

ENVIRONMENTAL SCIENCE

IV Semester: AE / CSE / IT / ECE / EEE / ME / CE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AHSB07	Foundation	L	T	P	C	CIA	SEE	Total
		0	0	-	0	30	70	100
Contact Classes: 0	Tutorial Classes: 0	Practical Classes: Nil			Total Classes: 0			
<p>COURSE OBJECTIVES: The course should enable the students to:</p> <ol style="list-style-type: none"> I. Analyze the interrelationship between living organism and environment. II. Understand the importance of environment by assessing its impact on the human world. III. Enrich the knowledge on themes of biodiversity, natural resources, pollution control and waste management. IV. Understand the constitutional protection given for environment. <p>COURSE OUTCOMES (COs):</p> <p>CO 1: Discover knowledge in ecological perspective and value of environment. CO 2: Understand the significance of various natural resources and its management. CO 3: Demonstrate a comprehensive understanding of the world's biodiversity and the importance of its conservation. CO 4: Categorize different types of pollutions and their control measures. Discover effective methods of waste Management. Analyze global environmental problems and come out with best possible solutions. CO 5: Understand environmental laws and sustainable development.</p> <p>COURSE LEARNING OUTCOMES (CLOs):</p> <ol style="list-style-type: none"> 1. Summarize about environment and its importance and Discuss environment and importance of ecosystems. 2. Provides the information regarding ecosystem and applicability. Acquire knowledge of how all the animals are competing with their food requirements and also understand the various trophic levels in the food chain. 3. Describe the flow of energy through the various components of ecosystem. Examine the importance a of nutrients and flow of nutrients in ecosystem 4. Summarize about the toxicity of heavy metals on the biotic and a biotic components. 5. Distinguish about different types of natural resources and their applicability and illustrate the utility of renewable resources efficiency. 6. Describe the impact of over utilization of underground and surface water. Discuss the disaster manage mental plans. 7. Describe the benefits and property of dams. Illustrate the uses of mineral resources. 8. Enumerate the applications of the solar energy and wind energy in modern days. 9. Illustrate the definition and importance of biodiversity. Acquire the genetic diversity, species and ecosystem diversity. 10. Describe the ecological values and consumptive use of ecosystem. Recall India is mega diversity nation. Discuss the hot spot center in and around. 11. Analyze the information regarding different causes for loss of biodiversity. Analyze various reasons for conflict of species. Illustrate different methods to protect the biodiversity. Correlate national biodiversity act. 12. Explain the meaning of environmental pollution and classification. Analyze the important pollutants in air pollutants. 13. Enumerate the sources types and effects of water pollution. Correlate the sources types and effects of soil pollution. Analyze the noise quality and permissible levels 14. Describe the various methods commonly employed for the disposal of solid waste. 15. Identify To understand the recent trends in e- waste management practices. 16. Understand concept of climate change and impacts. 17. Summarize the remedial measures of ozone depletion. 18. Evolve strategies to environmental issues. Describe the role of government and legal aspects in environmental protection. 19. Discuss the silent features of the hazardous waste management rules. Understand the importance of EIA for developmental activities. 20. State the aim and objectives of sustainable development. Enumerate population and its explosion. 21. Acquire knowledge of environmental education. Summarize the environmental ethics and objectives of green buildings. 								

Module-I	ENVIRONMENT AND ECOSYSTEMS
Environment: Definition, scope and importance of environment, need for public awareness; Ecosystem: Definition, scope and importance of ecosystem, classification, structure and function of an ecosystem, food chains, food web and ecological pyramids, flow of energy; Biogeochemical cycles Hydrological cycle, Phosphorous cycle, Nitrogen cycle. Biomagnifications.	
Module-II	NATURAL RESOURCES
Natural resources: Classification of resources, living and nonliving resources; Water resources: Use and over utilization of surface and ground water, floods and droughts, dams, benefits and problems; Mineral resources: Use and exploitation; Land resources; Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.	
Module-III	BIODIVERSITY AND BIOTIC RESOURCES
Biodiversity and biotic resources: Introduction, definition, genetic, species and ecosystem diversity; Value of biodiversity: Consumptive use, productive use, social, ethical, aesthetic and optional values; India as a mega diversity nation; Endangered and Endemic species, Hot spots of biodiversity. Threats to biodiversity: Habitat loss, poaching of wildlife, human-wildlife conflicts; Conservation of biodiversity: In situ and ex situ conservation; National biodiversity act.	
Module-IV	ENVIRONMENTAL POLLUTION, POLLUTION CONTROL TECHNOLOGIES AND GLOBAL ENVIRONMENTAL PROBLEMS
Environmental pollution: Definition, causes and effects of air pollution, water pollution, soil pollution, noise pollution; Solid waste: Municipal solid waste management, composition and characteristics of e-waste and its management; Pollution control technologies: Waste water treatment methods, primary, secondary and tertiary; Concepts of bioremediation; Global environmental problems and global efforts: Global Warming, Climate change, Sea level rise, ozone depletion, ozone depleting substances, deforestation and desertification; International conventions / protocols: Earth summit, Kyoto protocol and Montreal protocol	
Module-V	ENVIRONMENTAL LEGISLATIONS AND SUSTAINABLE DEVELOPMENT
Environmental legislations: Environmental protection act, air act1981, water act, forest act. municipal solid waste management and handling rules, biomedical waste management and handling rules2016, hazardous waste management and handling rules, Environmental impact assessment(EIA); Towards sustainable future: Concept of sustainable development, population and its explosion, crazy consumerism, environmental education, urban sprawl, concept of green building.	
Text Books:	
<ol style="list-style-type: none"> 1. Benny Joseph, "Environmental Studies", Tata Mc Graw Hill Publishing Co. Ltd, New Delhi, 1st Edition, 2006. 2. Erach Bharucha, "Textbook of Environmental Studies for Under Graduate Courses", Orient Black Swan, 2nd Edition, 2013. 3. Dr. P. D Sharma, "Ecology and Environment", Rastogi Publications, New Delhi, 12th Edition, 2015. 	
Reference Books:	
<ol style="list-style-type: none"> 1. Tyler Miller, Scott Spoolman, "Environmental Science", Cengage Learning, 14th Edition, 2012. 2. Anubha Kaushik, "Perspectives in Environmental Science", New Age International, New Delhi, 4th Edition, 2006. 3. Gilbert M. Masters, Wendell P. Ela, "Introduction to Environmental Engineering and Science, Pearson, 3rd Edition, 2007 	