CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA

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PG - COURSE OUTCOME

(ACADEMIC YEAR 2022-2023)

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Name of the programme				Master of Social Work
Short Name of the Programme				MSW
Code of the Programme				CCAMSW
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	SOW1 C01	HISTORY, PHILOSOPHY AND FIELDS OF SOCIAL WORK	CO1	Probe the historical development of Social Work
			CO2	Apply the principles and values in social work intervention
			CO3	Demonstrate ethical and professional behaviour
			CO4	Analyze social work as a profession
			CO5	Demonstrate the roles in various fields of Social Work practice
	SOW1 C02	SOCIOLOGY AND ECONOMICS FOR SOCIAL WORK PRACTICE	CO1	Analyse the sociological perspectives and contribution of different sociological theorists in for social work practice
			CO2	Examine the different sociological concepts in detail
			CO3	Assess the various social institutions in a scientific way
			CO4	Debate the nature, causes and magnitude of major social problems in India
			CO5	Critique economic concepts and identify key economic problems, concepts and theories in Social Work practice
	SOW1 C03	HUMAN GROWTH AND DEVELOPMENT	CO1	Analyse core concepts, strengths, and weaknesses of the major theories of lifespan development
			CO2	Examine the impact of biological/genetic influences on physical growth, cognition and behaviour.
			CO3	Assess change throughout the entire lifespan from conception to death
			CO4	Demonstrate an understanding of different stages of development through the lifespan
			CO5	Devise developmental concepts to everyday life
	SOW1 C04	PROFESSIONAL SKILLS FOR SOCIAL WORKERS	CO1	Examine the important terms and concepts essentially required for a social worker in social work profession
			CO2	Analyse different techniques to evaluate oneself as a social worker
			CO3	Apply the core relationship skills required in social work profession
			CO4	Demonstrate skills in communication (especially verbal, non-verbal and writing skills) and leadership in levels of social work interventions
			CO5	Apply various ICT resources in upgrading and updating their knowledge in Social Work
	SOW1 C05		CO1	Examine the legal rights of the people

		SOCIAL LEGISLATION AND HUMAN RIGHTS	CO2	Assess the overall structure and framework of Indian Constitution and different social legislations
			CO3	Apply the information of Human Rights in social work practice in general to individual groups and communities
			CO4	Develop the knowledge for legal aid to the weaker section of the society with special focus to children, women, differently abled and senior citizens
			CO5	Analyze the provisions of legal aid and lok adalats
	SOW 1 L01	CONCURRENT FIELD WORK - COMMUNITY	CO1	Probe information about community, projects, and services provided to beneficiaries
			CO2	Demonstrate skills in observation, team work, planning, organizing, recording and evaluation
			CO3	Organize community programmes and skills in programme management
			CO4	Apply various tools of social work
			CO5	Practice social advocacy methods like RTI, street play, PIL etc.
2	SOW2 C06	SOCIAL CASE WORK	CO1	Examine the concepts of Social Case Work
			CO2	Assess the importance of case work relationship and tools used in Social Case Work
			CO3	Analyse the components and tools of Social Case Work
			CO4	Examine the approaches and models of treatments in Social Case Work
			CO5	Analyse the case management in Social Case Work
	SOW2 C07	SOCIAL GROUP WORK	CO1	Examine concepts, characteristics, types, group process and dynamics of groups.
			CO2	Demonstrate the skills in understanding the group dynamics and stages of group development in Social Group Work practice
			CO3	Compare the various theories assumptions and historical evolution of Social Group Work in West and India
			CO4	Apply the various principles and process of Social Group Work in various settings
			CO5	Develop the attitude and competence to practice Social Group Work in various settings
	SOW2 C08	COMMUNITY ORGANISATION AND SOCIAL ACTION	CO1	Analyze the community organization and social action as methods of social work
			CO2	Dissect the key elements of community organization practice and social action
			CO3	Appraise the models and strategies for community organization and social action
			CO4	Operate with different problem situations in communities

			CO5	Apply the method, skills and techniques for participatory community work and social action
	SOW2 C09	PSYCHOLOGY FOR SOCIAL WORK	CO1	Applying the awareness of diagnosis, classification and DSM categories
			CO2	Determine the social influence and its types
			CO3	Analyze major issues and concepts in the field of Social Psychology
			CO4	Categorize mental disorders
			CO5	Develop awareness about the mental health disorders
	SOW2 C10	THEORY AND PRACTICE OF COUNSELLING	CO1	Categorise basic concepts related to Counselling
			CO2	Analyse the stages and steps in the Counselling process
			CO3	Practice important theories and approaches in Counselling
			CO4	Apply principles and code of ethics of counselling in the counselling process
			CO5	Demonstrate skills required in various stages of counselling practice in different settings
	SOW2 LO2	CONCURRENT FIELD WORK - AGENCY	CO1	Apply professional values, ethics and principles of social work in an agency setting
			CO2	Practice in working with individuals, groups and community
			CO3	Develop skills in writing records, planning, evaluation, observation and teamwork
			CO4	Develop solution to a specific problem or need by doing activities such as documentary, short video and other methods
			CO5	Practice social advocacy methods such as RTI, PIL, Advocacy letters, Newspaper reports and Petitions
3	SOW3 C11	QUANTITATIVE AND QUALITATIVE METHODS OF SOCIAL WORK	CO1	Validate Social Work Research as methods of social work
			CO2	Analyze the significance and characteristics of scientific research
			CO3	Distinguish the research processes of qualitative and quantitative research
			CO4	Carry out qualitative and quantitative research
			CO5	Apply the statistical techniques in social work research
	SOW3 C12	PARTICIPATORY PROJECT PLANNING AND TRAINING	CO1	Apply the principles of development projects while preparing development projects
			CO2	Integrate various tools and techniques in project identification and management
			CO3	Develop skill in writing development project according to the needs of the community
			CO4	Categorise the stages and steps in participatory training and facilitation
			CO5	Design participatory training programmes by utilising different methods of training and facilitation

	SOW3 C 13	COMMUNITY HEALTH	CO1	Analyse the basic concepts in health and health care
			CO2	Distinguish between the common communicable diseases and non-communicable diseases.
			CO3	Detect various legislations and community health programmes pertaining to health care in the intervention
			CO4	Inspect the nutritional problems and their management
			CO5	Organize various community health programmes, community based nutritional programmes, health camps and to work in nutritional rehabilitation team
	SOW3 E1 01	ELECTIVE 1(SPECIALISATION) - MEDICAL AND PSYCHIATRIC SOCIAL WORK HEALTH CARE SOCIAL WORK	CO1	Assess the historical foundations of social work in health care
			CO2	Examine the social workers role in health teams
			CO3	Analyse the practice settings in health care social work
			CO4	Apply different social work interventions in health care social work
			CO5	Examine the health care social work practice standards
	SOW3 E1 02	SOCIAL WORK IN MENTAL HEALTH SETTINGS	CO1	Examine psychiatric illnesses, treatment and aftercare
			CO2	Apply the knowledge regarding different policies and programmes in the field of mental health
			CO3	Assess, intervene and evaluate individuals, families, groups, and communities in mental health settings
			CO4	Demonstrate the specific roles and functions of a psychiatric social worker in different mental health settings
			CO5	Examine the scope of Psychiatric Social Work
	SOW3 E2 01	ELECTIVE 2(SPECIALISATION) - RURAL AND URBAN COMMUNITY DEVELOPMENT RURAL COMMUNITY DEVELOPMENT AND GOVERNANCE	CO1	Analyze the characteristic features and challenges of rural and tribal communities
			CO2	Appraise the concept, philosophy and principles of community development with focus on tribal and rural community
			CO3	Apply Government services and programmes in the rural and tribal community development
			CO4	Examine the evolution, structure and functions of development administration and Local Self Governance in rural and tribal community

			CO5	Demonstrate skills in community practice as a development worker.
	SOW3 E2 02	URBAN COMMUNITY DEVELOPMENT AND GOVERNANCE	CO1	Analyse the important terms, concepts and problems related to urban community and its impact on different sections of population
			CO2	Examine Urban Local Self Governance and its functioning
			CO3	Analyze the different Urban Social Problems, its causes, consequences and magnitude
			CO4	Compare the concept, principles, approaches and programmes for Urban Community Development
			CO5	Examine the various skills, challenges and role of Social Workers in Urban Community Development
	SOW 3 LO3	MEDICAL AND PSYCHIATRIC SOCIAL WORK	CO1	Demonstrate the ability in Psycho-Social assessment of patient in relation to the consequences of disease.
			CO2	Demonstrate Skills in observation, Team Work, Planning, Organizing and Recording
			CO3	Demonstrate the practice skills in social work methods
			CO4	Demonstrate the ability to prepare monograph
			CO5	Develop ability to function as a member of multidisciplinary team in hospital settings.
	SOW3 L03	RURAL COMMUNITY DEVELOPMENT FIELD WORK	CO1	Analyze rural community life pattern with specific focus to social, economic, cultural and political aspects
			CO2	Prioritize different role and functions of Social Workers in Rural and Community setting
			CO3	Develop skills in identifying and utilizing community resources to formulate rural community project, its management, appraisal and evaluation
			CO4	Develop competencies in organising and mobilizing rural community through participatory mechanisms
			CO5	Practice the various methods of Social Work in rural community setting
4	SOW4 C 14	ADMINISTRATION OF HUMAN SERVICE ORGANISATION	CO1	Integrate basic elements and process of administration as a method in social work practice
			CO2	Analyse the importance of different types of organisations in social welfare and the regulations related to NGO formation
			CO3	Develop an overview of human resource management as an important component of administration of human service organisations
			CO4	Develop analytical skills to understand the organisational behaviour

			CO5	Practice the utility of the administrative structures to maintain employee relation and grievance redressal
	SOW4 C 14	SOCIAL WORK WITH VULNERABLE GROUPS	CO1	Analyse different concepts related to vulnerability and marginalisation
			CO2	Examine the prevailing realities and problems of vulnerable and marginalized groups in India.
			CO3	Examine the roles and functions of social workers in helping marginalized and vulnerable groups
			CO4	Analyse the contribution of Government and Non-Government Organizations in promoting welfare of the marginalized and vulnerable groups.
			CO5	Inspect the policies and programmes for the vulnerable groups
	SOW4 E1 03	THERAPEUTIC APPROACHES IN MEDICAL AND PSYCHIATRIC SETTING	CO1	Examine various types of alternative system of medicines used in medical and psychiatric settings
			CO2	Demonstrate skill in the assessment and treatment of clients in their clinical experiences of practicum
			CO3	Organize therapeutic communication techniques, including teaching patients and families, in the mental health setting.
			CO4	Assess the application and effectiveness of therapies in medical and psychiatric settings
			CO5	Apply therapies in various medical and psychiatric settings
	SOW4 E1 04	SOCIAL WORK PRACTICE WITH FAMILIES	CO1	Analyse the concepts of family, marriage and family system perspective
			CO2	Distinguish the family development perspectives
			CO3	Inspect the family assessment tools in family social work practice
			CO4	Analyse the skills and capacities to work in family social work practice settings
			CO5	Examine the practice of family social work
	SOW4 E2 03	ENVIRONMENT STUDIES AND DISASTER MANAGEMENT	CO1	Analyse the basic concepts in environment studies
			CO2	Appraise the environment problems and impact on development initiatives.
			CO3	Examine the utilization and management of natural resources
			CO4	Validate the role of social work practice in environmental problems
			CO5	Monitor and communicate information on risks, relief needs in disasters and formulate strategies
	SOW4 E2 04	SOCIAL WORK PRACTICE AND GENDER	CO1	Analyse concepts related to gender and its significance in social work
			CO2	Develop perspectives concerning what constitutes a gender issue and learn to create

				a multiperspective analysis of a given gender issue
			CO3	Contrast the status of women and appreciate the gaps therein
			CO4	Develop skills and attitudes to work with gender issues
			CO5	Compose the practice of social work with gender perspective
	SOW 4 L04	MEDICAL AND PSYCHIATRY FIELD WORK	CO1	Organize need based therapeutic community in hospital setting
			CO2	Practice the methods of social work particularly social case work, social group work
			CO3	Develop ability to function as a member of multidisciplinary team in hospital setting
			CO4	Assess the psycho-social problems of the patient & family with respect to the consequences of the disease & disability
			CO5	Develop rehabilitation plan with respect to long term illness & disability
	SOW 4 L04	URBAN COMMUNITY DEVELOPMENT FIELD WORK	CO1	Analyze the Urban Community life pattern with specific focus to social, economic, political and cultural aspects
			CO2	Prioritize different role and functions of Social Workers in Urban Community setting
			CO3	Develop skills in identifying and utilizing community resources to formulate Urban
			CO4	community projects, its management, appraisal and evaluation
			CO5	Develop competencies in organizing and mobilizing Urban community through participatory Mechanisms
	SOW 4 L05	BLOCK PLACEMENT	CO1	Apply social work as a profession and the values, principles and ethics of professional social work
			CO2	Create an opportunity to experience the day-to-day work in social work setting
			CO3	Develop students to strengthen his/her skills and knowledge in their area of interest
			CO4	Organize students to identify, plan and implement social work interventions through the application of the methods of social work and assess their impact on different client's system in various fields
			CO5	Develop students to integrate learning and generate newer learning by participating in the activities conducted by the organization
Name of the programme				**Master of Arts, History**
Short Name of the Programme				**M.A. Hsitory**
Code of the Programme				**CCAMHI**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	CC19PHIS1C02		CO1	Demonstrate command over various stages of pre-modern Kerala.

		PRE-MODERN KERALA: PROBLEMS AND PERSPECTIVES	CO2	Critically analyze primary sources on pre-modern Kerala.
			CO3	Examine the formation of Malayali identity.
			CO4	Probe the process of social formation in pre-modern Kerala
			CO5	Debate on the early political structures of Kerala
	CC19PHIS1C03	PROBLEMS, PERSPECTIVES AND DEBATES IN EARLY INDIAN HISTORY	CO1	Analyse early medieval Indian History
			CO2	Debate different shades of opinion and interpretations regarding the major themes in Ancient and Early Medieval period
			CO3	Examine the historiography of the period
			CO4	Analyse the institutions and cultural elements in Indian society
			CO5	Evaluate the background to background to the rise of new religious ideas during 6th Century BC
	CC19PHIS1C04	EARLY BRONZE AND IRON AGE CIVILIZATIONS	CO1	Reconstruct the history of the evolution of civilizations in various parts of the World
			CO2	evaluate the intellectual and cultural contributions of these early civilizations to the mankind
			CO3	Distinguish the major dynasties of ancient China.
			CO4	Compare the evolution of world civilisations
			CO5	Probe the ideological foundation of the political structure of those time
2	CC19PHIS2C01	HISTORY AND THEORY	CO1	Make students to theorise historical events and enable them to compare it with the contemporary situation
			CO2	Understanding the major social science theories and its relation to history
			CO3	Make students to theorise historical events and enable them to compare it with the contemporary situation
			CO4	Identify the areas of social science theories
			CO5	Make students to theorise historical events and enable them to compare it with the contemporary situation
	CC19PHIS2C02	HISTORY OF MODERN KERALA: PROBLEMS AND PERSPECTIVES	CO1	Identify the history of modern Kerala, specifically the socio-cultural process that shaped the identity of present Kerala
			CO2	Recognise the alternative readings of Kerala history
			CO3	Evaluating the concept of Kerala model
			CO4	Review the idea of Kerala Renaissance
			CO5	Analysis of the upper and lower castes social movements in Kerala
	CC19PHIS2C03	STATE AND SOCIETY IN MEDIEVAL INDIA	CO1	Debate various perspective on the Medieval India.
			CO2	Analyse the nature of major medieval Indian dynasties.
			CO3	Examine the evolution of composite Indian culture.

			CO4	Research the development of science and technology.
			CO5	Distinguish between styles in art and architecture.
	CC19PHIS2C04	SELECTED PROBLEMS OF MEDIEVAL AND MODERN WORLD HISTORY	CO1	To understand the concept of feudalism and its various interpretations
			CO2	Analyse the features of colonialism in Asia and Africa
			CO3	To comprehend the ideological foundation of modern civilisation
			CO4	To understand the concept of feudalism and its various interpretations
			CO5	To understand how Western capitalist exigencies lead to colonial domination in various regions
3	CC19PHIS3C01	PERSPECTIVES ON COLONIALISM	CO1	Identify major historiographical trends and works on colonialism in India
			CO2	Analyse the aspects of colonial India
			CO3	Explain the impact of colonialism in India, especially the economic impact
			CO4	Evaluate the nature of women's working conditions in colonial India
			CO5	To understand the economic impact of colonialism in India
	CC19PHIS2C02	DISCOURSES ON NATIONALISM	CO1	Discuss the concept of nationalism
			CO2	Analyse the role of Indian National Congress and middle class in the formation and development of nationalism in India.
			CO3	Discuss the different historical perspectives on nationalism in India.
			CO4	Examine the origin and development of Communalism in India.
			CO5	Recognise the recent readings on nationalism based on caste and gender.
	CC19PHIS3C04	SELECTED THEMES IN ECONOMIC HISTORY OF MEDIEVAL INDIA	CO1	Analyze the advancement of science and technology in Early medieval and medieval India.
			CO2	Examine the relationship between the shift in socio-cultural environment and knowledge system in medieval India.
			CO3	Assess the progress achieved in various aspects of life such as Mathematics, Medicine, Agriculture, industries etc.
			CO4	Analyze the merits and drawbacks of knowledge systems in medieval India
			CO5	Identify important concepts in medieval India
4	CC19PHIS3E05	AESTHETIC TRADITIONS OF MEDIEVAL INDIA	CO1	Distinguish between various methods and theories of art history.
			CO2	Categorize the literary traditions of Medieval India.
			CO3	Appraise the paintings of Medieval India.
			CO4	Compare classical Indian music and dance traditions.

