# M.A./M.Sc. in Environmental Studies

## Course Outcomes (CO)

COs of the Course on "**Introduction to Environmental Sciences" (Paper 1)**

CO1: Introduces the basics of Environmental Science and structure and function of different compartments of the Environment.
CO2: Provides scientific perspective of the issues confronting our present day environment
CO3: Enables to understand the national and international issues related to atmosphere, water, soil and land use, biodiversity, global warming and climate changes, mineral and energy resources, and environmental impact assessment and environmental audit

COs of the Course on "**Social Perspectives on Environment" (Paper 2)**

CO1: Introduces students to social thought on environmental issues in traditional and modern societies
CO2: Provides a historical and contemporary perspective on environmental issues, specifically energy, transport and resource consumption
CO3: Evaluate critical issues in environmental studies in an Indian and global perspective
CO4: Analyze environmental politics in contemporary India, issues in global environmentalism

COs of the Course on "**Environment, Development and Sustainability" (Paper 3)**

CO1: Deals with the human dimension of development and environment
CO2: Provides adequate insight on management of natural resources
CO3: Imparts training in tools and methodologies of ecological and environmental economics.

COs of the Course on "**Methodologies for Environmental Studies" (Paper 4)**

CO1: Equips the students to various methods used in the collection of data and its analysis for environmental studies
CO2: Provides training on the theory and practice of biostatistical tools for analyzing the data and deriving meaningful conclusions
CO3: Investigates the potential of simulation models to understand the complexity of environmental processes
CO4: Enables to use environmental modeling, remote sensing and GIS in environmental studies.

COs of the Course on "**Environmental Risk and Impact Assessment" (Paper 5)**

CO1: Introduces the concept and components of environmental impact assessment
CO2: Enables to learn EIA as a systematic process that examines the environmental consequences of development actions, in advance
CO3: Investigates the agenda of all environmental agencies as a result of introduction of legislations in various countries
CO4: Evaluates the issues and problems in environmental assessment from the perspective of process and methods, and the goals of EIA

COs of the Course on "**Environmental Pollution and Health" (Paper 6)**

CO1: Examines the critical linkage between environmental pollution and human health
CO2: Analyze the mode of various diseases as triggered by the spread of contaminants in soil, water and air
CO3: Discusses different types of pollution and the guidelines for their control in the context of public health

COs of the Course on "**Urban Ecosystems" (Paper 7)**

CO1: Discusses emerging importance of the urban setting as the locus of environmental conflict and governance in India, across a range of urban clusters including metros, cities and towns
CO2: Explores the importance for policy, community mobilization, law and governance
CO3: Addresses some key challenges facing urban sustainability in the 21st century

COs of the Course on "**Natural Resources: Their Conservation and Management" (Paper 8)**

CO1: Helps to develop an objective view of the nature of Earth's resources, particularly the non-renewable resources
CO2: Explains how and where the Earth's resources are generated, how they are extracted and used, and how these activities impact Earth's environment.
CO3: Addresses sustainability by looking into different ways of conservation of the natural resources and their management

COs of the Course on "**Environmental and Resource Economics" –MA (Paper 9)**

CO1: Explains the integrated use of economics & ecology in decision making & law making processes
CO2: Discusses ideas and tools developed in other branches of economics to make significant contribution to valuation techniques, design of policy instruments for pollution control and management of commons
CO3: Examines the fundamentals of cost-benefit analysis and valuation techniques used for environmental economics

COs of the Course on "**Indian and International Environmental Law" –MA (Paper 11)**

CO1: Explains the role of environmental laws for planetary housekeeping, protecting the planet and its people from activities that upset the earth and its life-sustaining capacities
CO2: Explains to apply a range of regulatory instruments to preserve and protect the environment
CO3: Emphasizes on identifying the strengths and weaknesses in law and its enforcement and develops strategies to overcome the same

COs of the Course on "**Environmental History and Environmentalism" –MA (Paper 13)**

CO1: Provides a concise history, from ancient to modern times, of the interactions between human societies in relationship to ecosystems
CO2: Explains the present day environmental dilemmas, conflicts and choices that have their roots in the past
CO3: Examines the ways in which environmental changes, often the result of human actions, have caused historical trends in human societies.
CO4: Introduces the ideology of environmentalism and environmental history, modern environmental movements, the Gaia theory

COs of the Course on "**Environmental Policies and Politics" –MA (Paper 14)**

CO1: Introduces the politics of environmental issues at the national and international levels
CO2: Familiarizes with the debates on environmental policies and regulations and environmental movements in India

COs of the Course on "**Environmental Communications and Education" –MA (Paper 15)**

CO1: Focuses on methods of communication to the masses and consumers for environmental issues
CO2: Provides an overview of the scenario of environmental education and communication at the national and international levels
CO3: Provides foundation of environmental communication, education and interpretations to achieve the goal of sustainable development, protection of environment, and conservation of biodiversity and ecosystems

COs of the Course on "**Technology, Environment and Society" –MA (Paper 16)**

CO1: Explains the relationship between and evolution of technology and environment
CO2: Provides in-depth understanding on the role and contribution of different types of economic and social mechanisms in the contemporary societies shaping the structure and function environment
CO3: Analyze the technological changes in the direction of sustainable development and to achieve ecological and social justice.

