214	**INORGANIC CHEMISTRY I**	**CO1**	Estimate volumetrically the concentration of Zn, Mg and Ni using EDTA and the volumetric estimation of Fe.

	(Practiclas)	**CO2**	Estimate volumetrically the hardness of water and concentration of Ca in water samples using EDTA
		CO3	Estimate colorimetrically the concentration of Chromium – (using Diphenyl carbazide), Iron (using thioglycolic acid), Iron (using thiocyanate), Manganese (using potassium periodate), Nickel (using dimethyl glyoxime)
CH215	**Organic chemistry practicals-1**	**CO1**	Identify the correct method for separation of a binary mixtures and separate compounds in pure form
		CO2	Develop experimental knowledge in separation of organic mixtures and their purification using thin layer and column chromatography .
		CO3	Acquire knowledge in synthetic conversion of compounds
Semester 1 and 2 (Practicals)			
CH 214	**PHYSICAL CHEMISTRY PRACTICALS-1**	**CO1**	Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.
		CO2	Construct the phase diagram and determine the composition of an unknown mixture
		CO3	Construct the ternary phase diagram of acetic acid chloroform-water system to find out the composition of given homogeneous mixture
		CO4	Determine Kf of solid solvent, molar mass of non-volatile solute, mass of solvent and composition of given solution

		CO5	Determine KT of salt hydrate, molar mass of solute, mass of salt hydrate and composition of given solution.
		CO6	Construct the Freundlich and Langmuir isotherms for adsorption of acetic/oxalic acid on active charcoal and determine the concentration of acetic/ oxalic acid
Semester 3			
CH 231 **Credit : 5**	**Inorganic Chemistry III**	**CO1**	Explain the stability of d - metal complexes,their reactivity and the mechanism of ligand substitution reactions
		CO2	Understand the mechanism of some commonly used catalytic processes in Organometallic chemistry.
		CO3	Understand the role of metal ions in biological processes and the mechanism of action of enzymes
CH 232 **Credits: 5**	**ORGANIC CHEMISTRY III**	**CO1**	Understand organic transformations using organometallic reagents, oxidizing and reducing agents.
		CO2	Design synthetic routes to synthesise a given compound
		CO3	Develop the knowledge in different methods on organic synthesis
CH 233 **Credits: 5**	**PHYSICAL CHEMISTRY III**	**CO1**	Describe and explain the physical and chemical principles that underlie molecular structure determination techniques
		CO2	Understand the principle and theories associated with NMR, ESR, Mossbauer, NQR and PES spectroscopy
		CO3	Acquire skill in solving numerical problems

		CO4	Understand the quantum mechanical and non-quantum mechanical methods in computational chemistry, potential energy surface and basis functions.
Semester 4			
CH 241 **Credits: 5**	**CHEMISTRY OF ADVANCED MATERIALS**	CO1	Understand dimensions, synthesis, physicochemical properties of nanomaterials and its applications
		CO2	Understand the tools for analysing nano structures
		CO3	Acquire the skill in characterizing the nanomaterials
		CO4	Discuss the synthesis and applications of speciality polymers.
CH 242 (b) **Credits: 5**	**ORGANIC CHEMISTRY IV**	CO1	Remember the biosynthesis and synthesis of selected natural products.
		CO2	Understand the concept of molecular recognition in biology and the underlying factors facilitating the recognition
		CO3	Develop the knowledge in medicinal chemistry and plant derived phytochemicals
		CO4	Construct solid phase synthesis of peptides, oligonucleotides and understand the structure of proteins and nucleotides.