			CO5	Demonstrate command over architectural styles of Medieval India.
	CC19PHIS4C01	PROBLEMS AND DEBATES IN CONTEMPORARY INDIA	CO1	Appraise the pre-modern South Indian history
			CO2	Identify the important inscriptional and other sources related to south Indian history.
			CO3	Identify the socio-cultural life of the people in pre-modern South India.
			CO4	Examine the contemporary trends in South Indian History.
			CO5	Assess the key concepts in South Indian History.
	CC19PHIS4E03	SCIENCE AND TECHNOLOGY IN MEDIEVAL INDIA	CO1	Categorise the advancement of science and technology in Early Medievaland Medieval India.
			CO2	Examine the relationship between the shift in socio-cultural environment and knowledge system in Medieval India.
			CO3	Recognize the progress achieved in various aspects of life such as Mathematics, Medicine, Agriculture, industries etc.
			CO4	Analyze the merits and drawbacks of knowledge systems in Medieval India.
			CO5	Assess the key concepts in science and technology in Medieval India.
	CC19PHIS4E06	INDIAN LITERATURE IN HISTORICAL PERSPECTIVE	CO1	Examine the various stages of Indian literature.
			CO2	Assess the classical Indian texts.
			CO3	Inspect the link between History and Literature.
			CO4	Critically analyze the literary works of Indian English writers.
			CO5	Recognise the Indian literature in historical perspective.
Short Name of the Programme				**Master of Science, Zoology**
Code of the Programme				MSc. Zoology
Code of the Programme				**CCAMZL**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	ZO 1CT 01	BIOCHEMISTRY AND BIOPHYSICS	CO1	Distinguish carbohydrates and analyze the reactions and biological roles in different metabolic activities.
			CO2	Analyzing the properties of amino acids, proteins, enzymes and bioenergetic aspects
			CO3	Providing the classification, functions and metabolic pathways of carbohydrates, protein and lipids.
			CO4	Inspecting the structural and metabolic aspects of Nucleic acids.
			CO5	Analyze biological aspects of colloids, membrane systems, radiation and acoustics.
	ZO 1CT 02	BIOINSTRUMENTATION AND BIOSTATISTICS	CO1	Provide the concept of pH and assess various applications of microscopes.

			CO2	Analyse various separation techniques and compare the concept of radiation biology.
			CO3	Analyse the application of spectroscopy, categorize biomedical techniques and review nanotechnology.
			CO4	Examine the scope of statistics, methods and procedures of sampling and data types.
			CO5	Generate the various statistical inference and diversity studies: averages, measures of dispersion, probability distributions, correlation, regression, diversity indices and application of its knowledge.
	ZO 1 CT 03	ECOLOGY AND ETHOLOGY	CO1	Describe our ecosystem and to explain factors affecting population growth and population interactions.
			CO2	Describe the factors affecting ecosystem development, community ecology and conservation biology and compare biogeographical realms and zones.
			CO3	Discuss the behaviour as a reaction to stimuli and explain concepts of instinctive and learned behaviour.
			CO4	Describe the factors of motivation and categories of behaviour, explain conflict behaviour, discuss circadian rhythm, migration and navigation.
			CO5	Explain and categorize different aspects of social behaviour and parental care, describe the role of hormones in behaviour and explain evolution and adaptiveness of behaviour.
2	ZO 2CT 04	PHYSIOLOGY	CO1	Develop different concepts of nutrition and thermoregulation
			CO2	Analyse excretory system and respiratory system and its types in animals
			CO3	Examine various concepts on Neurophysiology.
			CO4	Examine various senses, distinguish tactile responses and illustrate vertebrate heart.
			CO5	Examine various aspects regarding cardiovascular system and identify lymphatic system, Distinguish various components of environmental physiology.
	ZO 2 CT 05	MOLECULAR BIOLOGY AND CYTOGENETICS	CO1	Analysing the concepts of the mechanism of DNA replication, DNA damage, repair and transcription mechanism in prokaryotes and eukaryote.
			CO2	Analyse the concepts of post transcriptional modifications and genetic code and ribosome's in prokaryotes and eukaryotes
			CO3	Apply the control and regulation of gene expression and recombination of DNA; explain eukaryotic genome and discuss the concept of interrupted genes, gene family.
			CO4	Create the concept of Cancer and gene therapy and Transposable genetic elements

			CO5	Justify the basic ideas of the organization of chromosome, illustrate concepts of microbial genetics and review the cytogenetics of cancer.
	ZO 2 CT 06	SYSTEMATICS AND EVOLUTION	CO1	Analyse the concept of systematics, taxonomy and various species concepts in Zoology, theories of classification, skills to collect and preserve specimens for identification using taxonomic keys.
			CO2	Examine taxonomic characters used in evolution and identification of specimens according to zoological nomenclature.
			CO3	Analyse newer trends in systematics, ethics to be followed while creating and publishing taxonomic publications and impediments to overcome.
			CO4	Distinguish natural selection as one of several evolutionary processes from other moden day theories including genetic drift, neutral theory and HW principle.
			CO5	Demonstrate the processes of microevolution, tempo, gene frequency, gene pool, bottle neck, founder population etc and explain molecular drive, molecular clocks and molecular divergence and Human evolution starting from a chimpanzee-human common ancestor.
3	ZO 3 CT 07	IMMUNOLOGY AND CELL BIOLOGY	CO1	Categorize innate and adaptive systems of immune response and the concepts of antigenicity and immunogenicity; explain Haematopoesis and T/B cell differentiation
			CO2	Describe different immune effector mechanisms/molecules of the human body towards foreign antigens.
			CO3	Illustrate the structure and functioning of Major Histocompatibility Complex; summarize the structure, diversity of antibody and its application in different techniques.
			CO4	Explain autoimmune and immunodeficiency diseases and to get idea about transplantation reaction and vaccination.
			CO5	Explain membrane functions, mechanisms of cellular communications, signal transduction and regulation of apoptosis
	ZO 3 CT 08	DEVELOPMENTAL BIOLOGY & ENDOCRINOLOGY	CO1	To describe basic concepts in development such as gametogenesis, fertilization and embryonic development.
			CO2	To explain cellular, molecular and genetic basis of development.
			CO3	Discuss the process of ageing and impact of environment on development.
			CO4	Describe different classes of chemical messengers and their physical characteristics.

			CO5	Explain how the secretion of hormone is regulated through positive and negative feedback mechanisms
	ZO 3 CT 09	MICROBIOLOGY & BIOTECHNOLOGY	CO1	Summarize the microbial taxonomy and phylogeny, explain bacterial cell structure and function and review the application of microbes for human welfare.
			CO2	Identify different microbial culture techniques, discuss microbial growth and nutrition and categorize various microbial diseases.
			CO3	Illustrate the structure of virus, explain microbial energy utilization and compare methods of microbial control.
			CO4	Compare different types of vectors and illustrate the various steps in genetic engineering and cloning
			CO5	Explain basic principle and types of PCR, discuss the steps and applications of Genomic and cDNA library and molecular markers.
4	ZO 4 ET 10	FISHERY SCIENCE - I TAXONOMY, BIOLOGY, PHYSIOLOGY & ECOLOGY	CO1	To compare major families of fishes.
			CO2	Discuss integumentary system with locomotion and life history.
			CO3	To illustrate the different physiological systems of fish.
			CO4	To recognize the basic understanding on adaptive physiology of fishes.
			CO5	Review the concepts of oceanography, limnology, and brackish water ecology.
	ZO 4 ET 11	FISHERY SCIENCE- II CAPTURE AND CULTURE FISHERIES	CO1	Explain capture fishery from different water resources in India including marine, estuarine and freshwater systems.
			CO2	Differentiate different types of aquaculture practices.
			CO3	Design pond for culture, and water quality management, feed and transportation requirements in aquaculture.
			CO4	Describe reproductive biology of fishes and induced breeding practices in aquaculture
			CO5	Explain preparation and maintenance of aquarium and describe major diseases encountered in aquaculture
	ZO 4 ET 12	FISHERY SCIENCE- III HARVESTING, POST HARVESTING TECHNOLOGY AND MARKETING	CO1	Differentiate commercial fishing methods and crafts and gears for harvesting.
			CO2	Formulating the notion of post-harvest technology; chemical composition, post-mortem changes, fish spoilage, handling of fresh fish.
			CO3	Formulating the notion of post-harvest technology; methods of processing.
			CO4	Generating ideas of fishery by-products; processing, storage, quality control, packing and exporting by mentioning different agencies.

			CO5	Providing the fishery management and international marketing.
Name of the programme				**Master of Science, Statistics**
Short Name of the Programme				**M.Sc. Statistics**
Code of the Programme				**CCAMST**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	CC22PMST1C01	ANALYTICAL TOOLS FOR STATISTICS–I	CO1	Develop skills in generalizing the concepts in univariate calculus to multivariate setup.
			CO2	Acquire the basic concepts of the complex plane.
			CO3	Determine derivatives and integrals in the case of functions in the complex plane.
			CO4	Determine Poles and residue of complex functions.
			CO5	Find the Laplace tranform of a given function and Express a given function as a Fourier Series.
	CC22PMST1C02	ANALYTICAL TOOLS FOR STATISTICS–II	CO1	Illustrate vector space, subspaces, independence of vectors, basis and dimension, direct sum, complement and orthogonality with examples.
			CO2	Examine linear independence and to construct orthogonal and orthonormal vectors.
			CO3	Determine rank, nullity and eigen values of a given matrix.
			CO4	Derive solution of homogeneous equations and their applications in real life situations and use of g inverse.
			CO5	Execute the decomposition of a matrix and classify quadratic forms.
	CC22PMST1C03	DISTRIBUTION THEORY	CO1	Describe different types of discrete probability distributions.
			CO2	Explain the properties and applications of continuous distributions
			CO3	Derive probability distributions of the different functions of discrete and continuous random variables
			CO4	Describe different Sampling distributions and their interrelations
			CO5	Illustrate real data modelling using probability distributions.
	CC22PMST1C04	PROBABILITY THEORY	CO1	Use algebra of sets in statistics.
			CO2	Describe basic concepts of Random variable from measure point of view.
			CO3	Explain the concept of distribution function, Characteristic function and their relationships and importance.
			CO4	Distinguish different types of convergence.
			CO5	Acquire knowledge in some of the very important theorems like WLLN, CLT and their applications.
	CC22PMST1C05		CO1	Develop scientific and experimental skills.

		STATISTICAL COMPUTING-1	CO2	Write the R codes for the analysis of the given data.
			CO3	Apply linear algebra problems in real- life situations.
			CO4	Fit the distributions to a real-life data using R-software.
			CO5	Explain how to make conclusions and write the inference for the data analysis based on the output obtained.
2	CC22PMST2C06	DESIGN AND ANALYSIS OF EXPERIMENTS	CO1	Discuss and compare different complete block designs with and without ancillary variables.
			CO2	Analyze experiments with and without missing values.
			CO3	Apply incomplete block designs and balanced incomplete block designs.
			CO4	Explain factorial experiments, total confounding and partial confounding.
			CO5	Describe Response surface design and method of steepest accent.
	CC22PMST2C07	ESTIMATION THEORY	CO1	Describe the properties of estimators: unbiasedness, consistency and sufficiency and explain exponential family and Pitman family of distributions, with illustrations.
			CO2	Describe the method of finding sufficient statistics, minimum variance unbiased estimators, consistent estimators and consistent and asymptotically normal estimators.
			CO3	Relate sufficient statistic and ancillary statistic using Basu's thorem and Determine UMVUE using complete sufficient statistic using Rao- Blackwell, and Lehmann-Scheffe theorems.
			CO4	Determine the estimators using method of moments, method of percentiles, maximum likelihood method and Bayesian method.
			CO5	Explain the concept of interval estimation-SELCI, Bayesian and Fiduicial Intervals.
	CC22PMST2C08	SAMPLING THEORY	CO1	Apply the sampling methods: simple random sampling, systematic sampling, stratified sampling and cluster sampling and; Estimate the population parameters for variables and attributes under each method.
			CO2	Estimate the population parameters concerning the study variables under auxiliary information.
			CO3	Explain the concepts of ordered and unordered estimators and its properties.
			CO4	Discuss probability proportional to size (PPS) sampling strategies.
			CO5	Discuss the multi stage and multiphase sampling, Describe non-sampling errors.

	CC22PMST2C09	TESTING OF STATISTICAL HYPOTHESES	CO1	Explain the problem of testing of hypotheses and the concept of p value.
			CO2	Construct most powerful tests using Neyman-Pearson lemma, one-sided and two-sided UMP tests and UMP unbiased tests.
			CO3	Describe the concept of α-similar tests and construct such tests.
			CO4	Apply nonparametric tests for testing goodness of fit, homogeneity and independence.
			CO5	Develop SPRT for different problems.
	CC22PMST2C10	STATISTICAL COMPUTING-2	CO1	Explore small and large data-sets to create testable hypotheses and identify appropriate statistical tests
			CO2	Apply different designs in real life situations
			CO3	Estimate the parameter of a distribution from sample
			CO4	Perform sampling methods analysis using R-software
			CO5	Explain how to make conclusions and write the inference for the data analysis based on the output obtained.
3	CC22PMST3C11	APPLIED REGRESSION ANALYSIS	CO1	Illustrate the concept of linear regression model and estimate and test the significance of regression parameters and explain properties of estimators.
			CO2	Check the model adequacy of regression models using residual analysis.
			CO3	Discuss polynomial, step-wise and non-parametric regression models.
			CO4	Explain logistic and Poisson regression models for binary and count data and estimate their parameters.
			CO5	Discuss generalized linear models and estimation of its parameters.
	CC22PMST3C12	STOCHASTIC PROCESSES	CO1	Explain Markov Chain with illustrations and Classify the States of a given Markov Chain.
			CO2	Describe inter arrival time and waiting time distributions and their properties.
			CO3	Explain generalized Poisson process and their properties.
			CO4	Describe the concept and applications of renewal process.
			CO5	Explain the basic characteristics of queues and the properties of Brownian motion.
	CC22PMST3E02	TIME SERIES ANALYSIS	CO1	Illustrate test for trend and seasonality and explain the smoothing methods for determining trend of the data.
			CO2	Describe the properties of linear time series models and fit linear models for time series data sets.
			CO3	Describe the maximum likelihood, Yule-Walker and least square estimation methods.

			CO4	Learn to validate a model using residual analysis.
			CO5	Define ARCH and GARCH models and derive their properties and analyse spectral density and periodogram.
	CC22PMST3C13	STATISTICAL COMPUTING-3	CO1	Fitting of regression lines.
			CO2	Predicting future values of a time series data
			CO3	Perform Stochasting modelling using R-software
			CO4	Use of different packages in R-software for the analysis of the given real life data.
			CO5	Explain how to make conclusions and write the inference for the data analysis based on the output obtained.
	CC22PMST3E19	STATISTICAL MACHINE LEARNING	CO1	To acquaint Python programming techniques needed for Statistical Machine Learning.
			CO2	To understand preprocessing techniques of data and variables of data analysis.
			CO3	To demonstrate understanding of basic concepts of Statistical Machine Learning.
			CO4	To equip with regression and classification techniques of Statistical Machine Learning.
			CO5	To understand the applications of survival analysis tools in Statistical Machine Learning.
	CC22PMST4C14	MULTIVARIATE ANALYSIS	CO1	Describe the development and uses of multivariate normal distribution and Learn the various characterization properties of multivariate normal distributions.
			CO2	Get idea about sampling distributions of various multivariate statistics and know how the results are utilized in inference procedure.
			CO3	Apply different aspects of testing of statistical hypothesis in multivariate set up.
			CO4	Identify the most appropriate statistical techniques for a multivariate dataset.
			CO5	Apply commonly used multivariate data analysis techniques, and interpret the results.
4	CC22PMST4P01	PROJECT/DISSERTATION AND VIVA VOCE	CO1	Manage a real practical situation where a statistical analysis is sought.
			CO2	Develop professional approach towards writing and presenting an academic report.
			CO3	Get more insight about the opportunities in research/career.
			CO4	To expose students to a variety of statistical techniques for dealing with the challenges presented by a given data.
			CO5	Manage a real practical situation where a statistical analysis is sought.
	CC22PMST3C16	STATISTICAL COMPUTING-4	CO1	Develop scientific and experimental skills of the students and to correlate the theoretical principles with application-based studies.
			CO2	Learn to apply the multivariate techniques using R or Python.

