

PO, PSO & CO

Programme Outcomes (POs),
Programme Specific Outcomes (PSOs)
and Course Outcomes (COs)

Postgraduate Programmes



**Internal Quality
Assurance Cell**

**ST. ALOYSIUS
COLLEGE EDATHUA**

POST GRADUATE PROGRAMMES

**PROGRAMME OUTCOMES (POs),
PROGRAMME SPECIFIC OUTCOMES (PSOs)
&
COURSE OUTCOMES (COs)**

CONTENT

Programme Outcomes (POs)	1
PSOs & COs of	
➤ M. A. English	2
➤ M. Sc. Physics	13
➤ M. Sc. Mathematics	22
➤ M. Sc. Zoology	30
➤ M. Com.	37
➤ M. A. Development Economics	44

PROGRAMME OUTCOMES (POs)- PG

Sl. No.	POs	Graduate Attributes
PO1	Communicate effectively, and appropriately in all modes of communication.	<i>Communication Skill</i>
PO2	Demonstrate leadership showing respect to others while working in teams.	<i>Leadership Readiness/Qualities</i>
PO3	Able to analyse the developments in the society and form a constructive, eco-sensitive and compassionate opinion.	<i>Environment and Sustainability</i>
PO4	Develop a multidisciplinary perspective and pursue research to solve socially relevant problems.	<i>Design/ Development of Solutions</i>
PO5	Develop sensitivity for social issues and act proactively upholding the values of peace, fraternity and love.	<i>Ethics</i>
PO6	Become confident and critically reflective lifelong learners.	<i>Life-long Learning</i>

M. A. ENGLISH

(PGCSS, 2019 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Create a social awareness in terms of society, culture, ethnicity, ecology and gender backgrounds of literature.
PSO2	Develop skills of research through interpretation, critical thinking and clear writing.
PSO3	Compile their research by applying research methodology.
PSO4	Identify the significance of internationally acclaimed works through the writings of highly celebrated writers including translated versions.
PSO5	Have a command over the four basic communicative skills LSRW.
PSO6	Exhibit a definite mastery of English language skills.
PSO7	Develop analytical, research-oriented and organizational skills.

COURSE OUTCOMES (COs)

SEMESTER 1

EN010101- UP UNTIL CHAUCER: EARLY LITERATURES IN ENGLISH

- CO1:** Analyze the major themes in Ancient and Medieval English literature as an expression of Anglo-Saxon culture and society as it emerges into a Britain-consciousness.
- CO2:** Assess and understand the personal experiences of people living in a society very different from our own.
- CO3:** Evaluate the literature of the Anglo-Saxons written over a thousand years ago.
- CO4:** Examine the standardization of creative consolidation initiated by Chaucer and his peers; a paradigm shift that made possible the emergence of English literature with a purpose and identity of its own.
- CO5:** Describe how these texts/readings proactively link up with the other texts/ readings in the module.

EN010102- LITERATURES OF THE ENGLISH RENAISSANCE

- CO1:** Relate with the literature, thought and culture of the Renaissance period in England, a historical watershed marking the transition from the medieval to the modern.
- CO2:** Inspect the era and the texts in the light of recent theoretical interventions like New Historicism and Cultural Materialism which had a special interest in Renaissance texts.
- CO3:** Discuss about Renaissance writings bearing the stamp of radical changes in the outlook and ways of life.
- CO4:** Compare and contrast major genres like Drama, Poetry and Prose which provides an introduction to the literature of the English Renaissance studied in a variety of historical contexts.

CO5: Explain how literary luminaries like William Shakespeare and Christopher Marlowe emerged and influenced each other leaving their mark on their own time and the time to come.

EN010103- LITERATURES OF THE ENGLISH REVOLUTION/ ENLIGHTENMENT

CO1: Describe the English literary texts which reflect the austere Puritan ideals of the late seventeenth century and the neoclassical vigor of the eighteenth century.

CO2: Analyze the comprehensive account of the late seventeenth and the eighteenth-century literary scenario drawing upon the significant social and the political developments of the times.

CO3: Discuss the rise of new genres like novel and are familiarized with Ian Watt's perspective on the inception of this new genre in England.

CO4: Outline an in-depth critique of the philosophy of the Enlightenment.

CO5: Compare and contrast the poetry of John Milton the epic poet of the late seventeenth century, the neoclassical satirists such as John Dryden and Alexander Pope, Aphra Behn the first professional woman writer of England, and Thomas Gray, the transitional poet.

EN010104 -NINETEENTH CENTURY ENGLISH LITERATURES

CO1: Analyze the fundamental premises of the Romantic Movement and Victorian literature, their theoretical and ideological frameworks, and the major trends and offshoots across various genres.

CO2: Illustrate the initial flowering of Romanticism, followed by the rapid growth of industrialization, scientific thinking and materialism.

CO3: Discuss the theoretical premises of the British Romantic Movement as well as the Victorian Age that chronologically follows the Romantic Era.

CO4: Examine the historical significance of the Ode as a poetic form best suited to examine the subjective and individualistic imagination of the romantic poet which finds expression as most of the poems in this section are odes.

CO5: Write about the Victorian Sensibility with increased attention being paid to the decline of the romantic sensibility, the growth of reason, ascent of materialism etc.

EN010105 – LITERARY CRITICISM

CO1: Examine the key concepts and texts of literary criticism ever since its emergence.

CO2: Provide theoretical familiarity with the range, approaches, and mechanics of critique.

CO3: Identify the historical, political and aesthetic dimensions of the growth of literary criticism.

CO4: Discuss issues like canon formation, evolution of the genres and methods of literary analysis.

CO5: Compare and contrast topics like classical western criticism from Plato, Aristotle Horace and Longinus, English Renaissance and neoclassical criticism, the 18th century trends, the romantic revolt, the Victorian tradition, the new critics, Eliot's critical positions, Psychoanalysis, myth/archetypal criticism, Russian Formalism, and Reader response theories.

SEMESTER - II

EN010201- MODERNITY AND MODERNISMS

CO1: Evaluate the literary trends of the early twentieth century in the context of the sensibility of literary modernism in the wake of the World War.

CO2: Describe the changed literary perspectives in the twentieth century, along with the social, economic and political background.

CO3: Examine some key issues like the Imperial expansion which had reached a boiling point and the onset of the World War I coupled with the attempts at creating a new world order.

CO4: Assess the impact of the Soviet experiment at the global level that needs to be read against the backdrop of the spread and influence of Marxism on a global scale.

CO5: Discuss the rise of Fascism and Nazism, followed curiously by the shadow of doubt cast over communism.

CO6: Analyze the reaction against Romanticism and Victorianism led to experimentation in writing in all genres.

EN010202- POSTMODERNISM AND BEYOND

CO1: Justify the postmodern works of literature which defy categorization and prove to be experimental in nature, subverting what is conventionally revered as the norm.

CO2: Illustrate the eclectic dimensions of postmodern thought as reflected in these literary works in which the boundaries that demarcate the different genres are often blurred.

CO3: Analyze the rigid frames of nomenclature and rejects the concepts of objectivity, absolute truth and the notion of the stratification into the high and the low culture.

CO4: Examine the underlying ideologies that nurture oppressive institutions and give emphasis on acknowledging the heterogeneity of thought and articulation.

CO5: Inspect the evolution of postmodern fiction over the decades with its culmination in the cyberpunk.

EN010203- AMERICAN LITERATURES

CO1: Discuss the most important branch of English literature belonging to the non- British tradition.

CO2: Examine information regarding the processes and texts chiefly responsible for the evolution of American Literature as a separate branch possessing characteristic features which sets it apart from others.

CO3: Assess the major conflicts, struggles and movements that are closely connected with the experiences of a group of people struggling to establish themselves as a nation.

CO4: Compare and contrast the usage of words and context in American and British Literature.

