GRANTS COMMISSION
Ability Enhancement Compulsory Course (AECC – Environment Studies)
For B.A./B.Sc./B.Com

Semester-II **Credit-6**
Marks-50 (End Semester-40; IA-10) **Total Lecturers-36**

Unit 1: Introduction to environmental studies
Multidisciplinary nature of environmental studies; Scope and importance,
Concept of sustainability and sustainable development. **(2 lectures)**

Unit 2: Ecosystems
What is an ecosystem? Structure and function of ecosystem,
Energy flow in an ecosystem: food chains, food webs and ecological succession.
Case studies of the following ecosystems :
a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem
d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans) **(4 lectures)**

Unit 3 : Natural Resources
Renewable and Non-renewable Resources
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 over-exploitation 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. **(6 lectures)**

Unit 4: 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,
biological invasions;
Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and
Informational value. **(6 lectures)**

Unit 5: Environmental Pollution
Environmental pollution: types, causes, effects and controls;
Air, water, soil and noise pollution
Nuclear hazards and human health risks.
Solid waste management: Control measures of urban and industrial waste.
Pollution case studies. **(6 lectures)**

Unit 6 : Environmental Policies & Practices

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. **(6 lectures)**

Unit 7: Human Communities and the Environment

Human population growth: Impacts on environment, human health and welfare.

Resettlement and rehabilitation of project affected persons;

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 (e.g., CNG vehicles in Delhi). **(6 lectures)**

Unit 8 : Field work

Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.

Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.

Study of common plants, insects, birds and basic principles of identification.

Study of simple ecosystems-pond, river, Delhi Ridge, etc. (Equal to 5 lectures)

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.

12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edn. 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.

16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.

17. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.

18. Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.

19. Wilson, E. O. 2006. The Creation: An appeal to save life on earth. New York: Norton.

20. World Commission on Environment and Development. 19