



G.PULLAIAH COLLEGE OF ENGINEERING AND TECHNOLOGY

KURNOOL

DEPARTMENT OF HUMANITIES & SCIENCES

COURSE DESCRIPTION FORM

Course Title	ENVIRONMENTAL STUDIES			
Course Code	15A01101			
Regulation	R15 – JNTUA			
Course Structure	Lectures	Tutorials	Practical's	Credits
	3	1	-	3
Course Coordinator	Mr.M.RAVI			
Team of Instructors	Mrs.P.MALATHI			

I. Course Overview:

Environmental study is interconnected; interrelated and interdependent subject. Hence, it is multidisciplinary in nature. The present course is framed by expert committee of UGC under the direction of Honorable Supreme Court to be as a core module syllabus for all branches of higher education and to be implemented in all universities over India. The course is designed to create environmental awareness and consciousness among the present generation to become environmental responsible citizens. The course description is: multidisciplinary nature of environmental studies, Natural Resources: Renewable and non-renewable resources; Ecosystems; Biodiversity and its conservation; Environmental Pollution; Social Issues and the Environment. Manufacture of Eco-friendly products, awareness on environment to the people; Human Population and the Environment; pollution control acts and Field Work. The course is divided into five chapters for convenience of academic teaching followed by field visits.

II. V. Prerequisite(s)

Level	Credits	Periods/ Week	Prerequisites
UG	3	4	Knowledge of basic sciences

III. Marks Distribution:

Sessional Marks	University End Exam Marks	Total Marks
There shall be 2 midterm examinations. Each midterm examination consists of objective paper for 10marks and subjective paper for 20marks with duration of 1hr 50min (20min for objective and 90min for subjective paper). Objective paper is set for 20 bits for 10marks. Subjective paper shall contain 5 questions of which student have to answer three questions evaluated for 20marks. I midterm examination shall be conducted for 1-4 units of syllabus and II midterm examination shall be conducted for 4-8 units. The total marks secured by the student in each midterm examination for 30marks is considered and the better of the two midterm examinations shall be taken as the final sessional marks secured by each candidate in the subject.	70	30

III. Evaluation Scheme:

S.NO	Component	Duration(hours)	Marks
1	I Mid Examination	1hour 50 minutes	30
2	II Mid Examination	1hour 50 minutes	30
3	External Examination	3	70

IV. Course Educational Objectives:

At the end of the course, the students will be able to:

- I. Determine the Natural resources on which the structure of development is raised for sustainability of the society through equitable maintenance of natural resources.
- II. Illustrate about biodiversity that raises an appreciation and deeper understanding of species, ecosystems and also the interconnectedness of the living world and thereby avoids the mismanagement, misuse and destruction of biodiversity.
- III. Summarize a methodology for identification, assessment and quantification of global environmental issues in order to create awareness about the international conventions for

- mitigating global environmental problems
- IV. Sustainable development that aims to meet raising human needs of the present and future generations through preserving the environment.
- V. Outline green environmental issue provides an opportunity to overcome the current global environmental issues by implementing modern techniques like CDM, green building, green computing etc.

VI Course Outcomes:

After completing this course the student must demonstrate the knowledge and ability to:

1. **Discover** Knowledge regarding environment and its components.
2. **Understand** various ecosystems, their biodiversity and Scientific methods to protect them.
3. **Categorize** different types of pollutions and their control measures.
4. **Discover** effective methods of waste management.
5. **Analyze** global environmental problems and come out with best possible solutions.
6. **Illustrate** green environmental issues.
7. **Understand** environmental laws and Environmental Impact assessments.

III How Course Outcomes are assessed:

	Outcome	level	Proficiency assessed by
A	An ability to apply knowledge of computing, mathematical foundations, algorithmic principles, and computer science and engineering theory in the modeling and design of computer – based systems to real-world problems.	N	--
B	An ability to design and conduct experiments, as well as to analyze and interpret data.	N	--
C	An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs, within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability.	N	--
D	An ability to function effectively on multi-disciplinary teams.	N	--
E	An ability to analyze a problem, and identify, formulate and use the appropriate computing and engineering requirements for obtaining its solution.	N	--
F	An understanding of professional, ethical, legal, security and social issues and responsibilities.	H	Assignments, mini projects.
G	An ability to communicate effectively, both in writing and orally.	N	--
H	The broad education necessary to analyze the local and global impact of computing and engineering solutions on individuals, organizations, and society.	H	--
I	Recognition of the need for, and an ability to engage in continuing professional development and life-long learning.	N	--
J	Knowledge of contemporary issues.	H	Assignments, mini projects.
K	An ability to use current techniques, skills, and tools necessary for computing and engineering practice.	N	--

L	An ability to apply design and development principles in the construction of software and hardware systems of varying complexity.	N	--
M	An ability to recognize the importance of professional development by pursuing postgraduate studies or face competitive examinations that offer challenging and rewarding careers in computing.	N	--

H = Highly Related N = None S = Supportive

Syllabus:

UNIT I

MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES:

Definition, scope, importance – need of public awareness.