EN010204- ENGLISH LANGUAGE HISTORY AND CONTEMPORARY LINGUISTICS

CO1: Create awareness about the basic concepts of linguistics, the scientific study of language after initiating them into the history of English language.

CO2: Evaluate the most recent advances in the theory of language study.

CO3: Analyze the historical perspective of English language.

CO4: Discuss areas like Phonetics, Phonology, syntax, morphology and semantics.

EN010205- THINKING THEORY

CO1: Examine certain core aspects of what is currently designated as ‘literary theory’ and also provide exposure to select current developments in this domain.

CO2: Analyze readings which will serve as signposts that mark the moments that retrospectively are termed as turns to/within ‘theory’ – Jonathan Culler’s ‘over-view essay’ on the emergence of ‘Theory’, Levis-Strauss’ application of Saussurean Theory, and Derrida’s critique of Levis-Strauss.

CO3: Assess the theoretical ruminations on Authorship and Discourse: Roland Barthes’ “The Death of the Author” and Michel Foucault’s “What Is an Author?” problematizes the hallowed assumptions of Literary Criticism; Robert J. C. Young’s “Poems That Read Themselves” takes the unsettling deconstructive project of Poststructuralism forward.

CO4: Write a reference wherein Psychoanalysis tackles issues pertaining to the Unconscious and Cognition: Shoshana Felman’s “Beyond Oedipus: The Specimen Story of Psychoanalysis” traces the shift from Freud to Lacan; “The Phantom of Hamlet or the Sixth Act: Preceded by the Intermission of “Truth” by Nicolas Abraham and Nicholas Rand is an interface where Literary Creativity takes Theory *per se* as its content!; Julia Kristeva’s “Approaching Abjection” throws light on how insights from psychoanalysis enrich our understandings of contemporary [literary] cultures.

CO5: Present a discussion platform that goes beyond the normative heterosexual assumptions of Identity and even Feminism.

SEMESTER - III

EN010301- READING INDIA

CO1: Construct an insight to the historical, cultural and literary heritage of India by analyzing the major movements and figures of Indian Literature in English.

- CO2:** Evaluate the origin and growth of Indian writing in English especially in the colonial and post-colonial context.
- CO3:** Describe all the four major genre of Poetry, Prose, Novel and Drama which highlight the evolution of the colonizer's language in the native soil.
- CO4:** Outline the thematic and stylistic aspects between the pre independence and post-independence Indian Literature.
- CO5:** Investigate the problem of modernization in Indian writing in English.
- CO6:** Assess the issues of Diaspora and their quest for identity.
- CO7:** Examine the cultural diversity of India by getting exposed to translations of regional literature.
- CO8:** Examine the Indian philosophy imbibed in the literature.

EN010302- POSTCOLONIAL FICTION

- CO1:** Evaluate the discursive nature of colonialism, and the counter- discursive impulses of postcolonial theory, narratives and texts.
- CO2:** Assess the writing, reading and the critical-theoretical practices based on postcolonial experience through representative texts.
- CO3:** Compare the consequences of European expansion, creation and exploitation of 'other' worlds, with the internal colonization of diverse kinds.
- CO4:** Categorize the impact of concepts like hybridity, spectrality and subalternity in the lives of colonial victims.
- CO5:** Examine the postcolonial concerns in West Asia with the help of Arabic literature by writers like Edward Said.
- CO6:** Discuss about the African post colonialism.
- CO7:** Restate the South American/ Caribbean literature as postcolonial texts rather than reducing it as part of magic realism.

EN010303- BODY, TEXT AND PERFORMANCE

- CO1:** Evaluate the basic structural, thematic and theoretical patterns which govern the poetic process, especially in its relation to the performative or the theatrical.
- CO2:** Compare and contrast the verbal and the visual, as well as drama, theatre, body, performance and performativity.
- CO3:** Analyze the way the aspects of power and powerlessness are constructed.
- CO4:** Justify the importance of cinematic medium in the study of performance.
- CO5:** Inspect the issues like gender, ethnicity and caste.
- CO6:** Discuss Anti- Aristotelian notions like Alienation Effect, modern dramatic modes like Comedy of Menace and the techniques of cinematic adaptations.
- CO7:** Explain Expressionism and similar modes of theatrical performance along with gender/transgender autobiography.

EN010304- LITERATURE AND GENDER

- CO1:** Prioritize the historic, thematic and cultural concerns that literature attempts against the backdrop of gender issues.
- CO2:** Evaluate the fundamental political, religious and social issues that shape gender relations.
- CO3:** Illustrate the fact that gender is fluidic in nature rather than a mere fixed hetero-normative male- female concept.
- CO4:** Discuss the ‘woman quotient’ in Gender Studies, where the concept of masculinity which looms large in a patriarchal social order is also examined.
- CO5:** Analyze the prominence of *écriture féminine* with the help of a series of poems by women.
- CO6:** Construct an understanding of the problems faced by the black women and lesbians.

EN010305- ETHICS IN/ AS LITERATURE

- CO1:** Examine the various ‘ethics’ that narrative fiction has adopted across centuries, continents and languages.

CO2: Evaluate the various ethical, formal choices that schools, influences and narrative devices have upheld so as to shape narrative fiction into its present expressive plurality.

CO3: Analyze how fiction has dealt with the issue of disabilities at different levels.

CO4: Compare the literatures which are usually understood as fictional/ narrative realism.

CO5: Illustrate the intersectionality between nature and human.

SEMESTER - IV

EN010401- CULTURAL STUDIES

CO1: Examine certain interpretive strategies commonly employed in Cultural Studies.

CO2: Explain how cultural processes and artifacts are produced, shaped, distributed, consumed, and responded to in diverse ways.

CO3: Analyze the pervading cultural semiosis that one can discern in societies the world over.

CO4: Evaluate the different modes that Lifestyles assume, with the help of readings from Michel de Certeau, Pierre Bourdieu, and George Simmel offer means by which we can and ‘read’ the various negotiations of socio-cultural identities.

EN010402- POSTCOLONIAL POETRY

CO1: Write about the diversity of poetry coming from the erstwhile colonies of the European Colonial Empires.

CO2: Analyze the regional specifics that ‘in a hybrid mode’ negotiate issues of sovereignty, language, race, gender, identity and place.

CO3: Examine, through representative texts, the entire gamut of poetry that has emerged from and still addresses the colonial and postcolonial experience, the world over.

CO4: Justify, in a somewhat general way, certain contours that ‘Poetic Postcolonialisms’ assume.

CO5: Compare and contrast certain colonial poems from certain parts of Asia and Africa.

EN810401- TRAUMA NARRATIVES AND MEMORY

- CO1:** Examine a range of ‘texts’ from the critical perspective of trauma theory.
- CO2:** Analyze the recent field which touches upon narrative, historical, theoretical, psychoanalytic and aesthetic categories.
- CO3:** Access the familiarization of the interface between narratives, trauma and memory.
- CO4:** Evaluate, in a somewhat general way, the issue of ‘the uncanny’ through the readings of Ernst Jentsch, Sigmund Freud, Colin Davis, and Cathy Caruth.
- CO5:** Justify newer modes of representation like ‘Graphic literature’, that surpasses what is usually discussed under the rubric of ‘literary representation’, especially with regard to traumatic and uncanny events.

EN810402- THE ISLAND IN LITERATURE

- CO1:** Explain how ‘islands’ have been portrayed as symbols, metaphors, motifs and themes in literature.
- CO2:** Evaluate how these portrayals have been understood, situated and subsequently discussed in relation to contemporary theories, especially post-colonial, and self-reflexive perspectives.
- CO3:** Assess a broad framework within which one can discern the whole notion of ‘literary islands.’ The essays by Stephanos Stephanides/Susan Bassnett, Ashleigh Harris and Ioana Andreescu chart out the domain of the subsequent discussions.
- CO4:** Discuss the ways in which ‘Europe’ has created the ‘island-as-metaphor’. The political and semiotic layers of this endeavor are reflected in the works of D H Lawrence, Jose Saramago and Joseph Conrad.
- CO5:** Write about a selection that has ‘meta-ramifications’; the works of Adolfo Bioy Casares, Umberto Eco and John Fowles all retain an onus on self-reflexivity with regard to the literary notion of ‘the island.’

