

**Course Structure-VAC(EE) U.G.Semester-1 Session 2023-24 (July 2023-Dec2023)**

Month	Unit	Topic Covered	Number of Classes	Objective	Outcome.	Teaching tools, References, etc
August	<p><b>Unit 1 :</b> Environmental education and sustainable development</p> <p><b>Unit 2 :</b> Natural Resources :</p>	<p>Definition and objectives of Environmental education; Levels and significance of Environmental Education.</p> <p>Sustainable Development- Definition; Sustainable Development Goals (SDGs)- targets and indicators, challenges and strategies for SDGs.</p> <p><b>Classification of natural resources-</b> biotic and abiotic, renewable and non-renewable.</p> <p><b>Biotic resources:</b> Major type of biotic resources- forests, grasslands, wetlands, wildlife and aquatic (fresh water and marine); Microbes as a resource; Status and challenges.</p> <p><b>Forest resources:</b> Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people</p>	4	<p>To develop and acquire knowledge and conceptual understanding about the subject.</p> <p>To develop inquiring minds and curiosity about the assets of natural resources and appreciate the benefits of the natural resources</p>	Empowers students with awareness, responsibility, problem-solving skills, and a commitment to sustainable actions, ensuring the protection and preservation of our environment for current and future generations.	White Board, Reference books, websites
September	<p><b>Unit 3 :</b> Ecosystems and ecosystem services</p>	<p><b>Water resources:</b> Fresh and marine water resources; Availability and use of water resources; Environmental impact of over-exploitation, issues and challenges; Water scarcity and stress; Conflicts over water.</p> <p><b>Soil and mineral resources:</b> Important minerals; Mineral exploitation; Environmental problems due to extraction of minerals and use; Soil as a resource and its degradation.</p> <p><b>Concept of an ecosystem-</b>Structure and function of an ecosystem. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids.</p> <p><b>Major ecosystem types in India and their basic characteristics-</b> forests, wetlands, grasslands, agriculture, coastal and marine; Ecosystem services- classification and their significance.</p>	4		Helps students understand their structure, function, and components like producers, consumers, and decomposers. They learn about energy flow, food chains, webs, and ecological pyramids, fostering awareness, appreciation, critical thinking, and a sense of stewardship towards conserving biodiversity and maintaining healthy ecosystems.	

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<p align="center">September</p>	<p><b>Unit 4:</b> Biodiversity and its conservation</p>	<p>Definition, types of biodiversity. Biodiversity Hot-spots. Bio-geographical classification of India. India as a mega-diversity nation</p> <p><b>Value of biodiversity :</b> consumptive use, productive use, social, ethical, aesthetic and option values</p> <p><b>Threats to biodiversity:</b> Land use and land cover change; Commercial exploitation of species; Invasive species; Fire, disasters and climate change; man-wildlife conflicts.</p> <p><b>Conservation of biodiversity:</b> <i>in-situ</i> and <i>ex-situ</i> conservation of biodiversity. National and International Instruments for biodiversity conservation. Endangered and endemic species of India</p> <p><b>MID-SEMESTER TEST (GOOGLE FORM)</b> <b>Mid semester Test</b> consist of series of <b>Multiple Choice Questions</b></p>	<p align="center">4</p>	<p>To acquire knowledge and conceptual understanding about the physical and biological components of the ecosystem and their interactions.</p> <p>To acquire knowledge and conceptual understanding about biodiversity and appreciate its values. To develop scientific inquiry for the threats to biodiversity and develop investigative measures to cope up the problems.</p> <p>To gather relevant information about student performance or progress.</p>	<p>Equips students with an understanding of biodiversity and its value, India's rich bio-geographical diversity, the significance of biodiversity hotspots, the threats it faces, and the importance of conservation efforts. This fosters awareness, appreciation, and a sense of responsibility for preserving biodiversity</p> <p>This helps in assessing knowledge, developing skills, applying learning, receiving feedback, improving academic performance, and preparing for future careers.</p>	<p>White Board, Reference books, websites</p>
<p align="center">October</p>	<p><b>Unit 5:</b> Environmental Pollution and management</p>	<p>Definition of pollution; Point sources and non-point sources of pollution.</p> <p><b>Air pollution:</b> Sources of air pollution; Primary and secondary pollutants; Criteria pollutants- carbon monoxide, lead, nitrogen oxides, ground-level ozone, particulate matter and sulphur dioxide; Indoor air pollution; Adverse health impacts of air pollutants; Air pollution control. National Ambient Air Quality Standards. AQI.</p> <p><b>Water pollution:</b> Sources of water pollution; River, lake and marine pollution, groundwater pollution; Water quality parameters and standards; adverse health impacts of water pollution on human and aquatic life. Water pollution control.</p> <p><b>Soil pollution and solid waste:</b> Soil pollutants and their sources; Solid and hazardous waste; Impact on human health, Solid waste Management</p>	<p align="center">4</p>	<p>To enable students to understand the main ideas and concepts of environmental pollution and apply them to solve the problems due to over utilization of the resources.</p>	<p>Students cultivates awareness, knowledge, problem-solving skills, and a sense of responsibility towards environmental conservation. It empowers students to actively participate in sustainable practices and contribute to addressing environmental challenges.</p>	

