SKILL ENHANCEMENT COURSE (SEC-II)

Semester - II				
Course code:	**ENVIRONMENTAL STUDIES**	**T/P**	**C**	**H/ W**
		T	**2**	**2**
Objectives	➢ To understand the multidisciplinary nature of environmental studies such as forest, water, mineral and energy and land resources. ➢ To portray the eco system bio diversity and its conservation. ➢ To impart the knowledge of environmental pollution ➢ To know the importance of field work to study common plants, insects and birds and visit local areas to document environmental assets.			
Unit -I	**The Multidisciplinary Nature of Environmental Studies:** Definition, Scope and importance - Need for public awareness			
Unit-II	**Natural Resources:** Renewable and non-renewable resources A). **Forest Resources:** Use and Over-Exploitation, Deforestation, Case Studies, Timber Extraction, Mining, Dams and Their Effect on Forests and Tribal People. B). **Water Resources:** Use and Over-Utilization of Surface and Ground Water, Floods, Drought, Conflicts over Water, Dams- Benefits and Problems. C). **Mineral Resources:** Use and Exploitation, Experimental Effects of Extracting and Using Mineral Resources, Case Studies. D). **Food Resources:** World Food Problems, Changes Caused by Agriculture and Overgrazing, Effects of Modern Agriculture, Fertilizer-Pesticide Problems, Water Logging, Salinity, Case Studies. E). **Energy Resources:** Growing Energy Needs, Renewable and Non-Renewable Energy Sources, Use of Alternate Energy Resources, Case Studies. F). **Land Resources:** Land as a Resource, Land Degradation, Main Induced Landsides, Soil-Erosion and Desertification. ➢ Role of Individual in Conservation of Natural Resources ➢ Equitable Use of Resources for Sustainable Lifestyle			
Unit- III	**ECOSYSTEMS, BIO-DIVERSITY AND ITS CONSERVATION** **Ecosystems:** Concept of an Ecosystem, Structure and Function of an Ecosystem, Energy Flow in The Ecosystem, Food Chains, Food Webs and Ecological Pyramids. **Biodiversity and Its Conservation:** 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**.**			
Unit -IV	**Environmental Pollution:** Causes, Effects And Control Measures of: **A).**Air Pollution, **B).** Water Pollution, **C).** Soil Pollution, **D).** Marine Pollution, **E).** Noise Pollution, **F).** Thermal Pollution, **G).** Nuclear Hazards.			
Unit -V	**Field Work** ➢ Visit to a Local Area to Document Environmental Assets–River/ Forest/ Grassland/ Hill/ Mountain ➢ Visit to a Local Polluted Site- Urban/Rural/Industrial/Agricultural ➢ Study of Common Plants, Insects, Birds ➢ Study of Simple Ecosystem-Pond, River, Hill Slopes, etc.,			

Reference and Textbooks: -

Agarwal, K. C. (2001). *Environmental Biology*. Nidi Publication Ltd.

Bharucha, E. (2002). *The Biodiversity of India* (Vol. 1). Mapin Publishing Pvt Ltd, Ahamedabad, India.

Brunner, C. R. (1993). *Hazardous waste incineration*. Mcgraw Hill Inc.

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.

Heywood, V. H., & Watson, R. T. (1995). *Global biodiversity assessment* (Vol. 1140). Cambridge: Cambridge university press.

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).

Mhaskar, A. K. *Matter Hazardous*. Techno-Science Publications.

Miller, T. G. (1989). *Environmental Science: Working with the earth (2 nd).* Wadsworth Publicing Co.

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.

Sharma, B. K. (2001). *Environmental Chemistry–6th Revised Edition*.

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.

Outcomes	On successful completion of the subject, the students acquired knowledge about: ➢ Renewable and non-renewable resources. ➢ Species and Ecosystem Diversity**,** Bio-Geographical Classification of India**,** Value of Biodiversity: ➢ Causes, Effects and Control Measures of environmental pollution ➢ Field work knowledge of studying eco system pond, river, hill and common plants, insects and birds ➢ Documentation of environmental assets