EN810403- LITERATURE AND FILM

- CO1:** Compare and contrast the relationship between literature and cinema.

CO2: Discuss the terrain of ‘Adaptation’ – of Literature into Film.

CO3: Illustrate film adaptations of literature in the domains of Epic/Myth, Theatre and Novel.

CO4: Write about Shakespearian works and their adaptations into cinemas, in addition to which, they can argue how much similar the cinemas are to the works they are inspired from.

M.Sc. PHYSICS

(PGCSS, 2019 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Acquire high-level knowledge in classical mechanics, quantum mechanics, electrodynamics and statistical mechanics, Nuclear Physics, atomic and Molecular Physics and apply it to complex problems in physics and other areas
PSO2	Develop proficiency in the analysis of complex physical problems and the use of mathematical or other suitable techniques to solve them
PSO3	Apply theoretical knowledge and critical reasoning skills to model and solve practical problems
PSO4	Understand and apply inter-disciplinary concepts and computational skills for understanding and describing the natural phenomenon
PSO5	Explore the multidisciplinary areas through the selection of advanced electives
PSO6	Develop skills for communication and for a research career in academia or industry by learning advanced ideas and techniques with emphasizing the underlying concepts of Physics

COURSE OUTCOMES (COs)

SEMESTER 1

PH010101- MATHEMATICAL METHODS IN PHYSICS– I

- CO1:** Familiarize the theorems in vector analysis and solve the mathematical problems related to the theorem.
- CO2:** Differentiate between the types of matrices and to find the solution for linear equations.
- CO3:** Explain the elementary probability theory and different theoretical distributions.
- CO4:** Explain about tensors, its applications and properties.
- CO5:** Familiarize tensor differentiation.

PH010102- CLASSICAL MECHANICS

- CO1:** Remember the methods involved to study motion of a system.
- CO2:** Apply this concept to formulate basic principle.
- CO3:** Explain the need of canonical transformation to solve some simple problems.
- CO4:** Understand Poisson and Lagrange brackets with their properties.
- CO5:** Apply Hamilton-Jacobi equation in harmonic oscillator problem.
- CO6:** Analyse central force problem to solve Kepler's law.
- CO7:** Solve Lagrange's equations of motion for small oscillations.

PH010103- ELECTRODYNAMICS

- CO1:** Explain Maxwell's equations in matter and Poynting's theorem.
- CO2:** Explain laws of reflection, refraction as outcomes of electromagnetic boundary conditions.
- CO3:** Understand the idea of electromagnetic wave propagation through waveguides and transmission lines.

CO4: Express the laws of electrodynamics under relativistic methods.

CO5: Explain the concept and principle of electromagnetic radiation.

PH010104- ELECTRONICS

CO1: Explain the characteristics and applications of FET devices.

CO2: Describe the concept of Op Amp as a differential amplifier.

CO3: Differentiates between voltage series and voltage shunt feed-back amplifier.

CO4: Identifies the functions of integrator and differentiator.

CO5: Describes the compensating circuits and different filter circuits.

CO6: Explains analog modulation, working of AM and FM receivers.

PH010105- GENERAL PHYSICS PRACTICALS

CO1: Describe the methodology of science and the relationship between observation and theory.

CO2: Practice the methodology by performing laboratory exercises.

CO3: Acquire necessary skills to produce accurate measurements and tabulate properly.

CO4: Understand data and draw inferences wisely.

CO5: Rediscover concepts of physics through optical and mechanical experiments.

CO6: Express their knowledge and ideas orally and in writing.

SEMESTER II

PH010201- MATHEMATICAL METHODS IN PHYSICS –II

CO1: Comprehend the application of mathematical concepts needed to solve problems in physics as well as other areas of science, and acquire practical skills in the use of these methods.

CO2: Explain the basic elements of complex mathematical analysis, including the integral theorems, obtain the residues of a complex function and use the residue theorem to

evaluate definite integrals in solving physical problems.

CO3: Apply integral transform (Fourier and Laplace) to solve mathematical problems of interest in physics.

CO4: Apply functions like Alpha, Beta, Dirac Delta, Gamma and Green function to solve mathematical problems of interest in physics.

CO5: Solve partial differential equations that are common in physical sciences by making use of standard methods like separation of variables.

CO6: Elaborate the orthogonal polynomials of special functions.

PH010202- QUANTUM MECHANICS- I

CO1: Explain mathematical tools of Quantum Mechanics.

CO2: Apply Dirac formulation to state kets, operators and bras.

CO3: Explain measurements, observables and uncertainty relations.

CO4: Analyse the Quantum Dynamics of a system.

CO5: Explain the general formalism of angular momentum.

PH010203- STATISTICAL MECHANICS

CO1: Explain the fundamentals of thermodynamics, Carnot cycle, statistics and distributions.

CO2: Grasp the basis of ensemble approach in statistical mechanics to a range of situations.

CO3: Explain the fundamental differences between classical and quantum statistics and learn about quantum statistical distribution laws.

CO4: Discuss various phenomena in solids using statistical mechanics.

CO5: Develop and apply Ising model and mean field theory for first and second order phase transitions.

PH010204- CONDENSED MATTER PHYSICS

- CO1:** Recognize different types of Materials and their Classification.
- CO2:** Explain the Free Electron Theory of Metals.
- CO3:** Interpret Band Theory of Metals and semiconductors.
- CO4:** Discuss the Dielectric Properties of Solids.
- CO5:** Explain the Superconductivity phenomena and related theorems.
- CO6:** Solve problems related to metals, semiconductors, dielectric materials, magnetic materials and superconductivity.

PH010205- ELECTRONICS PRACTICAL

- CO1:** Design and construct different circuits based on op amp.
- CO2:** Design different oscillators, filters, amplifiers circuits for various frequencies.
- CO3:** Select the appropriate integrated circuit models to build a given application.

SEMESTER– III

PH3C09- QUANTUM MECHANICS– II

- CO1:** Outline the foundations of quantum mechanics.
- CO2:** Apply the knowledge on the fields of non-relativistic and relativistic quantum mechanics like time-dependent perturbation theory, scattering theory, relativistic wave equations, and second quantization.
- CO3:** Apply theoretical studies and calculations of quantum mechanics in atomic and subatomic level problems.
- CO4:** Reinstate independent knowledge from literature and effectively impart it to peers.

PH3C10- COMPUTATIONAL PHYSICS

- CO1:** Familiarize with the mathematical skills in the field of numerical analysis.

CO2: Analyze different numerical methods, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations and evaluate their accuracy.

CO3: Compare the calculation and interpretation of errors in numerical methods.

CO4: Apply the numerical analysis to obtain approximate solutions to otherwise intractable mathematical problems., in the field of science and engineering.

CO5: Learn effective communication on solution methods and results.

PH3EC1- SOLID STATE PHYSICS

CO1: Familiarize with the basic theories of electronic structure of materials and defects and dislocations and how they help to tune the properties of materials.

CO2: Apply solid state theory to describe physical behavior of solids and electronic devices and develop new semiconductor devices.

CO3: Discuss the lasing principle and current crystal lasers.

CO4: Analyze the electrical and optical properties of materials and how they helped to develop new technological advances relevant in our lives and in future.

PH3EC2- CRYSTAL GROWTH TECHNIQUES

CO1: Compare the different crystal growth techniques.

CO2: Motivates for individual development and provide opportunity to explore basic research aptitude.

CO3: Discuss the development of current optoelectronic devices.

CO4: Engage in lifelong learning and adapt to changing needs of profession and society and get updated with current state-of-art.

