



Govt. Polytechnic Hamirpur
Department of Applied Sciences & Humanities

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Lesson Plan (Theory)

Branch: Electrical Engg.

Semester: Second

Subject: Environmental Science

Session: Jan-June 2024

Teacher: Dr. Vibha Sharma

Class Room

S.No	Tentative Week	No. of Lectures	Chapter/Unit Description	Detail of content	Reference Resources	Remarks
1	30-Jan to 14-Feb	6	Unit-1 Ecosystem	Structure of ecosystem, Biotic & Abiotic components Food chain and food web Aquatic (Lentic and Lotic) and terrestrial ecosystem Carbon, Nitrogen, Sulphur, Phosphorus cycle. Global warming -Causes, effects, process, Green House Effect, Ozone depletion	R1,R2	
2	20-Feb-21st March	9	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 pollution, Noise pollution (Regulation and Control) Rules, 2000.	R1,R2	
3	21st March-10-April	5	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	16APRIL-7-May	6	Unit- 4 Renewable sources of Energy	<p>Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector. Importance of coating. Advanced collector. Solar pond. Solar water heater, solar dryer. Solar stills</p> <p>Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel. Anaerobic digestion. Biogas production mechanism. Utilization and storage of biogas.</p> <p>Wind energy: Current status and future prospects of wind energy. Wind energy in India. Environmental benefits and problem of wind energy.</p> <p>New Energy Sources: Need of new sources. Different types new energy sources.</p> <p>Applications of (Hydrogen energy, Ocean energy resources, Tidal energy conversion.)</p> <p>Concept, origin and power plants of geothermal energy</p>	R1,R2,R3	
5	8May-22 May	5	Unit-5 Solid Waste Management, ISO 14000 & Environmental Management	<p>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.</p> <p>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.</p> <p>Concept of Carbon Credit, Carbon Footprint. Environmental management in fabrication</p>	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