			CO3	Validate results by simulation of artificial data sets using R or Python.
			CO4	Prepare the complex raw data into manageable format to analyze.
			CO5	Get basic knowledge about the avenues of further improvement of R packages and frontiers of ever-growing research on statistical computing.
	CC22PMST3E21	ADVANCED STATISTICAL MACHINE LEARNING	CO1	To understand model section methods using different regression methods.
			CO2	To demonstrate statistical learning models using tree-based methods and support vector machines.
			CO3	To equip with neural networks and deep learning methods.
			CO4	To learn unsupervised learning techniques and clustering methods.
			CO5	To acquaint with association rules for market basket analysis.
Name of the programme				**Master of Science, Applied Geology**
Short Name of the Programme				**M.Sc. Applied Geology**
Code of the Programme				**CCAMAG**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	GEL 1C 01	PHYSICAL GEOLOGY AND GEOMORPHOLOGY	CO1	Appraise the concepts of formation of universe, Solar system and Earth.
			CO2	Validate the concepts of earth layers, its physico-chemical properties of earth and gravity.
			CO3	Analyze geomorphological evolution of earth features.
			CO4	Asses the concepts of wetlands formation and management with international and Indian scenario.
			CO5	Compile the relation of geology and geotectonics.
	GEL 1C02	STRUCTURAL GEOLOGY AND GEOTECTONICS	CO1	Analyse geological mapping and deformations of rocks.
			CO2	Distinguish the different geological structures in the field.
			CO3	Justify projections in Structural Geology.
			CO4	Validate the differentiation of Earth's interior and tectonic evolution of continental crust through time.
			CO5	Distinguish the tectonic features associated with various kinds of plate movements.
	GEL 1C 03	GEOINFORMATICS	CO1	Examine the basic principles and applications of remote sensing in geoscience.
			CO2	Analyze the basics of satellite remote sensing and digital image processing of satellite and aerial photographs.
			CO3	Explain the thermal infrared remote sensing and its application.

			CO4	Analyse the fundamentals of image processing.
			CO5	Examine various tenants of GIS and its applications.
	GEL 1C 04	STRATIGRAPHY AND INDIAN GEOLOGY	CO1	Analyse the basics of stratigraphy and methods of correlation.
			CO2	Assess major geological events during different periods of Earth's history.
			CO3	Distinguish the major stratigraphical successions of India.
			CO4	Analyse the Himalayan uplift.
			CO5	Assess different stratigraphic boundary issues in Indian sub-continent.
2	GEL 2C 05	CRYSTALLOGRAPHY AND MINERALOGY	CO1	Construct different type of projections in crystallography using basic symmetry operations and notations. Solve crystal calculations using various theorems.
			CO2	Validate the crystal structure of mineral using X ray diffraction and evaluate the type of mineral.
			CO3	Compare various optical properties of minerals and evaluate their use in differentiating minerals.
			CO4	Group different minerals based on their properties and structure and earth mineralogy
			CO5	Appraise the mineralogical composition of different layers of earth and formulate their transformation with depth.
	GEL 2C 06	ECONOMIC GEOLOGY	CO1	Examine basic concepts of ore mineral deposits, ore microscopy and fluid inclusion studies.
			CO2	Examine major theories of ore genesis and various ore deposits.
			CO3	Categorize mineral deposits based on ore genesis and strategic importance.
			CO4	Apply and illustrate national mineral policy of India.
			CO5	Examine genesis, occurrence, distribution of major economic mineral deposits and fossil fuels.
	GEL 2C 07	HYDROGEOLOGY	CO1	Describe the Origin and distribution of water with hydrogeological properties of rocks
			CO2	Understand theories about water movements and evaluation aquifer parameters.
			CO3	Discuss Ground water quality properties and problems.
			CO4	Analyse Ground water exploration methods.
			CO5	Illustrate Wells drilling to completion and ground water problems with recharging and ground water provinces.
	GEL 2C 08	APPLIED PALAEONTOLOGY AND SEDIMENTOLOGY	CO1	Analyse fossilisation and its significance and evolution of vertebrate life.
			CO2	Validate the application, uses and significance of microfossils.

			CO3	Assessing various sedimentary processes and application of heavy minerals studies.
			CO4	Analysis of sedimentary textures and structures.
			CO5	Compare the different sedimentary facies and depositional environments.
3	GEL 3C 09	IGNEOUS AND METAMORPHIC PETROLOGY	CO1	Assess the different processes of partial melting, magma formation, volcanism and evaluate their link with different tectonic settings; reconstruct the crystallisation and magma formation conditions/process using texture, mineralogy and geochemistry of rocks
			CO2	Formulate the sequence of crystallisation of magmas and melting of rocks, using experimental phase diagrams; evaluate the role of various parameters in crystallisation of magma and melting of rocks.
			CO3	Differentiate various international classification and naming schemes of igneous rocks; Differentiate the petrogaphy and petrogenesis of various igneous rocks.
			CO4	Deduct the pressure temperature conditions of metamorphic rock formation; Compare and contrast different types of metamorphism and evaluate their link with plate tectonic process.
			CO5	Formulate the sequence of mineral reactions and formation of mineral assemblage with respect to different bulk composition during metamorphism; validate the significance of texture/structure in reconstructing petrogeneis processes.
4	GEL 4C 10	GEOCHEMISTRY AND ISOTOPE GEOLOGY	CO1	Justify the heterogenous composition of the solid earth and universe.
			CO2	Assess the evolution of trace elements and REEs during different geological processes.
			CO3	Distinguish various geological processes using geochemical data.
			CO4	Justify the use of isotopes in petrogenetic and geochronological studies.
			CO5	Demonstrate the use of modern analytical instruments in various geochemical analyses.
ELECTIVE				
3	GEL 3E 01a	CLIMATOLOGY	CO1	Examine general circulation and processes of atmosphere over the globe and key elements of global climate models.
			CO2	Analyze global balance of energy and transfer of radiation in the atmosphere.
			CO3	Compare various process and forms of precipitation and cyclones.
			CO4	Conclude the basic concept of latitude, longitude and motions of Earth.
			CO5	Examine the air masses and its classification.

	GEL 3E 02b	QUATERNARY GEOLOGY	CO1	Analyse the Tertiary Quaternary transition period along with its depositions and faunal - floral changes.
			CO2	Examine the faunal, floral, radioactive-non radioactive evidences for the chronological correlation of Quaternary period.
			CO3	Analyse the various causes of Quaternary climate change, its manifestation and current issues & hominids and modern man evolution.
			CO4	Understand different glaciation-deglaciation events of Quaternary period in diverse geographical environments, with a note on their respective deposits.
			CO5	Analyse the recent events in Quaternary, along with bore hole sediments data and climate modelling.
	GEL 3E 03a	MARINE GEOLOGY	CO1	Describe Sea bottom topography and history of marine geological studies.
			CO2	Assessing physical and chemical properties of sea water.
			CO3	Analysing Marine mineral resources and sedimentary deposits.
			CO4	Understanding Coastal processes and Coastal protection structures.
			CO5	Assessing ocean circulations and their significance.
4	GEL 4E 04a	EXPLORATION GEOLOGY	CO1	Estimate ore reserve from exploration data
			CO2	Validate the application of geochemical and biochemical studies on mineral exploration
			CO3	Compare different methods of geophysical exploration according to their application
			CO4	Examine the principles of gravity, magnetic, seismic, self-potential, and radiometric methods of exploration.
			CO5	Validate the use of geophysical well logging
	GEL 4E 05a	ENGINEERING GEOLOGY	CO1	Assess the role of geological studies in major civil engineering structures.
			CO2	Examine the role of rock mechanics and soil mechanics in Civil engineering.
			CO3	Compare and contrast various mining methods.
			CO4	Appraise the various geological hazards in an area and formulate mitigation measures.
			CO5	Appraise fundamentals of ore dressing.
PRACTICAL				
2	GEL 1L 01	GEOMORPHOLOGY, STRUCTURAL GEOLOGY, GEOINFORMATICS	CO1	Analyse topo sheet for different spatial and topographical features.
			CO2	Apply stereographic projections in structural problems.
			CO3	Validate the geological history of a terrain using geological map.
			CO4	Design thematic maps using QGIS software.

			CO5	Prepare image from aerial photograph and toposheets.
	GEL 2L 02	CRYSTALLOGRAPHY, MINERALOGY, ECONOMIC GEOLOGY, HYDROGEOLOGY, PALAEONTOLOGY AND SEDIMENTOLOGY	CO1	Prepare microfossil slides, identify microsfossils in it and construct the geo-tectonic scenario related to it
			CO2	Analyze important minerals and its physical properties and optical properties
			CO3	Prepare various graphical representation diagrams for determining water quality.
			CO4	Prepare stereographic projections of crystals with different symmetry.
			CO5	Assess the environmental condition of formation of sedimentary rock using various textural parameters.
	GEL1F 02	STUDY TOUR	CO1	Asses the use of different geological instrument and field techniques in geological field investigations.
			CO2	Categorize the different minerals, rocks, fossils and geological structures in the field
			CO3	Generate field data and geologic map of a given terrain.
			CO4	Compile and validate the field data generated
			CO5	construct the geological history of the terrain and prepare a geologic report.
4	GEL 3L 03	IGNEOUS AND METAMORPHIC PETROLOGY AND ELECTIVE COURSE	CO1	Differentiate different igneous and metamorphic rock and name them using international naming schemes
			CO2	Reconstruct different petrogenesis process using textural and structural evidences in rocks.
			CO3	Formulate the sequence of crystallisation of a magma.
			CO4	Formulate the mineral paragenesis for a given bulk composition during different pressure-temperature conditions.
			CO5	Evaluate the chemical characteristic of rocks using various discrimination criteria/diagram
	GEL 4L 04	GEOCHEMISTRY AND ELECTIVE COURSE (EXPLORATION GEOLOGY, ENGINEERING GEOLOGY	CO1	Calculation of mineral formulae using mineral chemistry.
			CO2	Qualitative evaluation of chemical components in rock/water samples
			CO3	Validate the subsurface geology using various geophysical survey.
			CO4	Estimate the quantity and orientation of ore bodies using field/lab data
			CO5	Evaluate the suitability of different rock/mineral for engineering construction.
	GEL 4P 01	PROJECT/ DISSERTATION	CO1	Compile and critically validate the available literature to find gap areas.
			CO2	Identify a valid problem and formulate a methodology.
			CO3	Generate field and lab data, curate the same.
			CO4	Compile the data generated and arrive at meaningful conclusion.

			CO5	Assess the relevance of the conclusion / possible solution and prepare a scientific report.
	GEL 4M 02	COMBINED FIELD MAPPING	CO1	Apply the basic field techniques and generate field data.
			CO2	Validate various lithologies, their contacts and different geological structures in the area.
			CO3	Validate the economic prominence of the area
			CO4	Analyze the overall tectonic set up of the terrane.
			CO5	Construct geological history of the area and depict the same in a geological map.
	GEL 4V 01	VIVA-VOCE	CO1	Compile the geological knowledge aquired over the years.
			CO2	Apply the geological understanding in solving problems
			CO3	Evaluate problems with a geological perspective.
			CO4	Validate different solutions from geological perspective.
			CO5	Develop skills to present ideas scientifically.
Name of the programme				**Master of Science, Clinical Psychology**
Short Name of the Programme				**M.Sc. Clinical Psychology**
Code of the Programme				**CCAMCP**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	CPY1C01	PERSONALITY AND PERSONAL GROWTH	CO1	Develop a scientific attitude and ability of reflection and logical reasoning in understanding behaviour
			CO2	Compare the theories of personality to recognize the aspect of self and its development.
			CO3	Validate the theories of personalities with real life situations
			CO4	Develop a knowledge on theories of personality
			CO5	Analyze the basic concepts of personality to explain uniqueness in human behaviour.
	CPY1CO2	COGNITIVE PSYCHOLOGY	CO1	Demonstrate the concepts of cognitive psychology and its development.
			CO2	Examine the theoretical knowledge regarding the various theoretical perspectives in cognitive psychology
			CO3	Analyze the various approaches of cognitive psychology.
			CO4	Assess the relevance of cognitive functions in human behaviour.
			CO5	Compare the approaches of cognitive psychology.
	CPY1C03	PSYCHOPATHOLOGY I	CO1	Definitions for a range of mental disorders.
			CO2	Conclude the diagnostic criteria and clinical attributes of diverse mental disorders.

			CO3	Distinguish the biological and psychological factors contributing to different mental disorders.
			CO4	Demonstrate proficiency in utilizing DSM-5 to identify mental disorders through analysis.
			CO5	Arrange skills in both evaluating case histories and conducting mental status examinations.
	CPY1C04	CLINICAL PSYCHOLOGY: THEORY & PRACTICE	CO1	Organize the historical progression of Clinical Psychology.
			CO2	Validate the effectiveness of Evidence-based psychotherapy.
			CO3	Formulate innovative strategies for resilience building in community settings.
			CO4	Debate the impact of Positive Psychology in clinical interventions.
			CO5	Conclude the ethical dilemmas in mental health practice using APA principles.
	CPY1L01	PRACTICALS -1	CO1	Demonstrate various psychological tests, its uniqueness, values and importance.
			CO2	Develop a scientific ability in understanding behaviour
			CO3	Choose and administer appropriate psychological tests.
			CO4	Implement personality assessment tools in clinical settings
			CO5	Choose effective psychological tool for assessment and evaluation of mental capacities
	CPY1AO1	COMMUNITY EXTENSION WORK	CO1	Examine the need of extension of psychological services
			CO2	Assess the social needs for psychological extension services
			CO3	Demonstrate skill in community services as per the need
			CO4	Apply the extension skills and referral skills
			CO5	Implement various mental health assessment tools
2	CPY2CO5	RESEARCH METHODOLOGY	CO1	Integrate scientific research methods in psychology
			CO2	Develop a detailed knowledge about conducting research systematically in Psychology
			CO3	Generate studies in psychology using research methods
			CO4	Prioritize the methods in research in different psychological setting
			CO5	Develop a level of knowledge in APA
	CPY2C06	BIO PSYCHOLOGY	CO1	Construct an idea on the various functions and activities of human organism
			CO2	Integrate the relationship between psychology and biological system
			CO3	Criticize the biological aspects of emotions., Motivation and higher order behaviour

			CO4	Formulate a level of knowledge about the theoretical background of biological basis of human behaviour
			CO5	Examine how the cognitive processes are influenced by biological system
	CPY2C07	PSYCHOPATHOLOGY - II	CO1	Determine the diagnostic criteria and clinical features of major mental disorders
			CO2	Determine the biological and psychological causes of major mental disorders
			CO3	Adapt the ability to use DSM-5 to identify major mental disorders
			CO4	Analyze various psychiatric disorders and its psychosocial impacts.
			CO5	Examine the etiological factors related with various psychiatric conditions
	CPY2C08	COUNSELLING PSYCHOLOGY	CO1	Demonstrate various counselling strategies.
			CO2	Determine the importance of various theories in the practice of counselling
			CO3	Analyse various counselling approaches in psychology
			CO4	Apply recent methods in psychological counselling
			CO5	Use various psychotherapeutic strategies and its theories in counselling
	CPY2L02	PRACTICALS - II	CO1	Examine the IQ levels of persons by administering Intelligence tests
			CO2	Assess the brain functioning of individuals by Neuropsychological tests
			CO3	Detect various developmental disabilities and learning problems of individuals
			CO4	Asses the cognitive distortions of persons
			CO5	Prepare the scientific clinical reports and functional profile of individuals
	CPY2A02	SELF-DEVELOPMENT TECHNIQUES	CO1	create an awareness on relaxation techniques
			CO2	Analyze different eastern and western techniques of meditation
			CO3	Monitor mind body functions to treat different problems
			CO4	Plan different techniques for the healthy development of personality
			CO5	Critique different perspectives of mindfulness and self-awareness
3	CPY3C09	PSYCHOTHERAPEUTICS-I	CO1	Determine the scientific basis of various psychotherapeutic approaches
			CO2	Demonstrate skill in psycho diagnosis and explain etiological relation to therapies
			CO3	Apply psychoanalysis techniques
			CO4	Practice specific therapies in clinical setting
			CO5	Detect ethical issues in psychotherapy
	CPY3C10	NEUROPSYCHOLOGY	CO1	Demonstrate the techniques of neuropsychological testing
			CO2	Assess the influence of brain on psychological functions

