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UNIVERSITY OF PETROLEUM & ENERGY STUDIES

College of Engineering Studies

Dehradun

COURSE PLAN

Programme: **B. Tech**. GEO INFORMATICS Engineering, E-Commerce, Retail & Automation, CSE with SPL in IT Infrastructure, CSE with SPL in Mainframe Technology, CSE with SPL in Mobile Computing, CSE with SPL in Oil & Gas Informatics, CSE with SPL in Open Source & Open Standard, CSE with SPL in Telecom Informatics, CSE with SPL in Healthcare Informatics, CSE with SPL in Manufacturing Informatics, Automotive Design Engineering, CIVIL ENGINEERING with SPL in ID, CSE with SPL in Banking - Financial Services & Insurance, CSE with SPL in Business Analytics and Optimization, CSE with SPL in CCVT, CSE with SPL in IT Security & Cyber Forensics, Fire & Safety Engineering, GEO SCIENCE ENGINEERING, Mechanical Engineering, Mechanical Engineering with SPL in Machine Design, Mechanical Engineering with SPL in MSNT, Mechanical Engineering with SPL in Production Engineering, Mechanical Engineering with SPL in Thermal Engineering, Mechatronics Engineering, Mining Engineering

Course : Environmental Studies

Subject Code : ENVO 101

No. of credits : 3

Semester : II

Session : 2016 -17

Batch : 2016-20

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Approved By

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COURSE PLAN

- ***Prerequisite:*** Basics of Chemistry, Biology and Physics
- ***Core Requisite:*** *General Observation, Discipline & Adaptability*

OBJECTIVES OF COURSE:-

The objectives of this course are to:

1. To help the student to acquire the knowledge in those aspects of environmental science and ecology that are particularly valuable to bright young student,

2. Fostering the development of analytical and technical skills in the environment, promoting a sense of responsibility and helping students deal effectively with ambiguity and disagreement about environment issues.

3. To provide fundamental knowledge of various aspects of pollution and to motivate to adopt ecofriendly technologies to facilitate conservation and regeneration of natural resource.

4. To create a pro-environmental attitude and behavioral pattern in the student that is based creating sustainable life styles.

b) **COURSE OUTCOMES FOR ENVIRONMENTAL STUDIES : At the end of this course student should be able to**

1. Understand environmental issues in multidisciplinary model.
2. Explain the natural environment and its relationships with human activities.
3. Analyze the impact of human activities on the environment.
4. Explain the structural and functional aspects of ecosystem. & identify the types of ecosystems.
5. Explain the energy flow within the ecosystem using water, carbon, oxygen and nitrogen cycles.
6. Identify the renewable and non-renewable resources.
7. Estimate the biological diversity of the environment & the threats to this biological diversity.
8. Explain the various types of pollution.
9. Identify the causes of various types of pollution.
10. Analyze the harmful effects of various types of pollution.
11. Identify the treatment methods and controls for various types of pollution.
12. Evaluate and Explain on global environmental issues

13. Analyze the causes and impact of various environmental issues.
14. Understand the meaning of population explosion in the world and in India
14. Understand the rate and trend of urbanization

c) COURSE OUTLINE

Module -1 Multidisciplinary Nature of Environment Studies

Module -2 Ecosystem

Module -3 Biodiversity & its Conservation

Module -4 Natural Resources and Management

Module -5 Environmental Pollution and its Control Methods

Module -6 Social issues and Environment

Module -7 Human Population & Environment

Module –8 Occupational Health and Safety

d) PEDAGOGY

1. **Class Test**
2. **Quiz**
3. **Assignments**
4. **Group Discussion**

e) COURSE COMPLETION PLAN

Total Sessions	12 weeks
Total Quizzes	10
Total Test	02
Total Assignment	03
Discussion	04

f) EVALUATION & GRADING

Students will be evaluated based on the following 3 stages.