SEMESTER - IV

PH4C11- ATOMIC AND MOLECULAR PHYSICS

- CO1:** Explain the role of atoms and molecules in the development of physics and analyzing the structure of matter.
- CO2:** Describe the behavior of atoms in external electric and magnetic field, which gives the foundation for analyzing theoretical models and experimental results in the concerned fields.
- CO3:** Describe the basics of different spectroscopic methods and their applications in characterization of research samples relevant in all fields of applied science.
- CO4:** Describe electron and nuclear magnetic resonance spectroscopy and their application in material science and medical field.

PH4C12- NUCLEAR AND PARTICLE PHYSICS

- CO1:** Explain the structure of the nucleus, radioactive decay, nuclear reactions and the interaction of radiation and matter.
- CO2:** Discuss the smallest building blocks of the universe and inspect the unanswered questions about dark matter, antimatter and the origin and evolution of the universe.
- CO3:** Design new ideas in fundamental research and apply them to develop higher theoretical models and experimental applications.
- CO4:** Describe the various particle interactions and their correlation, basic laws of particle physics and how they are applied to study the particle properties and their behavior in the subatomic world.
- CO5:** Critical evaluate theoretical predictions using quantum mechanical reasoning.

PH4EC3- NANOSTRUCTURES AND CHARACTERIZATION

- CO1:** Apply the basic principles of physics to describe scientific phenomena in nanoscale and qualitatively explain how the nanoparticle size can affect the morphology, crystal structure, reactivity, and electrical properties

- CO2:** Compare and contrast advanced characterization methods for measurement, observation, and fundamental understanding of phenomenon at nanomaterials
- CO3:** Describe the nano systems in quantum realm by applying principles of quantum mechanics in nan materials.
- CO4:** specialize in theoretical and experimental techniques and plan for a career in academia and Nano technology driven industry.
- CO5:** Engage in lifelong learning and adapt to changing needs of profession and society and get updated with current state-of-art.

PH4OE3- THIN FILM AND NANO SCIENCE

- CO1:** Compare different methods of synthesis of thin films and inorganic nanoparticles and nanostructures.
- CO2:** Apply the knowledge to evaluate and select the proper synthesis method best suited for fabricating nanostructured materials of various inorganic compounds.
- CO3:** Analyze the basic ethical, health-related and environment-related concerns with respect to nanoparticles in general.
- CO4:** specialize in theoretical and experimental techniques and plan for a career in academia and Nano technology driven industry.
- CO5:** Engage in lifelong learning and adapt to changing needs of profession and society and get updated with current state-of-art.

PH3P03- COMPUTATIONAL PHYSICS PRACTICALS

- CO1:** Illustrate and visualize the problems and the solutions using computer simulations
- CO2:** Identify the role of computer models and simulations in the solutions of physical problems.
- CO3:** Familiarize with programming languages like C++ and apply them to solve physical problems using numerical methods.
- CO4:** Construct foundation of computational methods for specialized interests in research.

CO5: Identify leadership as well as effective communication with the team.

CO6: Identify interpersonal skills and responsibility like working in a group, time management, acquiring information through literature, and presenting the work in a scientific language.

PH4PC4- MATERIAL SCIENCE PRACTICALS

CO1: Investigate research equipment (microscope, oscilloscope, etc.) and apply them for materials analysis and data acquisition.

CO2: Examine and conduct experiments which measures materials properties and apply the conceptual knowledge to analysis the experimental data.

CO3: Identify leadership as well as effective communication with the team.

CO4: Identify interpersonal skills and responsibility like working in a group, time management, acquiring information through literature, and presenting the work in a scientific language.

PH4D05- PROJECT/DISSERTATION

CO1: Execute a significant research-based project.

CO2: Lead and manage projects through collaboration with others.

CO3: Synthesize novel materials, characterize and analyze data to cultivate research findings.

CO4: Identify the ethical issues related to a researcher in publishing and practicing.

CO5: Utilize findings from research for advanced education.

CO6: Report and publish research findings in internationally accepted written formats.

CO7: Specialize in theoretical and experimental techniques and plan for a career in academia and Nano technology driven industry.

CO8: Engage in lifelong learning and adapt to changing needs of profession and society and get updated with current state-of-art.

PH4V06- VIVA VOCE

CO1: Effectively communicate the acquired knowledge in a timely manner.

CO2: Identify areas of research in relevant theoretical/experimental field.

M.Sc. MATHEMATICS

(PGCSS, 2019 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	On completion of this programme a student can classify and explain several specialised areas of advanced mathematics and its applications
PSO2	A Student will be able to construct and formulate problems in appropriate theoretical frameworks to facilitate their solution.
PSO3	A Student will be able to construct logical arguments for solving abstract or applied mathematical problems.
PSO4	A Student will be able to discuss and communicate mathematics effectively to a wide range of audience.
PSO5	A Student will be able to analyse, identify and benefit from opportunities for personal and career development.
PSO6	A Student will be able to explain the correct use of mathematical language to express both theoretical concepts and logical argument.
PSO7	A Student will be able to apply formulae and numerical information effectively and confidently in an employment environment.

COURSE OUTCOMES (COs)

SEMESTER I

ME010101- LINEAR ALGEBRA

- CO1:** Identify the basic definitions of Vector spaces, basis and dimension of vector spaces, subspaces and linear transformations.
- CO2:** Discuss the knowledge of linear functional, dual spaces, double dual spaces and transpose of a linear transformation.
- CO3:** Describe basic theorems such as Rank- Nullity theorem and Annihilator theorem.
- CO4:** Explain Eigen values and Eigen vectors, Cayley Hamilton Theorem and diagonalizable and triangulable properties of a linear operator.
- CO5:** Discuss the concept of hyper spaces and its dimension.
- CO6:** Identify the properties of determinants.

ME010102- ABSTRACT ALGEBRA

- CO1:** To use the basic concepts in groups, rings and fields
- CO2:** To describe about cyclic groups, normal subgroups and homomorphism
- CO3:** To explain about isomorphism theorems and sylows theorems
- CO4:** Identifies various applications of sylows theorems
- CO5:** To synthesize new ideas in the fields of quotients of an integral domain
- CO6:** To describe various properties about rings of polynomials

ME010103- BASIC TOPOLOGY

- CO1:** Analyze the transition from metric spaces to topological spaces.
- CO2:** Investigate whether a given family of subsets is a topology or not.
- CO3:** To apply the relationship between base and sub base of a topology.
- CO4:** Discuss various problems related to quotient topology and suggest solutions.

CO5: Explain the concept of separation axioms.

ME010104 - REALANALYSIS

CO1: Discuss functions of bounded variation and rectifiable curves.

CO2: Explain Riemann-Stieljes Integral and its properties.

CO3: Describe Uniform convergence of sequence and series of functions.

CO4: Describe some special functions like exponential function and logarithmic.

CO5: Equips the students to abstract thinking.

ME010105- GRAPH THEORY

CO1: To discuss the basic definitions namely, graph, cut vertex, bridge, block and Automorphism group of a graph.

CO2: Explain the properties of trees and connectivity.

CO3: Identify Eulerian graphs and apply results to identify Hamiltonian graphs.

CO4: To describe the concepts Planarity including Euler identity, non-planarity of celebrated graphs and its practical applications.

CO5: Explain major theorems and inventions in the history of graph theory and understand how it made the subject to develop to the present state.

SEMESTER II

ME010201- ADVANCED ABSTRACT ALGEBRA

CO1: Identify extension fields, algebraic extensions, geometric constructions and finite fields.

CO2: Explain theorems on Unique factorization domains, Euclidean domains, and Gaussian integers

CO3: Describe the properties of Automorphism of fields, Splitting fields, Separable Extensions and Normal Extensions.

CO4: Explain the major theorems such as Isomorphism Extension theorem and Splitting field theorems.

CO5: Discuss the concept of Galois Theory.

CO6: Identify and explain Main Galois Theorem and the illustrations of Galois Theory and Cyclotomic extensions.