			CO3	Analyze brain dysfunctions and psychological disorder
			CO4	Analyze the neurological etiology and make predictions on the basis.
			CO5	Monitor behaviour on the basis of cerebral asymmetry.
	CPY3C11	FIELD EXPERIMENTS	CO1	Execute different field experiments
			CO2	Analyze descriptive data collected from a wide range of sample
			CO3	Develop test questionnaire and inventories
			CO4	Develop skills needed to be an interviewer or trainer of interview
			CO5	Plan a research methodology systematically
	CPY3C12	CLINICAL PRACTICUM	CO1	Practice different psychological testing and therapies
			CO2	Develop skill in the application of psychological principle in the organization
			CO3	Assess client's mental status and insight about the disorder
			CO4	Monitor the treatment plan of the client
			CO5	Select therapy for a specific case
	CPY3E02	HEALTH PSYCHOLOGY	CO1	Compare the health-related behaviour and work under a medical practitioner or in a hospital
			CO2	Assess the programmes in health behaviour, related with hospital
			CO3	Practice as a training assistant for medical professional for the skill development in patient welfare behaviour.
			CO4	Monitor the team in hospital setting.
			CO5	Provide care for terminally ill patients
4	CPY4C13	PSYCHOTHERAPEUTICS - II	CO1	Determine the psychopathological formulation of a case on the basis of behaviour and cognitive therapy
			CO2	Demonstrate theory and practice of behaviour therapy and cognitive therapy
			CO3	Distinguish the types of behaviour modification techniques
			CO4	Analyze the importance of relaxation techniques
			CO5	Practice the techniques of cognitive behavioural therapy
	CPY4P01	DISSERTATION & VIVA-VOCE	CO1	Demonstrate the skills in data collection method
			CO2	Plan minor research in psychology independently
			CO3	Demonstrate the difference between qualitative and quantitative research reports
			CO4	Organize a research report in APA style
			CO5	Create a level of knowledge in reviewing studies
	CPY4E03	FORENSIC CLINICAL PSYCHOLOGY	CO1	Demonstrate and work with the guidance of licenced forensic psychology to support assessment and practice

			CO2	Apply clinical psychology principles in forensic investigations
			CO3	Invent more research findings in the area of forensic psychology
			CO4	Apply clinical psychological therapies in correctional institutions
			CO5	Analyze the existing social issues related to forensic psychology
	CPY4E07	COMMUNITY AND CONSULTING PSYCHOLOGY	CO1	Solve the various issues in the community and do psychological interventions in community basic
			CO2	Debate the discrimination on the basis of minority, cast, gender, power and living locality
			CO3	Create more community enhancement programmes to work against discrimination
			CO4	Demonstrate the psychological services for equality and equity in the community
			CO5	Develop researches in counselling and community psychology
Name of the programme				**Master of Science, Botany**
Short Name of the Programme				**M.Sc. Botany**
Code of the Programme				**CCAMBT**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	BOT1C01	PHYCOLOGY, BRYOLOGY, PTERIDOLOGY AND GYMNOSPERM:	CO1	Analyze the classification, ecological and economic significance of algae, bryophytes, pteridophytes and gymnosperms.
			CO2	Compare the origin and evolution of algae Bryophytes, Pteridophytes and Gymnosperms.
			CO3	Compare the important features and lifecycles of algae, Bryophytes, Pteridophytes and Gymnosperms.
			CO4	Analyze the features of importance of fossil bryophytes and gymnosperms
			CO5	Analyze the concepts how the stelear evolution occurs in Pteridophytes, Cytology and also familiarize with the work done by Indian Pteriodologist.
	BOT1C02	MYCOLOGY AND LICHENOLOGY, MICROBIOLOGY AND PLANT PATHOLOGY	CO1	Analyse the classification, ecology and characterstics features of fungi, lichens and Microbes.
			CO2	Examine Pathogenic and Non-pathogenic diseases and understand principles of Plant disease management.
			CO3	Examine Plant diseases, study of the life history of causal agents, host and their relationship and control measure for plant diseases.
			CO4	Justify the role of fungi as saprophytes and symbionts.

			CO5	Assess the importance of microbiology in various fields like Industrial, food and Agriculture.
	BOT1C03	ANGIOSPERM ANATOMY, EMBRYOLOGY, PALYNOLOGY AND LAB TECHNIQUES	CO1	Examine the structure and development of angiosperms and helps to explore the internal tissue organization of higher plants.
			CO2	Analyse the concepts of reproductive biology of angiosperms.
			CO3	Analyse the importance of anatomical, embryological and palynological characters in taxonomical classification.
			CO4	Justify the role of Palynology in various fields.
			CO5	Compose the principle and uses of instruments and various procedures involved in microtechnique.
	BOT1L01	PRACTICALS OF PHYCOLOGY, BRYOLOGY, PTERIDOLOGY, GYMNOSPERMS, MYCOLOGY AND LICHENOLOGY	CO1	Construct cellular drawing and explain the external and internal structure of lower group organism.
			CO2	Develop skills for making micro preparation of lower groups for anatomical studies, identification and classification.
			CO3	Develop skills for identifying vegetative and reproductive structures of lower groups.
			CO4	Develop the skill of identifying the fossil specimen.
			CO5	Make collection of mentioned specimens from various localities, their Identification and preparation of herbarium.
	BOT1L02	PRACTICALS OF MICROBIOLOGY, PLANT PATHOLOGY, ANGIOSPERM ANATOMY, EMBRYOLOGY, PALYNOLOGY AND LAB TECHNIQUES.	CO1	Develop skill in permanent slide preparations and identification of anatomical features in angiosperm specimens.
			CO2	Examine types of stomata of leaves and nodal anatomy of stem by making micro preparations.
			CO3	Prepare pathological herbarium and identification.
			CO4	Develop skills for embryo dissection and Acetolysis Method for pollen morphology.
			CO5	Develop skills for isolation and staining of bacteria by various methods.
2	BOT2C04	CELL BIOLOGY, MOLECULAR BIOLOGY AND BIOPHYSICS	CO1	Analyse the role of various cell organelles, chromosome behaviour and its interactions and developed knowledge about various phases of cell division.
			CO2	Compile the importance of Cancer and Its genetical basis.
			CO3	Examine the central dogma of life and the knowledge of molecular evolution in phylogeny of gene families.
			CO4	Apply the knowledge of biophysics and molecular biology in research studies.
			CO5	Develop the concept of biophysical techniques in instrumentation.

	BOT2C05	CYTOGENETICS, GENETICS, BIOSTATISTICS, PLANT BREEDING AND EVOLUTION	CO1	Examine basic terms and concepts of genetics, interaction of gene and genetic recombination and mobile genetic elements
			CO2	Analyze the role of statistical tools for collection, analysis, interpretation and visualization of data, and its application in biological experiments.
			CO3	Analyze about various plant breeding techniques used in crop improvement and their application in agriculture and legal regulations related to IPR.
			CO4	Assess the concepts and applications of cytogenetics.
			CO5	Analyze the geological time scale, concepts, theories and evidences of evolution.
	BOT2C06	PLANT ECOLOGY, CONSERVATION BIOLOGY, PHYTOGEOGRAPHY AND FOREST BOTANY	CO1	Assess the concepts and importance of ecosystem and environmental hazards.
			CO2	Categorize the phytogeographical distribution patterns of plants and phytochoria of World and India.
			CO3	Categorize the different forest types and products and major and minor forest products for sustainable utilization of bio-resources.
			CO4	Select the threatened plants and the role of different biodiversity conservation ventures at local/national and global levels.
			CO5	Assess the skill for Environmental Impact Assessment and awareness to Environmental laws.
	BOT2L03	PRACTICALS OF CELL BIOLOGY, MOLECULAR BIOLOGY, BIOPHYSICS AND CYTOGENETICS	CO1	Develop skills for mitotic and meiotic studies in plants.
			CO2	Develop skills for preparation of buffers and measurement and calculation of pH using pH meter.
			CO3	Solve the problems from molecular biology.
			CO4	Solve the problem and prepare Ideogram from given data.
			CO5	Make a visit to reputed molecular biology lab.
	BOT2L04	ANGIOSPERM ANATOMY, EMBRYOLOGY, PALYNOLOGY AND LAB TECHNIQUES PRACTICALS OF GENETICS, BIOSTATISTICS, PLANT BREEDING, PLANT ECOLOGY, CONSERVATION BIOLOGY, PHYTOGEOGRAPHY AND FOREST BOTANY	CO1	Analyze Plant Population details, various floristic and vegetational regions of the World and India in maps and forest products.
			CO2	Demonstrate hybridization technique in plants and visit to a plant breeding station.
			CO3	Solve the Problems from Central tendencies, Measures of dispersion, tests of significance and correlation analysis.
			CO4	Develop skills for estimation of dissolved oxygen content in the water sample by Winkler's method.
			CO5	Solve the problems of linkage.
3	BOT3C07	PLANT PHYSIOLOGY, METABOLISM AND	CO1	Examine the mineral nutrition for plant growth, growth hormones, Photosynthesis,

		BIOCHEMISTRY		Nitrogen metabolism and photomorphogenesis.
			CO2	Detect Response mechanisms of plant stress, Transpiration, Translocation, water and plant cells.
			CO3	Categorize the role of enzymes in metabolic activities and its regulation.
			CO4	Compile the physiological, ecological and phylogenic importance of secondary metabolites.
			CO5	Analyse role of biomolecules in life.
	BOT3C08	ANGIOSPERM MORPHOLOGY, ANGIOSPERM TAXONOMY AND PLANT RESOURCES	CO1	Compile the theories of origin and evolution of angiosperms, flower, floral parts and co-evolution of flower and pollinators.
			CO2	Examine the systems of classification and phylogeny of plants.
			CO3	Compile the rules of ICBN, botanical gardens, character weighing and literature in plant taxonomy.
			CO4	Analyse the current scenario of Indian taxonomy, herbaria and organizations.
			CO5	Categorize different types of plant resources and their useful parts.
	BOT3C09	BIOTECHNOLOGY AND BIOINFORMATICS	CO1	Analyze the concepts, theory, techniques and applications of plant tissue culture
			CO2	Assess in-depth the fundamental principles of biotechnology and the concepts and techniques involved in recombinant DNA technology.
			CO3	Analyze cloning, patenting of genes and GMOs
			CO4	Develop knowledge in the usage of biological networks.
			CO5	Make an insight into the bioinformatic tools that aid analyses of biological data.
	BOT3L05	PRACTICALS OF PLANT PHYSIOLOGY, METABOLISM, BIOCHEMISTRY, ANGIOSPERM MORPHOLOGY AND TAXONOMY	CO1	Develop practical skills in Separation of leaf pigments by paper chromatography and water potential by tissue weight change method.
			CO2	Develop skills in extraction of enzymes.
			CO3	Develop skills in quantitative estimation of protein by Biuret.
			CO4	Apply the knowledge of taxonomy to identify the plant species using floras and keys.
			CO5	Make dissections and hand sections on different types of ovaries, different types of placentation in special types of flowers.
	BOT3L06	PRACTICALS OF PLANT RESOURCES, BIOTECHNOLOGY AND BIOINFORMATICS PRACTICALS OF PLANT RESOURCES,	CO1	Develop skills on DNA Isolation and Gel casting.
			CO2	Prepare and sterilize culture media and Culturing of Carrot /Tobacco/Datura.
			CO3	Examine the morphology of the source plants mentioned in the syllabus, identification and submission of the plants and plant products.

		BIOTECHNOLOGY AND BIOINFORMATICS	CO4	Compile of scientific presentations using packages such as MS-PowerPoint.
			CO5	Develop acquisition of basic skills in Internet browsing and the use of web browsers and search engines.
4	BOT04E01	ELECTIVE I- ENVIRONMENTAL BIOLOGY AND BIODIVERSITY CONSERVATION	CO1	Analyze the concepts of population and community ecology.
			CO2	Assess the impact of climate change on ecosystem and global initiatives and movements for climate change and environmental protection.
			CO3	Analyze different types of habitats with reference to Kerala.
			CO4	Apply the principles of biodiversity conservation strategies in global perspective for the use and restoration of threatened ecosystem and sustainable development.
			CO5	Assess the various disciplines related to ecology and biodiversity.
	BOT4E02	ELECTIVE II- GENETIC ENGINEERING	CO1	Examine the general procedure of gene cloning and Prospects, achievements and demerits of Transgenic Organisms.
			CO2	Compile gene therapy strategies and its application in medical field.
			CO3	Validate the basic concepts of genome organization in plants and about different molecular markers and its application.
			CO4	Examine the merits and demerits of different tools used in Recombinant DNA technology.
			CO5	Analyze the importance of bio-nanotechnology in medicine and bioremediation and its biosafety concerns.
	BOT4L07	PRACTICALS OF ELECTIVES	CO1	Develop Skills on determination of Physical and chemical analysis of soil and water.
			CO2	Construct charting and mapping of Vegetation and Identification of invasive plants.
			CO3	Develop skills on DNA Isolation and Gel casting.
			CO4	Apply theoretical knowledge to the problem-solving methods in to Restriction Mapping.
			CO5	Analyze the tools, Equipment's and visualization dyes used in Recombinant DNA Technology.
	BOT4D01	DISSERTATION	CO1	Analyze the knowledge gaps in botanical research.
			CO2	Compose relevant literature and write a literature review of the chosen field.
			CO3	Apply theoretical frameworks to the chosen area of study.
			CO4	Develop skills in hands on training on instruments and procedures related to the chosen area of study.

			CO5	Demonstrate the ability to collate, critically interpret data, write research report paper publications in scientific manner.
	BOT4V01	VIVA VOICE	CO1	Assess the communication skill and knowledge in chosen discipline.
Name of the programme				**Master of Science, Chemistry**
Short Name of the Programme				**M.Sc. Chemistry**
Code of the Programme				**CCAMCH**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	CHE1C01	QUANTUM MECHANICS AND COMPUTATIONAL CHEMISTRY	CO1	Analyse the laws of quantum mechanics necessary for the description of atoms and molecules and their chemical reaction.
			CO2	Apply boundary conditions to constraint set of possible states.
			CO3	Choose the appropriate method in terms of applicability and accuracy for the calculation of a given chemical problem.
			CO4	Analyse the expansion of wave function as the linear combination of basic elements.
			CO5	Deduce the chemical properties at the atomic scale using computational language.
	CHE1C02	ELEMENTARY INORGANIC CHEMISTRY	CO1	Analyse the concept of Acids and bases on the basis of various theories
			CO2	Implement the chemistry of main group elements
			CO3	Implement the chemistry of transition and inner transition elements
			CO4	Develop an understanding on the importance, various processes and applications of Nano materials
			CO5	Examine the various reactions involved in nuclear chemistry and applications of radioactivity and radiolysis.
	CHE1C03	STRUCTURE AND REACTIVITY OF ORGANIC COMPOUNDS	CO1	Examine chemical bonding, reactivity and various effects in organic molecules. Physical Aspects of Reaction Mechanism
			CO2	Compare Acidity and Basicity as well as aromaticity.
			CO3	Analyze the concepts of stereochemistry and will be able to analyse stereo chemical aspects in organic chemistry.
			CO4	Analyze the concept of conformation analysis and its importance in organic reactions.
			CO5	Deduce the mechanisms in asymmetric reaction and analyse its applications.
	CHE1C04	THERMODYNAMICS, KINETICS, AND CATALYSIS	CO1	Calculate the rate constants of reactions and derive the rate expressions of chain reactions by applying steady-state approximation.
			CO2	Apply elementary laws of chemical kinetics and analyse reaction mechanisms and changes in transport properties of chemical reactions

			CO3	Provide basic knowledge of surface from a physical-chemical perspective.
			CO4	Analyze the chemical systems from thermodynamic point of view. Ability to define energy transfer through mass, heat and work.
			CO5	Distinguish various kinds of catalysis including the principles, mechanisms and applications
2	CHE2C05	GROUP THEORY AND CHEMICAL BONDING	CO1	Analyze molecule in 3-D, describe the concept of symmetry elements and symmetry operations.
			CO2	Examine the point groups of molecules and apply symmetry considerations for optical activity and dipole moment.
			CO3	Examine and demonstrate the group multiplication table, character table and representations of group.
			CO4	Apply the projection operator for constructing SALCs
			CO5	Integrate application of symmetry to spectroscopy and find IR and Raman mode of vibration.
	CHE2C06	CO-ORDINATION CHEMISTRY	CO1	Analyze the effect of various ligand field strengths on d-metal ions and stability of co-ordination compounds.
			CO2	Analyze the electronic spectra of complexes with respect to spin and orbital selection rules, various transitions and charge transfer spectra
			CO3	Determine the magnetic properties of complexes.
			CO4	Compare the methods for distinguishing between outer and inner sphere redox reactions
			CO5	Justify the substitution labiality in complex reactions.
	CHE2C07	REACTION MECHANISM IN ORGANIC CHEMISTRY	CO1	Develop an ability to understand addition and elimination reactions with mechanism and stereo chemical aspect
			CO2	Compare aliphatic and aromatic, nucleophilic and electrophilic substitution with mechanism and kinetics
			CO3	Implement the theory of pericyclic reactions to get an idea about the orbital overlap in chemical reaction.
			CO4	Analyze photochemical reactions with mechanism.
			CO5	Compare the classification, structure and synthesis of natural products.
	CHE2CO8	ELECTROCHEMISTRY, SOLID STATE CHEMISTRY AND STATISTICAL	CO1	Examine Debye –Huckel equation, limiting and extended forms and its application
			CO2	Compare the efficiency of different electro chemical cells

