



**Bharati College**



**(University of Delhi)**  
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## Lesson Plan (AEC Semester I, August to November 2023)

<b>Name of Teacher</b>	Dr Rashmi Kumari	<b>Department</b>	Environmental Studies
<b>Course</b>	Ability Enhancement Course	<b>Semester</b>	First
<b>Paper</b>	Environmental Science: Theory into Practice Paper code - 2181001001	<b>Academic Year</b>	2023-2024

### Learning Objectives

- To gain knowledge on natural processes and resources.
- To understand the consequences of human actions on the web of life, global economy, and quality of human life.
- To develop critical thinking for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.
- To Acquire values and attitudes towards understanding complex environmental- economic- social challenges, and active participation in solving current environmental problems and preventing the future ones.
- To adopt sustainability as a practice in life, society, and industry.

### Learning Outcomes

- i. Gain in-depth knowledge on natural processes and resources that sustain life and govern economy.
- ii. Understand the consequences of human actions on the web of life, global economy, and quality of human life.
- iii. Develop critical thinking for shaping strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.
- iv. Acquire values and attitudes towards understanding complex environmental- economic- social challenges, and active participation in solving current environmental problems and preventing the future ones.
- v. Adopt sustainability as a practice in life, society, and industry.

## Lesson Plan

Week No.	Theme/Curriculum	Any Additional Information
1-2	<ul style="list-style-type: none"> <li>• Multidisciplinary nature of environmental studies; components of environment: atmosphere, hydrosphere, lithosphere, and biosphere</li> <li>• Scope and importance; Concept of sustainability and sustainable development; Brief history of environmentalism</li> </ul>	Practical and Experimental activities
3-7	<ul style="list-style-type: none"> <li>• Definition and concept of Ecosystem: Structure of ecosystem (biotic and abiotic components)</li> <li>• Functions of Ecosystem: Physical (energy flow), Biological (food chains, food web, ecological succession), and Biogeochemical (nutrient cycling) processes. Concepts of productivity, ecological pyramids and homeostasis</li> <li>• Types of Ecosystems: Tundra, Forest, Grassland, Desert, Aquatic (ponds, streams, lakes, rivers, oceans, estuaries); importance and threats with relevant examples from India</li> <li>• Ecosystem services (Provisioning, Regulating, Cultural, and Supporting); Ecosystem preservation and conservation strategies; Basics of Ecosystem restoration</li> </ul>	<p>Allocation of Assignment I (Last Date 30 th September 2023)</p> <p>Practical, Experimental activities and Outreach activities</p>
8-11	<ul style="list-style-type: none"> <li>• Land resources: Minerals, soil, agricultural crops, natural forest products, medicinal plants, and forest-based industries and livelihoods; Land cover, land use change, land degradation, soil erosion, and desertification; Causes of deforestation; Impacts of mining and dam building on environment, forests, biodiversity, and tribal communities</li> <li>• Water resources: Natural and man-made sources; Uses of water; Over exploitation of surface and ground</li> </ul>	<p>Test and Viva Scheduled</p> <p>Practical, Experimental activities and Outreach activities</p>

	<p>water resources; Floods, droughts, and international &amp; inter- state conflicts over water</p> <ul style="list-style-type: none"> <li>• Energy resources: Renewable and non-renewable energy sources; Use of alternate energy sources; Growing energy needs; Energy contents of coal, petroleum, natural gas and bio gas; Agro-residues as a biomass energy source</li> <li>• Case studies: Contemporary Indian issues related to mining, dams, forests, energy, etc (e.g., National Solar Mission, Cauvery river water conflict, Sardar Sarovar dam, Chipko movement, Appiko movement, Tarun Bharat Sangh, etc)</li> </ul>	
12-15	<ul style="list-style-type: none"> <li>• Environmental pollution (Air, water, soil, thermal, and noise): causes, effects, and controls; Primary and secondary air pollutants; Air and water quality standards</li> <li>• Nuclear hazards and human health risks</li> <li>• Control measures for various types of urban, industrial waste, Hazardous waste, E-waste, etc; Waste segregation and disposal related case studies</li> </ul>	Practical, Experimental activities and Outreach activities

## References

1. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y., and Berg, L.R. (2015). *Environment*, 8th Edition. Wiley Publishing, USA. (pp. 1-472).
2. Singh, J.S., Singh, S.P., and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. (pp.1-842).
3. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y., and Berg, L.R. (2015). *Environment*, 8th Edition. Wiley Publishing, USA. (pp. 1-472).
4. Odum, E.P., Odum, H.T., and Andrews, J. (1971). *Fundamentals of Ecology*. Saunders, Philadelphia, USA. **Chapter 1** (Pages: 1-16); **Chapter 2** (Pages: 18-76); **Chapter 10** (Pages: 414-458).
5. Gadgil, M. and Guha, R. (1993). *This Fissured Land: An Ecological History of India*. University of California Press, Berkeley, USA. (pp. 1-245).
6. McCully, P. (1996). *Rivers no more: the environmental effects of dams*, In: *Silenced Rivers: The Ecology and Politics of Large Dams*, Zed Books, New York, USA. **Page. 29-64**.
7. Brusseau, M.L., Pepper, I.L. and Gerba, C.P. (2019). *Environmental and Pollution Science*, 3rd Edition. Academic Press, USA. **Chapter 16** (Pages: 243-255); **Chapter 18** (Pages: 280-305); **Chapter 21** (Pages: 352-358); **Chapter 22** (Pages: 365-374); **Chapter 23** (Pages: 378-388); **Chapter 25** (Pages: 416-426).
8. Carson, R. (2002). *Silent Spring*. Houghton Mifflin Harcourt, USA. Pp. 1-264.

**Additional Resources**

1.

**Online Resources (If Any)**

**Assignment and Class Test Schedule for Semester**

**Marks distribution**  
**Assignment = 4 Marks**  
**Test = 4 Marks**  
**Viva= 10 Marks**  
**CA = 10 Marks**