

Course Name	ENVIRONMENTAL STUDIES			
Course Code	23UEVGC41	L	P	C
Category	MANDATORY COURSE	1 + 1 (III & IV SEM)		2

COURSE OBJECTIVES:

This course aims to provide knowledge on the

- Environmental studies and Ecosystem
- Natural Resources
- Biodiversity and its Conservation
- Environmental Pollution
- Environmental policies , Impact of Human Communities on Environment

UNIT - I Introduction to environmental studies and Ecosystems 6

Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere. • Scope and importance; Concept of sustainability and sustainable development.

Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems:

- Forest ecosystem
- Grassland ecosystem
- Desert ecosystem
- Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT - II Natural Resources: Renewable and Non-renewable Resources 6

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).

Heating of earth and circulation of air; air mass formation and precipitation.

Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

UNIT - III Biodiversity and Conservation 6

Levels of biological diversity :genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot pots; • 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.

UNIT - IV Environmental Pollution

6

Environmental pollution : types, causes, effects and controls; Air, water, soil, chemical and noise pollution.

Nuclear hazards and human health risks.

Solid waste management: Control measures of urban and industrial waste.

Pollution case studies.

UNIT - V Environmental Policies & Practices and Human Communities & the Environment

6

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 conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC).

Human population and growth:

Impacts on environment, human health and welfares. Carbon foot-print.

Resettlement and rehabilitation of project affected persons; case studies.

Disaster management: floods, earthquakes, cyclones and landslides.

Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

Note: Project Should be submitted compulsorily. Given below are ideas for project.

For Science Programmes:

Micro plastic estimation in water & soil, Biodiversity counting, Local floriculture requirement, home gardening with geotag, determination of water table level, Determination of TDS level, water analysis

For CS/IT/BCA/AI students: modelling to control pollution or any other environmental issues.

For Arts Programme:

Survey on Bore depth in different areas, health issues, water borne diseases, anaemia in adults and children, water scarcity, soil wastes generated in different areas etc.,

BOOKS FOR STUDY:

Erach Bharucha, Text book for Environmental Studies for Undergraduate Courses of All Branches of Higher Education, UGC

BOOKS FOR REFERENCES:

- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India,

WEB RESOURCES:

❖ <https://nptel.ac.in/courses/127105018>

Nature of Course	EMPLOYABILITY				SKILL ORIENTED		✓	ENTREPRENEURSHIP		
Curriculum Relevance	LOCAL		REGIONAL			NATIONAL			GLOBAL	✓
Changes Made in the Course	Percentage of Change			29	No Changes Made			New Course		
* Treat 20% as each unit (20*5=100%) and calculate the percentage of change for the course.										

COURSE OUTCOMES:**K LEVEL**

After studying this course, the students will be able to:

CO1	Explain the importance of Environmental studies and Ecosystem	K1 to K4
CO2	Identify renewable and non-renewable resources	K1 to K4
CO3	Categorise various species of plants and animals	K1 to K4
CO4	Analyse pollution causing agents and find ways for preventing them	K1 to K4
CO5	Elaborate environmental policies	K1 to K4

MAPPING WITH PROGRAM OUTCOMES:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	S	S	S	S	S	S	S	M
CO2	M	S	S	S	M	S	S	M
CO3	S	S	S	M	S	S	S	M
CO4	S	S	S	S	S	S	S	M
CO5	S	M	S	S	S	S	S	M

S- STRONG		M – MEDIUM		L - LOW	
CO / PO MAPPING: (TANSCHÉ)					
COS	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	3	3	3	3
CO 2	3	3	3	3	3
CO 3	3	3	3	3	3
CO 4	3	3	3	3	3
CO 5	3	3	3	3	3
WEIGHTAGE	15	15	15	15	15
WEIGHTED PERCENTAGE OF COURSE CONTRIBUTION TO POS	3.0	3.0	3.0	3.0	3.0

LESSON PLAN:

UNIT	ENVIRONMENTAL STUDIES	HRS	PEDAGOGY
I	Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere. • Scope and importance; Concept of sustainability and sustainable development. Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web 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, estuaries)	6	Chalk & talk, ppt
II	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). Heating of earth and circulation of air; air mass formation and precipitation. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.	6	Chalk & talk, ppt

