

Program Outcomes (POs)
Program Specific Outcomes (PSO)
Course Outcomes (COs)



**DEPARTMENT OF ENVIRONMENTAL
SCIENCE**

**DOON (P.G.) COLLEGE OF AGRICULTURE SCIENCE AND TECHNOLOGY
SELAQUI, DEHRADUN, UTTARAKHAND.**

PROGRAM AND COURSE OUTCOME
DEPARTMENT OF ENVIRONMENTAL SCIENCES

PROGRAM OUTCOMES

The M.Sc. Environmental Sciences programs impart knowledge of:

- PO1:** Conservation of natural resources,
- PO2:** Socio- ecological aspects
- PO3:** Pollution of the surrounding natural resources,
- PO4:** Controlling the pollution,
- PO5:** Social issues connected to it,
- PO6:** Impacts of human population on the environment, Public awareness

PROGRAM SPECIFIC OUTCOME:

PSO1. Develop skill and capacity of students(post graduate) for industries and task related to environmental management and safeguarding, UGC NET, ASRB NET, UGC GATE, USET and civil services (UPSC, PCS), etc.,

COURSE OUTCOME
M.Sc. ENVIRONMENTAL SCIENCES
Semester I

PAPER NAME: Fundamentals of Environmental Sciences

PAPER CODE: SOLS/EVS-C-001

COURSE OUTCOMES: Students will be able:

1. To gain fundamental knowledge of environmental sciences,
2. To understand the ecosystem population, community, ecological succession, self sustenance of ecosystem,
3. To understand meteorological parameters.

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Man and Environment

PAPER CODE: SOLS/EVS-C-002

COURSE OUTCOMES: Students will be able:

1. To gain knowledge about man and environment, religion, culture and environment,
2. To understand the environmental issues and problems,
3. To understand the politics of ecosystems

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Natural Resource Management

PAPER CODE: SOLS/EVS-C-003

COURSE OUTCOMES: Students will be able:

1. To provides knowledge on Natural resource management,
2. To understand the biodiversity, utilization, conservation, and management,
3. To understand the approaches/ methods and best practices for natural resources management,
4. To understand the sustainable development

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Environmental Chemistry and Instrumentation

PAPER CODE: SOLS/EVS-C-004

COURSE OUTCOMES: Students will be able:

1. To gain Basic knowledge of Environmental chemistry,
2. To understand the chemical composition of air, water chemistry and soil chemistry
3. To understand the toxic chemicals in the environment (air and water)
4. To understand Instrumentation techniques.

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Lab Course–I

PAPER CODE: SOLS/EVS-C-005

COURSE OUTCOMES: Students will be able:

1. To provide practical training related to ecosystem,
2. To provide practical training related to ecological adaptations in extreme environments etc.

Credits: One Lab /practical period of two hour per week over a semester

PAPER NAME: Lab Course–II

PAPER CODE: SOLS/EVS-C-004

COURSE OUTCOMES: Students will be able:

1. To provides practical training related to inventorization of natural resources,
2. To provides practical training related to modern methods/approaches for conservation of natural resources,
3. To provide training related to working and handling of instruments,
4. To determination of dissolved oxygen, Chloride contents,TDS, free CO₂and heavy metal

Credits: One Lab /practical period of two hour per week over a semester

COURSE OUTCOME
M.Sc. ENVIRONMENTAL SCIENCES
Semester II

PAPER NAME: Environmental Monitoring and Pollution Control

PAPER CODE: SOLS/EVS-C-007

COURSE OUTCOMES: Students will be able:

1. To provides basic knowledge on Environmental Monitoring and Pollution Control
2. To understanding the water pollution, air pollution, noise pollution, radioactive and thermal pollution and solid waste

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Climate Science: Climate Change, Impact, Mitigation and Adaptation

PAPER CODE: SOLS/EVS-C-008

COURSE OUTCOMES: Students will be able:

