

Program Outcome

PO1: M. Sc in Environmental Sciences is an advanced course of study that can lead to employment in the government or private sectors.

PO2: After completion of the program, the students have obtained fundamental knowledge of different aspects of environment at local, regional and global level.

PO3: Students have acquired environmental monitoring skills, by performing experiments and data analysis.

PO4: Students also achieved expertise in environmental management strategies.

PO5: Students acquired skills in the preparation, planning and implementation of environmental projects.

PO6: The students passing M.Sc. Degree in the subject Environmental Science have the opportunity of job and services in the field of Teaching, Researches, Projects, Effluent Treatment Plants/Sewage treatment Plant of various Industries/Companies/Factories, Municipal Councils/Corporations, Central Pollution Control Board, State Pollution Control Boards, National Research Institutes/Organizations/Laboratories, NEERI, EIA, GIS, Environmental Monitoring Projects, Environmental Consultants, Different Laboratories, NGO's, Forest department, Water Purification and Treatment Plants and Various Sectors related to the field of Environment.

PO7: Students can also be excellent entrepreneurs in the field of waste management.

Program Specific Outcomes

The Master's course (M.Sc.) in Environmental Science was instituted as a multidisciplinary programme with the aim of developing foundation on ecological, social, economic, legal and ethical dimensions on a robust interdisciplinary approach.

PSO1: Students in this program can expertise in many different areas such as Natural Resource Conservation and Management, Wildlife Management, Environmental Pollution, Environmental Monitoring and Instrumentation, Environmental Microbiology and Toxicology, Environmental Chemistry, Solid Waste Management, Environmental Impact Assessment and Disaster Management, Remote Sensing and GIS, Environmental Biotechnology, Sustainable Development and Ecological Modelling.

PSO2: The programme provides an understanding of the basic concepts of environments and its components along with their interactions through study of Ecology, Biodiversity, Environmental Chemistry, Environmental Microbiology and Biotechnology.

PSO3: It gives insight knowledge about the different kinds of pollution like air, water and soil and their sources, remediation measures through study of climate and pollution studies.

PSO4: Determine pollution using Environmental Monitoring and Analytical Techniques, Biostatistics and Basic computing.

PSO5: Understand different technologies like Environmental Biotechnology, Water and Wastewater treatment technology and Environmental Toxicology to find the solutions and their applications in abatement of pollution and other environmental problems.

PSO6: Understand the applications of different tools like Remote Sensing & Geographical Information Systems and different methodologies for the management and conservation of environment, natural resources and biodiversity.

PSO7: To disseminate knowledge about the environmental impact assessment of different developmental projects and disaster management strategies.

PSO8: Become aware of the environmental policies, legislation and regulations.

PSO9: Through Dissertation, student can identify a particular environmental problem, review the literature for finding the gaps, develop research methodology, collect data and carry out experimental analysis and interpretation for finding a suitable solution and acquire the ability to write the research findings in the form of structured thesis and communicate the research results through oral presentations and research papers.

Course Outcomes

The outcomes of the following courses are enlisted below.

1. Course MEN –C 101: Fundamentals of Environmental Science

CO1: It accounts for the recognition of physical, chemical and biological components of the earth's system and its functionality.

CO2: Development of critical thinking to examine all perspectives related to environmental issues, environmental interactions and its relationship with other subjects as interdisciplinary field.

2. Course MEN –C 102: Natural Resource Conservation and Management

CO1: Basic understanding of importance of environmental resources and their sustainable use.

CO2: Understanding the translational character of environmental problems and way of handling them at local, national and global level.

CO3: Development and application of concept and methodologies for analysis and understanding of interaction between social and environmental process and their holistic management.

3. Course MEN –C 103: Wildlife Management

CO1: Learning the basic of concept of wildlife, recognition of wildlife habitats, census methods and identification of wildlife species.

CO2: Application of knowledge to solve problems related to wildlife conservation and management and their inter-relationship with economy and environmental current and future scenario.

CO3: Enabling the critical evaluation of current events and public information related to wildlife conservation and management as being scientifically or opinion based contribution to the knowledge based information.

4. Course MEN –C 104: Environmental Pollution

CO1: Comprehensive overview of environmental pollution and their types, identification of sources and their management

CO2: Understanding the concepts involved in control technologies and their practical applications.

5. Course MEN –C 201: Environmental Monitoring and Instrumentation

CO1: Basic learning of environmental monitoring and sampling, diagnosing and feedback information to a warning or controlled procedure.

CO2: Emphasize on technical developments, analytical methods, data collection and analysis, use of scientific principles and their resource management and actions.

6. Course MEN –C 202: Environmental Microbiology and Toxicology

CO1: Competently explain various aspects of environmental microbiology –water, air and soil and comprehend about soil and air microbiome, water pollution, water-borne diseases, their transmission and control.

CO2: Enable the Understanding of basics of toxicology and xenobiotics, its impact and control measures.

7. Course MEN –C 203: Environmental Chemistry

CO1: Learning the basic principles of environmental chemistry. Application of previous knowledge of analytical chemistry to environmental processes and samples.

CO2: Understanding the interconnections between different sectors of the environment (soil, water, air) and the effect of human activities on the natural chemical processes.

8. Course MEN –E 204: Solid Waste and Wastewater Management

CO1: The concept of Solid waste and its management. The fundamental scientific processes underlying the design and operation of wastewater treatment plant.

CO2: Comprehend the management of residuals from water and wastewater treatment. Insight into the analytical methods that are used for the design of a water and wastewater treatment plant.

