

Semester - II					
Course code: 22BES2	SEC-II		T/P	C	H/ W
	ENVIRONMENTAL STUDIES		T	2	2
<b>Objectives</b>	<ul style="list-style-type: none"> <li>➤ To understand the multidisciplinary nature of environmental studies such as forest, water, mineral and energy and land resources.</li> <li>➤ To portray the eco system bio diversity and its conservation.</li> <li>➤ To impart the knowledge of environmental pollution</li> <li>➤ To know the importance of field work to study common plants, insects and birds and visit local areas to document environmental assets.</li> </ul>				
<b>Unit -I</b>	<b>The Multidisciplinary Nature of Environmental Studies:</b> Definition, Scope and importance - Need for public awareness				
<b>Unit-II</b>	<b>Natural Resources:</b> Renewable and non-renewable resources A). <b>Forest Resources:</b> Use and Over-Exploitation, Deforestation, Case Studies, Timber Extraction, Mining, Dams and Their Effect on Forests and Tribal People. B). <b>Water Resources:</b> Use and Over-Utilization of Surface and Ground Water, Floods, Drought, Conflicts over Water, Dams- Benefits and Problems. C). <b>Mineral Resources:</b> Use and Exploitation, Experimental Effects of Extracting and Using Mineral Resources, Case Studies. D). <b>Food Resources:</b> World Food Problems, Changes Caused by Agriculture and Overgrazing, Effects of Modern Agriculture, Fertilizer-Pesticide Problems, Water Logging, Salinity, Case Studies. E). <b>Energy Resources:</b> Growing Energy Needs, Renewable and Non-Renewable Energy Sources, Use of Alternate Energy Resources, Case Studies. F). <b>Land Resources:</b> Land as a Resource, Land Degradation, Main Induced Landsides, Soil-Erosion and Desertification. <ul style="list-style-type: none"> <li>➤ Role of Individual in Conservation of Natural Resources</li> <li>➤ Equitable Use of Resources for Sustainable Lifestyle</li> </ul>				
<b>Unit- III</b>	<b>ECOSYSTEMS, BIO-DIVERSITY AND ITS CONSERVATION</b> <b>Ecosystems:</b> Concept of an Ecosystem, Structure and Function of an Ecosystem, Energy Flow in The Ecosystem, Food Chains, Food Webs and Ecological Pyramids. <b>Biodiversity and Its Conservation:</b> Introduction- Definition: Genetic, Species and Ecosystem Diversity, Bio-Geographical Classification of India, Value of Biodiversity: Consumptive Use, Productive Use, Social Ethical, Aesthetic and Option Values. Biodiversity at Global, National and Local Levels, India as a Mega-Diversity Nation, Hot Spots of Biodiversity, Threats to Biodiversity: Habitat Loss, Poaching of Wildlife, Man-Wildlife Conflicts, Endangered and Endemic Species of India, Conservation of Biodiversity: In-Situ And Ex-Situ Conservation of Biodiversity.				
<b>Unit -IV</b>	<b>Environmental Pollution:</b> Causes, Effects And Control Measures of: <b>A).</b> Air Pollution, <b>B).</b> Water Pollution, <b>C).</b> Soil Pollution, <b>D).</b> Marine Pollution, <b>E).</b> Noise Pollution, <b>F).</b> Thermal Pollution, <b>G).</b> Nuclear Hazards.				
<b>Unit -V</b>	<b>Field Work</b> <ul style="list-style-type: none"> <li>➤ Visit to a Local Area to Document Environmental Assets–River/ Forest/ Grassland/ Hill/ Mountain</li> <li>➤ Visit to a Local Polluted Site- Urban/Rural/Industrial/Agricultural</li> <li>➤ Study of Common Plants, Insects, Birds</li> <li>➤ Study of Simple Ecosystem-Pond, River, Hill Slopes, etc.,</li> </ul>				

**Reference and Textbooks: -**

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- Clark, R. B., Frid, C., & Attrill, M. (2001). *Marine pollution* (Vol. 5). Oxford: Oxford university press.
- Cunningham, W. P., Cooper, T. H., Gorham, E., & Hepworth, M. T. (1998). *Environmental encyclopedia*.
- De, A.K. (1990). *Environmental Chemistry*. Wiley Eastern Ltd.
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- Hawkins, R. E. *Encyclopedia of Indian Natural History*. Bombay Natural History Society, Bombay.
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- Jadhav, H. V., & Bhosale, V. M. (2006). *Environmental Protection and laws*. Himalaya Publishing House.
- McKinney, M. L., & Schoch, R. M. (1996). *Environmental Science: Systems and Solutions* (St. Paul, MN).
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- Narain, S., Mahapatra, R., Das, S., Misra, A., Parrey, A. A., Pandey, K., & Banerjee, S. (2014). *Down to Earth*. Centre for Science and Environment.
- Odum, E. P., & Barrett, G. W. (1971). *Fundamentals of ecology* (Vol. 3, p. 5). Philadelphia: Saunders.
- Rao, M.N., & Datta, A.K. (1987). *Waste Water Treatment*. Oxford & Ibh Publ, Co.Pvt. Ltd.
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- Townsend, C.R., Begon, M., & Harper, J.L. (2008). *Essentials of Ecology* (3rd edition). Oxford: Blackwell Publishing.
- Trivedi, R. K. (2010). *Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards. Vol. I and II, Enviro Media*.
- Wanger, K.D. (1998). *Environmental Management*. Saunders Co. Philadelphia, USA.

<b>Outcomes</b>	On successful completion of the subject, the students acquired knowledge about: <ul style="list-style-type: none"><li>➤ Renewable and non-renewable resources.</li><li>➤ Species and Ecosystem Diversity, Bio-Geographical Classification of India, Value of Biodiversity:</li><li>➤ Causes, Effects and Control Measures of environmental pollution</li><li>➤ Field work knowledge of studying eco system pond, river, hill and common plants, insects and birds</li><li>➤ Documentation of environmental assets</li></ul>
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