Semester 3 and 4 (Practicals)			
	Inorganic CHEMISTRY PRACTICALS-11	**CO1**	Explain the stability of d - metal complexes,their reactivity and the mechanism of ligand substitution reactions
		CO2	Understand the mechanism of some commonly used catalytic processes in Organometallic chemistry.
		CO3	Understand the role of metal ions in biological processes and the mechanism of action of enzymes
CH 235	**Organic Practicals II**	**CO1**	Interpret the structure of Compounds based on UV ,IR, NMR and MS datas.
		CO2	Estimate Paracetamol using colorimetric method
		CO3	Develop the paper chromatogram of a compound and determine its retention factor.
		CO4	Estimate Quantitatively the amount of Aniline and Phenol in a sample.
CH 236 **Credits: 5**	**PHYSICAL CHEMISTRY PRACTICALS-11**	**CO1**	Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.
		CO2	Determine the strength of strong/ weak acids by conductometric titrations.
		CO3	Determine the concentration of a solution potentiometrically
		CO4	Verify the Kendall's equation and determine the viscosity of liquid mixtures

		CO5	Determine the concentration of a liquid mixture using a refractometer
		CO6	Determine the surface tension of liquids and use this in determining the parachor value

Name of the program: M.Com Finance			
Course Code **L/P** **Credits**	**Course name**	**Course outcomes**	
Semester 1			
CO 211	**Business Ethics and Corporate Governance**	CO 1	Understanding the significance of ethical decision making in corporate governance
		CO 2	Apply the skill of quality work life management in maintaining organizational culture
		CO 3	Identify the impact of ethical and socially responsible business in sustainable development
		CO 4	Apply CSR models in setting up of CSR activities of the business organisation
		CO 5	Analyse whether the provisions of Companies Act 2013 and SEBI guidelines is enough to maintain a framework for CSR activities.
CO 212	**Legal Framework for Business**	**CO1**	Understand the regulatory framework for business
		CO2	Explain the provisions of Companies Act 2013

		CO3	Explain the provisions pertaining to LLP Act, IBC, MSME Development Act and IDRA
		CO4	Analyse the legal provisions of FEMA and FCRA in international trade and investment
		CO5	Explain the role of Competition Commission in India
		CO6	Classify the import/export promotion schemes and the role of FDI policy and FI policy in international business
		CO7	Classify Central and State schemes of MSME promotion
CO213	**Research Methodology**	CO1	Understand the concept and process of Research
		CO2	Explain the Research process for the preparation of Research design
		CO3	Explain the sampling design in research
		CO4	Identify the appropriate tools for data collection
		CO5	Utilize Statistical tools for data analysis and assess the results
		CO6	Explain the procedure of report writing
CO214	**Planning and Development Administration**	CO1	Evaluate the planning mechanism in India at the union, state and district level
		CO2	Explain the central state financial relationship, recent policy initiatives in Indian economic system
		CO3	Appraise the budgetary procedure in our country at the Union, state and Local self Government Level
		CO4	Apply the skill in identifying the factors related to inflation and distinguish different methods of national income calculation

		CO5	Criticize the performance of Kerala Model Development plan related to the economic performance of Kerala.
		CO6	Construct a consciousness on the economic planning process in our country
CO215	**Advanced Corporate Accounting and Reporting**	CO1	Familiarize with the important Indian and International Accounting standards
		CO2	Equip with the ability to prepare consolidated Financial Statements of group companies
		CO3	Impart ability in preparing the financial statements of different type of entities in conformity with the Indian Accounting Standards
		CO4	Inculcate the skill for solving advanced accounting issues and practices including insurance claims, investment accounting and liquidation of companies
		CO5	Create employability related to Accounting and Corporate Consultancies
Semester 2			
CO 225	**E-Business and Cyber Laws**	CO1	Understand the concepts of E-Business and its transformation from traditional to E-Business
		CO2	Compare the various models of E-Business and E-commerce
		CO3	Differentiate between E-Business and E-Commerce
		CO4	Demonstrate the Launching of a successful online Business and E commerce.
		CO5	Explain the system of e- business and its application
		CO6	Understand the concept of Cyber World and its regulations.
CO	**Investment**	CO1	Understand the basic concepts of Investment management

