SREE VIDYANIKETHAN ENGINEERING COLLEGE
(Autonomous)
Sree Sainath Nagar, A. Rangampet-517 102
Department of Mechanical Engineering
Lesson Plan

Name of the Subject : ENVIRONMENTAL SCIENCES (14BT3HS01)
Class & Semester : B.Tech. II Year II semester (Mechanical Engineering)
Name of the faculty Member:

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
UNIT – I: MULTIDISCIPLINARY NATURE OF ENVIRONMENT AND NATURAL RESOURCES				
1.	Definition, scope and importance of multidisciplinary nature of environment	1	T1	a) Land resources-land degradation, types soil erosion and desertification b) Geothermal energy c) Case studies of Chipko movement, Narmada Bachao Andolan and Tehri dam
2.	Segments of environment-lithosphere, hydrosphere, atmosphere and biosphere	1	T1	
3.	Need for public awareness	1	T1	
4.	Introduction to renewable and Non-renewable resources	1	T1	
5.	Forest resources: use and over exploitation, deforestation-causes, effects and remedies, case studies	1	T1	
6.	Water resources-use and over utilization of surface & ground water, conflicts over water-benefits and problems of large dams, case studies	1	T1	
7.	Mineral resources- mining, adverse effects, case studies	1	T1	
8.	Food resources-world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problem, water logging and salinity, case studies	2	T1	
9.	Energy resources-growing needs, renewable energy resources–solar, wind, hydropower, hydrogen fuel and non-renewable energy resources-coal, natural gas, nuclear energy	1	T1	
10.	Role of an individual in conservation of natural resource and equitable use of resources for sustainable lifestyles.	1	T1	
Total periods required:		**11**		
UNIT – II: ECOSYSTEMS AND BIODIVERSITY				
11.	Definition and concept of an Ecosystem, structure and function of an ecosystem-producers, consumers and decomposers	1	T1	a) Grass land ecosystem and Mangrove ecosystem b) Biogeochemical cycles– carbon,
12.	Food chains, food webs and ecological pyramids	1	T1	
13.	Characteristic features, structure and functions of forest ecosystem, desert ecosystem, aquatic ecosystem-ponds, lakes and oceans	1	T1	
14.	Energy flow in the ecosystem	1	T1	
15.	Ecological succession	1	T1	

16.	Definition, concept and value of Biodiversity	1	T1	nitrogen, phosphate and sulphur cycles c) Aquatic ecosystem-streams and rivers ecosystems d) Biodiversity at global, national and local level e) Case study of Kolleru lake ecosystem
17.	Role of biodiversity in addressing new millennium challenges	1	T1	
18.	Hot spots of biodiversity	1	T1	
19.	Threats to biodiversity–habitat loss, poaching of wildlife, man-wild life conflicts	1	T1	
20.	Endemic, endangered and extinct species of India Conservation of biodiversity–in-situ and ex-situ	1	T1	
Total periods required:		**10**		
UNIT -III: ENVIRONMETAL POLLUTION AND CONTROL				
21.	Definition, causes, adverse effects and control measures of air pollution	1	T1	a) Marine pollution b) Role of individuals in prevention of pollution c) Cyclones and landslides d) Case study of industrialization of Pattancheru
22.	Definition, causes, adverse effects and control measures of water pollution and soil pollution	1	T1	
23.	Definition, causes, adverse effects and control measures of noise pollution	1	T1	
24.	Definition, causes, adverse effects and control measures of thermal pollution	1	T1	
25.	Definition, causes, adverse effects and control measures of nuclear pollution	1	T1	
26.	Solid waste management–causes, effects and control measures of urban and industrial wastes.	2	T1	
27.	Hazards and disaster management–floods, earthquakes, tsunamis-case studies	1	T1	
Total periods required:		**08**		
UNIT – IV: SOCIAL ISSUES AND THE ENVIRONMENT				
28.	From unsustainable to sustainable development, urban problems related to energy	1	T1	a) Water conservation-rain water harvesting and watershed management b) Resettlement and rehabilitation of people-its problems and concerns c) Holocaust, Climate change
29.	Environmental ethics-issues and possible solutions, global warming, acid rain	2	T1	
30.	Ozone layer depletion, nuclear accidents and case studies	1	T1	
31.	Wasteland reclamation, consumerism and waste products	1	T1	
32.	Environment protection act, air (prevention and control of pollution) act	1	T1	

33.	Water (prevention and control of pollution) act, wildlife protection act, forest conservation act	1	T1	d) Case study of Taj Mahal
34.	Issues involved in enforcement of environmental legislation, public environmental awareness	1	T1	
Total periods required:		**08**		
UNIT – V: HUMAN POPULATION AND THE ENVIRONMENT				
35.	Population growth, population characteristics and variation among nations, population explosion	1	T1	a) Hepatitis-B Virus
36.	Family welfare programme, environment and human health, human rights, value education	1	T1	b) Case study of fluorosis in Andhra Pradesh
37.	HIV/AIDS, women and child welfare	2	T1	c) Study of common plants, insects and birds (submission of a written report)
38.	Role of information technology in environment and human health, case studies	1	T1	
39.	**Field work:** Visit to a local area to document environmental assets-pond/forest/grassland/hill/mountain or assignment/seminar	3	T1	d) Study of river and hill slopes ecosystems (submission of a written report)
Total periods required:		**8**		
Grand total periods required:		**45**		

TEXT BOOKS:

1. A.Kaushik and C.P. Kaushik, "**Environmental Studies**", New Age International (P) Ltd Publications, 4th Edition, 2014.
2. Erach Barucha, "**Environmental Studies**", Orient Blackswan, 2nd Edition, 2013.

REFERENCE BOOKS:

1. R. Rajagopalan, "**Environmental Studies**", Oxford University Press, 2nd Edition, 2011.
2. Benny Joseph, "**Environmental Studies**", Tata McGraw-Hill, 2nd Edition, 2009.
3. Dr. B S Chauhan, "**Environmental Studies**", University Science Press, 1st Edition, 2008.
4. M. Anji Reddy, "**Textbook of Environmental Sciences and Technology**", BS Publications, 2007.
5. Larry W Canter, "**Environmental Impact Assessment**", McGraw-Hill Education, 2nd edition, 1996.

Signature of the faculty Member framing the syllabus **Signature of the Chairman (BOS)**

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