1. To provides basic knowledge of Climatology
2. To gain basic knowledge of physical and dynamic climatology,
3. To understanding the climatological process
4. To understanding the regional Climatology
5. To understanding the applied Climatology or Responses to Climate Change: Adaptation and Mitigation
6. To understanding the Arctic and Polar Affairs

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Environmental Microbiology, Biotechnology and Environmental Toxicology

PAPER CODE: SOLS/EVS-C-009

COURSE OUTCOMES: Students will be able:

1. To provides basic knowledge of Environmental microbiology,
2. To gain basic knowledge of microbial nutrition,
3. To understanding the microbial ecology, and environmental Biotechnology,
4. To understanding the Imparts knowledge of environmental toxicology,
5. To understanding the toxicity assessment, systemic toxicity,

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Ecology and Ecosystem Services

PAPER CODE: SOLS/EVS-C-010

COURSE OUTCOMES: Students will be able:

1. To gain knowledge of freshwater, terrestrial, Marine and agro ecosystem,
2. To understanding the Goods and services of freshwater, terrestrial ecosystem, Marine ecosystem and agro ecosystem,
3. To understanding the major terrestrial ecosystem in the world
4. To understanding the biomes and Biogeographic realms of worlds

5. To understanding the physico- chemical aspects of estuaries, marine and mangrove ecosystems
6. To understanding the coral Reef: as a specialized oceanic ecosystem
7. To understanding the drivers of degradation of ecosystems and their conservation and management

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Lab Course–I

PAPER CODE: SOLS/EVS-C-011

COURSE OUTCOMES: Students will be able:

1. To provides practical training related to climatology,
2. To provides practical training related to environmental monitoring and pollution control

Credits: One Lab /practical period of two hour per week over a semester

PAPER NAME: Lab Course–II

PAPER CODE: SOLS/EVS-C-012

COURSE OUTCOMES: Students will be able:

1. To provides practical training related to microbiology, biotechnology and toxicology
2. To provides practical training related freshwater, terrestrial, Marine and agro ecosystem goods and services

Credits: One Lab /practical period of two hour per week over a semester

PAPER NAME: Environment vs Development

PAPER CODE: SOLS/EVS- SS-001

COURSE OUTCOMES: Students will be able:

1. To provides knowledge on Growth and development,
2. To understanding the Resource and development,
3. To understanding the Environment *versus* development and conflicts related to environment and development and conflicts resolution mechanism

COURSE OUTCOME
M.Sc. ENVIRONMENTAL SCIENCES
Semester III

PAPER NAME: Environmental Economics and Sustainable Development

PAPER CODE: SOLS/EVS-C-013

COURSE OUTCOMES: Students will be able:

1. To basic knowledge of environmental economics,
2. To understanding the Economic tools,
3. To understanding the Sustainable Development,
4. To understanding the Social Issues and the Environment

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Biodiversity Conservation and Restoration Ecology

PAPER CODE: SOLS/EVS-C-014

COURSE OUTCOMES: Students will be able:

1. To imparts knowledge of biodiversity and its utilization,
2. To gain knowledge of conservation and management,
3. To understanding the ecosystem restoration
4. To understanding the management through ecological approaches

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Lab Course-I

PAPER CODE: SOLS/EVS-C-015

COURSE OUTCOMES: Students will be able:

1. To provides practical training related to environmental economics valuation,
2. To provides practical training related to ecosystem restoration and methods for biodiversity conservation

Credits: One Lab /practical period of two hour per week over a semester

PAPER NAME: Environmental Geosciences and Disaster Risk Reduction

PAPER CODE: SOLS/EVS-E-001

COURSE OUTCOMES: Students will be able:

1. To provides knowledge of environmental geosciences and earth system,
2. To understanding the earth's processes and geological hazards,
3. To understanding the environmental geochemistry and land use planning,
4. To understanding the disaster management, rehabilitation, reconstruction and recovery and disaster

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Traditional Ecological Knowledge

PAPER CODE: SOLS/EVS-E-002

COURSE OUTCOMES: Students will be able:

1. To provides knowledge on local traditional Ecological Knowledge,
2. To understanding the cultural, sacred, myth, rituals and beliefs,
3. To understanding the TEK and natural resources management
4. To understanding the knowledge transfer to new generation
5. To understanding the documentation and promotion of TEK

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Remote Sensing, GIS and Environmental Modeling

PAPER CODE: SOLS/EVS-E-003

COURSE OUTCOMES: Students will be able:

1. To provide basic knowledge of remote sensing
2. To understanding the application of Remote Sensing
3. To understanding the geographic information system (RS/GIS),
4. To understanding the environmental Modelling

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Environmental Toxicology

PAPER CODE: SOLS/EVS-E-004

COURSE OUTCOMES: Students will be able:

1. To imparts knowledge of environmental toxicology,
2. To imparts knowledge of toxicity assessment, systemic toxicity,
3. To understanding the biotransformation, bioaccumulation and biomagnifications,
4. To understanding the environmental health and risk assessment

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Lab Course–II

PAPER CODE: SOLS/EVS-E-005

COURSE OUTCOMES: Students will be able:

1. To provides practical training related to environmental geosciences
2. To provides practical training Disaster Risk Reduction,
3. To Understanding the Traditional Ecological Knowledge ,
4. To provides practical training Remote Sensing, GIS and Environmental Modeling ,
5. To provides practical training Environmental toxicology,

Credits: One Lab /practical period of two hour per week over a semester

PAPER NAME: Research Methodology and Environmental Statistics

PAPER CODE: SOLS/EVS- SS-002

COURSE OUTCOMES: Students will be able:

1. Students learn the various steps in the field of research,
2. Use and application of instruments in undertaking experimentation,
3. Analysis and presentation of data using statistical tools,
4. Various other means in environmental research and publication

COURSE OUTCOME
M.Sc. ENVIRONMENTAL SCIENCES
Semester IV

PAPER NAME: Environmental Management: EIA and Environmental Auditing

PAPER CODE: SOLS/EVS-C-016

COURSE OUTCOMES: Students will be able:

1. To provides knowledge on Environmental impact assessment,
2. To imparts knowledge of methodology of EIA,
3. To understanding the public participation in sound environmental decision
4. To understanding the environmental clearance procedures,
5. To understanding the monitoring and auditing of environment,
6. To understanding the environmental management plan for developmental projects

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Environmental Laws, Ethics and Policies

PAPER CODE: SOLS/EVS-C-017

COURSE OUTCOMES: Students will be able:

1. To provides knowledge related to national and international efforts for environmental protection,
2. To imparts knowledge of national laws and policies linked to environment management

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Lab Course-I

PAPER CODE: SOLS/EVS-C-018

COURSE OUTCOMES: Students will be able:

1. To provides practical training related to EIA and EMP,
2. To provides practical training related to Environmental auditing,
3. To provides practical training related to national laws And policies

Credits: One Lab /practical period of two hour per week over a semester

PAPER NAME: Dissertation

PAPER CODE: SOLS/EVS-E-006

COURSE OUTCOMES: Students will be able:

- To the studies on problem identification and data collection, compilation and analysis for designing strategies for conservation/management of environment and socio economic development

PAPER NAME: Mountain Ecology

PAPER CODE: SOLS/EVS-E-007

COURSE OUTCOMES: Students will be able:

1. To provides knowledge on importance of mountain ecosystem services,
2. To imparts knowledge of hazards and natural disaster related to mountain areas,
3. To understanding the livelihood of mountain communities,
4. To understanding the conservation and management of mountains and its precious resources

Credits: One Theory period of one hour per day over a semester

PAPER NAME: Himalayan Wildlife

PAPER CODE: SOLS/EVS-E-008

COURSE OUTCOMES: Students will be able:

1. To provides knowledge of Himalayan wildlife and suggests best possible approaches
2. To understanding the strategies for wildlife conservation and management

Credits: One Theory period of one hour per day over a semester