		THERMODYNAMICS	CO3	Analyze symmetry elements, symmetry operations and crystal systems.
			CO4	Describe the physical properties such as magnetic, electrical, optical behaviour of materials
			CO5	Distinguish the importance and consequences of quantum mechanics for macroscopic particle systems
1&2	CHE1LO1 & CHE2LO4	INORGANIC CHEMISTRY PRACTICAL I & I	CO1	Analyze the cation mixture
			CO2	Assess the amount of ions by complexometric titrations
			CO3	Detect the intensity of colour and estimate the amount of ions using colorimetric methods
	CHE1LO2 & CHE2LO5	ORGANIC CHEMISTRY PRACTICALS I & II	CO1	Separate the mixture of organic compounds
			CO2	Analyze the compounds separated from the mixture by chemical analysis
			CO3	Detect the melting and boiling points of the compounds
			CO4	Apply the principles for the preparation of organic compounds by two or three steps
	CHE1LO3 & CHE2LO6	PHYSICAL CHEMISTRY I & II	CO1	Examine the working and application of Potentiometer, conductivity meter, viscometer and refractometer
			CO2	Compare the relation of solubility with molar heat of solution
			CO3	Examine the distribution law
			CO4	Analyze the principles behind the experiment performed in the laboratory.
3	CHE3C09	MOLECULAR SPECTROSCOPY	CO1	Analyze basic concepts and theories of microwave spectroscopy, IR, Raman, NMR, electronic and mass spectroscopy
			CO2	Detect important terms and theory of Nuclear Magnetic Resonance spectroscopy and its applications to structural problems.
			CO3	Compute UV λmax value of various compounds
			CO4	Analyze the spectrum and find out the correct structure of compounds as an application of spectroscopy
			CO5	
	CHE3C10	ORGANOMETALLIC &BIOINORGANIC CHEMISTRY	CO1	Determine different properties and structures for organometallic compounds from different parts of the periodic table and their trends.
			CO2	Analyse synthetic routes to various classes of organometallic compounds.
			CO3	Compare ligand classes in organometallic chemistry, their effects on organometallic compounds, and influence on reactivity and catalysis.
			CO4	Apply the basic principles in inorganic and general chemistry to interdisciplinary topics in the field of bioinorganic chemistry.
			CO5	Examine the main roles of metal ions in biological processes, and identify the

				chemical properties that are required to each particular function.
	CHE3C11	REAGENTS AND TRANSFORMATIONS IN ORGANIC CHEMISTRY	CO1	Create proper knowledge about various methods of oxidation and reduction reagents.
			CO2	Develop idea about synthetic reagents like DABCO, DMAP, DDQ, oxane etc in organic synthesis
			CO3	Examine the classification of polymers, structure and synthesis of bio-polymers like proteins, nucleic acids, cellulose, starch etc.
			CO4	Analyse the structure, synthesis and reaction of various heterocyclic compounds and applications of supramolecular chemistry.
			CO5	Examine the molecular rearrangements and coupling reactions with mechanism.
	CHE3E01	SYNTHETIC ORGANIC CHEMISTRY (ELECTIVE)	CO1	Examine various oxidation and reduction methods
			CO2	Apply organometallic and metallic reagents for synthesis of organic compounds and coupling reactions.
			CO3	Compare the Synthesize of an organic compound by retrosynthetic methods by C-C and C-X bond disconnection
			CO4	Describe nucleophilic condensation reactions of carbonyl compounds and apply it on the retrosynthetic analysis.
			CO5	Analyse stereo and regioselective compounds by own planning, target selection reagents and solvents
4	CHE4C12	INSTRUMENTAL METHODS OF ANALYSIS	CO1	Solve absolute and relative errors, mean and standard deviation, variance, confidence limits, student t and f tests
			CO2	Analyze organic precipitating agents, acid base redox and precipitation titrations, and complexometric titrations
			CO3	Distinguish the principles of electroanalytical methods like potentiometry, polarography and their applications biomembrane, biological and biocatalytic electrodes.
			CO4	Compare the instrumentation, principle and applications of different spectroscopic and optical methods.
			CO5	Analyse different chromatographic methods, detectors and CHN analysis by GC.
	CHE4O6	NATURAL PRODUCTS AND POLYMER CHEMISTRY	CO1	Analyse general methods of structural elucidation of compounds of natural origin.
			CO2	Adapt advanced methods of structural elucidation of compounds of natural origin.
			CO3	Distingush the methods of isolation, purification and characterization of chemical constituents from the natural source
			CO4	Examine different polymerization process with respect to synthesis mechanisms and kinetics

			CO5	Integrate challenges, analysis, and conclusions related to polymer chemistry.
	CH4EO8	ORGANOMETALLIC CHEMISTRY	CO1	Examine fundamental principles of organotransition-metal chemistry and know how chemical properties are affected by metals and ligands
			CO2	Examine the structure and bonding issues to understand the stability and reactivity of simple organometallic complexes
			CO3	Implement modern methods to characterize organometallic compounds
			CO4	Determine fundamental reaction types and mechanisms and how to combine these to understand efficient catalytic processes
			CO5	Analyse the applications of organometallic homogeneous catalysis in production of compounds.
3 & 4	CHE3LO7 & CHE4L10	INORGANIC CHEMISTRY PRACTICALS– III & IV	CO1	Quantitatively separate binary mixtures of ions in solution and estimation by volumetric, colorimetric or gravimetric methods
			CO2	Separate binary mixtures by ion-exchange method
			CO3	Practice the preparation of inorganic complexes
	CHE3LO8 & CHE4L11	ORGANIC CHEMISTRY PRACTICALS– III & IV	CO1	Expertise the examination of reducing sugar, amino group, phenolic group and esters volumetrically
			CO2	Expertise the examination of vitamin A, drugs and anti-biotics colorimetric ally
			CO3	Apply the principle of extraction of natural products and purification by column and TLC
			CO4	Practice the preparation of TLC plate activation and identification of compounds dyes, food additives, food colours, amino acids, sugars, pesticides and herbicides
	CHE3LO9 &CHE4L12	PHYSICAL CHEMISTRY PRACTICALS– III & IV	CO1	Determine specific conductance and calculate Arrhenius parameter and order of a reaction.
			CO2	Distinguish the rate of adsorption on various system.
			CO3	Make a deep insight into phase equilibria experiments.
			CO4	Practice in handling polarimeter, spectrophotometer and chemistry softwares.
Name of the programm				**Master of Science, Environmental Science**
Short Name of the Programme				**M.Sc.Enviromental Science**
Code of the Programm				**CCAMES**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	ES 1C 01	FUNDAMENTALS OF ECOLOGY AND ENVIRONMENT	CO1	Develop an insight in to fundamentals, Scope, Importance of Environmental Science and structure and function of different components of the Environment.

			CO2	Create knowledge on multidisciplinary nature of environmental Science and need of Environmental awareness.
			CO3	Make foundation on different Environmental factors and various ecological processes
			CO4	Develop an insight into various processes involved in ecosystems.
			CO5	Make awareness on fundamentals of Ecological theories
	ES 1C 02	PHYSICAL PROCESSES IN THE ENVIRONMENT	CO1	Make foundation on Structure and Composition of atmosphere and General atmospheric circulation.
			CO2	Develop an insight in to thermodynamics of atmosphere and associated processes.
			CO3	Create knowledge on various processes involved in ecosystem.
			CO4	Reconstruct an understanding on diurnal variations in temperature and their significance in pollutant dispersion.
			CO5	Generate idea regarding earth systems.
	ES 1C 03	ENERGY AND ENVIRONMENT	CO1	Develop distinction between Renewable and Non-Renewable energy resources.
			CO2	Make awareness on worlds and India's energy reserves and consumption.
			CO3	Make knowledge on modern techniques for energy resource recovery.
			CO4	Prioritize into some key concepts such as Energy production and impacts on environment, Important multipurpose power projects and environmental issues in India
			CO5	Analyse Sustainable energy management, problems and solutions and Energy crisis and challenges of energy transformation
	ES1C 04	ENVIRONMENTAL POLLUTION AND WASTE MANAGEMENT	CO1	Develop an insight in to the fundamental Concepts of Environmental pollution.
			CO2	Develop perspective on Air pollution and its management by and looking into concerned pollutants and their effects.
			CO3	Analyse the chemistry of water and gain knowledge on waste water treatment.
			CO4	Analyse the chemistry of soil and the soil pollutants.
			CO5	Develop an insight into the impacts of wastes on environment and gain knowledge about innovative Waste management approaches.
	ES W1C 05 and ES W1C 06	PRACTICAL 1 AND 2	CO1	Analyse skills on Methods of sampling and preservation of water
			CO2	Develop practical skill in Physico -chemical analysis of water
			CO3	Validate skill in assessment of micro algal / phytoplankton / zooplankton diversity and estimation of their numerical strength using standard methods.
			CO4	Examine skill in Drainage Basin analysis.

			CO5	Create skill in analysis of waste water and soil
2	ES W2C 07	FUNDAMENTALS OF ENVIRONMENTAL ENGINEERING	CO1	Develop an understanding of Concepts, characteristics of environmental engineering and ethics in environmental engineering.
			CO2	Develop perspective on Sources of water pollution, pollutant dynamics in environment, measurement of water pollution, water quality parameters
			CO3	Review knowledge in Solid waste characterization, dynamics of wastes in environment, management and disposal of solid wastes and Treatment methods.
			CO4	Make aware of Legislation on management and handling of municipal solid wastes, bio-medical wastes and hazardous wastes.
			CO5	Create awareness regarding physical pollution
	ES 2C 08	ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY	CO1	Examine the characteristics, classification, identification and morphology of microorganisms.
			CO2	Analyze the physiological status of microorganisms in the environment.
			CO3	Demonstrate the role of biotechnology in Environmental protection.
			CO4	Develop perspective on Emerging trends in biotechnology for Environmental Protection.
			CO5	Devise innovative biotechnological Methods in Pollution Control.
	ES 2C 09	HYDROLOGY AND WATERSHED MANAGEMENT	CO1	Develop perspective on Surface water hydrology and groundwater hydrology.
			CO2	Create an awareness on Flood frequency and water balance.
			CO3	Analyse the status of Distribution of water - local, regional and global.
			CO4	Develop an insight in to Water resource management.
			CO5	Generate an idea on watershed development and management
	ES 2C 10	REMOTE SENSING AND GIS	CO1	Develop a comprehensive perspective on topographical maps.
			CO2	Develop an insight in to methods and equipment used in Aerial Photo Interpretation.
			CO3	Analyse Remote sensing and GIS techniques to solve environmental problems.
			CO4	Apply remote sensing and GIS techniques in various fields.
			CO5	Create an awareness on geospatial techniques used in Environmental management
	ES2C11& 12	PRACTICAL III & IV	CO1	Analyze physico-chemical properties of solid waste.
			CO2	Make isolates of microbial cultures and identify microorganisms.

			CO3	Develop skill to identify various geomorphic and environmental features in the maps.
			CO4	Develop skills in Digital Image Processing.
			CO5	Apply RS and GIS Techniques for problem solving in various fields.
3	ES 2C 13	ENVIRONMENTAL ASSESSMENT TOOLS AND MONITORING METHODS.	CO1	Develop an understanding on Fundamental principles on Environment Impact Assessment (EIA), Risk Assessment (RA) and Environmental Management Plan (EMP).
			CO2	Create an insight in to concept of Environmental Impact Statements and EIA in sustainable development.
			CO3	Analyze the Statistical tools for problem solving in various fields.
			CO4	Develop an insight in to fundamental principles of probability.
			CO5	Construct perspectives on Eco informatics and its applications in Environmental Science.
	ES 2C 14	ENVIRONMENTAL TOXICOLOGY AND OCCUPATIONAL HEALTH AND SAFETY	CO1	Create knowledge on global transport of pollutants and fate of pollutants in ecosystems.
			CO2	Develop an insight in to Biochemical effects of environmental contaminants
			CO3	Analyze the perspectives on Environmental health and safety
			CO4	Apply the Occupational health & safety management system in different field of industry
			CO5	Develop an understanding on fundamentals of Ergonomics
	ES 3C 15	BIODIVERSITY AND CONSERVATION	CO1	Illustrate the basic concept of ecological and biological processes that ensures long-term Stability of ecosystems.
			CO2	Demonstrate importance of diversity at different levels of biological organization.
			CO3	Develop an insight into Threats to Biodiversity, National and International Programmes for biodiversity conservation.
			CO4	Analyze the values of biodiversity and scientific approaches for conservation that can lead to sustainable development.
			CO5	Develop a comprehensive perspective on Ex-situ / in-situ conservation techniques.
	ES W3C 16	ENVIRONMENTAL DISASTER MANAGEMENT	CO1	Develop perspective on Disaster management system with special reference to Prediction and forecasting.
			CO2	Distinguish to understand weather and climate and Treaties and conventions - IPCC.
			CO3	Develop an insight into Forest protection and management.
			CO4	Develop awareness on concept of Emergency Disaster management, Tools of Disaster management, Emergency Management

				Information Systems (EIMS), Phases of disaster management.
			CO5	Prioritize to analyze Environmental problems faced by India and the world and Sustainable development - problems and perspectives.
	ES W3C 17 & ES W3C 18 -	PRACTICAL - V AND PRACTICAL - VI	CO1	Develop skills to estimate Starch, Amino acids, Protein, Reducing and Non-reducing sugars, Primary and Secondary metabolites and Phenolic contents in biological specimens.
			CO2	Analyze different Statistical tools (Direct and computational) for environmental management.
			CO3	Develop skills to identify major fauna and flora of terrestrial, freshwater and marine ecosystems.
			CO4	Create skills to estimate primary productivity
			CO5	Develop skills to estimate phyto sociological parameters by quadrat method.
4	ES 4C 20 - Elective 2	INDIAN ENVIRONMENTAL LAWS	CO1	Develop an understanding on concepts of Environmental ethics and Constitutional status of environment.
			CO2	Apply various Environmental laws for environmental management.
			CO3	Analyze the powers of Central / State Governments to supersede the respective Central / State Boards in Environmental protection and management.
			CO4	Apply various Environmental laws in the field of waste management.
			CO5	Use the knowledge on International environmental treaties and conventions with respect to Environmental protection, conservation and management.
	ES W4C 21 Elective 3	CURRENT ENVIRONMENTAL ISSUES IN INDIA	CO1	Develop perspectives on concepts of Sustainable development.
			CO2	Make insight in to impact of climate change on environment.
			CO3	Detect an insight in to the relevance of bio diversity conservation and management.
			CO4	Develop understanding on Institutional mode of environmental planning, policy formulation and strategies.
			CO5	Create awareness on popular environmental movements and people's participation in environmental conservation and management.
	ES W4C 23 Elective 5	ENVIRONMENTAL ECONOMICS	CO1	Develop perspectives on Basics and trends of Environmental Economics.
			CO2	Analyze of role of environmental goods and services.
			CO3	Create awareness on Cost Benefit Analysis (CBA).

