Govt. Polytechnic Hamirpur
Lesson Plan (Theory)

Branch: Civil Engg. Sem.: Second
Subject : Environmental Science Session: Jan-June 2025
Teacher: Shareshtha Devi Class Room

Proposed Lesson Plan:

Period:27/01/25to 29/05/25				Total Lectures Planned: 32		
S.No.	**Week**	**No. of Lectures**	**Chapter/ Unit Description**	**Detail of content**	**Reference Resources**	**Remarks**
1	5th Jan 1st Feb	4	Unit-1 Ecosystem	Structure of ecosystem, Biotic & Abiotic components Food chain and food web Aquatic (Lentic and Lotic) and terrestrial ecosystemCarbon, Nitrogen, Sulphur, Phosphorus cycle. Global warming -Causes, effects, process, Green House Effect, Ozone depletion	R1,R2	
2	2nd Feb 3rd Feb 4th Feb	6	Unit– 2 Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refriger- ants, I.C., Boiler) ,Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator). Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler. Noise pollution: sources of pollution, measurement of pollution level, Effects of Noise pollu-tion, Noise pollution (Regulation and Control) Rules, 2000.	R1,R2	
3	5th Feb 1st March 2nd March	6	Unit- 3 Water and Soil Pollution	Tur-bidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation. Waste Water Treatment: Primary methods: sedimentation, froth floatation, Secondary meth- ods: Activated sludge treatment, Trickling filter, Bioreactor, Tertiary Method: Sources of water pollution, Types of water pollutants, Characteristics of water pollutants Membrane sepa-ration technology, RO (reverse osmosis). Causes, Effects and Preventive measures of Soil Pollution: Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	R1,R2	

4	4th March 1st April 2nd April 3rd April	8	Unit– 4 Renewable sources of Energy	Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate col- lector. Importance of coating. Advanced collector. Solar pond. Solar water heater, solar dryer.Solar stills. Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel. Anaerobic digestion. Biogas production mechanism. Utilization and storage of biogas. Wind energy: Current status and future prospects of wind energy. Wind energy in India. Environmental benefits and problem of wind energy. New Energy Sources: Need of new sources. Different types new energy sources. Applications of (Hydrogen energy, Ocean energy resources, Tidal energy conversion.) Concept, origin and power plants of geothermal	R1,R2,R3	
5	4th April 1st May 2nd May 3rd May 4th May	8	Unit-5 Solid Waste Management, ISO 14000 & Environmental Management	Solid waste generation- Sources and characteristics of : Municipal solid waste, E- waste, bio-medical waste.Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries. Collection and disposal: MSW (3R, principles, energy recovery, sanitary landfill), Hazardous. Waste Air quality act 2004, air pollution control act 1981 and water pollution and control act1996.Structure and role of Central and state pollution control board. Concept of Carbon Credit, Carbon Footprint. Environmental management in fabrication industry.ISO14000: Implementation in industries, Benefits.	R1,R2,R3	

R1 Environmental Studies by S.C. Sharma & M.P. Poonia
R2 ES&DM by Ved. P. Verma Kataria&sons
R3 OSS(open source Software)

HOD

Signature of Teacher