ME010202- ADVANCED TOPOLOGY

CO1: Understanding of topological spaces and having a grasp on basic results and the separation axioms.

CO2: Explain the product space and its pointwise relevance.

CO3: Understand classical theorems in Topology such as Urysohns lemma and Urysohns metrization theorem.

CO4: Formulate variations of compactness and explain their equivalence in certain constraints.

CO5: Differentiate paths in topological spaces according to the homotop relation among their class.

CO6: Understand the concepts and applications of Topology in medical field such as muscle formulation, simulations and especially in pharmaceutical science fields.

ME010203- NUMERICAL ANALYSIS WITH PYTHON 3

CO1: Able to solve numerical problems both manually and using Python 3 programming.

CO2: To find the mathematical concepts in algebra and calculus using Python such as root of an equation, limit and derivatives of functions, continuity of a function at a point, etc.

CO3: To find the area between two curves and the length of a curve easily by programming in Python.

CO4: Able to construct programs for finding the roots of equations using bisection method, Newton-Raphson method, etc.

CO5: Able to apply the techniques of solving set of linear equations using Gauss Elimination method, LU decomposition method, Doolittle method, etc.

CO6: Able to design programs for numerical methods such as interpolation, curve fitting, numerical integration, etc.

ME010204- COMPLEX ANALYSIS

- CO1:** To explain about the various basic ideas in complex analysis like analytic functions, harmonic functions etc.
- CO2:** Identifies various applications of complex integration.
- CO3:** To explain about different versions of Cauchy theorems.
- CO4:** To describe Taylor's theorem, types of singularities and Schwarz lemma.
- CO5:** Apply the concepts to derive the theorems of Cauchy, argument principles etc.

ME010205- MEASURE THEORY AND INTEGRATION

- CO1:** Explain Lebesgue Measure.
- CO2:** Describe concept of integration of non – negative functions.
- CO3:** Explain Lebesgue's differentiation theorem.
- CO4:** Illustrate signed measure and related theorems.
- CO5:** Explain Measure spaces, Measurable functions.
- CO6:** Explain measurability in a product space and the product measure.
- CO7:** Compare integration and differentiation in the aspect of measure.

SEMESTER III

ME010301- FUNCTIONAL ANALYSIS

- CO1:** Understand how functional analysis uses and unifies ideas from vector spaces and the theory of metrics.
- CO2:** Explain the fundamental properties of normed spaces and of the transformations between them.
- CO3:** Understand the notions of dot product and Hilbert space.
- CO4:** Understand and apply fundamental theorems from the theory of normed and Banach spaces, including the Hahn-Banach theorem, the open mapping theorem and the closed

graph theorem.

CO5: Apply the spectral theorem to the resolution of integral equations.

ME010302- PARTIAL DIFFERENTIAL EQUATIONS

CO1: Able to solve linear partial differential equations using various techniques.

CO2: To describe orthogonal trajectories of a system of curves on a surface

CO3: To apply methods such as Charpit's method, Jacobi's method, etc.

CO4: To discuss nonlinear equations of second order.

CO5: Able to describe families of equipotential surfaces and relation of logarithmic potential to the theory of functions.

CO6: Able to solve Laplace equation.

ME010303- MULTIVARIATE CALCULUS AND INTEGRALTRANSFORMS

CO1: Transition from elementary analysis to advanced analysis.

CO2: Describe other forms of Fourier Series.

CO3: Discuss multivariable differential Calculus.

CO4: Describe application of complex valued function.

CO5: Explain the matrix of a linear transformation.

CO6: Explains integrations of differential forms.

ME010304- ADVANCED COMPLEX ANALYSIS

CO1: To examine the concepts of analytic functions, conformal mapping, homology etc.

CO2: To describe various properties of harmonic functions.

CO3: To illustrate various series representations of analytic function.

CO4: To discuss Riemann zeta functions, Weistrars zeta functions, p-functions etc.

CO5: Identify the relevance of Riemann mapping theorem.

CO6: Compare and contrast between harmonic and sub harmonic functions.

ME010305- OPTIMIZATION TECHNIQUES

- CO1:** To describe the basics of Integer programming.
- CO2:** Apply the concept of LPP to solve problems.
- CO3:** Evaluate optimal measures related to flow and potentials in networks.
- CO4:** To describe the basics of game theory.
- CO5:** To use the basic concepts of Nonlinear programming for optimization.

SEMESTER IV

ME010401– SPECTRAL THEORY

- CO1:** To learn the fundamental theorems of normed spaces - the open mapping theorem, closed graph theorem.
- CO2:** Develop the fundamentals of spectral theory of operators.
- CO3:** Apply fundamental theorems from the theory of Compact linear operators and their spectrum.
- CO4:** Able to apply the basic theory of Banach algebras.

ME010402- ANALYTIC NUMBER THEORY

- CO1:** Introduce different types of Arithmetic Functions and Identify their properties.
- CO2:** Explain Dirichlet product of Arithmetical Functions, and the Average Order of Arithmetical functions.
- CO3:** Introduce Chebyshev's Functions and describes equivalent forms of Prime Number Theorems.
- CO4:** Discuss and explain congruences, Chinese Remainder Theorem, Lagranges Theorem and its Applications.
- CO5:** Describe the concept of Quadratic Residues, Primitive Roots, Legendre's symbol, Gauss' Lemma and the Quadratic Reciprocity law.

ME800401- DIFFERENTIAL GEOMETRY

- CO1:** Able to Calculate and work with principal, Gaussian and mean curvatures for surfaces in R^3 and deduce general features of the surface from these functions.

CO2: Analyse Gauss map, Weingarten map.

CO3: Discuss geodesics.

CO4: Explains curvature of surfaces.

CO5: Identify different types of surfaces.

ME800402- ALGORITHMIC GRAPH THEORY

CO1: To recall the basic definitions and ideas of graph theory such as vertex, isomorphic graphs, subgraphs, etc.

CO2: To compose algorithms for searching, sorting, etc.

CO3: To create graphs in a computer.

CO4: To outline activity digraphs and critical paths.

CO5: To design algorithms for networks, matchings, etc.

ME800403- COMBINATORICS

CO1: To differentiate between basic counting principles and apply them to solve practical problems of counting.

CO2: To design solution to logical questions of practical importance.

CO3: To illustrate the existence of certain true observations regarding societal problems.

CO4: To justify the need of application of generalized principle of inclusion and exclusion in solving practical problems.

CO5: To examine and explain the use of recurrence relation and generating functions in complex counting problems.

M.Sc. ZOOLOGY

(PGCSS, 2019 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Plan self-employment opportunities in fish culture, ornamental fish culture, etc.
PSO2	Develop skill sets to make fishery by-products and fishery value-added products.
PSO3	Recommend to the farmers on how to control and manage agricultural pests, agricultural weeds, etc.
PSO4	Analyse water and soil quality parameters of their respective regions.
PSO5	Develop skills for communication for a research career in academia or industry.
PSO6	Develop required skill sets to pursue their interest in subject through research.

COURSE OUTCOMES (COs)

SEMESTER-I

ZL010101- ANIMAL DIVERSITY: PHYLOGENETIC AND TAXONOMIC APPROACHES

- CO1:** The students are getting a chance to understand the phylogenetic relationships among the different groups of animals.
- CO:2** To provide the latest trends in animal taxonomy and phylogenetic systematics.
- CO3:** To impart the knowledge about the fauna on the verge of extinction, especially in the Indian sub-continent and how we can save them.
- CO4:** Getting chances to study the techniques in taxidermy.
- CO5:** Imparting the new trends in computer -aided taxonomic studies.
- CO6:** Getting an awareness of the types of taxonomic publications.

ZL010102- EVOLUTIONARY BIOLOGY AND ETHOLOGY

- CO1:** To describe the concept of relatedness and its connection to biological evolution
- CO2:** To apply knowledge to new information and data, as well as the capacity to effectively communicate the principles of evolution and its application to human biology.
- CO3:** To expose students to the basics and advances in ethology.
- CO4:** To generate an interest in the subject in order to understand the complexities of studying animal behavior.
- CO5:** To study the origin of life on earth.
- CO6:** To study the process of extinction and extinct animals on earth, till date.