NATURAL RESOURCES: Renewable and non renewable resources, natural resources and associated problems,

FOREST RESOURCES; uses and over exploitation, deforestation, mining, timber extraction; case studies. Dams their uses effects on forests, tribal. WATER RESOURCES: use and over exploitation of underground, surface water-floods, droughts, and conflicts over dams, benefits and their problems. MINERAL RESOURCES: uses and over exploitation of mineral resources; case studies. FOOD RESOURCES : world food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizer problems, water logging, salinity; case studies. ENERGY RESOURCES growing energy needs, renewable and non renewable resources; case studies LAND RESOURCES: soil erosion, and degradation, desertification. Role of an individual in conservation of natural resources.

UNIT II

ECOSYSTEMS: Concepts of ecosystem, structure function of an ecosystem – Producer, Consumer, Decomposer. Energy Flow in the Ecosystem, Ecological Succession, Food Chains, Food webs, and ecological pyramid. Introduction, characteristics features, structure of forest ecosystem, grass land ecosystem, desert ecosystems, aquatic ecosystems.

BIODIVERSITY AND ITS CONSERVATION: Introduction, definition, levels of Biodiversity, Bio – Geographical classification of India. Values of Biodiversity – Consumptive, Productive, social, Ethical, Aesthetical, Optional values – Biodiversity at Global, national, local levels. India a mega diversity nation, Hot spots of Biodiversity. Threats to Biodiversity: Habitat loss, poaching of wild life, man – wild life conflicts. Endangered and Endemic species of India. Conservation of Biodiversity: In – Situ, Ex – Situ Conservation Biodiversity.

UNIT III

Environmental Pollution: Definition, Causes, effects and control measures of:

- a. Air Pollution
- b. Water Pollution
- c. Soil Pollution
- d. Marine Pollution
- e. Noise Pollution
- f. Thermal Pollution
- g. Nuclear Pollution

Solid Waste Management: Causes, effects and control measures of urban, Industrial wastages. Role of Individual in preventing pollution. Disaster Management – Floods, Earth Quakes, Cyclones, and Land Slides.

UNIT IV

Social issues and the environment: From unsustainable to Sustainable development, urban related problems (Energy), water conservation, rain water harvesting, water shed management, resettlement and rehabilitation of people and its problems. Case Studies. Environmental Ethics, possible solution. Climate change, global warming, acid rains, ozone layer depletion, nuclear accident and holocaust, Case studies, Waste Land Reclamation. Consumerism and waste products. Environmental acts (Air, Water, wild life, Forest conservation acts).

UNIT V

Human Population and the Environment: Population growth, variation among nations. Population explosion – Family welfare programme. Environment and human health, Human rights, Value Education, HIV / AIDS, Women and child Welfare. Role of information technology in Environment and human health. Case studies.

Field Work: Visit to a local area to document environmental assets River/ Urban/ Industrial/ Agricultural Study of Common plants, insects, birds. – study of simple ecosystem pond, river hill slopes, etc.,

TEXT BOOKS:

1. Text book of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission, Universities Press.
2. Environmental Studies by Kaushik, New Age Publishers.

REFERENCES:

1. Comprehensive Environmental Studies by J.P Sharma, Laxmi Publications.

I. Course Plan:

The course plan is meant as a guideline. There may probably be changes.