III	Levels of biological diversity :genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot pots; • 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	Chalk , ppt& talk
IV	Environmental pollution : types, causes, effects and controls; Air, water, soil, chemical and noise pollution. Nuclear hazards and human health risks. Solid waste management: Control measures of urban and industrial waste. Pollution case studies.	6	Chalk & talk, ppt
V	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 conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC). Human population and growth: Impacts on environment, human health and welfares. Carbon foot-print. Resettlement and rehabilitation of project affected persons; case studies. Disaster management: floods, earthquakes, cyclones and landslides. Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).	6	Chalk & talk, ppt

Learning Outcome Based Education & Assessment (LOBE)						
Formative Examination - Blue Print						
Articulation Mapping – K Levels with Course Outcomes (COs)						
Internal	Cos	K Level	Section A			
			MCQs			
			No. of Questions	K - Level		
CI	CO1	K1 – K4	25	K1		

AI	CO2	K1 – K4	25	K2		
CI	CO3	K1 – K4	25	K1		
AII	CO4	K1 – K4	25	K2		
Question Pattern CIA I & II		No. of Questions to be asked	50			
		No. of Questions to be answered	50			
		Marks for each question	1			
		Total Marks for each section	50			

Distribution of Marks with K Level CIA I & CIA II							
	K Level	Section A (Multiple Choice Questions)	Section B (Either / Or Choice)	Section C (Either / Or Choice)	Total Marks	% of (Marks without choice)	Consolidate of %
CIA I	K1	25	-	-	25	50	100
	K2	25	-	-	25	50	
	K3	-	-	-	-	-	-
	K4	-	-	-	-	-	-
	Marks	50	-	-	50	100	100
CIA II	K1	25	-	-	25	50	100
	K2	25	-	-	25	50	
	K3	-	-	-	-	-	-
	K4	-	-	-	-	-	-
	Marks	50	-	-	50	100	100

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3- Application oriented- Solving Problems

K4- Examining, analyzing, presentation and make inferences with evidences

CO5 will be allotted for individual Project which carries five marks as part of CIA component.

Internal Examinations - Question Paper – Format

Q.No.	Unit	CO	K-level		
Answer ALL the questions				PART – A	(50 x 1 = 50 Marks)
1.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
2.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
3.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
4.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
5.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
6.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
7.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
8.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
9.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
10.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
11.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
12.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
13.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
14.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
15.	Unit - I	CO1	K1		
				a)	b)

				c)	d)
16.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
17.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
18.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
19.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
20.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
21.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
22.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
23.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
24.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
25.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
26.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
27.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
28.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
29.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
30.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
31.	Unit - II	CO2	K2		
				a)	b)

				c)	d)
32.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
33.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
34.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
35.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
36.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
37.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
38.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
39.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
40.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
41.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
42.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
43.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
44.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
45.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
46.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
47.	Unit - II	CO2	K2		
				a)	b)

Summative Examinations - Question Paper – Format

Q.No.	Unit	CO	K-level		
Answer ALL the questions				PART – A	(75 x 1 = 75 Marks)
1.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
2.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
3.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
4.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
5.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
6.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
7.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
8.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
9.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
10.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
11.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
12.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
13.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
14.	Unit - I	CO1	K1		
				a)	b)
				c)	d)
15.	Unit - I	CO1	K1		

				a)	b)
				c)	d)
16.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
17.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
18.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
19.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
20.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
21.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
22.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
23.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
24.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
25.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
26.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
27.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
28.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
29.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
30.	Unit - II	CO2	K2		
				a)	b)
				c)	d)
31.	Unit - III	CO3	K1		

				a)	b)
				c)	d)
32.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
33.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
34.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
35.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
36.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
37.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
38.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
39.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
40.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
41.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
42.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
43.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
44.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
45.	Unit - III	CO3	K1		
				a)	b)
				c)	d)
46.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
47.	Unit - IV	CO4	K2		

				a)	b)
				c)	d)
48.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
49.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
50.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
51.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
52.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
53.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
54.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
55.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
56.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
57.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
58.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
59.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
60.	Unit - IV	CO4	K2		
				a)	b)
				c)	d)
61.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
62.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
63.	Unit - V	CO5	K1		

				a)	b)
				c)	d)
64.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
65.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
66.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
67.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
68.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
69.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
70.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
71.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
72.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
73.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
74.	Unit - V	CO5	K1		
				a)	b)
				c)	d)
75.	Unit - V	CO5	K1		
				a)	b)
				c)	d)