225	**Management**	CO2	Understand the influence of personal finance management in the financial discipline of a person
		CO3	Analyse the behavioural finance theories and its impact on investment management
		CO4	Evaluate whether the financial market regulatory measures existing in India, is sufficient for maintaining a safe investment environment to the investors.
		CO5	Create financial models using spreadsheet for the valuation of ACCRINT,PV,FV,CUMIPMT,DCF techniques
		CO6	Analyse the relevance of financial literacy to build up a good investment habit among the public
CO 222	**Strategic Management**	**CO1**	Describe the relevance of strategic management in corporate form of organisation
		CO2	Classify different levels of strategy
		CO3	Evaluate the relevance of environmental analysis in strategic management
		CO4	Evaluate different types of strategic alternatives
		CO5	Compare the approaches to strategy formulation
		CO6	Evaluate the implementation, evaluation and control of strategies
		CO7	Develop Strategic Intent for a business
CO223	**Quantitative Techniques and Financial Econometrics**	CO1	Familiarize with the use of Financial Econometrics in processing the secondary data
		CO2	Understand the quantitative research techniques in processing the primary data
		CO3	Apply quantitative techniques and financial econometrics in solving the business research problems

		CO4	Develop advanced skills for analysing and processing the primary data using SPSS
CO224	**International Business**	CO1	To understand the concepts in IB with respect to foreign trade
		CO2	To understand the current business phenomenon and to evaluate the global business environment
		CO3	To Analyse the concept of IB and strategies adopted by firms to expand globally
		CO4	To understand the concept of IB with functioning of global trade
		CO5	To demonstrate sensitivity towards ethical and moral issues and have ability to address them internationally
Semester 3			
CO 231 U	**Income Tax Planning and Management**	CO1	Understand the legitimate way of income tax planning and management under different financial and managerial decisions
		CO2	Apply knowledge and skill for tax planning and management for individuals
		CO3	Understand knowledge with computation skill regarding tax planning and management for corporate assessee
		CO4	Explain the basic concepts of double taxation relief computation and Double Taxation Avoidance agreement
		CO5	Understand knowledge on international taxation and international settlement commission
		CO6	Develop application and analytical skill of the provisions of Income Tax Law for income tax planning and management
CO233F	**International**	CO1	Understand the components of global financial markets and financial management of MNCs

	Financial Management		
		CO2	Understand foreign exchange Risk management and different tools for risk management
		CO3	Analyze the different methods used for Foreign exchange risk management
		CO4	Evaluate the risk involved in International Investment decisions
		CO5	Understand the international financial instruments and create a portfolio suitable for risk management of M
CO232F	**Security Analysis and portfolio Management**	CO1	Understand the dimensions of fundamental analysis
		CO2	Administer the tools of technical analysis, the patterns and trends in the market for taking investment decisions considering market efficiency
		CO3	Understand the tradeoff between risk and return for the valuation of securities
		CO4	Articulate the Traditional and Modern portfolio theories for the construction of optimum portfolios
		CO5	Examine revision of portfolio in accordance with risk and return association by using different strategies
	Strategic Cost and Management Accounting	CO1	To understand the various concepts of cost accounting. They will be able to make decisions while solving the problems.
		CO2	To understand regarding cost accounting as a tool of managerial decisions about profit planning, make or buy decisions, cost control and cost reduction
		CO3	To analyse the motive behind preparing the various budgets establishing a budgetary control system and its administration

		CO4	To understand the various types of standard cost and to determine total standard cost and variances and its applications
		CO5	To understand the concepts of operating costing and its applicability in service industry
Semester 4			
CO 241W	Goods and Service Tax and Customs Law	CO1	Understand the knowledge and concepts of indirect taxes in India
		CO2	Express knowledge on registration, filing of return including e- filing and payment of taxes under the provisions of GST law
		CO3	Analyse the provisions regarding GST administration in India
		CO4	Understand the taxation mechanism under GST
		CO5	Computation of taxable value of supply and taxes under the provisions of GST law
		CO6	Understand the provisions regarding appeals, revisions, offences and penalty under GST regime
CO242F	**Risk Management and Derivatives**	CO1	Understand the basic concepts in risk,types of risk ,its cause,effects and burden on society
		CO2	Understand the tools and techniques used for risk management
		CO3	Understand the types of derivative instruments as risk management tools.
		CO4	Analyse the role derivative instruments in Risk management
		CO5	Application of Derivative instruments in Risk management

