

SEMESTER II
Common Value Added Courses (VAC-151)
ENVIRONMENTAL STUDIES

Total Marks= 100

End Semester Examination = 70

Internal Examination = 30

Total Credits=3

UNIT 1: Introduction to Environmental Studies: (12 lectures)

Definition, scope and importance of environmental studies. Concept of ecosystem; Producers, consumers and decomposers; Energy flow in an ecosystem; Food chain and food webs; Ecological pyramids; Ecological succession. Nutrient cycles (Carbon cycle and nitrogen cycle). Major ecosystems: Terrestrial (Forest) and Aquatic (Pond).

UNIT 2: Natural Resources and management: (12 lectures)

Concepts and types of natural resources (Renewable and non-renewable). Importance, threats and management of land resources, forest resources, water resources and energy resources.

UNIT 3: Biodiversity and conservation: (12 lectures)

Definition, levels of biodiversity (genetic, species and ecosystem diversity); Endemism ; global biodiversity hot spots. Biodiversity of India with special reference to North East India. Threats to Biodiversity: Habitats loss, poaching of wildlife, man-wildlife conflicts in Indian context. *In-situ* and *ex-situ* conservation of biodiversity.

UNIT 4: Environmental pollution and climate change: (12 lectures)

Environmental pollution: Types (Air, water, soil and noise pollution), causes, effects and controls, Solid waste Management. Climate change, global warming, ozone layer depletion, acid rain and its impact on environment. Environment Laws: Environment Protection Act; Air (Prevention and control of pollution) Act; Water (Prevention and control of pollution); Wildlife Protection Act.

UNIT 5: Environmental ethics and disaster management: (12 lectures)


Principle and concept of environmental ethics; Animal Welfare and Animal Rights, Deep ecology, Ecofeminism, Putting environmental ethics into practice. Environmental movement and awareness: Chipko, Silent valley, Bishnois of Rajasthan. Causes, impacts and management of floods, earthquake, cyclones and landslides.

SUGGESTED READINGS:

1. Bharucha, E. (2003). Textbook for Environmental Studies, University Grants Commission, New Delhi and Bharati Vidhyapeet Institute of Environmental Education and Research, Pune.
2. Carson, Rachel. (1962). Silent Spring (Boston: Houghton Mifflin, 1962), Mriner Books, 2002.
3. Economy, Elizabeth (2010). The River Runs Black: The Environmental Challenge to China's Future.
4. Gadgil, M. and Ramachandra, G. (1993). This fissured land: an ecological history of India. University of California Press.
5. Gleeson, B. and Low, N. (eds.) (1999). Global Ethics and Environment, London, Routledge.



6. Grumbine, R. Edward, and Pandit, M. K. (2013). Threats from India's Himalaya dams. *Science* 339. 6115: 36-37.
7. Heywood V. H. and Watson, R. T. (1995). *Global Biodiversity Assessment*. Cambridge University Press.
8. McCully, P. (1996). *Silenced rivers: the ecology and politics of large dams*. Zed Books.
9. McNeill, John R. (2000). *Something New Under the Sun: An Environmental History of the Twentieth Century*.
10. Odum, E. P., Odum, H. T. And Andrews, J. (1971). *Fundamentals of Ecology*. Philadelphia: Saunders.
11. Pepper, I. L., Gerba, C. P. and Brusseau, M. L. (2011). *Environmental and Pollution Science*. Academic Press.
12. Rao, M. N. and Datta, A. K. (1987). *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
13. Raven, P. H., Hassenzahl, D. M. and Berg, L. R. (2012). *Environment*, 8th edition. John Wiley and Sons.
14. Ricklefs, R. E. and Miller, G. L. (2000). *Ecology*. W. H. Freeman, New York.
15. Robbins, P. (2012): *Political Ecology: A critical introduction*. John Wiley and Sons.
16. Rosencranz, A., Divan, S. and Noble, M. L. (2002). *Environmental law and policy in India*. Oxford University Press, India.
17. Sengupta, R. (2003). *Ecology and Economics: An approach to sustainable development*. OUP Catalogue.
18. Singh, J. S., Singh, S. P. and Gupta, S. R. (2006). *Ecology, Environment and Resource Ecology, Environment and Resource Conservation*. Anamaya Publishers.
19. Sodhi, N. S., Gibson, L. and Raven, P. HG. (eds). (2013). *Conservation biology: voices from the Tropics*. John Wiley and Sons.
20. Van Leeuwen, C. J. and Vermeire, T. G. (2007). *Risk assessment of Chemicals*.
21. World Commission on Environment and Development. (1987). *Our Common Future*. Oxford. Oxford University Press.


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