			CO4	Construct knowledge to apply Economics in Pollution control.
			CO5	Develop perspectives on resource economics
	ES 4C 25	ELECTIVE 7 - GREEN CHEMISTRY	CO1	Create awareness on the basics of green chemistry.
			CO2	Choose the Emerging Green Technologies & Alternative Energy Sources for sustainable development.
			CO3	Assess the fate of chemicals in the environment.
			CO4	Appraise the Economic perspectives on pollution prevention and minimization.
			CO5	Choose the emerging green alternatives for fertilization and pest control.
Name of the programme				**Master of Arts, Economics**
Short Name of the Programme				**M.A. Economics**
Code of the Programme				**CCAMEC**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	CC19PECO1 C01	MICROECONOMICS: THEORY AND APPLICATIONS – I	CO1	Generate the knowledge and skill consumers use for effective decision-making under uncertain and risky market situations.
			CO2	Formulate an idea about the external and internal factors influencing market demand for commodities.
			CO3	Assess the superiority of the modern theory of production and cost over the traditional approach of production and cost.
			CO4	Developing an idea about the economics of interdependence and uncertainty leads to cooperation among rival firms in an oligopoly market.
			CO5	Assemble the concepts of players, strategies, payoffs, rationality, and equilibrium used to explain the game theory.
	CC19P ECO1 C02	MACROECONOMICS: THEORIES AND POLICIES - I	CO1	Assess diverse consumption and investment theories' impact on economic growth.
			CO2	Analyse the interplay between inflation and unemployment and formulate policy effects.
			CO3	Deduce business cycle theories and link them to effective policy strategies.
			CO4	Develop IS-LM models and compose policies for stable economic conditions.
			CO5	Formulate and defend informed macroeconomic policy recommendations.
	CC19P ECO1 C03	INDIAN ECONOMY: PROBLEMS AND POLICIES	CO1	Analyze the evolution of the Indian economy, assess its sectoral contributions, and evaluate key challenges including poverty, unemployment, and regional disparities, thereby gaining a comprehensive understanding of India's economic growth and structural dynamics.
			CO2	Assess the various facets of India's economic development, including the agriculture

				sector's initiatives, industrial growth patterns, service sector dynamics, inflation trends, monetary management changes, governmental efforts against black money, inclusive policies, and potential contributions to global climate change deals.
			CO3	Assess economic planning's role, goals, techniques, achievements, and Five-Year Plan, grasp NITI Aayog's role and Vision Documents, and comprehend recent Union Budget welfare initiatives.
			CO4	Analyze the economic reforms post-1991 in India, spanning policy shifts, evaluation of reforms, infrastructure investment models like PPP, and cooperative federalism via GST.
			CO5	Examine Kerala's growth, unique model, agri-industrial aspects, health/education systems, migration, decentralization's effects, achievements, and challenges like poverty, unemployment, and fiscal crises.
	CC19PECO1 C04	QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS I	CO1	Develop the basics of statistics and its application in Economics.
			CO2	Examine the rules of differential calculus.
			CO3	Develop mathematical approach in economic problems.
			CO4	Examine the rules of integration.
			CO5	Compose mathematical techniques in economic problems.
2	CC19PECO2 C05	MICROECONOMICS: THEORY AND APPLICATIONS II	CO1	Create awareness of using mathematical techniques in economic theories for capital investment decisions.
			CO2	Developing an idea about the general equilibrium and welfare economics from traditional and modern theories of welfare
			CO3	Construct a policy to overcome the externalities in consumption and production with appropriate government regulation.
			CO4	Assess how the market signalling recovers the asymmetric information and adverse selection.
			CO5	Hypothesis the consumer preferences in decision-making under different market conditions.
	CC19PECO2 C06	MACROECONOMICS: THEORIES AND POLICIES II	CO1	Compare and contrast Classical and Keynesian theories, assessing their implications for economic equilibrium and policy-making and demonstrating analytical mastery.
			CO2	Apply the quantity theory of money, Phillips curve, and monetary approach to balance of payments theory to real-world scenarios and constructing effective monetary and fiscal policy strategies.
			CO3	Evaluate assumptions and strengths of new classical, real business cycle, and supply-side

				models, and propose policy actions grounded in micro-macro insights.
			CO4	Compile nominal and real rigidities, menu cost models, and efficiency wage theories and devise justifiable policy recommendations for addressing macroeconomic fluctuations.
			CO5	Analyse politico-economic models, predict political influences on policies, and formulate strategies to mitigate economic instability stemming from political factors.
	CC19PECO2 C07	PUBLIC FINANCE: THEORY AND PRACTICE	CO1	Analyze the policy issues and propose solutions on economic policy-making related to public goods, externalities, and other critical aspects of public finance.
			CO2	Evaluate equity and efficiency dimensions of tax policies and design effective tax policies for an economy.
			CO3	Apply economic theories to practical scenarios and contribute to public finance policies and their implications.
			CO4	Formulate fiscal policies for effective governance and resource allocation across different levels of government.
			CO5	Prepare solutions to address fiscal challenges by assessing government priorities, allocations, and policy directions.
	CC19PECO2 C08	QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS II	CO1	Develop a fair idea about probability theory which forms the foundation of inferential statistics
			CO2	Assessing a reasonable understand of theoretical distributions and their significance
			CO3	Develop an idea about the major theories of estimation
			CO4	Develop hypothesis for their research work and facilitate research bent of mind in statistical tools
			CO5	Analyzing various statistical tools and apply statistical tools in research
3	CC19PECO3 C09	INTERNATIONAL TRADE	CO1	Produce the theoretical and empirical aspects of international economics and understand the consequences of global interdependence
			CO2	Evaluate the international economic problems and issues facing the world economies.
			CO3	Examine the importance of international trade and various international trade theories.
			CO4	Examine the importance and ways to regulate international trade and the national economy in the global context
			CO5	Justify the impact of trade policies in national and international level and understand the EXIM Policy.
	CC19PECO3 C10	GROWTH AND DEVELOPMENT	CO1	Design policy interventions that promote equity and human development by evaluating the impacts of economic policies on growth and societal well-being.

			CO2	Evaluate the role of growth theories in shaping development policies and decisions.
			CO3	Develop strategies, policies, and projects based on different growth theories to achieve sustainable and inclusive growth.
			CO4	Analyze the strengths and limitations of stage theories and evaluate the impact of institutions and dualisms on development.
			CO5	Assess various financing approaches to identify financing gaps and propose solutions.
	CC19PECO3 E01	BANKING: THEORY AND PRACTICE	CO1	Appraise central bank structures and functions, analyse monetary policy tools, and assess their impact on economic growth and inflation.
			CO2	Evaluate roles of commercial banks, specialized financial entities, and their contributions to credit allocation and sectoral development.
			CO3	Apply digital payment systems, e-banking, and mobile banking concepts to enhance efficiency in modern banking transactions.
			CO4	Critically evaluate banking reforms post-1991, including Narsimha Committee recommendations, and analyse their effects on asset quality, capital adequacy, and regulation.
			CO5	Analyse growth of international banking, offshore banking, and roles of global financial institutions like BIS and World Bank in shaping international finance.
	CC19PECO3 C11	BASIC ECONOMETRICS	CO1	Examine the fundamentals of econometrics', including PRF, stochastic error, OLS estimation, hypothesis testing with t and F tests, and recognizing the significance of normality assumptions.
			CO2	Apply regression to multiple variables, estimate partial coefficients with OLS, assess model significance using F-test, test coefficient equality, and apply matrix approach to OLS properties.
			CO3	Analyse various problems related to regression analysis and evaluates its consequences and remedial steps
			CO4	Assess varied regression models, functional forms, and dummy variables while managing ANOVA, ANCOVA, dummy traps, and utilizing regression for structural analysis.
			CO5	Analyze specification errors, quantify their effects, utilize RESET test, and comprehend qualitative response models including Linear Probability, Logit, and Probit.
4	CC19PECO4 C12	INTERNATIONAL FINANCE	CO1	Analyze the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium.

			CO2	Design the conditions of financial markets and its impact in the economy.
			CO3	Hypothesize the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control the world economy and how global trade can be one of the major contributors of reducing poverty.
			CO4	Examine the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.
			CO5	Analyse the functioning of the International Monetary System.
	CC19PECO4 C13	FINACIAL MARKETS	CO1	Develop strategies for promoting an inclusive and efficient financial system based on financial market developments, innovations, and financial inclusion.
			CO2	Analyze money market dynamics, trends, and policy implications in domestic and global contexts.
			CO3	Prepare implications for financial markets and economic growth based on the roles and mechanisms of primary and secondary markets.
			CO4	Justify the significance of derivatives in modern financial systems by applying derivatives for hedging, speculation, and investment strategies.
			CO5	Examine the role of international financial instruments in cross-border financing, capital raising, and international financial stability.
	ECO4E01	ADVANCED ECONOMETRICS	CO1	Examine qualitative response regression models, including the linear probability model (LPM), logit model, probit model, and tobit model.
			CO2	Analyze dynamic econometric models such as autoregressive and distributed-lag models, and employ panel data regression techniques, including fixed effects and random effects models.
			CO3	Analyze simultaneous equation methods for addressing identification issues and estimating equations with instrumental variables.
			CO4	Analyze instrumental variable regression, assess unit root tests, and understand the principles of cointegration in time series econometrics.
			CO5	Assess time series modelling methodologies like ARIMA and ARCH/GARCH, and use them for forecasting and measuring volatility.
	ECO4 E06	AGRICULTURAL ECONOMICS	CO1	Analyse models of agricultural progress and assess the interdependence between agriculture and industry.

			CO2	Apply production relationships, factor-product and product-product concepts, evaluate resource efficiency, and farm size productivity and investment choices.
			CO3	Develop agricultural price formation, determine elasticity for demand and supply, apply Cob-web theorem and Nerlovian models, and evaluate the role of public intervention and price policies.
			CO4	Assess agribusiness structures, regulated and cooperative markets, develop market intelligence, and futures trading in agricultural commodities.
			CO5	Analyze trends in area, production, and cropping patterns, evaluate the impacts of the green and second green revolutions, assess agricultural inputs and technology, and examine credit, labour, and policy changes in Indian agriculture.
Name of the programme				**Master of Arts, English Literature**
Short Name of the Programme				**M.A. English Literature**
Code of the Programme				**CCAMAG**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	ENG1CO1	BRITISH LITERATURE FROM THE AGE OF CHAUCER TO THE 18TH CENTURY	CO1	Develop a thorough understanding of the various eras in the history of English literature including the Renaissance, Restoration and Neoclassical periods through the perusal of representative works of the time.
			CO2	Investigate the way the volatile socio-political scenario influenced the literary production of the era.
			CO3	Evaluate the influence of historical events and societal changes on the themes and forms of literature during the specified time period.
			CO4	Adapt knowledge of historical and cultural contexts to contextualize the themes and motifs present in literary works.
			CO5	Generate connections between literary works and their broader implications for the development of British literature and culture
	ENG1CO2	BRITISH LITERATURE: THE NINETEENTH CENTURY	CO1	Make the student thorough with the main writers and their works of the literary period
			CO2	Examine the historical and aesthetic development of British literature and culture during the nineteenth century
			CO3	Analyse the social, political, cultural or historical conditions out of which the literature of the period emerges, and to which it responds
			CO4	Assess the significance of specific works in shaping the literary landscape of the time.
			CO5	Generate original interpretations of literary texts from the 19th century.
	ENG1CO3		CO1	Examine the evolutions of English language

		HISTORY OF ENGLISH LANGUAGE	CO2	Assess the significance of specific linguistic changes in shaping the modern English language.
			CO3	Generate hypotheses or theories about the future evolution of English based on historical patterns.
			CO4	Examine the social, cultural, and political influences on language evolution.
			CO5	Evaluate the impact of external influences (e.g., invasions, trade, colonization) on the English language.
	ENG1CO4	INDIAN LITERATURE IN ENGLISH	CO1	Compose a comprehensive grasp of an array of literary compositions, authors and literary movements
			CO2	Provide an overview of the various phases of the evolution of Indian writing in English.
			CO3	examine tthe thematic concerns, genres and trends of Indian writing in English.
			CO4	Evaluate pluralistic aspects of Indian culture and identity
			CO5	Assess the literary works based on Indian culture and its representation in Indian English literature
2	ENG2CO5	TWENTIETH CENTURY BRITISH LITERATURE UPTO 1940	CO1	Develop a sophisticated understanding of the relationship between literary texts and social structures
			CO2	Analyse the cultural, political, and stylistic protocols of modernism and its various literary movements
			CO3	Monitor texts closely, and know how to read both formal and thematic aspects of texts as part of larger cultural and historical movements.
			CO4	Examine the historical background including the socio-political changes in 20th century
			CO5	Analyse literary genres, trends, and literary movements
	ENG2 CO6	LITERARY CRITICISM AND THEORY- PART 1	CO1	Develop and simulate alternative perspectives by examining different types of analysis of the same problem.
			CO2	Analyse texts and work on resolutions while looking for
			CO3	convergence between literature, philosophy and critical theory.
			CO4	Apply, Interpret and extend Western critical theory to Indian contexts, leading to different models of convergence, assessment and representation.
			CO5	Determine a solid basic grounding in the fundamental topics of literary theory and the methodological issues concerning the study of literature.
	ENG2CO7	AMERICAN LITERATURE	CO1	Identify key ideas, representative authors and works, significant historical or cultural

				events, and characteristic perspectives or attitudes expressed in the literature of different periods or regions.
			CO2	Analyze literary works as expressions of individual or communal values within the social, political, cultural, or religious contexts of different literary periods
			CO3	Demonstrate knowledge of the development of characteristic forms or styles of expression during different historical periods in different regions
			CO4	Demonstrate an awareness of the connection between texts and their historical and cultural contexts
			CO5	Identify relationships between moments in American history, colonialism, and culture and their representation in works of American literature.
	ENG2CO8	POSTCOLONIAL WRITINGS	CO1	Analyse the historical experience of colonization and its impacts on the colonized peoples across the globe, through the medium of literary writings.
			CO2	Examine major theoretical concepts associated with postcolonial studies as manifested through the literary discourse.
			CO3	Discuss questions of resistance and representation, the politics language and literary form, and the quests for identity, autonomy and self-determination that mark postcolonial literary expression.
			CO4	Demonstrate a good understanding of the ways in which colonialism has shaped the literature emerging from postcolonial nations.
			CO5	Demonstrate a good understanding of the nature of postcolonial migration and diaspora.
3	ENG3CO9	TWENTIETH CENTURY BRITISH LITERATURE POST 1940	CO1	Demonstrate a deep understanding of major literary works, themes, and trends in this period.
			CO2	Analyze texts within their historical, cultural, and social contexts.
			CO3	Examine how authors engage with questions of race, class, gender, sexuality, and other forms of identity in their works.
			CO4	Prepare findings in written reports or oral presentations that showcase advanced research skills.
			CO5	Analyze issues related to identity, representation, and diversity in literature.
	ENG3C10	LITERARY CRITICISM AND THEORY- PART 2	CO1	Paraphrase the postulates of various literary theories
			CO2	Critically analyse texts using these theoretical framework

			CO3	Examine diverse theoretical perspectives to develop nuanced and well-rounded interpretations of literary texts
			CO4	Demonstrate the student's mastery of literary theory and its application
			CO5	Respond to literary and cultural texts and explain the premises and assumptions underlying those responses
	ENG3E02	EUROPEAN FICTION IN TRANSLATION	CO1	Develop a comprehensive understanding of European fiction and its diverse literary traditions, styles, and themes.
			CO2	Compare European fiction with other literary traditions
			CO3	Analyse the issues of cultural plurality and hybridity expressed through canonical European Literature
			CO4	Develop an understanding of the importance of Classical literature in the formation of Western civilisation.
			CO5	Analyse the deep engagement of theatre with important socio-political issues of Europe in
	ENG3E09	AMERICAN ETHNIC WRITING	CO1	Understand the literary traditions, histories, and cultural contexts of various ethnic groups in the United States
			CO2	Interpret ethnic literary texts and explore themes, narrative techniques, cultural references, and social implications within these texts
			CO3	Compare and contrast different ethnic literary traditions, recognizing both commonalities and distinct features
			CO4	Analyze ethnic works from a diverse range of authors, ensuring exposure to different viewpoints, experiences, and storytelling techniques.
			CO5	Understand cultural sensitivity and awareness through the study of literature from various ethnic backgrounds
4	ENG4C11	ENGLISH LITERATURE IN THE 21ST CENTURY	CO1	Understanding the insights, genres, conventions and experimentations associated with Modern English literature, the knowledge of historical, socio-political, and religious trends in the texts.
			CO2	Analyse the pattern of development and change in the themes and literary techniques used by the post modern novelists and poets.
			CO3	Develop reading, writing and analytical skills and communicate their ideas critically, creatively, and persuasively through the medium of language in the current information intensive society.
			CO4	Analyse the essays in the period as a vehicle for representing personal experiences, moved into literary, social and cultural criticism and engaged in polemic and persuasion.