9. Course MEN –E 205: Air pollution and management

CO1: Introductory learning of major problems in indoor air pollution and control, regulations outcomes, recent statistics of indoor air problem and control strategy.

CO2: Familiar with regulations pertinent to air pollutions outcomes and importance of Clear Air Act and related materials and regulations.

CO3: Description of general air pollution problems, meteorological definitions, air transport equations and pollution control matters and devices. Knowledge of anthropogenic sources and atmospheric effects to pollutions, pollution transport mechanisms, development of transport equations and applications, stack emissions. Theory and development of pollution control devices: cyclone, electrostatic particle precipitator, packed towers, gravitational separator, bag house and their practical applications.

10. Course MEN –E 206: Current Environmental Issues and Basic Computing.

CO1: Understand the impact of environmental issues, the importance of environmental management in development of society and country, use of natural resources in sustainable manner.

CO2: Learning Basic Concepts of Computing, Computer organization and practical use in daily life and environmental operations.

11. Course MEN –C 301: Environmental Impact Assessment and Disaster Management.

CO1: Explicate the concept of EIA, identification of the objectives and scope of EIA, Illustration of the necessity of public participation in EIA studies.

CO2: Identifying the importance of environmental attributes, the phenomena of impacts on environment and quantifying the impacts for various developmental projects

CO3: Capacity to integrate knowledge and to analyse, evaluate and manage the different public health aspects of disaster events at a local and global levels, even when limited

information is available, to describe, analyse and evaluate the environmental, social, cultural, economic, legal and organisational aspects influencing vulnerabilities and capacities to face disasters. Balancing theoretically and practically aspect in the processes of disaster management (disaster risk reduction, response, and recovery) and relate their interconnections, particularly in the field of the Public Health aspects of the disasters, to manage the public health aspects of the disasters. And to analyse and evaluate research work on the field of emergencies and disaster while demonstrating insight into the potential and limitations of science, its role in society and people's responsibility for how it is used.

12. Course MEN -C302: Remote Sensing and GIS in Environmental Management.

CO1: Basic information of Remote sensing and GIS, enable the use of geo-spatial management methodology and tools in order to assist in developing an Environmental Management strategy.

CO2: Enabling learning basic GIS concepts including spatial data structures, data sources and transfer methods, projections and coordinate systems, geo-referencing, fundamental of spatial analysis, course exercise specially emphasis on environmental case studies and related tasks.

13. Course MEN -C303: Environmental Biotechnology.

CO1: Understand and assimilate the concepts and specific terminology of environmental biotechnology. Search and manage information from various sources, describing the scientific bases that are applied by environmental biotechnology. Describing the properties of microorganisms with potential application to processes of environmental biotechnology.

CO2: Explanation of the technologies, tools and techniques in the field of environmental biotechnology. To acknowledge the role of microorganisms as biotechnological agents. Mastering the basic terminology of molecular biology and genetics. Study bioreactors for environmental application.

14. Course MEN -C304: Sustainable Development, Eco-tourism and Environmental Economics

CO1: Sound knowledge and understanding of the major results of Sustainable development, Eco tourism and environmental economics. Introduction to the fundamentals of rigorous economic analysis.

CO2: Role, applications and impacts of Sustainable development as holistic approach, Eco-tourism and environmental Economics.

15. Course MEN -E305: Himalayan Geology and Ecology

CO1: Basic knowledge of developing a sustainable national capacity to continuously assess the health status of the Himalayan ecosystem, enable policy bodies in their policy-formulation functions and assist states in the Indian Himalayan Region (IHR) with their implementation of actions selected for sustainable development.

CO2: Scientific assessment of the vulnerability of the Himalayan eco system to short and long term variability in the weather and climate in all its dimensions of physical, biological and socio-cultural aspects, Research aptitude for framing evidence-based policy measures to protect the fragile ecosystem and Time-bound action programmes at state level in the Indian Himalayan Region (IHR) in order to sustain the ecological resilience and ensure the continued provision of key ecosystem services.

16. Course MEN -E306: Aquaculture

CO1: Basic understanding of agriculture, aquaculture and fisheries.. Aquaculture scenario in Indian and global context. Types of aquaculture systems and criteria for selecting species for culture. Ecological concepts like productivity, carrying capacity, food chain and food web. Ecological cycles of Nitrogen, Phosphorous and Carbon.

CO2: Pond fertilization and biological food production. Management of nursery, rearing and stocking ponds of cultivable fishes. Culture of air breathing fishes, prawns and mollusks. Integrated farming in aquaculture and concept of sustainability and Organizations involved in R&D in aquaculture.

17. MEN- C401: Faunistic Taxonomy and Biodiversity

CO1: Acquire knowledge required to map biodiversity of plants, animals and fungi. Introduction to the biological kingdoms, and their evolution and taxonomic classification.

CO2: Students will learn basic field methodology for such collections in different ecosystems during field excursions and field courses.

18. MEN- C402: Ecological Modelling, Statistics and Research Methods

CO1: Develop skills to understand long-term dynamics and stability properties of complex ecological systems.

CO2: Develop the ability to apply the methods while working on a research project work. Describe the appropriate statistical methods required for a particular research design

CO3: Choose the appropriate research design and develop appropriate research hypothesis for a research project. Develop an appropriate framework for research.

19. MEN- C403 Environmental policies and laws.

CO1: Learning about the significance of developments in international environmental law and the fundamental principles.

CO2: Understanding judicial response to environmental issues in India.

CO3: Exposition about human rights to environment and constitutional framework governing environment in India.