		CO6	Acquire knowledge in the accounting treatment of Derivatives
CO244S	**Management Optimization Techniques**	CO1	Understand the concept of Management Science and business optimization models
		CO2	Solve Linear Programming Models of business problems
		CO3	Apply Linear Programming model in the areas of transportation and assignment
		CO4	Develop decision making skills under uncertainty, risk and replacement of assets
		CO5	Apply network analysis techniques for project implementation
	Accounting Standards	CO1	To understand the structure, process and organisational setup involved in evaluating accounting standards in India
		CO2	To familiarise with the status of accounting standards in India
		CO3	To understand and recognise the International accounting standard authorities
		CO4	To understand the process of convergence of IFRS in India
		CO5	To understand the concepts of accounting standards and group the objectives and benefits of accounting standards.

Name of the program: MA English			
Course Code L/P Credits	**Course name**	**Course outcomes**	
Semester 1			
EL 211 (Paper I)	**Chaucer to the Elizabethan Age**	CO1	Identify the important precepts of the literary periods under study
		CO2	Categorise the writers involved in shaping the cannons
		CO3	Assess the language of early writers, and the rise of drama during the period
		CO4	Interpret the different genres of the period
		CO5	Evaluate the prevailing thematic contours of the literary system
		CO6	Analyse the various aspects of tragedy and comedy of the Elizabethan period
EL212 (Paper II)	**Shakespeare Studies**	CO1	Identify the major socio-political and historical events in the Elizabethan period.
		CO2	Identify the seminal works of William Shakespeare
		CO3	Estimate the contributions of Shakespeare in enriching English language
		CO4	Identify the various discourses addressed in the plays and critically evaluate them.

		CO5	Evaluate Shakespeare as a pioneering figure in defining the course of English drama.
		CO6	Explain the critical reviews of Shakespearean plays based on contemporary theoretical perspectives and their adaptations.
EL213 (Paper III)	**The Augustan Age**	CO1	Identify the major socio-political and literary trends in English literature from the Reformation to the post-Restoration era
		CO2	Identify the seminal works of Augustan writers and the features unique to Augustan poetry and prose
		CO3	Estimate the impact of Puritanism in English literary scene
		CO4	Explain the features of Neo-Classicism in English literature of the age
		CO5	Evaluate the rise and popularity of novels during the period
EL214 (Paper IV)	**Romantics and Victorians**	CO6	Appraise the conflicting trends in prose and drama of the age
		CO1	Identify the general traits of the periods under study
		CO2	Explain the socio political backdrop that shaped literature
		CO3	Estimate the contribution of writers of the periods under study
		CO4	Develop knowledge on different genres
		CO5	Evaluate the major theses of literary works
		CO6	Analyse literature in the light of literary criticism

Semester 2			
EL221 (Paper V)	**From Modernism to the Present**	CO1	Identify the socio-cultural impulses that shaped the twentieth century English society
		CO2	Identify the poets, novelists, dramatists, essayists, prose writers and critics of the age
		CO3	Examine the similarities and differences between the literature of the first and the second half of the 20th century.
		CO4	Identify the various movements that dominated the literature, culture, and arts of the century.
		CO5	Analyze critically and explain the features of Modernism
		CO6	Evaluate critically the texts in terms of their stylistic and formal features.
EL222 (Paper VI)	**Indian Writing in English**	CO1	Identify the socio political contexts of the colonial and the post-colonial periods
		CO2	Explain the uniqueness of indian cultural discourse
		CO3	Estimate the contribution of major writers
		CO4	Develop knowledge on indian aesthetics
		CO5	Evaluate the different genres and their nuances
		CO6	Analyse the linguistic exceptionality of indian writing
EL223 (Paper VII)	**American Literature**	CO1	Identify the socio-political factors that shaped the American literary scene
		CO2	Identify the different ages in American literature and the literary trends specific to each age

