Environment Education and Awareness

Course Code: VAC-ENV
Credit weightage: 2

Total Marks:50
End semester examination:35
Internal Assessment: 15

Course Objectives

a. To understand the importance of the environment and the various issues it faces.
b. To assess students' knowledge and understanding of environmental education and awareness.
c. To foster a positive attitude among students towards the environment and ecology from a social perspective.
d. To develop scientific, interpretive, and creative thinking skills related to environmental issues in students.
e. To examine the challenges, we encounter in understanding nature, particularly concerning socio-economic solutions for sustainable development.

Learning Outcomes

a. Have awareness of the issues related to environmental pollution, its effects, and potential solutions.
b. Acquire knowledge about natural resources, their importance, and how human activities impact these resources in the environment.
c. Familiarize students with the significance of biodiversity conservation.
d. Understand the necessity of sustainable development for the future and strive to become a competent and socially responsible citizen of India.

Unit-1

Introduction to Environmental Studies

- Environmental Studies: Introduction and scope
- Segments of Environment: Atmosphere, hydrosphere, lithosphere, biosphere
- Concept of sustainability and sustainable development

Biodiversity and Conservation

- Levels of biological diversity: Genetic, species, and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts;
- Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity and values of biodiversity.

Ecology & Ecosystems

- Structure and function of ecosystem, energy flow, food chains, food webs, and ecological succession.
- Forest ecosystem, grassland ecosystem, desert ecosystem, and aquatic ecosystems (case studies of local ponds/ streams/ lakes/rivers/ etc.).

Natural Resources

- Introduction and classification, biotic and abiotic, renewable and non-renewable resources
- Land resources and land use change; land degradation, soil erosion, and desertification.
- Forest Resources: Importance and causes of deforestation including mining and dam building (Case Studies of Himachal Pradesh)
- Water resources: Use and over-exploitation of surface and groundwater, floods, droughts
- Energy resources: renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs.

Unit-11

Environmental pollution

- Definition, types and causes, effects and controls: Air, water, soil, noise, and radiation Pollution
- Emerging pollutants, fireworks, and their ill-effects, climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture, case studies on pollution

Environmental Policies & Practices

- Environment Laws: Wildlife Protection Act, Water (Prevention and Control of Pollution) Act, Forest Conservation Act, Air (Prevention & Control of Pollution) Act, Environmental Protection Act
- Environmental Impact Assessment, International agreements: Montreal and Kyoto protocols, Convention on Biological Diversity (CBD).
- Nature reserves, local populations and rights, and human-wildlife conflicts in Himachal context

Human Communities and the Environment

- Human population growth: Impacts on the environment, human health and welfare.
- Resettlement and rehabilitation of project-affected populations: A case study of Bhakra Nangal Dam/ or any nearby such site
- Disaster management: Floods, earthquakes, cyclones and landslides.
- Environmental ethics and environmental movements: Chipko and the *Devbans* in environmental conservation.
- Environmental communication and public awareness, case studies of Himachal Pradesh, the role of HIMCOSTE and Department of Environment, Science Technology & Climate Change (H.P)

Internal Evaluation weightage: 15 Marks

The internal evaluation will be based on the student's active participation through handwritten reports on the following activities:

- Campus cleanliness, plantations, nature camps drives
- Documentation of campus biodiversity
- Campus environmental management activities: Solid disposal, water management & sewage treatment
- Documentation of environmental assets: River/ forest/ flora/fauna/ etc.
- Visit a local polluted site: Urban/Rural/Industrial/Agricultural.
- Study common plants, insects, birds, and basic principles of identification.
- Study of simple ecosystems- pond, river, dam, pond/ etc.

Suggested Readings

- Anubha Kaushik and C P Kaushik, *Perspective in Environmental Studies*, New Age International Publishers.
- D. Dave and S. S. Katewa, *Text Book of Environmental Studies*, Cengage Learning.
- J.S. Singh, S. P. Singh and S.R. Gupta, *Ecology, Environment and Resource Conservation*, Anamaya Publications https://sdgs.un.org/goals
- S.E. Manahan, *Environmental Chemistry*, (11th ed.), CRC Press https://doi. org/10.1201/9781003096238.
- Ministry of Environment, Forest and Climate Change, *A Handbook on International Environment Conventions & Programmes* (2019). https://moef.gov.in/wp- content/uploads/2020/02/ convention-V-16-CURVE-web.pdf 3.
- Kanchi Kohli and Manju Menon, *Development of Environment Laws in India*, Cambridge University Press.
- Barrie Pittock, *Climate Change: The Science, Impacts and Solutions*, 2nd Edition, Routledge.
- V.K. Ahluwalia, *Environmental Pollution, and Health*, The Energy and Resources Institute (TERI).
- R. Rajagopalan, *Environmental Studies: From Crisis to Cure*, Oxford University Press.