ZL010103- BIOCHEMISTRY

- CO1:** To provide the basic knowledge of the chemical nature of life and life processes and the structure and function of biologically important molecules.

CO2: To generate an interest in the subject and help students to explore the new developments in Biochemistry.

CO3: Imparting the importance of metabolism of bio-molecules in normal physiology of man.

CO4: Providing the basic knowledge of abnormal metabolism of biomolecules in man.

CO5: To get a basic knowledge of the diseases caused by errors in metabolism.

ZL010104- BIostatistics AND RESEARCH METHODOLOGY

CO1: To impart concepts of statistics and research methodology, and create awareness about the gadgets, tools and accessories of biological research.

CO2: Providing materials to improve analytical and critical thinking, skills through problem solving.

CO3: To enable learners to effectively apply suitable statistical tests in research.

CO4: To sensitize students about the ethics involved in research and enable them to come up with innovative research designs.

CO5: To equip learners to prepare research papers and project proposals.

SEMESTER-II

ZL010201- FIELD ECOLOGY

CO1: To provide the knowledge of animal adaptations to a variety of environments.

CO2: Providing knowledge about the ill effects of population explosion.

CO3: To understand the different aspects of population and its interactions.

CO4: To understand the natural resources.

CO5: To make an awareness of manmade issues on environment.

CO6: Giving the importance of wastes and waste management.

CO7: Imparting knowledge about sustainability., green technology and ecosystem monitoring.

ZL010202- DEVELOPMENTAL BIOLOGY

- CO1:** Imparting knowledge about the concepts and processes in developmental biology.
- CO2:** Providing the students to understand and appreciate the genetic mechanisms and the unfolding of the same during development.
- CO3:** To expose the learner to the new developments in embryology and its relevance to Man.

ZL010203- GENETICS AND BIOINFORMATICS

- CO1:** Imparting knowledge about the fine structure of genetic material and molecular basis of hereditary transmission.
- CO2:** Imparting knowledge about the significances of Genetics in Principle in inheritance of traits in Man.
- CO3:** Providing knowledge about the role of genetics in evolution.
- CO4:** Giving an opportunity to explore the emerging field of bioinformatics.
- CO5:** To equip the students to take up bioinformatics studies; as the basics of bioinformatics such as data mining, proteomics, Microarrays, Protein modelling, drug designing etc.
- CO6:** To equip the students, how to Identify of human genes and diagnosis of human diseases.

ZL010204- MICROBIOLOGY AND BIOTECHNOLOGY

- CO1:** Providing a basic knowledge of the microbial world, its structure and function.
- CO2:** To give students an intensive and in-depth learning in the field of biotechnology.
- CO3:** Imparting the students to familiarize with the emerging field of biotechnology - to understand the modern biotechnology practices and approaches, with an emphasis on its application in - medical, industrial, environmental, agricultural, nano medicine etc.
- CO4:** Providing the basics of Gene therapy, Cell and tissue engineering, Gene products in medicine etc.
- CO5:** Familiarizing the students with issues like - public policy, biosafety, and intellectual property rights, related to biotechnology.

CO6: To explore the area of Fermentation technology, Enzyme engineering and applications, Transgenic plants, Bio fertilizers, Bio pesticides, gene technology etc.

SEMESTER-III

ZL010301- ANIMAL PHYSIOLOGY

CO1: Providing the basic knowledge of the functioning of organ systems across the animal world.

CO2: Providing an over view of the comparative functioning of different systems in animals.

CO3: Chances to learn more about human physiology.

ZL010202- CELL AND MOLECULAR BIOLOGY

CO1: Providing the students to understand the structural and functional details of the basic units of life at the molecular level.

CO2: Imparting ways to refresh the basics of cell biology.

CO3: Providing the students to understand the new developments in molecular biology and its implications in human Welfare.

ZL010303- BIOPHYSICS, INSTRUMENTATION AND BIOLOGICAL TECHNIQUES

CO1: Providing a basic knowledge of the biological system and processes based on physical principles.

CO2: Providing an insight on the tools and techniques of various instruments available for biochemical and biophysical studies.

CO3: Training the learner, the operational skills of different instruments required in Zoology.

ZL010304- IMMUNOLOGY

CO1: Providing an intensive and in-depth knowledge to the students in immunology.

CO2: Imparting ways to help the learner to understand the role of immunology in human health and well-being.

CO3: Familiarizing the students, the new developments in immunology.

SEMESTER-IV

ELECTIVE SUBJECT- FISHERIES

ZL800401- NUTRITION, GROWTH AND PHYSIOLOGY OF FISHES

CO1: Imparting knowledge about the various aspects of fish biology.

CO2: Providing ways to understand the basic principles of fish nutrition and the functions of individual nutrients.

CO3: Providing the basic knowledge of the functional physiology of fishes.

CO4: Imparting a basic knowledge about various fish diseases.

ZL800402- FISHERY RESOURCES AND MANAGEMENT

CO1: Imparting knowledge in inland and marine fishery resources of India.

CO2: Imparting theoretical knowledge on application of latest electronic and computer devices used in fisheries, as remote sensing, GIS etc.

CO3: Providing knowledge on interactions between aquaculture and the environment.

CO4: Providing knowledge on integrated fish culture, Composite fish culture. Integrated farming and aquaponics

CO5: Imparting knowledge about the basics of ornamental fishery and its export from India, Aquarium fishes, Setting up and maintenance of an aquarium.

CO6: Imparting a basic knowledge on control and management of aquatic weeds in the system.

ZL800403- FISHERY SCIENCE AND TECHNOLOGY

CO1: Getting familiarized with the latest advances in aquaculture.

CO2: Getting acquainted with the various aspects of fish processing techniques.

CO3: Imparting a basic knowledge on the techniques in fish feed technology.

CO4: Getting familiarized with factory sanitation and hygiene, water quality and standard.

CO5: Imparting an average knowledge about the crafts and gears used in inland and marine waters.

CO6: Providing the basics of biotechnology for accelerating gonadal growth and manipulation of the duration of spawning.

M.Com. FINANCE & TAXATION

(PGCSS, 2019 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Acquire managerial skills and theoretical knowledge for managing business units with special focus on functional areas of business and management.
PSO2	Acquire advanced accounting knowledge and skills and assess latest developments in the field of accounting.
PSO3	Enabling learners to acquire advanced theoretical knowledge on research methods and techniques and also developing capabilities in the application of research in solving business related problems.
PSO4	Acquire expertise in specialized fields like finance, taxation, marketing, management and information technology.
PSO5	Acquire quantitative aptitude and analytical skills.
PSO6	Enable the learner to pursue career in professional areas of commerce and management such as taxation, financial services, consultancy etc.

COURSE OUTCOMES (COs)

SEMESTER I

CM010101- SPECIALISED ACCOUNTING

- CO1:** Apply the knowledge of accounting in different practical situations.
- CO2:** Examine the value of goodwill and value of companies based on the value of shares and compare the real value of shares with the market prices and identify the mispricing.
- CO3:** Outline determination of purchase consideration in the event of amalgamation and to construct post amalgamation financial statements
- CO4:** List different types of NBFCs, their provisioning norms and to investigate NAV of mutual funds through hits computation.
- CO5:** Analyze theoretical aspects of emerging areas in accounting

CM010102- ORGANISATIONAL BEHAVIOUR

- CO1:** Explain concepts of organization behaviour.
- CO2:** Examine individual behaviour, personality and motivation.
- CO3:** Assess group behaviour and leadership related to organizational behaviour.
- CO4:** Outline change management and deal with stress.
- CO5:** Explain role of organizational culture and conflict in organizational behavior.