COs of the Course on "**Natural Resource Conflicts and Choices" –MA (Paper 17)**

CO1: Focuses on contemporary conflicts, struggles and policy choices around natural resources
CO2: Provides critical thinking on who controls the environment and how, and who degrades nature and why
CO3: Introduces to major approaches towards natural resource issues and enables to think creatively about conflict and concord in general, with special emphasis on the roles of ideas and institutions in environmental politics
CO4: Discusses case studies on big dams and endangered fauna, industrial pollution and global warming, the role of gender and empire

COs of the Course on "**Global Environmental Issues" –MA (Paper 19)**

CO1: Introduces the important environmental issues that have become a matter of global policy making, international negotiations and trade disputes
CO2: Provides an understanding of the links between environment, property regimes, trade and information economies

COs of the Course on "**Atmosphere and Global Climate Change" –MSc (Paper 9)**

CO1: Introduces the development of the Earth's atmosphere, its dynamic nature and variability in turns of the global energy balance
CO2: Deals with elements of the climate, climate change and human impacts on climate initiative policies
CO3: Trains on different methods being sued to understand the functioning of atmospheric processes

COs of the Course on "**Natural & Managed Ecosystem" –MSc (Paper 10)**

CO1: Explains the important aspects of Ecology
CO2: Emphasizes the distinction between natural and managed ecosystems
CO3: Discusses different management approaches and strategies for sustainable development
CO4: Empowers on tools and techniques used to analyze the status of ecosystems

COs of the Course on "**Biodiversity and Conservation Biology" –MSc (Paper 11)**

CO1: Entails the study of diversity existing at different levels of Biological organization
CO2: Provides basic concept on the essential ecological and biological processes which ensures long terms stability of ecosystems
CO3: Highlights the values of biodiversity and scientific approaches to conservation which only can lead to sustainable development and safeguard the interests of future generations
CO4: Trains on the methods for measurement of species diversity and molecular diversity

COs of the Course on "**Soil Biology" –MSc (Paper 12)**

CO1: Provides fundamentals of general soil science, the processes of its development and the major principles of its classifications and mapping
CO2: Analyze the importance of applied soil science is in the practice of composting, and the fight against pollution or erosion of soils.
CO3: Explains the types of organismic interactions in soil, problems and solutions to different soil related challenges
CO4: Trains on methods to analyze soil physical, chemical and biological characteristics

COs of the Course on "**Ecotoxicology and Environmental Health" –MSc (Paper 13)**

CO1: Discusses the source, origin and effect of various toxic materials and heavy metals that adversely affect environmental health
CO2: Develops in-depth understanding on movement of toxicants in different components of environment, in different levels of biological organization and in trophic transfer across the food chain
CO3: Explains the types of contaminants and its effect on human health
CO4: Trains on the methods used to assess the ecotoxicological impact and human health issues due to increase in the levels of contaminants in environment

COs of the Course on "**Environmental Chemistry" –MSc (Paper 15)**

CO1: Introduces the basic chemistry relevant to the course, and to the general chemistry of the lithosphere, hydrosphere and atmosphere
CO2: Emphasize on understanding the chemistry of various anthropogenic pollutants and basic analytical techniques.
CO3: Trains on chemical analysis of water & waste water and the scientific principle of tools and techniques used for chemical analysis

COs of the Course on "**Environmental Hazards" –MSc (Paper 16)**

CO1: Introduces various environmental hazards, their causes, nature, preparedness and assessment of loss
CO2: Explains to model hazards and familiarizes them with methods of disaster management
CO3: Trains on preparation of hazard zonation map of India for landslides, earthquakes, floods; methods to estimate earthquake-loss using remote sensing and GIS, and prepare master plan for any environmental hazard mitigation

COs of the Course on "**Hydrology and Water Resources" –MSc (Paper 17)**

CO1: Introduces the hydrologic cycle and various characteristics of surface and groundwater resources including different techniques of water management
CO2: Explains methods to estimate physico-chemical properties of water and evaluate hydrologic parameters; catchment delineation and water balance
CO3: Trains on basic analytical methods to quantify water quality, analyze hydrograhs and determine hydrological parameters

COs of the Course on "**Environmental Geology" –MSc (Paper 18)**

CO1: Provides basic geologic knowledge to maximize the utilization of all natural resources and minimize their degradation
CO2: Explains geological methods to minimize the destructive potential of natural processes and to sustain a healthy biosphere on earth
CO3: Trains on methods to identify common minerals & major rock types in hand specimens and under petrological microscope, and tools to analyze geomorphological basis of land use and interpret plate tectonics and hazard zonation maps

COs of the Course on "**Systems Analysis and Modelling" –MSc (Paper 19)**

CO1: Introduces the concept of systems and sub-systems, and modelling and simulations as well as computational techniques

CO2: Explains to model various environmental systems, particularly those dealing with ecology and ecosystems and study of environmental pollution in modelling air and water quality

CO3: Introduces to major approaches towards natural resource issues and enables to think creatively about conflict and concord in general, with special emphasis on the roles of ideas and institutions in environmental politics

CO4: Trains on the computational techniques and simulation models to analyze environmental processes