Lecture No.	Learning Objective	Topics to be covered	Reference
1-2	Able to understand about environment and its importance	MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES: Definition, scope, importance – need of public awareness.	T1, T2
3-8	Understands about different types of natural resources and their applicability	NATURAL RESOURCES: Renewable and non renewable resources, natural resources and associated problems	T2
9-10	Able to analyze effects of deforestation	FOREST RESOURCES; uses and over exploitation, deforestation, mining, timber extraction; case studies. Dams their uses effects on forests, tribal.	T2
10-11	Understands conflicts over water	WATER RESOURCES: use and	T2

	resources.	over exploitation of underground, surface water-floods, droughts, and conflicts over dams, benefits and their problems.	
12-13	Able to analyze effects of modern agriculture and benefits of organic farming	FOOD RESOURCES : world food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizer problems, water logging, salinity; case studies.	T1, T2,R1
14-15	Able to analyze the utility of renewable resources efficiently.	ENERGY RESOURCES growing energy needs, renewable and non renewable resources; case studies	T2
16-18	Understands reasons for land depletion	LAND RESOURCES: soil erosion, and degradation, desertification.	T1, T2
19-21	Analyzes individuals responsibilities in protecting natural resources.	Role of an individual in conservation of natural resources.	T1
22-23	Provides information regarding ecosystem and applicability	ECOSYSTEMS: Concepts of ecosystem, structure function of an ecosystem – Producer, Consumer, Decomposer.	T1, T2, R1
24-25	Able to understand how all living organisms are interconnected.	Energy Flow in the Ecosystem, Ecological Succession, Food Chains, Food webs, and ecological pyramid.	T1, T2, R1
26-28	Understand different ecosystems and the products they provide.	Introduction, characteristics features, structure of forest ecosystem, grass land ecosystem, desert ecosystems, aquatic ecosystems.	T1, T2, R1
29-31	Able to understand about different commercially valuable products provided by biodiversity	BIODIVERSITY AND ITS CONSERVATION: Introduction, definition, levels of Biodiversity. Values of Biodiversity – Consumptive, Productive, social, Ethical, Aesthetical, Optional values.	T1, T2
32-33	Provides information regarding different living organisms in different areas of world.	Biodiversity at Global, national, local levels. India a mega diversity nation, Hot spots of Biodiversity.	T1, T2
34-36	Able to understand reasons for biodiversity loss.	Threats to Biodiversity: Habitat loss, poaching of wild life, man – wild life conflicts.	T1, T2
37-38	Able to implement different methods to	Conservation of Biodiversity: In	T1, T2

	protect biodiversity	– Situ, Ex – Situ Conservation Biodiversity.	
39-40	Able to implement different methods to prevent pollution	Environmental Pollution: Definition, Causes, effects and control measures of: Air Pollution, Water Pollution.	T1
41-42	Able to implement different methods to prevent pollution	Soil Pollution, Marine Pollution, Noise Pollution.	T1
43	Able to implement different methods to prevent pollution	Thermal Pollution, Nuclear Pollution.	T1
44-46	Understand causes for disasters and implement management techniques for e-waste and plastic waste	Solid Waste Management: Causes, effects and control measures of urban, Industrial wastages.	T1, T2, R1
47-48	Understand causes for disasters and implement management techniques for e-waste and plastic waste	Disaster Management – Floods, Earth Quakes, Cyclones, and Land Slides.	T1, T2, R1
49-50	Knowledge about sustainable development	Social issues and the environment: From unsustainable to Sustainable development	T1
51	Able to implement different methods for overcoming water scarcity.	water conservation, rain water harvesting, water shed management	T2, R1
52-54	Understand different global environmental issues	resettlement and rehabilitation of people and its problems. Case Studies. Environmental Ethics, possible solution.	T2, R1
55-57	Understand different global environmental issues	Climate change, global warming, acid rains, ozone layer depletion, nuclear accident and holocaust, Case studies.	T1, T2, T3, R1
58-60	Able to implement different acts in protecting environment	Waste Land Reclamation. Consumerism and waste products. Environmental acts (Air, Water, wild life, Forest conservation acts).	T1, T2, T3, R1
61	Able to analyze about human population growth	Human Population and the Environment: Population growth, variation among nations	T1, R1
62-63	Explains about how to maintain the population count, explains about the degradation of environment with increase in population.	Population explosion – Family welfare programme. Environment and human health,	T1, T3, R1
64-65	Implement the rights of every individual for their welfare and also for the	Human rights, Value Education, child welfare	T1

	society		
66-67	Explains about the diseases that is caused because of increase in human population and ill practices	HIV / AIDS, cholera, tuberculosis, malaria	T1, T2, T3, R1
68	Able to analyze the importance of modern technology in our development and environmental protection	Role of information technology in Environment and human health. Case studies	T1, R1
69-70	Gives the knowledge on the ecosystems, factors that influences our existence and how the systems are destroyed by human interference.	Field Work: Visit to a local area to document environmental assets River/ Urban/ Industrial/ Agricultural Study of Common plants, insects, birds.	

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