CM010103- MARKETING MANAGEMENT

- CO1:** Describe customer centricity, CRM, value chain and customer delight.
- CO2:** Illustrate market segmentation process and its applications in marketing strategies.
- CO3:** Examine consumer behavior and its impact in marketing.
- CO4:** Identify product line, product mix, brand equity, brand identity, brand personality and brand image.
- CO5:** Describe ideas regarding services marketing and service quality.

CM010104- MANAGEMENT OPTIMISATION TECHNIQUES

CO1: Explain various business optimization models.

CO2: Ability to develop Linear Programming Models for business problems and solve the same.

CO3: Application of Linear Programming 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.

CM010105- METHODOLOGY FOR SOCIAL SCIENCE RESEARCH

CO1: Explain basic concepts of social science research.

CO2: Ability to formulate a research design.

CO3: Illustrating a sampling design.

CO4: Construct an instrument, its validation and different forms of scaling.

CO5: Discuss the technique of research reporting.

SEMESTER – II

CM010201- ADVANCED CORPORATE ACCOUNTING

CO1: Ability to prepare consolidated financial statements of group companies.

CO2: Ability to prepare financial statements of public utility companies and deal with the disposal of surplus.

CO3: Describe the procedure of bankruptcy under the recent Bankruptcy Procedure Code.

CO4: Explain the accounting procedures of liquidation of companies and gaining the ability to prepare various statements required as per the Companies Act.

CO5: Outline the preparation of accounts of some special lines of businesses like shipping, hospitals and hotels.

CM010202- HUMAN RESOURCE MANAGEMENT

- CO1:** Describe basic concepts of HRM and performance appraisal.
- CO2:** Describe human resource development, stress management and work life management.
- CO3:** Explain various aspects of training.
- CO4:** Explain various aspects of industrial relations so as to evaluate the real cases of industrial relations.
- CO5:** Examine HR outsourcing, HR accounting and HR audit.

CM010203- INTERNATIONAL BUSINESS AND FINANCE

- CO1:** Compare and contrast globalization, internationalization of business and the international business environment.
- CO2:** Describe theories of international trade, trade barriers and trade blocks.
- CO3:** List various economic institutions related to international trade.
- CO4:** Describe various aspects of international monetary system.
- CO5:** Predict international investment environment.

CM010204- QUANTITATIVE TECHNIQUES

- CO1:** Application of quantitative techniques in business and management.
- CO2:** Design appropriate parametric test for testing the hypotheses.
- CO3:** Identify the most suitable non parametric test for testing a hypothesis.
- CO4:** Identifying the most suitable sampling technique in research.
- CO5:** Application of the principles of SQC.

CM010205- STRATEGIC MANAGEMENT

- CO1:** Explain theoretical foundations of strategic management.
- CO2:** Examine various models of environmental and internal analysis.
- CO3:** Outline strategy formulation process at the corporate level.

CO4: Illustrate various tools of strategic planning and evaluation.

CO5: Identifying modes of implementation and control of strategies.

SEMESTER – III

CM010301- STRATEGIC FINANCIAL MANAGEMENT

CO1: Describe theoretical foundations of financial management and financial management decisions.

CO2: Examine the feasibility of different options regarding discount, credit period, storage cost etc. related to current assets and current liabilities and estimate working capital requirements.

CO3: Assess long term proposals and evaluate the risk associated with long term investment.

CO4: Justify the decisions regarding leasing of capital assets.

CO5: Explain the performance of business entities.

CM010302- INCOME TAX - LAW AND PRACTICE

CO1: Explain the basic concepts of Income Tax.

CO2: Illustrate/compute the income from salary and house property.

CO3: Examine taxable profit of a business or profession.

CO4: Solve capital gain and income from other sources.

CO5: Examine Gross Total Income of an Individual.

CO6: Explain eligible deductions and examine taxable Income and tax liability of an individual.

CM010303- SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

CO1: Describe the concepts of investments, different types of investments, views of investment and process of investment and use the theoretical knowledge in investment information for selection of securities.

CO2: Explain the types of risk in security market and use various tools for the valuation of bonds as well as economic indicators to predict the market.

CO3: Explain the tools of technical analysis, examine the patterns and trends in the market by using various tools and recommend to take investment decisions after understanding market efficiency level also.

CO4: Design Modern portfolio theories and construct optimum portfolios.

CO5: Justify revising of constructed portfolios as per risk and return association by using different strategies

CM800301- INDIRECT TAX LAWS

CO1: Describe the basic concepts of the Goods and Services Tax.

CO2: Explain the levy and collection of tax and tax credit.

CO3: Illustrate the provisions regarding registration, preparations of books of accounts and filing of returns under the Act.

CO4: Discuss the powers of GST authorities regarding inspection, search and seizure.

CO5: Describe the Customs Law in India.

SEMESTER – IV

CM010401- ADVANCED COST AND MANAGEMENT ACCOUNTING

CO1: Solve activity-based absorption methods instead of conventional absorption method.

CO2: Use the marginal costing principles in decision making situations of businesses.

CO3: Assess practical cases of pricing decisions in different situations.

CO4: Describe the concepts of standard costing, and the process of cost control through it.

CO5: Assess the practical issues related to transfer pricing.

CM010402- INCOME TAX – ASSESSMENT & PROCEDURES

CO1: Illustrate and solve the total income and tax liability of firms and Association of Persons.

CO2: Explain assessment of companies and determine their tax liability.

CO3: Explain and justify assessment of co- operative societies and trusts.

CO4: Describe the assessment procedures, TDS and advance payment of tax and application in various situations.

CO5: Discuss tax planning concepts and apply the same.

CM800401- DERIVATIVES AND RISK MANAGEMENT

CO1: Describe derivative market in India, its evolution, types, players, risks involved and basic quantitative foundations.

CO2: Examine the implications of Risk in the perception of individuals and Institutions and measurement of risks.

CO3: Describe and explain the concept of forward market and its function.

CO4: Examine the operation and pricing of various types of futures.

CO5: Describe the concepts and methodology of option trading and apply the models of pricing the option contracts.

CO6: Describe exchanges through Swaps.

CM800402- PERSONAL INVESTMENT AND BEHAVIOURAL FINANCE

CO1: Explain the meaning and significance of financial literacy, Financial Discipline& Financial Competency, the role of family and parents in financial socialization.

CO2: Describe and justify the Significance of savings on financial destiny and its relationship with Consumerism and to explain the different elements/steps in Personal Financial Planning to attain Financial Well Being and Examine the different retail investment avenues.

CO3: Describe Behavioural Finance, its evolution and related theories.

CO4: Explain Different Heuristics, Biases and other Irrational Investment Behaviours.

CO5: Describe the relationship between biases and to adopt techniques to lower the impact of biases.

M.A. DEVELOPMENT ECONOMICS

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Develop knowledge in the advanced economic theory and its application.
PSO2	Master mathematical and quantitative techniques commonly used in economics research and also in the field of corporate business and policy applications.
PSO3	Acquire an in-depth knowledge in the fields like development Economics, financial market, environmental and human resource management, international economics, international trade, econometrics, mathematical economics etc.
PSO4	Attain a competitive edge in the State and Central Service examinations where the subject content of economics dominates in the selection process and demonstrate a sound potential and ambience for a variety of challenging careers.
PSO5	Enhance their economic way of thinking and research skills and grab research openings in govt. funded national and international research institutions.

COURSE OUTCOMES (COs)

SEMESTER 1

DE010101- MICRO ECONOMICS ANALYSIS I

CO1: Demonstrate an understanding, usage and application of basic economic principles.

CO2: Provides an intuitive learning regarding other branches of economics.

CO3: Analyze the behavior of consumers in terms of the demand for products and the performance of firms under different market structures.

CO4: Evaluate the determinants of international trade and financial flows, and identify the social consequences of national and international economic activity.

CO5: To create capacity to analyze how microeconomic concepts can be applied to analyses real-life situations.

