



Govt. Polytechnic Hamirpur
Lesson Plan (Theory)

Branch: *Mechanical Engg* Sem.: Second
Subject : Environmental Science
Teacher: Shareshtha Devi

Session: Jan-June 2024
Class Room

Proposed Lesson Plan:

Period: 27/01/24 to 25/05/24				Total Lectures Planned: 32		
S.No.	Week	No. of Lectures	Chapter/Unit Description	Detail of content	Reference Resources	Remarks
1	5th Jan	4	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	
	1st Feb					
2	2nd Feb	6	Unit-2 Air and, Noise Pollution	Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refrigerants, 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	
	3rd Feb					
	4th Feb					
3	5th Feb	6	Unit-3 Water and Soil Pollution	Turbidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation. Waste Water Treatment: Primary methods: sedimentation, froth floatation, Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor, Tertiary Method: Sources of water pollution, Types of water pollutants, Characteristics of water pollutants Membrane separation 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	
	1st March					
	2nd March					

4	4th March	8	Unit- 4 Renewable sources of Energy	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.	R1,R2,R3	
	1st April			Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel. Anaerobic digestion. Biogas production mechanism. Utilization and storage of biogas.		
	2nd April			Wind energy: Current status and future prospects of wind energy. Wind energy in India. Environmental benefits and problem of wind energy.		
	3rd April			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		
5	4th April	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.	R1,R2,R3	
	1st May			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 act 1996. Structure and role of Central and state pollution control board.		
	2nd May			Concept of Carbon Credit, Carbon Footprint.		
	3rd May			Environmental management in fabrication industry. ISO14000: Implementation in industries, Benefits.		
	4th May					

- 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



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Subject : Environmental Science

Teacher: Shareshtha Devi

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