			CO5	Examine a wide range of texts to familiarize the complexities and diversity in the studies of location and culture.
	ENG4P01	DISSERTATION / PROJECT	CO1	Generate research aptitude in the learners and give them optimal background information and experience for taking up research programmes.
			CO2	Identify various research methodologies, tools and styles to undertake research.
			CO3	Assess literary as well as cultural texts in the light of various critical and theoretical lenses.
			CO4	Develop critical thinking within a structured framework.
			CO5	Develop a thorough understanding about the ethics of conducting academic research.
	ENG4E14	INDIAN ENGLISH FICTION	CO1	Appraise the historical trajectory of various genres of Indian Writing in English from colonial times to till the present.
			CO2	Analyze Indian literary texts written in English in terms of colonialism, postcolonialism, regionalism, and nationalism.
			CO3	Examine the role of English as a medium for political awakening and the
			CO4	Analyze how the sociological, historical, cultural and political context impacted the texts selected for study
			CO5	Develop a literary sensibility and display an emotional response to the literary texts and cultivate a sense of appreciation for them
	ENG4E18	MALAYALAM LITERATURE IN ENGLISH TRANSLATION	CO1	Examine the basic issues related to translation and in that process develop a sensibility for native and local literatures.
			CO2	Analyse the social, political and cultural dimensions of the texts prescribed
			CO3	Examine the works from historical and literary perspectives to briefly trace the evolution of Malayalam literature.
			CO4	Analyse the historical contexts behind the origin and development of English. literature with a special focus on various movements and the important works belonging to such movements.
			CO5	Examine the stylistic and pragmatic nature of translation from Malayalam to English.
Name of the programme				**Master of Science, Mathematics**
Short Name of the Programme				**M.Sc. Maths**
Code of the Programme				**CCAMMS**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	MTH1C01	ALGEBRA I	CO1	Analyze finitely generated abelian groups, factor groups and plane isometries.
			CO2	Compute factor groups, simple groups and Group Actions and its Applications.

			CO3	Compute Series of Groups and discuss Isomorphism theorems.
			CO4	Apply Sylow theorems to solve problems in group theory and the discuss the concept of free groups.
			CO5	Apply the concept of Group Presentation and Polynomials over a Ring.
	MTH1C02	LINEAR ALGEBRA	CO1	Describe the concept of vector spaces, subspaces, bases, dimension and coordinate of a vector and various results.
			CO2	Apply various theorems in Linear transformation.
			CO3	Describe the concept of dual space and compute the transpose of a linear transformation.
			CO4	Discuss the concept of diagonalizable and triangulable operators and various fundamental results of these operators. Also, compute annihilating polynomial of given matrix and discuss about invariant subspaces and related theorems.
			CO5	Describe inner product spaces and their properties and apply orthonormalization techniques to solve problems.
	MTH1C03	REAL ANALYSIS	CO1	Develop the concept of metric spaces and their topological properties
			CO2	Apply the concept of continuity, compactness and connectedness.
			CO3	Demonstrate differentiation and related properties.
			CO4	Develop the concept of Riemann Stieltjes integral and explain its properties.
			CO5	Develop the concept of sequence and series of functions, uniform continuity and uniform convergence.
	MTH1C04	DISCRETE MATHEMATICS	CO1	Recall how to work with some of the discrete structures.
			CO2	Explain how lattices and Boolean algebra are used as tools.
			CO3	Adapting ideas pertaining to graph theory in a systematic manner.
			CO4	Define Automata and discuss the acceptability of a string by finite automation
			CO5	Describe the deterministic and non-deterministic finite state machine.
	MTH1C05	NUMBER THEORY	CO1	Demonstrate the concept of arithmetical functions and its properties.
			CO2	Develop the idea of Dirichlet multiplication.
			CO3	Use Euler Summation Formula and solve problems.
			CO4	Examine several aspects of the distribution of prime numbers.

			CO5	Analyze the concept of quadratic residues and quadratic reciprocity laws and construct the idea of cryptography.
2	MTH2C06	ALGEBRA- II	CO1	Describe the properties of prime and maximal ideals.
			CO2	Apply properties of finite fields and summarize constructible numbers.
			CO3	Apply various properties of extension fields.
			CO4	Describe isomorphism extension theorem and conjugation isomorphism theorems and their applications.
			CO5	Discuss splitting fields, separable extensions, cyclotomic extensions, Galois group, insolvability of quintic.
	MTH2C07	MTH2C07 REAL ANALYSIS II	CO1	Discuss about Lebesgue measurable sets.
			CO2	Describe Lebesgue measurable functions and discuss their properties.
			CO3	Derive general Lebesgue integration and discuss the properties of Lebesgue integration.
			CO4	Discuss about monotone functions, functions of BV, absolute continuity, integrating derivatives and convex functions.
			CO5	Explain the completeness and approximation of Lp spaces.
	MTH2C08	TOPOLOGY	CO1	Recall the basic concepts of topological spaces and its properties.
			CO2	Describe the concept of Quotient Spaces.
			CO3	Discuss the Spaces having Special Properties.
			CO4	Explain the Spaces using Separation Axioms.
			CO5	Discuss Urysohn characterization of normality and Tietze characterization of normality.
	MTH2C09	ODE & CALCULUS OF VARIATION	CO1	Solve differential equations using techniques such as power series method, Frobenius series method, etc.
			CO2	Analyze the properties of Legendre Polynomials and Bessel functions.
			CO3	Solve systems of first-order differential equation.
			CO4	Analyze the nature and stability properties of the critical points.
			CO5	Formulate and analyze problems and solutions using the knowledge of calculus of variation, oscillation theory, boundary value problems.
	MTH2C10	OPERATIONS RESEARCH	CO1	Formulate a real-life problem as a mathematical programming model in general, standard and canonical forms.
			CO2	Solve by optimizing the linear programming problem using various method.
			CO3	Discuss integer programming problems, transportation problems and sensitivity analysis.

			CO4	Analyse the concepts of scheduling of sequential activities and flow in network analysis.
			CO5	Discuss the concepts related to theory of games and illustrate the rectangular game as a linear programming problem.
3	MTH 3C11	MULTIVARIABLE CALCULUS AND GEOMETRY	CO1	Discuss the properties of linear transformations.
			CO2	Explain the properties of determinants.
			CO3	Compute curvature and discuss the concept of curves, parametrization and curvature.
			CO4	Analyze different types of surfaces, smooth surfaces and discuss their properties.
			CO5	Compute lengths of curves on surfaces, fundamental forms, the Gaussian, Mean and Principal curvatures of a surface.
	MTH3C12	COMPLEX ANALYSIS	CO1	Develop the relation between analytic functions and its power series representation.
			CO2	Analyze the properties of Mobius transformation.
			CO3	Integrate the theorems of complex integration
			CO4	Construct Laurent series about isolated singular points.
			CO5	Analyze the applications of Residue theorem, Rouche's theorem, Maximum modulus principles and Schwarz's lemma.
	MTH3C13	FUNCTIONAL ANALYSIS	CO1	Describe the definition of linear space, quotient space and normed linear spaces and the basic results regarding them.
			CO2	Explain various theorems in normed spaces.
			CO3	Apply various theorems regarding Hilbert spaces.
			CO4	Compute dual space of a given normed spaces and apply Hahn Banach Theorems.
			CO5	Discuss Bounded linear functional on Hilbert space, bounded linear operator, compact operator, compact sets, dual operators, finite rank operators and invertible operator.
	MTH3C14	PDE & INTEGRAL EQUATIONS	CO1	Solve first order partial differential equation using different methods.
			CO2	Categorize the canonical forms of hyperbolic, parabolic and elliptical equations and solve the equations.
			CO3	Solve some physical problems like heat equation and wave equations using partial differential equations.
			CO4	Solve wave equation, elliptical problems and non - homogeneous equation using the method of separation of variables.
			CO5	Analyze integral equations and their connection with differential equations and solve integral equations.
	MTH3E02	ELECTIVE I- CRYPTOGRAPHY	CO1	Apply various methods for encryption and decryption.

			CO2	Analyze different methods to break the cryptosystem.
			CO3	Recall the ideas in probability theory.
			CO4	Discuss the relationship between probability theory and cryptography.
			CO5	Describe Block ciphers and Hash functions.
4	MTH4C15	ADVANCED FUNCTIONAL ANALYSIS	CO1	Describe– Spectrum, self-adjoint operators, compact operators and some theories related to it.
			CO2	Explain Spectral theory, Minimax Principle and its applications on integral operators.
			CO3	Apply properties of projection operators, spectral decompositions and Hilbert theorem
			CO4	Discuss Spectral decomposition and Functions operators.
			CO5	Discuss Second category space, perfectly covex set and its properties and Apply Open mapping theorem, Closed Graph Theorem and Banach -Steinhaus Theorem. Define Banach Algebras and apply basic theorems related to it.
	MTH4E08	ELECTIVE II-COMMUTATIVE ALGEBRA	CO1	Discuss about rings and ideals.
			CO2	Explain the properties of modules.
			CO3	Explain the constructions like tensor product and localization and discuss their properties
			CO4	Demonstrate primary decomposition and integral dependence.
			CO5	Compare Noetherian rings and Artinian rings.
	MTH4E09	ELECTIVE III-DIFFERENTIAL GEOMETRY	CO1	Discuss about level curves, graph of a function, tangent space and vector fields.
			CO2	Explain surfaces of n-dimension and orientation.
			CO3	Discuss the concept of Geodesics, parallel transport, Weingarten map and related theorems.
			CO4	Compute arc length, line integral, define curvature of a plane curve and explain local and global parameterization.
			CO5	Deduce results using the concept of curvature of surfaces and differential one forms.
	MTH3C12	ADVANCED COMPLEX ANALYSIS	CO1	Develop the properties of the space of continuous functions, analytic functions and meromorphic functions.
			CO2	Construct the functions of a special class as an infinite product.
			CO3	Analyze the properties of Gamma and Zeta functions.
			CO4	Apply the properties of Analytic functions and Meromorphic functions to develop some important theorems of Complex Analysis.
			CO5	Integrate advanced properties of entire functions.
	MTH4P04	PROJECT	CO1	Develop concept of a particular topic by review of the available literature.

			CO2	Analyze and interpret the research data.
			CO3	Prepare a scientific report.
			CO4	develop analytical, reasoning and computational skills along with the research skills.
Name of the programme				**Master of Science, Computer Science**
Short Name of the Programme				**M.Sc.CS**
Code of the Programme				**CCAMCS**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	CSS1C01	DISCRETE MATHEMATICAL STRUCTURES	CO1	Apply operations on set theory, propositional calculus and predicate calculus with its applications.
			CO2	Apply operations of relations and functions in discrete mathematical structures
			CO3	Describe concepts and applications of Lattices and Boolean Algebra in Computer Science domain.
			CO4	Summarize Group, Ring and Field in Group Theory with concepts of cosets.
			CO5	Describe concepts of tree, graph theory and applications and formulate problem solving in computer science domain.
	CSS1C02	ADVANCED DATA STRUCTURES	CO1	Analyze basic and advanced data structures dealing with algorithm development, problem solving and concepts of arrays
			CO2	Discuss the concepts of linked list, stack and queue.
			CO3	Analyze various sorting and searching algorithms
			CO4	Describe the concept tree and graph.
			CO5	Explain concept of hash table, hashing and heap.
	CSS1C03	THEORY OF COMPUTATION	CO1	Describe basic concepts in the theory of computation.
			CO2	Describe different formal languages and algorithms.
			CO3	Construct automation and grammar for all formal languages.
			CO4	Validate types of formal languages and its machine equivalence.
			CO5	Validate computability and decidability.
	CSS1C04	THE ART OF PROGRAMMING METHODOLOGY	CO1	Illustrate various notions and design flowchart and algorithm for a given problem.
			CO2	Analyse user defined data types and determine the data representation formats for a specific problem domain.
			CO3	Assess the merits and demerits of various programming constructs to choose an appropriate problem and develop programs by evaluating the computational requirements.
			CO4	Execute the basic operations in file handling.

			CO5	Discuss the concept of dynamic memory allocation.
	CSS1C05	COMPUTER ORGANIZATION AND ARCHITECTURE	CO1	Illustrate basic digital fundamentals concepts.
			CO2	Demonstrate the internal architecture of a computer system.
			CO3	Create an understanding to perform computer arithmetic operations.
			CO4	Summarize the key concepts of memory and I/O organization.
			CO5	Compare standards and guidelines of different microprocessors and microcontroller.
	CSS1A01	INTRODUCTION TO RESEARCH (ABILITY ENHANCEMENT AUDIT COURSE)	CO1	Understand and comprehend the basics in research methodology.
			CO2	Applying the concepts in research.
	CSS1L01	PRACTICAL 1	CO1	Create programming skill nourishing techniques in C programming to help the students cope up with recent updates.
			CO2	Create programming skill nourishing techniques in Data Structures to help the students cope up with recent updates
2	CSS2C06	DESIGN AND ANALYSIS OF ALGORITHM	CO1	Discuss algorithm design and model of computation and different problems in computer science.
			CO2	Justify time and space complexity of algorithms and the correctness of algorithms and solving recurrence equation.
			CO3	Describe the divide-and-conquer, Brute Force and Branch-and-Bound and back tracking.
			CO4	Analyse the complexity of Greedy approach and Dynamic Programming and parallel algorithms.
			CO5	Describe classes P, NP, and NP- Complete and NP Completeness reduction for TSP and Hamiltonian Cycle
	CSS2C07	OPERATING SYSTEM CONCEPTS	CO1	Describe the concepts of operating system, process and threads.
			CO2	Illustrate the principles of concurrency, mutual exclusion and deadlock in operating system.
			CO3	Discuss the different memory management concepts.
			CO4	Demonstrate the various scheduling algorithms.
			CO5	Interpret the client/server computing concepts
	CSS2C08	COMPUTER NETWORKS	CO1	Recall concepts of networking models, topology, transmission media, and protocol suite.
			CO2	Discuss application layer and its protocols, network layer and its functions.
			CO3	Describe transport layer protocols.
			CO4	Describe data link layer functions and its protocols.
			CO5	Analyze different cryptographic techniques

	CSS2C09	COMPUTATIONAL INTELLIGENCE	CO1	Discuss the basics of Artificial Intelligence, state space search and its application.
			CO2	Analyze various search and game-based techniques with heuristics.
			CO3	Discuss basic issues of knowledge representation, representation of facts using logic and knowledge representation using rules.
			CO4	Discuss various reasoning methods and basics of Planning and understanding, Expert systems, basics of machine learning and Artificial Neural Networks and genetic algorithms.
			CO5	Illustrate various game playing methods and slot and filler structure.
	CSS2C10	PRINCIPLES OF SOFTWARE ENGINEERING	CO1	Understand principles and practices of software engineering.
			CO2	Identify software models for different nature of projects.
			CO3	Understand the concepts of software UI design, process planning, project scheduling & Develop strategies for coding and testing.
			CO4	Identify the risks associated with projects.
			CO5	Discuss about of project report writing.
	CSS2A02	TERM PAPER (PROFESSIONAL COMPETENCY AUDIT COURSE)	CO1	Examine and assess scientific literature critically.
			CO2	Formulate an overview of the relevant literature for a specific research topic.
	CSS2L02	PRACTICAL- II	CO1	Create programming skill nourishing techniques in Operating Systems to help the students cope up with recent updates.
			CO2	Create programming skill nourishing techniques in Computer Networks to help the students cope up with recent updates.
3	CSS3C11	ADVANCED DATABASE MANAGEMENT SYSTEM	CO1	Recall the basic concepts in database management system.
			CO2	Understand the relational database design (normalization).
			CO3	Recall and memorize structured query language, PL/SQL.
			CO4	Understand transaction, concurrency control in database.
			CO5	Understand the concepts in object-oriented database management system.
	CSS3C12	OBJECT ORIENTED PROGRAMMING CONCEPTS	CO1	Understand object-oriented programming concepts and formulate Java programs that include basic constructs.
			CO2	Develop java program using packages and interfaces.
			CO3	Discuss exception handling, multithreaded applications, synchronizations and I/O.
			CO4	Generalize socket programming, JDBC architecture and connectivity.