DE010102- MACRO ECONOMICS THEORY AND POLICY I

CO1: Understand the aggregate economy in both the short run and the long run.

CO2: To familiarize the students with the contribution of various schools of thought in macroeconomics.

CO3: To enable students to understand basic concepts of macroeconomics and its empirical performance.

CO4: Develop an understanding of how fiscal and monetary functions in an economy.

DE010103- ECONOMIC GROWTH AND DEVELOPMENT

CO1: Conceptual clarity on various dimensions of economic growth and development.

CO2: A deeper understanding about the vital development issues like poverty, unemployment, inequality etc. in India.

CO3: A critical understanding of changes, issues and policies with respect to development of Indian Economy.

CO4: To understand the various patterns of economic development with the given empirical evidence. The learners will also under the recent literatures in Development Economics

CO5: Discuss about the role of women in economic development.

DE010104- DEVELOPMENT ISSUES OF INDIAN ECONOMY

CO1: Understand the development paradigm adopted in India since independence

CO2: Review major trends in economic indicators and policy debates taking place in the country

CO3: Analyze various government policies and its impact in the socio –economic realm of the society and to participate in the policy decision making process of the Government

CO4: Understand how planning and infrastructure support can develop an economy.

DE010105-MATHEMATICS FOR ECONOMIC

CO1: Develop the analytical and mathematical skills related to various economic relationships.

CO2: Gain the knowledge to integrate economic theories with mathematical techniques.

CO3: Develop the mathematical tools that are used extensively in Microeconomics, Macroeconomics, and Econometrics.

CO4: Get rigorous training in mathematical computations essential for studying and analyzing current economic issues.

SEMESTER -II

DE010201- MICROECONOMIC ANALYSIS–II

CO1: Apply microeconomic principles in the areas of industrial organization, exchange, and welfare.

CO2: Apply microeconomic theory and microeconomic models to real economic situations and explain, analyze and predict the effects of interventions and structural changes in the economy on the welfare of individuals.

CO3: Demonstrate knowledge and understanding of the issues concerning efficiency, general equilibrium and general welfare.

CO4: Understand the different ways to measure welfare changes for individuals and know how to aggregate them.

DE010202- MACROECONOMIC THEORY AND POLICY- II

CO1: Discuss about different types of macroeconomic models.

CO2: Evaluate and critically compare results in alternative macroeconomic models.

CO3: Understand the importance and limitations of modeling assumptions for macroeconomic policy.

CO4: Understand the macroeconomic theories and models that researchers and policymakers employ.

DE010203- MODERN PUBLIC ECONOMICS

CO1: Understand of various aspects of fiscal policy and debt management

CO2: Understand established concepts and theoretical results on collective choice, optimal income taxation, and the effects of income redistribution on the provision of public goods

CO3: Familiarize the rationale for and role of government intervention in economic activities and how the government makes economic decisions

CO4: Discuss the recent theoretical and empirical developments, especially in the Indian public economics

CO5: Familiarity with the different aspects of fiscal federalism

DE010204- POLITICAL ECONOMY OF DEVELOPMENT

- CO1:** Understand the key concepts, methodologies, theories, and techniques in political development discourse.
- CO2:** Develop conceptual clarity of the importance of history and relations of power.
- CO3:** Understand alternative approaches to modeling development policies, (iii) critically evaluate the usefulness of development methodologies and techniques.
- CO4:** Develop the capacity to understand and interpret the theories and apply them to economic problems.

DE010205- QUANTITATIVE TECHNIQUES FOR ECONOMIC ANALYSIS

- CO1:** Understand the concepts and terminology that are fundamental to statistical analysis and inference.
- CO2:** Discuss different frequency distributions, probability and non-probability sampling methods.
- CO3:** Understand the inferential statistics as well as the interpretation of data.
- CO4:** Gain knowledge and skills in handling economic data, analyzing and interpreting with the help of statistical and mathematical methods.

SEMESTER III

DE010301– INTERNATIONAL ECONOMICS- I

- CO1:** Understand international trade, policy and balance of payment imparted in the course would help the students to solve real-world problem.
- CO2:** Equip the students the theoretical foundations of international trade and capital flows.
- CO3:** Develop an understanding of the functioning of the international trading apparatus.
- CO4:** Enhance the ability to become trade policy-makers and key strategists on trade issues.

DE010302- ECONOMETRIC METHODS- I

- CO1:** Demonstrate their understanding of the appropriate econometric methods for analyzing data.
- CO2:** Enable the students to gain knowledge and skills in handling different types of econometric.
- CO3:** Develop an understanding of various econometric models used in estimation process.
- CO4:** Enable the students to interpret computer output for the estimation and testing of econometric relationships.
- CO5:** Able to understand and make decisions on the basis of analysis.

DE010303- REGIONAL ECONOMICS

- CO1:** Understand the fundamentals of Regional Economics and the impacts of globalization on regional economies.
- CO2:** Enhance the knowledge in strategies to deal with economic change, in particular on a regional level in developing economies.
- CO3:** Understand how globalization processes impact upon development at different geographical scales, especially on a regional level.
- CO4:** Develop ability to apply economic geographical concepts and theories in descriptions and analyses of regions' development, and to present.

DE010304- THEORIES AND APPROACHES OF ENVIRONMENTAL ECONOMICS

- CO1:** Acquire the basic skills and knowledge required in the natural resource management of a country for a sustainable existence.
- CO2:** Equip students with analytical skills that would enable the evaluation of environmental and economic policy issues.

CO3: Understand the economics of the relationship between economic activities and environmental impacts.

CO4: Understand governing laws relating to environment and management.

CO5: Elicit rational solutions for solving burgeoning environmental problems.

DE010305- DEVELOPMENT ISSUES OF KERALA ECONOMY

CO1: Understand Kerala's development experiences in historical perspective.

CO2: Discuss the current and critical issues, challenges and problems of the Kerala economy.

CO3: Enhance the analytical ability to understand the dynamics of a regional economy.

CO4: Understand the issues faced by Kerala Economy.

CO5: Review policies with respect to development of Indian and Kerala Economy.

SEMESTER IV

DE010401- INTERNATIONAL ECONOMICS- II

CO1: Understand the international finance, financial institutions and their application in real life.

CO2: Demonstrate basic understanding of foreign exchange market and exchange rates.

CO3: Analyze the Balance of Payment and Balance of Trade statistics of an economy.

CO4: Demonstrate basic understanding of the issues pertaining to multinational financing and investment decisions.

CO5: Enhance the ability to become policy-makers and key strategists on issues related to international finance and related institutions.

DE010402- ECONOMETRIC METHODS- II

CO1: Understand and interpret the results from regression models involving panel data and instrumental variables.

CO2: Understand how to set up and estimate binary response models.

CO3: Discuss the basic concepts of stationary and nonstationary time series, linear models for univariate and multivariate time series.

CO4: Understand the concepts of integration and cointegration and how to test for these phenomena in time series.

CO5: Discuss and analyze panel data regression models.

ELECTIVES

DE800401- GENDER AND DEVELOPMENT

CO1: Discuss the basic concepts of gender and indices of gender development and equality.

CO2: Discuss how gender is related to poverty, health, education, demography and growth.

CO3: Understand gender issues in a global and transnational context, or seeking to contribute to policy-making.

CO4: Analyze various issues related to gender development with special emphasis to Indian and Kerala context.

DE800402- ECONOMICS OF EDUCATION

CO1: Analyze the cost and benefits of education.

CO2: Discuss about the influence of education on economic growth.

CO3: Evaluate the pros and cons of various financial resource mobilization sources.

CO4: Understand review and analyze the Kerala education policy.

DE800403- HUMAN RESOURCE MANAGEMENT

CO1: Understand the importance of human resource and application of computer in management of human resource.

CO2: Discuss the recruitment selection and training process in human resource management.

CO3: Evaluate the performance of human resource and manage the grievances arising in the business.

CO4: Understand about various trade unions and analyze the importance of employee relation.