		CO3	Explain the impact that art and culture of the time had on American literature
		CO4	Examine the Afro-American experience as articulated in African American literature
		CO5	Compare and contrast literary works across genres and ages
		CO6	Develop a critical and analytical perspective with regard to American texts and authors
EL224 (Paper VIII)	**Critical Studies I**	CO1	Identify the important theoretical schools and the major arguments put forward by them
		CO2	Explain the intellectual milieu in Europe that led to the emergence of theories
		CO3	Estimate the impact that socio-political upheavals had on shaping the theories
		CO4	Develop knowledge of the terms used in the criticism of literature
		CO5	Develop critical standpoint on the theorists and their work
		CO6	Evaluate the interconnected nature of major theoretical schools and draw out similarities and differences
		CO7	Analyse works of literature using theoretical frameworks
Semester 3			
EL231(Paper IX)	**Linguistics and Structure**	CO1	Understand the key concepts, theories and methodologies used by linguists in qualitative and quantitative analysis of linguistic structure

	of English Language	CO2	Develop an awareness of the basic nature, branches, and history of linguistics
		CO3	Analyse language units based on their phonological, morphological and syntactical features.
		CO4	Explain the transformation of sentences based on TG grammar.
		CO5	Understand the psychological mechanisms responsible for language acquisition and linguistic behaviour.
		CO6	Understand the latest trends in 20th C linguistic theory.
EL232 (Paper X)	**Critical Studies II**	CO1	Identify the important theoretical schools and the major arguments put forward by them
		CO2	Estimate the impact that socio-political upheavals had on shaping the theories
		CO3	Explain the intellectual milieu in Europe that led to the emergence of theories
		CO4	Develop knowledge of the terms used in the criticism of literature
		CO5	Develop critical standpoint on the theorists and their work
		CO6	Evaluate the interconnected nature of major theoretical schools and draw out similarities and differences
		CO7	Analyse works of literature using theoretical frameworks
EL 233. 1 (Paper XI:	**European Drama**	CO1	Recognize the socio-cultural and political factors that led to the emergence of drama as a genre in Europe
		CO2	Summarise the genre of modern European drama in terms of topics, perspectives and dramaturgy

Elective)		CO3	Explain the aesthetic principles that governed the art of dramaturgy in Europe down the ages
		CO4	Distinguish the defining aspects of major theatrical movements that came into being the post-World War era
		CO5	Develop an aesthetic appreciation of the formal and thematic innovations made by key figures in the field of dramaturgy
		CO6	Analyse a play in terms of key elements like plot, character, diction, spectacle and thought
EL 234.1 (Paper XII : Elective)	**European Fiction**	CO1	Identify the main thematic concerns in European fiction written in the last two centuries
		CO2	Trace the socio-cultural and political developments that shaped the European fiction of 19th and 20th centuries
		CO3	Illustrate the correlation between the evolution of European fiction and various schools of philosophy
		CO4	Examine the thematic concerns of texts selected for study from post structuralist perspective
		CO5	Critique European fiction in aesthetically meaningful ways
		CO6	Critique European fiction in terms of explaining their contemporary relevance
Semester 4			
EL241(Paper XIII)	**English Language Teaching**	CO1	Acquire knowledge of the historical and current theories in ELT
		CO2	Understand the theoretical perspectives on Language acquisition and language teaching.
		CO3	Understand the implications of the various approaches, methods and techniques
		CO4	Develop the ability to critically evaluate syllabi, teaching materials, and evaluation procedures.

		CO5	Understand techniques and principles in language teaching
		CO6	Understand learner problems and learner factors in developing proficiency in language skills.
EL242 (Paper XIV)	**Cultural Studies**	CO1	Identify ‘culture’ as an evolving academic field of study
		CO2	Identify the major theorists and their contributions to the field
		CO3	Examine the recent developments and ongoing debates in the field of cultural studies, particularly issues surrounding social media representation, gender and identity
		CO4	Apply theoretical concepts to the study of cultural texts, including film, literature and visual media
		CO5	Estimate the production and representation of race, gender and “otherness” in popular culture
		CO6	Analyse works of literature using theoretical frameworks
EL 243.1 (Paper XV : Elective)	**Comparative Literature**	CO1	Identify the important theoretical schools in comparative study
		CO2	Explain the significance of comparative study in the contemporary scenario
		CO3	Estimate the literary correspondence among regional, national and world literatures
		CO4	Develop knowledge on various genres and their correlations
		CO5	Evaluate the thematic undercurrents with regard to comparative literature