5.1	Internal Assessment	-	30%
5.2	Mid-term Examination	-	20%
5.2	End term Examination	-	50%

H1. INTERNAL ASSESSMENT: WEIGHTAGE – 30%

Internal Assessment shall be done based on the following:

Sl. No.	Description	% of Weightage out of 30%
1	Class Tests and Quiz	50%
2	Assignments (Problems/Presentations)	30%
3	Discussion	20%

H2*. Internal Assessment Record Sheet (including Mid Term Examination marks)* *will be displayed online at the end of semester i.e. last week of regular classroom teaching.*

H3. CLASS TESTS/QUIZZES: Two Class Tests based will be held online. All questions are objective type. Ture or False, Multiple Choice and Fill in Blanks. Self-Assessment questions are uploaded. one class test or one quiz at least ten days before the Mid Term Examination and second class test and second quiz at least ten days before the End Term Examination. Those who do not appear in Viva-Voce and quiz examinations shall lose their marks.

The marks obtained by the students will be displayed on LMS a week before the start of Mid Term and End Term Examinations respectively.

H4. ASSIGNMENTS: After completion of each unit or in the mid of the unit, there will be home assignments. Those who fail to submit the assignments by the due date shall lose their marks

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H6. GENERAL DISCIPLINE: Based on student's regularity, punctuality, sincerity and behavior in the class.

The marks obtained by the students will be displayed on LMS at the end of semester.

H7. MID TERM EXAMINATION: **WEIGHTAGE – 20%**

Mid Term examination shall be one Hours duration and shall be a combination of **Multiple Choice Questions**

H8. END TERM EXAMINATION: **WEIGHTAGE – 50%**

Mid Term examination shall be one Hours duration and shall be a combination of

H9. GRADING:

The overall marks obtained at the end of the semester comprising all the above three mentioned shall be converted to a grade.

Session	Topics	Course Out comes. Addressed	Required Learning Resources (including media)	Pedagogy/ Discussion(s) / Postings	Assignment(s)
Week-1	**Module 1 Multidisciplinary nature of Environmental Studies**		**Study Material**		
	Multidisciplinary nature of Environmental Studies, scope, Importance of environment & need of public Awareness Institutions in Environment, People in Environment	Explain the scope and importance of environmental studies Explain the need for environmental awareness Explained the activities of Institutes & Authors	Block 1 Chapter 1 Power Point Slides	On line Course Video-1 Video continue Video continue	2 Assignments Self-assessment Quiz Discussion
Week 2	**Module 2 Concept of Ecosystem**				
	Structure of Ecosystem	Concept of Ecosystem Structure of ecosystem (Biotic and Abiotic) Biotic (Producer, Co and Decomposer)	Block 1 Chapter 2		Self-assessment Quiz Discussion

		Abiotic (Physical fa Chemical Factors)			
	Functions of Ecosystem & Ecological Succession Food Chain, Food Web, Trophic Level, Ecological (Pyramid of energy, biomass, number)	Biogeochemical cycle & Energy Flow Ecosystem (cycling of nutrients)- Carbon Cycle, Nitrogen cycle, Water Cycle, Oxygen Cycle, Ecological Succession Flow charts of Food Chain, Food Web, Trophic Level, Ecological (Pyramid of energy, biomass, number),	Block 1 Chapter -2 Chapter- 3	Video Video	
Week 3	**Types of Ecosystem** Major Ecosystem Ty Terrestrial Ecosystem Tundra, Deciduous, Grassland, Tropical Rain Forest, Desert Aquatic Ecosystem	Explain Terrestrial Ecosystem: Biotic and Abiotic factors in Taiga, Tundra, Deciduous, Grassland, Tropical Rain Forest, Desert Marine and Fresh water Ecosystem	Block 1 Chapter 4		
	Case Study	Wet Lands of Assam	Block 1 Chapter -5	Vedio-2	
Week-4	**Module: 3**				

