

# **KOLHAN UNIVERSITY, CHAIBASA**



## **Syllabus for FYUGP, NEP-2020 UG – Environmental Studies (2022 onwards)**

**Designed by**

**Dr. Basant Shubhankar**  
Assistant Professor  
Univ. Dept. of Chemistry  
KU, Chaibasa

**Dr. Shovit Ranjan**  
Assistant Professor  
Univ. Dept. of Zoology  
KU, Chaibasa

**Dr. Nitish Kumar Mahato**  
Assistant Professor  
Univ. Dept. of Zoology  
KU, Chaibasa

**Semester-III**  
**Course Title: Environmental Studies (CC-7)**  
**THEORY (03 Credits)**

<b>Unit</b>	<b>Content of Environment Studies</b>	<b>45 Hours</b>
<b>Unit 1</b>	<b>Introduction to Environmental Studies</b>	<b>3 Hours</b>
	Components of environment: atmosphere, hydrosphere, lithosphere, and biosphere; Scope and importance; Concept of sustainability and sustainable development; Multidisciplinary nature of environmental studies.	
<b>Unit 2</b>	<b>Ecosystems</b>	<b>7 Hours</b>
	Definition and concept of Ecosystem. Structure of ecosystem (biotic and abiotic components); Functions of Ecosystem: Physical (energy flow), Biological (food chains, food web, ecological succession), and Biogeochemical (nutrient cycling) processes. Concepts of productivity, ecological pyramids and homeostasis. Types of Ecosystems: Tundra, Forest, Grassland, Desert, Aquatic (ponds, streams, lakes, rivers, oceans, estuaries); importance and threats with relevant examples from India.	
<b>Unit 3</b>	<b>Natural Resources</b>	<b>7 Hours</b>
	Land resources; Soil erosion and desertification; Impacts of mining and dam building on environment; Water resources: Natural and man-made sources; Uses of water; Over exploitation of surface and ground water resources; Floods, droughts, and international & interstate conflicts over water; Energy resources: Renewable and non-renewable energy sources; Use of alternate energy sources; Growing energy needs; Case studies: Contemporary Indian issues related to mining, dams, forests, energy, etc.	
<b>Unit 4</b>	<b>Biodiversity and Conservation</b>	<b>7 Hours</b>
	Definition of Biodiversity; Levels of biological diversity; Biodiversity hotspots; Endemic and endangered species of India; IUCN Red list criteria and categories; Threats to biodiversity; Biodiversity conservation strategies: in-situ and ex-situ methods of conservation; National Parks, Wildlife Sanctuaries, and Biosphere reserves; Biological Indicator species; Case studies: Contemporary Indian wildlife and biodiversity issues, movements, and projects.	
<b>Unit 5</b>	<b>Environmental Pollution</b>	<b>7 Hours</b>
	Environmental pollution: causes, effects, and controls; Primary and secondary air pollutants; Nuclear hazards and human health risks; Solid waste management; Pollution case studies (some important one in context of India).	
<b>Unit 6</b>	<b>Global Environmental Issues and Policies</b>	<b>7 Hours</b>
	Climate change, Global warming, Ozone layer depletion, and Acid rain; International agreements and programs related to climate and	

	environmental issues; Sustainable Development Goals; Environment legislation in India: Wildlife Protection Act, 1972; Water (Prevention and Control of Pollution) Act, 1974; Forest (Conservation) Act 1980; Air (Prevention & Control of Pollution) Act, 1981; Environment Protection Act, 1986; Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.	
<b>Unit 7</b>	<b>Environment and Ecology (with reference to Jharkhand state)</b> <b>Geographical feature:</b> Soil, Climate, River, lakes, flora & fauna, National parks & Wildlife Sanctuaries, Policies & Programmes related to conservation of forest in context to Jharkhand. <b>Industry in Jharkhand and its impact on Environment:</b> large scale Industry (Iron & Steel, Mining & Mineral Extraction, Chemical & Explosive, Cement, Agro based and Automotive) and small-scale Industry (Handloom sector, Tassar & Lac industry, Sericulture, Stone industry). <b>Mineral profile &amp; Tourist Spots of Jharkhand</b> (Hill Station, Waterfalls, Water spots, Religious Tourist Place, Cultural & Ethnic Tourist spots.	<b>7 Hours</b>

#### Suggested Readings:

- Gadgil, M., & Guha, R. 1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
- Rao, M.N. & Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
- Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. Environment. 8th edition. John Wiley & Sons.
- Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
- Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
- Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.
- Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.
- Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.