

**REVISED**  
**ABILITY ENHANCEMENT**  
**COMPULSORY COURSE**

Environment Science  
Course: ENVS2AECC02  
(Theory)

To be implemented from the Academic Session 2022-23 onwards

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**HIMACHAL PRADESH UNIVERSITY**  
**SUMMER HILL, SHIMLA**

**COURSE : ENV52AECC2**  
**ENVIRONMENT SCIENCE (THEORY)**

Year end Examination: 100 marks

**Note:** The Examiner will set a total of nine (9) questions covering all topics/units of the prescribed course by setting at least two questions from each unit. Out of the nine questions, one question containing ten (10) short-answer type questions of two marks each that will cover entire course will compulsory. The candidate will attempt a total of five questions (one from each unit) including the compulsory question. All questions will carry equal marks.

**Unit 1**

Introduction to environmental studies & Ecosystems: Multidisciplinary nature of environmental studies: Scope and importance; what is an ecosystem? :Structure and function of ecosystem, Energy flow in an ecosystem, food chains, food webs and ecological succession, Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems; 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, biological invasions, Conservation of biodiversity, In-situ and Ex-situ conservation of biodiversity, Concept of sustainability and sustainable development.

(15 Periods)

**Unit 2**

Natural Resources & its management and conservation: Land resources and land use change: Land degradation, soil erosion and desertification; Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations; Water: Use and overexploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state); Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

(15 Periods)

**Unit 3**

Environmental Pollution & Management: Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution, Solid waste management: Control measures of urban and industrial waste. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Environment Laws: Environment Protection Act, Air (Prevention & Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act; International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD); Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

(15 Periods)

**Unit 4**

Environment & Social Issues: Human population growth: Impacts on environment, human health and welfare; Resettlement and rehabilitation of project affected persons; case studies; Disaster management: floods, earthquake, cyclones and landslides; Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan, Environmental ethics: Role of

Indian and other religions and cultures in environmental conservation; Environmental communication and public awareness, case studies.

### **Dangers and Ill Effects of Drug Consumption**

Introduction - Definition of addiction, addict and Mode of action of drugs on body organs. Types of Drugs - Sedatives and tranquillizers, opiate narcotics, stimulants, Hallucinogens, Examples and their harmful effects. Reasons for drug addiction - Curiosity, peer pressure, frustration and depression, family history, prolonged use of drugs for pain relief. Ill effects of drug addiction - on the health of the victim, family and society. Rehabilitation of Drug Addicts - Role of family, friends, society and rehabilitation centres.

(15 Periods)

### **Suggested Readings:**

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*. London, Routledge.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. *Threats from India's Himalaya dams*. *Science*, 339: 36-37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29-64). Zed Books.
8. McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. Tripathi 1992.
14. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.