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		<p><b>Noise pollution:</b> Definition of noise; Unit of measurement of noise pollution; Sources of noise pollution; Noise standards; adverse impacts of noise on human health. Abatement of noise pollution.</p>				
<b>October</b>	<p><b>Unit 5:</b> Environmental Pollution and management</p> <p><b>Unit 6:</b> Social Issues and the Environment</p> <p><b>Unit-7</b> Environmental Treaties and Legislation</p>	<p><b>Thermal and Radioactive pollution:</b> Sources and impact on human health and ecosystems.</p> <p>Role of an individual in prevention of pollution. Pollution case studies.</p> <p>Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.</p> <p>Disaster management: floods, earthquake, cyclone and landslides.</p> <p>Water conservation, rain water harvesting, watershed management</p> <p>Population explosion and environment</p> <p>Human Rights and environment.</p> <p>Role of women and environment.</p> <p>Role of Information Technology in Environment and human health.</p> <p>Environmental Movements</p> <p><b>Major International Environmental Agreements:</b> Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES); Ramsar Convention on Wetlands of International Importance; United Nations Convention to Combat Desertification (UNCCD); Vienna Convention for the Protection of the Ozone Layer; Montreal Protocol on Substances that Deplete the Ozone Layer, United Nations Framework Convention on Climate Change (UNFCCC); Kyoto Protocol; Paris Agreement; India's status as a party to major conventions.</p> <p><b>Major Indian Environmental Legislation:</b> The Wild Life (Protection) Act, 1972; The Water (Prevention and Control of Pollution) Act, 1974; The Forest</p>	6	<p>To develop inquiring minds and curiosity about the proper management of urban and rural solid waste.</p> <p>To acquire knowledge and conceptual understanding about social issues and its management. To develop ethical values towards environment. To develop skills of scientific inquiry to instigate remedial measures for restoration</p>	<p>Students cultivates awareness, knowledge, problem-solving skills, and a sense of responsibility towards environmental conservation. It empowers students to actively participate in sustainable practices and contribute to addressing environmental challenges.</p> <p>Students enhances their understanding of environmental laws, issues, and the importance of public awareness. It empowers them to advocate for stricter enforcement and actively participate in environmental conservation efforts, fostering a sense of civic responsibility.</p> <p>Students cultivates awareness, knowledge, problem-solving skills, and a sense of responsibility towards environmental conservation. It empowers students to actively participate in sustainable practices and contribute to addressing</p>	<p>White Board, Reference books, websites</p>

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	<p>(Conservation) Act, 1980; The Air (Prevention and Control of Pollution) Act, 1981; The Environment (Protection) Act, 1986; The Biological Diversity Act, 2002; Noise Pollution (Regulation and Control) Rules, 2000; Ramsar sites; Biosphere reserves; Protected Areas; National Green Tribunal; Some landmark Supreme Court judgments.</p> <p><b>Major International organizations and initiatives:</b> United Nations Environment Programme (UNEP), International Union for Conservation of Nature (IUCN), World Commission on Environment and Development (WCED), United Nations Educational, Scientific and Cultural Organization (UNESCO), Intergovernmental Panel on Climate Change (IPCC), and Man and the Biosphere (MAB) programme.</p> <p><b>Project/Field work</b></p>			environmental challenges.	
<b>U. G Semester 1 (FYUGP) Examination December-2023</b>					

**Books for Reference**

**English Version**

1. Essential Environmental Studies S.P. Misra, S.N. Pandey
2. A textbook of Environmental Studies Erach Bharucha
3. A textbook of Environmental Studies Dr. D.K.Asthana, Dr. Meera Asthana

**Hindi Version**

1. Paryavaran Adhayan Erach Bharucha

<https://www.earthclipse.com/environment/types-and-threats-to-natural-resources.html>

<https://www.britannica.com/science/ecosystem>

<https://www.greenfacts.org/en/biodiversity/l-3/1-define-biodiversity>.

<https://greencleanguide.com/environmental-pollution-control-water-air-and-land/>

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<http://www.mondaq.com/india/x/624836/Waste+Management/Environment+Laws+In+India>

<https://paa2007.princeton.edu/papers/7192>

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