	Biodiversity				
	Types of Biodiversity Genetic. Species and Ecosystem Biodiversity at Various levels and Hot Spots	Introduction Definition Significance genetic, Species and Ecosystem Biodiversity. How do human activities effect on biodiversity prevention of loss of biodiversity Global Level, National Level. Endangered & Endemic Species	Block -3 Chapters -1 & 2	Video	Quiz
	India – Biogeographic Classification. Mega diversity Nation – Endangered & Endemic Species	Explain Biogeographic Regions. Conservation of Endangered & Endemic Species. Sanctuaries & National Parks	Block -3 Chapter -3		
	Threats & Conservation of Biodiversity Case Study	Explain types Threats. In-situ and Ex-situ Conservation. Project Tiger	Block -3 Chapters -4& 5		
Week -5	**Moudle:4 Natural Resources & Management**				
	Components Of Earth Atmosphere Hydrosphere	Explain Origin and E Earth Explain the various Structure and	Block- 4 Chapter-1	WBT Text with Static Image Text with video	Quiz Discussion

	Lithosphere Biosphere	Function various Layers of Atmosphere		animation showcasing the concept Text with interactive tabs/image clicks For all Natural Resources Sessions	
	Renewable Energy Resources	Explain Solar, Wind, Tides, Hydropower, Geothermal Biomass And Biofuel generation	Block-4 Chapter -2		
	Nonrenewable resources	Explain Petrol, Natural Gas Coal Nuclear power generation	Block -4 Chapter-2		
	Deforestation	Causes for Deforestation. Effects of deforestation	Block 4 Chapter 3		
	Equitable use of Resources for Sustainable Development	Explain sources of Resources Current & Future challenges	Bloc-4 Chapter 4		
	Case Study	Narmada Valley Project	Block 4 Chapter -5		
Week 6	**Environmental Pollution and its Control Methods**				
	Air Pollution	Causes and Control Methods	Block 5 Chapter 1	Video Video	Quiz Discussion
	Water Pollution	Causes and Control Methods	Block 5 Chapter 1	Video	

	Waste Water Treatment	Methods for Treatment of Waste water. Flow chart for treatment of waste water	Block 5 Chapter 1	Video	
Week 7					
	Soil Pollution	Causes & Effects of Soil Pollution	Block 5 Chapter 1	Video	
	Noise Pollution	Causes & Effects of Noise Pollution	Block 5 Chapter 1	Video	
	Thermal Pollution	Causes & Effects of Thermal Pollution	Block 5 Chapter 1	Video	
Week 8					
	Solid Waste Management	Sources/ Treatment and control methods	Block 5 Chapter 1	Video	
	Disaster Management	Sources, treatment of solid waste	Block 5 Chapter 2	Video	
	Radio Active/Nuclear Pollution	Definition Types of Disasters	Block 5 Chapter 2	Video	
Week 9	**Social Issues & Global Environmental Problems**				
	Sustainable Development	Definition Explained sustainability	Text with video	Video	
	Climate Change Acid Rain	Explained reasons for climate change Causes and effect of acid rain	Block 6 Chapter 2	2 videos	
	EIA				
Week 10	**Environment**				

	Protection Acts				
	Water Protection Act	Explained water Protection Act	Block 6 Chapter 3	Video	
	Wild Life Protection Act	Explained definition Chapters and section Act	Block 6 Chapter 3	Video	
Week 11	**Environment & Human Health**				
	Population explosion & Urbanization	Explain causes & Effects of Urbanization	Block 6 Chapter-1	Video	
	Role of Environment & Human Health	Role of IT in Environment & Importance of GIS		Video	
	Women & Child Welfare	Need for women & children welfare support from MHRD		Video	
Week 12	**Occupational Health and Safety**				
	Occupational health and hygiene , importance of safety in daily life, Occupational Safety on Health, Hazards and risk analysis and management			Videos and ppt	Assignment

Suggested Books for Reading

***BOOKS*:** (Title, author and name of Publisher)

Title	Author	Publisher
a). Text Book of Environmental Studies	Erach Bharucha	UGC, New Delhi
b). Principles of Environmental Science & Engineering	R.Pannir Selvam	SPGS, Chennai-600 088
c). Encyclopaedia of Ecology, Environment	Swaroop. R,Mishra, S.N. Jauri, V.P.	Mitlal, New Delhi

d). Environmental Concerns	Saigo & Cunningham	
e). Air Pollution	M.N.Rao	
f).Environmental Studies	Kaur.H	Pragati Prakashan, Meerut

Journals

Magazines (Down to Earth) **Web Sources:** (Optional)