			CO5	Design GUI and applets for web-based applications and familiarize object-oriented modelling and design patterns in UML.
	CSS3C13	PRINCIPLES OF COMPILERS	CO1	Discuss basic concepts of language translation.
			CO2	Discuss analysis phase.
			CO3	Construct various phases of compiler.
			CO4	Discuss synthesis phase.
			CO5	Discuss optimization techniques.
	CSS3E02c	CRYPTOGRAPHY AND NETWORK SECURITY	CO1	Demonstrate the basic cryptography concepts including attacks, services and mechanisms and provide different symmetric encryption algorithms.
			CO2	Discuss Message Authentication codes and public key cryptography algorithms.
			CO3	Explain different network security applications and also generalize the concept of public key infrastructure.
			CO4	Describe transport level security and IP security.
			CO5	Examine the different types of intruders, malicious software and firewalls.
	CSS3E01d	BIOINFORMATICS	CO1	Understand the various biological sequence data that control genetic behaviour.
			CO2	Analyze the sequences and explain the biological reasons.
			CO3	Demonstrate tools and algorithms for sequence alignment and its importance.
			CO4	Discuss various databases of biological sequences and give insight to research.
			CO5	Examine the importance of analysing large biological data for human welfare.
	CSSL03	PRACTICAL - III	CO1	Create programming skill nourishing techniques in Databases to help the students cope up with recent updates.
			CO2	Create programming skill nourishing techniques in OOP's to help the students cope up with recent updates.
4	CSS4E03e	FUNDAMENTALS OF BIG DATA	CO1	Illustrate the concept of Big Data.
			CO2	Identify different types of Databases.
			CO3	Demonstrate different queries in MongoDB.
			CO4	Explain Hadoop environment and its components.
			CO5	Discuss MapReduce.
	CSS4E04a	DIGITAL IMAGE PROCESSING	CO1	Discuss application of digital image processing and image processing fundamentals.
			CO2	Discuss image sampling and quantization and image transformation techniques.
			CO3	Discuss image enhancement techniques.
			CO4	Discuss concept of segmentation and compression techniques.
			CO5	Discuss various noise models and filter techniques

	CSS4P01	PROJECT	CO1	Design a new system that comprises the various scientific technologies and inculcate them to the academic process that explores the various fields of computer science.
			CO2	Produce a change in the existing system through updates and make them lively
Name of the programme				**Master of Commerce**
Short Name of the Programme				**M.Com**
Code of the Programme				**CCAMCM**
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	MCM1C01	BUSINESS ENVIRONMENT & POLICY	CO1	Organise the concepts of macro-economic in which a business organisation operates.
			CO2	Interpret the idea about the policies of the government and assess their impact on business.
			CO3	Analyse the concepts of ethics and the role of ethical behaviour in the business world today.
			CO4	Examine the present scenarios that synthesize business environment information.
			CO5	Assess the business environment of an organization using selected strategic tools.
	MCM1C02	CORPORATE GOVERNANCE & BUSINESS ETHICS	CO1	Develop the knowledge of corporate ethics.
			CO2	Assess the emerging trends in good governance practices.
			CO3	Create about corporate financial reports in the global and Indian context.
			CO4	Illustrate the importance- for business and the community of ethical conduct.
			CO5	Recognize and prioritize ethical issues in business.
	MCM1C03	QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS	CO1	Develop important quantitative techniques, which enables students to take sound business decision making.
			CO2	Make students learn the process of applying appropriate quantitative techniques for validating findings and interpreting results.
			CO3	Analyze various business situations in applying quantitative techniques to get optimal solutions for the organizations.
			CO4	Assess the appropriate parametric test for testing Hypothesis.
			CO5	Categorize the non- parametric test.
	MCM1C04	MANAGEMENT THEORY AND ORGANIZATIONAL BEHAVIOUR	CO1	Distinguish management theories to be adopted in an organisation.
			CO2	Assess the various concepts of organisational behaviour.
			CO3	Develop group dynamic and team skills.
			CO4	Contrast power and politics influence organizational behaviour.
			CO5	Assess organizational culture and change which contributes to the behaviour of the organization.

	MCM1C05	ADVANCED MANAGEMENT ACCOUNTING	CO1	Apply tools, techniques, and concepts in management accounting process.
			CO2	Analyze and diagnose business problems.
			CO3	Use the concepts of Financial and non-financial measures of performance.
			CO4	Apply the concepts of standard costing techniques for variance analysis.
			CO5	Apply the marginal costing principles in decision making situations of businesses.
2	MCM2C06	ADVANCED CORPORATE ACCOUNTING	CO1	Analyse different types of corporate restructuring.
			CO2	Examine accounting standards of IFRS/Ind AS related to income tax, lease and revenue from contracts etc.
			CO3	Prepare financial statements under various situations like corporate restructuring, amalgamation and liquidation.
			CO4	Apply inflation accounting and evaluate the traditional.
			CO5	accounting and inflation accounting for the given financial statement.
	MCM2C07	ADVANCED STRATEGIC MANAGEMENT	CO1	Assess the important strategic management concepts and analysis of the environment in which the business operates.
			CO2	Assess Emerging trends in strategic management.
			CO3	Categorize the Strategic options at Corporate Level, Business Level and Functional Level.
			CO4	Create strategies for industry leaders, runner - up firms and weak businesses.
			CO5	Analyze the strategic issues and alternatives in Globally Competitive Markets.
	MCM2C08	STRATEGIC COST ACCOUNTING	CO1	Apply the cost accounting tools, techniques and concepts in managerial decision-making process.
			CO2	Practice the control techniques in managing business.
			CO3	Develop the concept of cost evaluation
			CO4	Compare the traditional and strategic methods of costing.
			CO5	Design the quality management in products
	MCM2C09	INTERNATIONAL BUSINESS	CO1	Compare theories of international trade and the international business environment.
			CO2	Compare various international economic institutions and international business functional strategies.
			CO3	Appraise the role of World Trade Organization (WTO) in governing international trade.
			CO4	Compare types of disequilibrium in BOP along with methods to correct disequilibrium.
			CO5	Demonstrate the working of the international monetary system and international money and capital markets.

	MCM2C10	MANAGEMENT SCIENCE	CO1	Apply the concepts of management science and tools supporting decision making.
			CO2	Demonstrate the management science techniques in appropriate decision situations.
			CO3	Practice different Linear Programming Models for Business problems to solve the same.
			CO4	Apply Linear Programming techniques in the areas of transportation and Assignment.
			CO5	Analyse network analysis techniques for project implementation.
3	MCM3C11	FINANCIAL MANAGEMENT	CO1	Distinguish the theories related to financial management.
			CO2	Examine the knowledge on the allocation, management and funding of financial resources.
			CO3	Examine the decision-making areas of financial management.
			CO4	Apply the measures of cost of capital and financial leverage to frame long term financial policies for business.
			CO5	Analyze the main ways of raising capital and their pros and cons in different circumstances.
	MCM3C12	INCOME TAX LAW, PRACTICE AND TAX PLANNING- I	CO1	Compute income under various heads, taxable income of various persons, tax planning and procedure of assessment.
			CO2	Assess various types of persons under Income tax Act.
			CO3	Apply tax provisions in various cases.
			CO4	Examine various tax incentives and benefits under direct taxes.
			CO5	Apply filing of return of income.
	MCM3C13	RESEARCH METHODOLOGY	CO1	Demonstrate knowledge of research processes.
			CO2	Formulate suitable sampling techniques.
			CO3	Develop questionnaire.
			CO4	Compare different scaling techniques.
			CO5	Prepare the key elements of research proposal/report.
	MCM3E01	INVESTMENT MANAGEMENT	CO1	Analyse theoretical and practical background in the field of investments.
			CO2	Compare the different alternatives of investments in India.
			CO3	Operate various tools and techniques for evaluating the portfolios.
			CO4	Apply the concept of portfolio management for the better investment.
			CO5	Assess the portfolio evaluation and portfolio revision.
	MCM3E02	FINANCIAL MARKETS AND INSTITUTIONS	CO1	Develop the knowledge of financial markets and institutions.
			CO2	Examine the inter-linkage and regulatory framework within which the system operates in India.

			CO3	Compare the various innovative financial instruments, bitcoin and crypto currency, etc.
			CO4	Prioritize the role of various development financial institutions in Indian financial system.
			CO5	Appraise the role of foreign capital in Indian financial system.
4	MCM4C14	FINANCIAL DERIVATIVES & RISK MANAGEMENT	CO1	Determine the importance of financial derivatives products and institutional structure of the market.
			CO2	Distinguish among hedging, speculation and arbitrage strategies in derivative market.
			CO3	Apply scientific methods for valuation of options and other derivatives products, in continuous and discrete time.
			CO4	Justify the binomial model and its extension in continuous time to the Black-Scholes model.
			CO5	Demonstrate critical thinking, analytical and problem-solving skills in the context of derivatives pricing and hedging practice.
	MCM4C15	INCOME TAX LAW, PRACTICE AND TAX PLANNING- II	CO1	Examine the income tax laws and related judicial pronouncements pertaining to various assesse with a view to derive maximum possible tax benefits admissible under the law.
			CO2	Compute the total income and tax liability of firms, AOP/BOI.
			CO3	Assess companies and determine their tax liability.
			CO4	Assess co-operative societies and trusts.
			CO5	Apply the tax planning concepts.
	MCM4E03	INTERNATIONAL FINANCE	CO1	Assess the significance of international finance.
			CO2	Analyze international financial markets and exchange theories
			CO3	Examine foreign exchange exposure and risk management.
			CO4	Assess the impact of exchange rate behaviour in global financial market.
			CO5	Compare short term asset and liability management, foreign direct investment and foreign portfolio management.
	MCM4E04	ADVANCED STRATEGIC FINANCIAL MANAGEMENT	CO1	Compare the managerial implications of shareholder value creation.
			CO2	Formulate financial strategy for capital structure, leverage effect and the value of the firm.
			CO3	Compare leasing versus buying.
			CO4	Examine the risk associated with the long-term investment.
			CO5	Analyze the performance of business entities.
Name of the programme				**Master of Science, Physics**
Short Name of the Programme				**M.Sc. Physics**

Code of the Programme				CCAMPH
Semester	**Course Code**	**Course Title**	**CO No.**	**Course Outcomes**
1	PHY1C01	CLASSICAL MECHANICS	CO1	Analyze dynamical systems using Lagrangian and Hamiltonian mechanics.
			CO2	Examine the classical background of quantum mechanics by learning Poisson brackets and Hamilton -Jacobi equation.
			CO3	Analyze the dynamics and kinematics of rigid body.
			CO4	Apply the theory of small oscillations in dynamical systems.
			CO5	Analyze nonlinear equations and illustrate the concepts of Chaos.
	PHY1C02	MATHEMATICAL PHYSICS	CO1	Compare orthogonal curvilinear coordinate Systems.
			CO2	Apply the concept of matrices and tensors to related problems.
			CO3	Solve second order differential equations in various physical problems.
			CO4	Assess various special functions as the solutions of second order differential equations.
			CO5	Apply Fourier series to solve problems and use Fourier Transforms and Laplace transforms to evaluate Integrals.
	PHY1C03	ELECTRODYNAMICS AND PLASMA PHYSICS	CO1	Analyse understanding of Maxwell's equations and its solutions in different situations.
			CO2	Examine the behaviour of plane electromagnetic waves pertaining to motion in different physical medium and boundary conditions.
			CO3	Apply the behaviour of electromagnetic waves to different physical configurations which make the propagation of waves from one region of space to another.
			CO4	Analyse the relativistic nature of electrodynamics.
			CO5	Apply the concepts of electromagnetism to plasma.
	PHY1C04	ELECTRONICS	CO1	Illustrate the working principle of JFET and MOSFET, and their applications.
			CO2	Analyze the theory and working of different photonic and microwave devices such as LEDs, semiconductor lasers, Photodetectors, solar cells, Tunnel diode and transferred electron devices.
			CO3	Review the basic operational amplifier characteristics, ideal Op-Amp.
			CO4	parameters and its frequency response.
			CO5	Demonstrate the applications of Op-Amp in various circuits.

2	PHY2C05	QUANTUM MECHANICS -I	CO1	Anlyse the Hilbert Space formalism in Quantum Mechanics.
			CO2	Assess the quantum dynamics and the evolution of a quantum mechanical system using different pictures.
			CO3	Deduce the theory of angular momentum angular momentum.
			CO4	Analyse Schroedinger equation for central potentials.
			CO5	Examine invariance principles and conservation laws in quantum mechanics.
	PHY2C06	MATHEMATICAL PHYSICS -II	CO1	Analyse functions of complex variables.
			CO2	Apply the concepts of group theory.
			CO3	Apply calculus of variation.
			CO4	Analyse integral equations.
			CO5	Apply Greens functions to solve differential equations.
	PHY2C07	STATISTICAL MECHANICS	CO1	Examine the statistical basis of thermodynamics.
			CO2	Compare microcanonical, canonical and grand canonical ensembles.
			CO3	Analyse statistical systems using quantum statistical mechanics.
			CO4	Analyse ideal Bose Systems.
			CO5	Analyse ideal Fermi Systems.
	PHY2C08	COMPUTATIONAL PHYSICS	CO1	Review the basics of Python language, data types and modules.
			CO2	Understand modules for maths and visualisation like numpy and matplotlib.
			CO3	Use arrays and matrices for mathematical analysis and problem solving.
			CO4	Create phython programs for solving various physics problems.
			CO5	Review the basics of Python language, data types and modules.
1&2	PHY1L01 & PHY2L03	(GENERAL PHYSICS)	CO1	Apply and illustrate the concepts of properties of matter through experiments.
			CO2	Apply and illustrate the concepts of electricity and magnetism through experiments.
			CO3	Apply and illustrate the concepts of optics through experiments.
			CO4	Apply and illustrate the concepts of spectroscopy through experiments.
			CO5	Apply and illustrate the concepts of properties of matter through experiments.
	PHY1L02 & PHY2L04	(ELECTRONICS)	CO1	Design and construct electronic circuits using diodes and transistors.
			CO2	Design and construct electronic circuits using OPAMP.
			CO3	Design and construct electronic circuits using IC -555.
			CO4	Design and construct digital electronics circuits.

			CO5	Design and construct electronic circuits using diodes and transistors.
3	PHY3C09	QUANTUM MECHANICS -II	CO1	Apply time-independent degenerate and non-degenerate perturbation theory in quantum systems.
			CO2	Solve quantum mechanical problems using variational method and WKB method.
			CO3	Apply time-dependent perturbation theory in quantum systems.
			CO4	Analyse quantum scattering problems.
			CO5	Examine relativistic quantum mechanics.
	PHY3C10	NUCLEAR AND PARTICLE PHYSICS	CO1	Analyze the properties of nucleus and features of nuclear forces.
			CO2	Integrate the theory of nuclear decay.
			CO3	Analyse different nuclear models and nuclear processes.
			CO4	Illustrate the working of nuclear radiation detectors.
			CO5	Analyse the concept of elementary particles.
	PHY3C11	SOLID STATE PHYSICS	CO1	Analyse crystalline structure and binding.
			CO2	Analyse lattice vibrations.
			CO3	Examine electron states in semiconductors.
			CO4	Contrast dielectric, ferroelectric and magnetic properties.
			CO5	Examine superconductivity.
	PHY3E05	EXPERIMENTAL TECHNIQUES	CO1	Compare the working of vacuum pumps, vacuum gauges and other accessories associated with the creation of vacuum.
			CO2	Inspect different thin film deposition techniques, thickness and conductivity measurement of thin films.
			CO3	Categorize different particle accelerators, principle and their application.
			CO4	Review of nuclear techniques used for material analysis.
			CO5	Examine the concept of X-ray diffraction technique for identification and structural analysis of different materials.
4	PHY4C12	ATOMIC AND MOLECULAR SPECTROSCOPY	CO1	Implement vector atom model to study the effect of electric and magnetic fields on atoms and molecules.
			CO2	Examine structural properties of the molecules using principles of Microwave and Infrared spectroscopy.
			CO3	Apply the principles of linear and nonlinear Raman spectroscopy in structural determination.
			CO4	Analyze the principles of electronic spectroscopy, rotational fine structure and the determination of dissociation energy.
			CO5	Examine the fundamental concepts of NMR, ESR and Mossbauer spectroscopy.
	PHY4E11	MATERIALS SCIENCE	CO1	Analyse crystal imperfections.

			CO2	Examine different phase diagrams and analyse the diffusion process in solids.
			CO3	Analyze plastic deformation and fracture of materials.
			CO4	Analyze the process of engineering materials.
			CO5	Examine the characterization of nanomaterials.
	PHY4E20	MICROPROCESSORS, MICROCONTROLLERS AND APPLICATION	CO1	Analyze the organisation and internal architecture of microprocessor 8085.
			CO2	Practice assembly language programming
			CO3	Analyse peripheral devices and their interfacing of microprocessor.
			CO4	Assess the structure of AVR microcontrollers and programming.
			CO5	Practice the AVR programming in C language
	PHY4E17	ADVANCED CONDENSED MATTER PHYSICS	CO1	Analyse amplitude, frequency and phase modulation.
			CO2	Illustrate the elements of information theory and digital communication.
			CO3	Assess the different communication systems such as receivers transmitters.
			CO4	Apply the theory concerned with analog to digital communication and vice versa.
			CO5	Analyse amplitude, frequency and phase modulation.
3&4	PHY3L05 & PHY4L06	MODERN PHYSICS PRACTICAL	CO1	Design and construct advanced electronic circuits.
			CO2	Apply and illustrate the concepts of material science and condensed matter physics through experiments.
			CO3	Design and construct advanced electronic circuits for communication electronics.
			CO4	Apply various techniques for different experimental studies.
	PHY4L07	COMPUTATIONAL PHYSICS PRACTICAL	CO1	Develop python program for solving numerical integration and differentiation.
			CO2	Develop python program for matrix operations
			CO3	Develop python program for solving equations.
			CO4	Develop python program for solving classical and quantum mechanics problems.
			CO5	Develop python program for solving electrodynamics problems.
	PHY4P01	PROJECT	CO1	Research the methodology of the project.
			CO2	Formulate a research project.
			CO3	Design and implement a research project.
			CO4	Assess the result of the project.
			CO5	Compile the scope and limitations of a research project.