



Indraprastha College for Women University of Delhi

Course Name:	BCom Group-B
Paper Title:	Environmental Science: Theory into practices (AEC-I)
Unique Paper Code:	2181001001
Semester:	I
Faculty(s):	Dr. Nikki
Year:	2026

Work Plan			
Unit No.	Learning Objective	Lecture No.	Topics to be Covered
I	Introduction to Environmental Studies	1	Multidisciplinary nature of environmental studies, components of environment
		2	sustainability and sustainable development, history of environmentalism
II	Ecosystems	3	Structure of ecosystem, Functions of Ecosystem, energy flow, food chains, food web, ecological succession, and Biogeochemical (nutrient cycling) processes
		4	Concepts of productivity, ecological pyramids and homeostasis,
		5	Types of Ecosystems: Tundra, Forest, Grassland,)
		6	Types of Ecosystems: :Desert, Aquatic (ponds, streams, lakes, rivers , oceans, estuaries
		7	Ecosystem services (Provisioning , Regulating, Cultural, and Supporting);

		8	Ecosystem preservation and conservation strategies; Basics of Ecosystem restoration
III	Natural Resources	9	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
		10	desertification; Causes of deforestation; Impacts of mining and dam building on environment, forests, biodiversity, and tribal communities
		11	Water resources: Natural and man-made sources; Uses of water;
		12	Over exploitation of surface and ground water resources; Floods, droughts, and international & interstate conflicts over water
		13	Energy resources: Renewable and non-renewable energy sources; Use of alternate energy sources; Growing energy needs;
		14	Energy contents of coal, petroleum, natural gas and bio gas; Agro-residues as a biomass energy source
		15	Contemporary Indian issues related to mining, dams, forests, energy , National Solar Mission,
		16	Cauvery river water conflict , Sardar Sarovar dam, Chipko movement, Appiko movement, Tarun Bharat Sangh
IV	Environmental Pollution	17	Environmental pollution : Air, water, soil, thermal, and noise): causes, effects, and controls; Primary and secondary air pollutants;
		18	Environmental pollution : Water, soil
		19	Environmental pollution : Thermal noise
		20	Nuclear hazards and human health risks
		21	Solid waste management: Control measures for various types of urban, industrial waste, Hazardous waste,
		22	E-waste, etc; Waste segregation and disposal,
		23	Delhi air pollution and public health issues, Plastic waste management rules, Bhopal gas tragedy
		24	Previous year question, doubts

Syllabus		
Unit	Contents	Contact Hours
I	Unit 1 Introduction to Environmental Studies Multidisciplinary nature of environmental studies; components of environment: atmosphere, hydrosphere, lithosphere, and biosphere • Scope and importance; Concept of sustainability and sustainable development; Brief history of environmentalism	2
II	Unit 2 Ecosystems • Definition and concept of Ecosystem • Structure of ecosystem (biotic and abiotic components); 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 4 Ability Enhancement Compulsory Course 5 • Types of Ecosystems: Tundra, Forest, Grassland, Desert, Aquatic (ponds, streams, lakes, rivers, oceans, estuaries); importance and threats with relevant examples from India • Ecosystem services (Provisioning, Regulating, Cultural, and Supporting); Ecosystem preservation and conservation strategies; Basics of Ecosystem restoration	6
III	Unit 3 Natural Resources • 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 • Water resources: Natural and man-made sources; Uses of water; Over exploitation of surface and ground water resources; Floods, droughts, and international & interstate conflicts over water • 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 • 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)	8
IV	Unit 4: Environmental Pollution Environmental pollution (Air, water, soil, thermal, and noise): causes, effects, and controls; Primary and secondary air pollutants; Air and water quality standards • Nuclear hazards and human health risks • Solid waste management: Control measures for various types of urban, industrial waste, Hazardous waste, E-waste, etc; Waste segregation and disposal • Pollution case studies: Ganga Action plan (GAP), Delhi air pollution and public health issues, Plastic waste management rules, Bhopal gas tragedy, etc	8
	Total	24

Suggested Readings

Unit1: Introduction to Environmental Studies

1. Raven, P.H, Hassenzuhl, D.M., Hager, M.C, Gift, N.Y.,and Berg, L.R. (2015). Environment, 8th Edition. Wiley Publishing, USA. Chapter 1 (Pages: 1-17); Chapter 2 (Pages:22-23); Chapter 3 (Pages:40,41); Chapter 4 (Pages:64,66).