		CO6	Analyse the inter-cultural transaction of comparative literature
EL244.2 (Paper XVI: Elective)	**Regional Literatures in English Translation**	CO1	Identify the socio-political and literary background of the regional literatures in India.
		CO2	Identify the poets, novelists, dramatists, essayists, and prose writers of India.
		CO3	Examine the major landmarks and trends of India's major literatures from the 19th century to the present day.
		CO4	Generate a historical awareness regarding the regional literary movements.
		CO5	Develop the idea of nationalism, protest against inequalities, and concern for the environment by retelling the established myths and dominant narratives.
		CO6	Evaluate the great linguistic and literary diversity of India

Name of the program: M.Sc Biochemistry			
Course Code L/P Credits	**Course name**	**Course outcomes**	
Semester 1			
BC 211	**Techniques in Biochemistry**	CO1	Understand various biochemical and cytochemical techniques and their applications

		CO2	Perform cell fractionation methods for plant, animal and microbial cells
		CO3	Perform most suitable chromatographic techniques
		CO4	Perform electrophoretic techniques
		CO5	Understand photometric and spectroscopic techniques
		CO6	Identify radiation hazards, its detection and measurements.
BC 212	**CELL BIOLOGY AND GENETICS**	**CO1**	Understand different membrane models and mechanism of transport across cell membrane.
		CO2	Familiarize with cell cycle events, regulation of cell cycle at molecular level and apoptosis
		CO3	Explain the nature of signals, sorting, SRP Receptor, the targeting of proteins to the endoplasmic reticulum and various organelles
		CO4	Identify components of extracellular matrix and cytoskeleton
		CO5	Explain the signaling molecules, receptors and their functions
		CO 6	Understand the basic principles of gene organization, inheritance biology and population genetics
		CO 7	Interpret the inheritance of characters by using linkage and crossing over

		CO 8	Construction of pedigrees and analysis of pattern of inheritance in the families
BC 213	**Plant and Microbial Biochemistry**	**CO1**	Understand photosynthesis, nitrogen cycle and plant microbe interaction
		CO2	Understand senescence, structure and functions of plant hormones and phytochromes
		CO3	Classify plant secondary metabolites
		CO4	Understand the basics of Microbiology
		CO5	Remember nutrient cycles and parasexual process in bacteria
BC 214	**Practical I - Biochemical & Microbial techniques**	**CO1**	Demonstrate dialysis
		CO2	Practise separation of biomolecules using chromatographic techniques
		CO3	Perform separation of proteins by polyacrylamide gel electrophoresis
		CO4	Practise basic techniques in Microbiology
		CO5	Detect enzyme activity in microbes
		CO6	Enumerate microorganisms from water
Semester 2			
BC 221	**Enzymes**	CO1	Understand the classification and nomenclature of enzymes and units of enzyme activity
		CO2	Identify enzyme catalysis and the structure and mechanism of action of selected enzymes

		CO3	Perform enzyme kinetics
		CO4	Compare single enzyme catalyzed reactions with bi substrate reactions
		CO5	Perform isolation and purification of enzymes in plant, animal and microbial cells
		CO6	Identify industrial uses of enzymes, diagnostic and therapeutic applications.
BC 222	Metabolism	CO1	Understand the functions of specific anabolic and catabolic pathways of Carbohydrates, Lipids, Amino acids and Nucleic acids.
		CO2	Explain the regulation of metabolic pathways
		CO3	Describe the bioenergetics of metabolic pathways
		CO4	Write down the chemical reactions involved in electron transport chain and oxidative phosphorylation.
BC 223	**Clinical and Nutritional Biochemistry**	CO1	Understand energy value of foods
		CO2	Understand nutritional aspects of carbohydrates, lipids, proteins, fiber and vitamins
		CO3	Understand biochemical aspects of diet and diet related diseases
		CO4	Explain the diseases related to digestion and absorption of foods
		CO5	Understand various inborn errors of metabolism

