

AECC-1: ENVIRONMENTAL STUDIES
Ability Enhancement Compulsory Course (AECC)

Course Title: ENVIRONMENTAL STUDIES	
Course Code: AECC-1	Course Credits: 2
No. of Teaching Hours/Week: 2	Duration of End Sem. Exam: 2 Hours
Total Contact Hours: 28	Assessment (Marks): 30 (Theory) + 20 (IA) =50

Course Objectives:

1. To make students realize the importance and their role in the protection and maintenance of a healthy environment for sustainable development.
2. To enable students to grasp the significance and issues related to ecosystems, biodiversity and natural resources, and ways of managing/ protecting them.
3. To enable students to have a nuanced understanding of environmental pollution, solid waste management and climate change and to act with concern on environmental issues.
4. To make students aware of the environmental policies and movements, and the role of individuals and communities in environmental protection for educating and inspiring the young minds.

Learning Outcomes:

At the end of the course, students will –

1. Understand the importance and dimension of a healthy environment, become environmentally conscious, skilled and responsible in all their actions with a concern for sustainable development.
2. Comprehend the significance and issues related to ecosystems, natural resources and biodiversity and become aware of the need and ways to protect/ preserve them.
3. Grasp the issues related to environmental pollution, solid waste management and climate change, and become conscious and proactive in the discharge of their responsibilities towards the environment.
4. Become aware and appreciate the values and concerns of environmental movements and policies and the role of communities, and act responsibly on environment-related issues.

Pedagogy: Lectures/Tutorials/Interactive Sessions/Open Educational Resources (as reference materials), practical exercises/Assignments/ Seminars/Group discussions and Counselling.

AECC-1: ENVIRONMENTAL STUDIES

UNIT 1: Introduction

7 hours

- 1.1: Environmental Studies – Importance and scope, multidisciplinary nature; Concept of sustainability and sustainable development
- 1.2: Ecosystems –Concept, structure and function; Pond ecosystem, Forest ecosystem; Food chains, Food webs; Concept of ecological succession
- 1.3: Bio-geographical zones of India; Levels of biological diversity- Genetic, Species and ecosystem; Biodiversity Hotspots with special reference to India; Threats to biodiversity
- 1.4: Conservation of biodiversity: In-situ and Ex-situ; Endangered and endemic species – Concept; Afforestation – Social forestry, Agroforestry, Green belt

UNIT 2: Environmental pollution and its management

7 hours

- 2.1: Air pollution, water pollution, noise pollution, - Causes, effect and control measures.
- 2.2: Climate change, global warming, ozone layer depletion, acid rain and its impact on human communities and agriculture
- 2.3: Solid waste management - biodegradable and non-biodegradable waste; Segregation of domestic waste at source
- 2.4: Impact of plastic on human and animal health

UNIT 3: Natural resources and management

7 hours

- 3.1: Land resources and land-use changes; Land degradation, soil erosion and desertification
- 3.2: Water: Use and over-exploitation of surface and groundwater; Water conservation - rainwater harvesting; Watershed management – Meaning and importance
- 3.3: Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources
- 3.4: Disaster management– Definition and types (Natural and Man-made); Self-protection during disasters (Fire, Floods, Earthquakes, landslides)

UNIT 4: Environmental Policies and Practices

7 hours

- 4.1: Human population growth: Impact on environment, human health and welfare; Environmental ethics– Role of religion and cultures
- 4.2: Environment movements – Chipko, Narmada Bachao Andolan, Silent valley, Bishnois of Rajasthan
- 4.3: Individual and community initiatives – *Salu Marada Thimmakka*; Concept of Sacred Groves (*Devarakadu*)
- 4.4: Environment Protection Act; Biodiversity Act (2002); National Environmental Policy, 2006 – Provisions and importance; Environmental Impact Assessment – Concept; *Swachh Bharat Mission*– Objectives; International agreements – Montreal and Kyoto protocols

Suggested Reading:

1. Agarwal, K.C. (2001) *Environmental Biology*, Bikaner, Nidhi Pub.
2. Basker, Sushmitha & Bhasker, R. (2007) *Environmental Studies for Undergraduate Courses*, New Delhi, Unicorn Books.
3. Bharucha, Erach, (2013) *Textbook of Environmental Science*. Orient Black Swan.
4. Bhatt, K. N. (2010) *Population Environment and Health – emerging issues*, Jaipur, Rawat.
5. Carson, R. (2002) *Silent Spring*. Houghton Mifflin Harcourt.
6. Coenraads, Robert (2010) *Natural disasters and how we cope* Millennium House.
7. Hebbar, Aravinda, (2003) *Parisara Vijnana*, Udupi, Lathangi Prakashana.
8. Gadgil, M., & Guha, R. (1993). *This Fissured Land: An Ecological History of India*, Univ. of California Press.
9. Gleeson, B. and Low, N. (eds.) (1999). *Global Ethics and Environment*, London, Routledge.
10. Glejck, P. H. (1993). *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, OUP.
11. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. (2006). *Principles of Conservation Biology*. Sunderland: Sinauer Associates.
12. McCully, P. (1996). *Rivers no more: the environmental effects of dams* (pp. 29-64) Zed Books.
13. McNeill, John R. (2000). *Something New Under the Sun: An Environmental History of the Twentieth Century*.
14. Nandini, N. (2019). *A textbook on Environmental Studies (AECC)*. Sapna BookHouse, Bengaluru.
15. Grumbine, R. Edward, and Pandit, M.K. (2013). *Threats from India's Himalayadams. Science*, 339: 36-37.
16. Odum, E. P. (1983) *Basic Ecology*, Saunders.
17. Odum, E.P., Odum, H.T. & Andrews, J. (1971). *Fundamentals of Ecology*, Philadelphia: Saunders.
18. Pandey, G.N. (1997) *Environmental Management*. Vikas Publishing House.
19. Roy, Pashupati Kumar and Kumar, Arvind (2008) *Environmental Resource Management*. Daya Pub.
20. Pepper, I.L, Gerba, C.P. & Brusseau, M.L. (2011). *Environmental and Pollution Science*. Academic Press.
21. Rao, M.N. & Datta, A.K. (1987). *Waste Water Treatment*. Oxford and IBH Pub.
22. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. (2012). *Environment*. 8th edition. John Wiley & Sons.
23. Rosencranz, A., Divan, S., & Noble, M. L. (2001). *Environmental law and policy in India*. Tripathi 1992.
24. Sengupta, R. (2003). *Ecology and economics: An approach to sustainable development* OUP.
25. Sharma, P.D. (2011) *Ecology and Environment*, Rastogi Publications.

26. Singh, Harimohan (2010) *Waste Water Treatment Technology*, Alfa Publications, New Delhi,
27. Singh, Janamjit (2006) *Biodiversity - planning for sustainable development*, New Delhi, Deep and Deep Pub.
28. Singh, R.B. and Mal, Suraj (2009) *Environmental change and bio-diversity*. Jaipur, Rawat,
29. Singh, J.S., Singh, S.P. and Gupta, S.R. (2014). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
30. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). (2013). *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
31. Thapar, V. (1998) *Land of the Tiger: A Natural History of the Indian Subcontinent*, Warren, C. E. (1971). *Biology and Water Pollution Control*. WB Saunders.
32. Wilson, E. O. (2006). *The Creation: An appeal to save life on earth*. New York:Norton.
33. World Commission on Environment and Development. (1987). *Our CommonFuture*. Oxford University Press.