2. Singh,J.S., Singh,S.P.,and Gupta,S.R.(2017).Ecology, Environmental Scienceand Conservation. S.Chand Publishing, New Delhi.Chapter1(Page:3-28).

Unit 2:Ecosystems

1. Odum,E.P., Odum,H.T., and Andrews,J. (1971). Fundamentals of Ecology. Saunders, Philadelphia, USA. Chapter1(Pages: 1-16); Chapter2(Pages: 18-76);Chapter10(Pages:414-458).

2. Raven,P.H,Hassenzuhl, D.M.,Hager, M.C,Gift, N.Y.,and Berg,L.R.(2015). Environment, 9th Edition. Wiley Publishing, USA. Chapter 3 (Pages: 38-52); Chapter 4(Pages:53-62); Chapter5 (Pages:100-103); Chapter6(Pages:106-128).

3. Singh, J.S., Singh, S.P., and Gupta, S.R. (2017). Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi. Chapter 13 (Pages: 307-323);Chapter18(Pages:420-442); Chapter 28 (Pages:747-769).

Unit 3:NaturalResources

1. Gadgil,M. and Guha,R.(1993). This Fissured Land: An Ecological History of India. University of California Press, Berkeley, USA. (pp.1-245).

2. McCully, P. (1996). Rivers no more: the environmental effects of dams, In:

SilencedRivers: The Ecology and Politics of Large Dams, Zed Books, New York, USA.

Page. 29-64.

3. Raven,P.H,Hassenzuhl,D.M.,Hager,M.C,Gift,N.Y.andBerg,L.R.(2015).Environment, 9th Edition. Wiley Publishing, USA. Chapters 10, 11, 12, 13 (Pages: 180-263);Chapter14(Pages:272-275);Chapter15(Pages:286-289).

4. Singh,J.S.,Singh,S.P.and Gupta,S.R.(2017).Ecology, Environmental Science and Conservation. S.Chand Publishing, New Delhi. Chapter 25 (Pages:623-663).

Unit 4:EnvironmentalPollution

1. Brusseau, M.L., Pepper, I.L. andGerba, C.P. (2019). Environmental and Pollution Science, 3rd Edition. Academic Press, USA. Chapter 16 (Pages: 243-255); Chapter 18(Pages:280-305); Chapter21(Pages:352-358); Chapter22(Pages:365-374); Chapter23(Pages:378-388); Chapter25(Pages:416-426).

2. Carson,R.(2002).Silent Spring.HoughtonMifflinHarcourt,USA.Pp.1-264.

3. Raven, P. H, Hassenzuhl, D. M., Hager, M. C, Gift, N. Y. and Berg, L. R. (2015). Environment, 9th Edition. Wiley Publishing, USA. Chapter 19 (Pages:359-381); Chapter 21 (Pages:401- 421); Chapter 23(Pages:440-453).

4. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). Ecology, Environmental Science and Conservation.S. Chand Publishing, New Delhi. Chapters 19,20,12 (Pages:445-535).

MARKING SCHEME

	Paper Components		
Credits	Lecture (L)	Tutorial (T)	Practical (P)
2	1	0	1
Assessment Scheme			
S.No.	Component	Marking Scheme	Total Marks
1	Internal Assessment - Assignment/Quiz/Project/Presentation - ClassTest - Attendance		10
		4	
		4	
		2	
2.	Continuous Assessment (Tutorial) - Activity 1 - Activity 2 - Attendance		NA
		NA	
		NA	
		NA	
3.	Practical - Continuous Assessment - End Term Written/Practical Exam - Viva		40
		40	
		NA	
		NA	
4.	End Semester Examination		30