Semester 3			
BC 231	**MOLECULAR BIOLOGY**	CO1	Understand genetic materials like DNA, RNA etc
		CO2	Remember mechanism of DNA replication and repair
		CO3	Understand process of transcription
		CO4	Identify genetic code and understand mechanism of protein synthesis
		CO5	Understand cellular regulation of genes
		CO6	Remember operon concepts
		CO7	Identify DNA binding motifs
		CO8	Understand development of embryonic cells
BC 224	**Practical II - Enzymology & Clinical Biochemistry**	CO1	Determine the enzymatic activity in biological tissues
		CO2	Carry out the preparation and purification of selected enzymes
		CO3	Determine the effect of substrate concentration, pH, temperature, enzyme concentration and activators/electrolytes on velocity of enzyme catalysed reaction and to analyse enzyme kinetics.
		CO4	Perform Liver, Kidney and Cardiac Function Tests
		CO5	Perform the diagnostic tests of Diabetes Mellitus
BC 232	**Immunology**	**CO1**	Understand innate immunity and its barriers
		CO2	Understand humoral immunity
		CO3	Explain MHC and cell mediated immunity

		CO4	Understand immunological techniques
		CO5	Understand the basic aspects of clinical immunology
BC 233	Pharmacology and Toxicology	CO1	Understand the pharmacological actions of different categories of drugs
		CO2	Understand the application of basic pharmacological knowledge in the prevention and treatment of various diseases.
		CO3	Understand the principles and practice of clinical toxicology
		CO4	Identify the protocol for screening of natural drugs
BC 235	**Practical III -** IMMUNOTECHNIQUES AND PHYTOCHEMICAL	CO1	Develop skill in blood film preparation and identification of cells
		CO2	Perform antigen antibody reactions
		CO3	Understand procedure for purification of immunoglobulins
		CO4	Develop skill in preparing plant extracts
		CO5	Identify the protocol for screening of natural drugs
		CO6	Know methods for quantitative analysis of phytoconstituents
		CO7	Perform isolation of natural products by chromatographic techniques
BC 234	**METHODS IN**	**CO1**	Understand intellectual property rights and patent laws

	RESEARCH	**CO2**	Know various types of research
		CO3	Remember methods of scientific writing
		CO4	Identify sampling methods
		CO5	Understand measures of central tendencies and statistics of dispersion
		CO6	Know analysis of variance
		CO7	Understand biological data, databases and sequence analysis
		CO8	Understand structure based drug design and molecular docking
Semester 4			
BC 241	**MOLECULAR ENDOCRINOLOGY**	CO1	Understand hormones and their mechanism of action
		CO2	Know organs regulating hormonal secretions and metabolism
		CO3	Identify various hormones based on their nature and action
		CO4	Understand biosynthesis, secretion and regulation of hormones
		CO5	Know hormone receptors
		CO6	Understand hormone signalling and related pathways
BC 242	**BIOTECHNOLOGY AND GENETIC**	**CO1**	Acquire insight into fundamentals of recombinant DNA technology, cloning and expression systems and DNA libraries

	ENGINEERING	**CO2**	Acquaint with techniques like DNA sequencing, RFLP, RAPD, PCR, DNA Finger printing, site directed mutagenesis, DNA microarrays and human genome projects
		CO3	Understand the concepts, developments, applications of medical biotechnology and recollect the biotechnological approaches in healthcare and prevention of diseases
		CO4	Understand the plant tissue culture techniques and mehtods for crop and livestock improvement
		CO5	Explain the process of genetic engineering and molecular farming in plants
		CO 6	Understand the aspects of environmental biotechnology and ethical, social and biosafety aspects of biotechnology.
		CO 7	Identify the types of bioreactors and steps involved in the production of enzymes, antibiotics and insulin
BC 243	**Techniques in Molecular Biology**	CO1	Gain insight of molecular biology techniques that are instrumental in analysis of genes at DNA level
		CO2	Acquire practical experience in DNA and RNA extraction
		CO3	Learn to isolate plasmid DNA and genomic DNA from E. coli and to perform Agarose gel electrophoresis of DNA
		CO4	Describe the use of nucleic acids as tools in molecular research

		CO5	Decide and apply appropriate tools and techniques in molecular biology
		CO6	Understand the fundamental molecular tool and their applications