

Department	Department of Environmental Science	Credits	2
Program name & Code	B. Tech	Lecture	2hr
BOS Id	12	Tutorial	0 hr
Course Name	Environmental Science	Practical	0 hr
Course Code	TEV101/201	CWA	25%
Course Category	MDS	MSA	25%
Semester	1	ESA	50%

COURSE OUTCOMES:

CO 1:	Identify the concept and components of environment, ecology and ecosystem.
CO 2:	Assess information about the natural resources, biodiversity and their conservation
CO 3:	Recognize different types of the environmental pollution and their managements.
CO 4:	Acquiring beliefs and perspectives that support comprehending difficult environmental economic-social issues and actively contributing to the resolution of present environmental issues as well as the prevention of future ones.
CO 5:	Adopt sustainability as a practice in life, society and industry.

SYLLABUS

UNIT	CONTENT	Hrs
1.	<p>Environmental Science and Ecosystem: a. Definition of Environmental Science, multidisciplinary nature, Objective, scope and importance. b. Concept of an ecosystem, structure and function, energy flow, ecological succession, food chains, food webs, ecological pyramids. c. Introduction, types, characteristic features, structure and function of the following ecosystem:</p> <ul style="list-style-type: none"> • Forest ecosystem • Grassland ecosystem • Desert ecosystem • Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) 	6
2.	<p>Natural Resources and Biodiversity:</p> <p>a. Renewable and non- renewable resources.</p> <p>b. Natural resources and associated problems:</p> <ul style="list-style-type: none"> • Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effects on forests and tribal people. • Water Resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams – benefits and problems, water conservation, rainwater harvesting, watershed management. • Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. • Food Resources: World food problems, Changes in land use by agriculture and grazing, Effects of modern agriculture, Fertilizer/ pesticide problems, Water logging and salinity • Energy Resources: Increasing energy needs, Renewable/ non-renewable, Use of Alternate energy sources, urban problems related to energy, Case studies • Land resources: Land as a resource, land degradation, man-induced land-slides, soil erosion and desertification, wasteland reclamation <p>c. Role of an individual in conservation of natural resources, equitable use of resources for sustainable lifestyles.</p> <p>d. Definition of biodiversity, levels of biodiversity, value of biodiversity, threats to biodiversity (habitat loss, poaching of wildlife, man-wildlife conflicts).</p> <p>e. Biodiversity at global, national and local levels, India as a biodiversity nation,</p>	8

	biogeographical classification of India, hotspots of biodiversity. f. Endangered and endemic species of India. g. Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity	
3.	Environmental Pollution: a. Definition, causes, effects and control measures of Air Pollution, water pollution, soil pollution, marine pollution noise pollution, thermal pollution, nuclear hazards. b. Solid waste Management: causes, effects and control measures of urban and industrial wastes c. Role of an individual in prevention of pollution, pollution case studies, pollution case studies	6
4.	Important Environmental and Social Issues, Management and Legislation: a. Climate change, global warming, acid rain, Ozone layer depletion, nuclear accidents and holocaust. Case studies. b. Sustainable development, Resettlement and rehabilitation of people (its problems and concerns, case studies), Environmental ethics (issues and possible solutions), consumerism and waste products. c. Disaster management: floods, earthquake, cyclone and landslides. d. Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act, e. Issues involved in enforcement of environmental legislation, Public Awareness f. Population growth (variation among nation), 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.	8
5.	Field work: a. Visit to a local area to document environmental assets-river/ forest/ grasslands/ hill /mountain. b. Visit to a local polluted site- Urban/ Rural/ Industrial/ Agricultural c. Study of common plants, insects, birds d. Study of simple ecosystems- pond, river, hill slopes, etc.	2
TEXT BOOKS:		
TB 1:	Environmental Science, Dr. Kamal Kant Joshi IK International Publisher, Wiley New Delhi	
TB 2:	Environmental studies by Daniel, Wiley, India	
TB 3:	Textbook of Environmental Science, M Ajni Reddy, BS Publication, Hyderabad	
TB 4:	Environmental Science, Dr. Avnish Chauhan Khanna Publisher, New Delhi	
REFERENCES:		
Ref 1:	Joseph K. & Nagendran R.: Essentials of Environmental studies; Pearson Edition	
Ref 2:	Santra S. C., Environmental Science; Central Book Agency.	
Ref 3:	Dhameja, S. K.: Environmental Studies; Katson books	
Ref 4:	Srivastava Smriti: Environmental Studies; Katson books.	
Ref 4:	Environmental and Ecology, Dr. Kamal Kant Joshi IK International Publisher, Wiley New Delhi	

CWA- Class Work Assessment, MSA- Mid Semester Assessment, ESA- End Semester Assessment

Relationship between the Course Outcomes (COs), Program Outcomes (POs) and the Program Specific Objectives (PSOs) for **TEV 101/201**

