

University of Mumbai**CLASS: T.E. (Electrical Engineering)****Semester - V****SUBJECT: Environment Studies (abbreviated as EVS)**

Periods per week (each of 60 min.)	Lecture	2	
	Practical	-	
	Tutorial	1	
		Hours	Marks
Evaluation System	Theory Examination	2	50
	Practical examination	-	-
	Oral Examination	-	-
	Term Work	-	25
	Total		75

Module	Contents	Hours
Objective	Objective of this course is to create environmental awareness, of variety of environmental concerns.	-
1	Nonliving Environment Soil Origin, Classification, Soil types of India, Mineral Resources, Equitable Use of Mineral Resources Water Earth's reserves, Saltwater, Freshwater, Atmospheric water & Rainfall, Hydrology, Minimum Environmental Flows Air Composition, Oxygen, Carbon dioxide, Nitrogen, Wind Solar System The Sun, Solar energy	5
2	Living Environment Biodiversity, Genes, Populations, Species, Communities, Value of Biodiversity Ecosystems Classification, Ecosystem Resilience, Productivity, Food chain, Food web Nutrient cycling Biomes	5

	Rainforests, Seasonal broadleaved forests, Conifer forests Swamps, Grasslands, Arid and Semi-arid biome, Polar biome, Oceans	
3	<p>Social Environment</p> <p>Population Population explosion and migration, Women and Children, Pressures of population growth, Industrialization, Conflicts over land, Social conflicts Disasters, Human Rights and Value Education</p> <p>Food Agriculture, Irrigation, Livestock, Fisheries, Sustainable agriculture</p> <p>Health Communicable diseases, Vector borne diseases, Pandemics, Vulnerable groups, Role of information and awareness</p> <p>Energy Non-renewable Energy, Renewable Energy, Hydroelectric energy, Solar energy, Wind energy, Energy from biomass, Bio-diesel</p> <p>Urbanization Habitation, Communication, Recreation</p> <p>Waste Solid wastes, Sewage and Wastewater, Hazardous wastes, Management of solid wastes, Land disposal and Sanitary landfills, Recycling, Medical wastes Industrial wastes, Wastewater treatment, Bioremediation of wastewater Biodegradation and Composting , Management of toxic and hazardous wastes</p> <p>Pollution Air pollution, Noise pollution, Thermal pollution, Water pollution, Marine pollution, Bio-magnification, Land pollution, Control</p> <p>Economy Subsistence, Markets, Global trade regimes</p> <p>Natural resource depletion Deforestation, Mining, Soil erosion, Loss of wetlands, Loss of biodiversity, Desertification</p> <p>Invasive species Plants, Animals, Genetically Modified Organisms</p>	8
4	<p>Environmental Conservation Early warning systems, Bio-indicators, Tsunami & other natural disasters Disaster management</p> <p>Impact assessment Inventorying, Monitoring, GIS</p> <p>Protected Areas Wildlife Sanctuaries, National Parks, Biosphere Reserves</p> <p>Endangered species Ex-situ conservation, Conservation breeding</p> <p>Economic valuation</p>	6

	Bio-resources, Nature's services National Legislation Constitutional provisions for safeguarding the environment, The Environmental (Protection) Act, The Air (Prevention and Control of Pollution) Act, The Water (Prevention and Control of Pollution) Act, The Wildlife (Protection) Act, Forest Act, Biodiversity Act International Conventions and Treaties Ramsar Convention, CITES, Convention on Biological Diversity, Convention to Combat Desertification, Convention on Climate Change	
5	Global Efforts in protecting the living environment Global Biodiversity Assessment, Ecosystem services and Millennium Ecosystem Assessment Sustaining Biodiversity: The Species Approach Species Extinction, importance of wild species, causes of premature extinction of wild species, protecting wild species, wild sanctuary, legislation, Reconciliation ecology Environmental Economics, politics, and worldviews Economic Systems and Sustainability Using Economics to improve Environmental Quality Reducing poverty to improve Environmental quality and human well-being Micro loans for the poor	6

Theory Examination:

1. Question paper will comprise of total 7 questions, each of 10 marks.
2. Only 5 questions need to be solved.
3. Question number 1 will be compulsory and covering the all modules.
4. Remaining questions will be mixed in nature. (e.g.- suppose Q.2 has part (a) from, module 3 then part (b) will be from any module other than module 3.)
5. In question paper weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.

Term work:

Term work shall consist of minimum Five projects (PROJECTS SHALL BE DESIGNED ON THE SAME GUIDE- LINE OF BOOK BY Jagdish Krishnawamy , R J Ranjit Daniels, " Environmental Studies", Wiley India Private Ltd. New Delhi) and a written test.

The distribution of marks for term work shall be as follows,

Laboratory work (Tutorial/Project and Journal) : 15 marks.

Test (at least one) : 10 marks.

The final certification and acceptance of term-work ensures the satisfactory performance of laboratory work and minimum passing in the term-work.

Recommended Books:

1. Jagdish Krishnawamy , R J Ranjit Daniels, *Environmental Studies*, Wiley India Private Ltd. New Delhi.
2. Anindita Basak, *Environmental Studies*, Pearson.
3. Deeksha Dave , *Textbook of Environmental Studies*, Cengage learning, THOMSON INDIA EDITION.
4. Benny Joseph, *Environmental Studies*, Tata McGRAW HILL.
5. D. L. Manjunath, *Environmental Studies*, Pearson.
6. R.Rajgopalan, *Environmental Studies*, Oxford.
7. Erach Bharucha, *Textbook of Environmental Studies*, Universities Press/Orient BlackSwan.