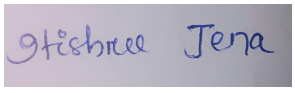
PNS SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BASIC SCIENCE & HUMANITIES

LESSION PLAN OF ENVIRONMENTAL SCIENCE

Branch : EL/ME /ETC/ CI/CS	Semester: 1st	Name of the Lecturer: **Itishree Jena & Monalisha Das**
Subject : ES	Classes Alloted in a Week: 4	Duration of Semester: 06.08.2025 - 04.12.2025
Week	Class Day	Theory / Practical Topic
1st	1	**(UNIT-01) Ecosystem:** Structure of ecosystem, Biotic & Abiotic components
	2	Food chain and food web Aquatic (Lentic and Lotic)
	3	Terrestrial ecosystem , Carbon cycle.
	4	Nitrogen cycle, Sulphur, Phosphorus cycle
2nd	1	Green House Effect, Ozone depletion
	2	**(UNIT-02) Air and, Noise Pollution:** Definition of pollution and pollutant, Natural sources of air pollution
	3	Natural sources of air pollution , Man-made sources of air pollution (Refrigerants, I.C., Boiler)
	4	Air Pollutants: Types, Particulate Pollutants: Effects control - Bag filter
3rd	1	control - Cyclone separator, Electrostatic Precipitator, Gaseous Pollution Control: Absorber
	2	Gaseous Pollution Control: Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler
	3	Noise pollution: sources of pollution, measurement of pollution level, Effects of Noise pollution
	4	Noise pollution (Regulation and Control) Rules, 2000, (UNIT-03) **Water and Soil Pollution:** Sources of water pollution, Types of water pollutants
4th	1	Characteristics of water pollutants Turbidity, pH, total suspended solids, Total solids BOD: Definition, calculation
	2	Total solids COD: Definition, calculation, Waste Water Treatment: Primary methods: sedimentation
	3	Waste Water Treatment: Primary methods: froth floatation
	4	Secondary methods: Activatedsludge treatment, Secondary methods: Trickling filter

5th	1	Secondary methods: Bioreactor, TertiaryMethod: Membrane separation technology
	2	TertiaryMethod: RO (reverse osmosis)
	3	Causes, Effects and Preventive measures of Soil Pollution : Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.
	4	**(UNIT-04) Renewable sources of Energy:** Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air)
6th	1	Theory of flat plate collector. Importance of coating. Advanced collector, Solar pond & Solar water heater
	2	solar dryer & Solar stills, Biomass: Overview of biomass as energy source
	3	Thermal characteristics of biomass as fuel, Anaerobic digestion & Biogas production mechanism
	4	Utilization and storage of biogas, Wind energy: Current status and future prospects of wind energy
7th	1	Wind energy in India , Environmental benefits and problem of wind energy
	2	New Energy Sources: Need of new sources. Different types new energy sources, Applications of (Hydrogen energy, Ocean energy resources, Tidal energy conversion.)
	3	Concept, origin and power plants of geothermal energy
	4	**(UNIT-05)Solid Waste Management, ISO 14000 & Environmental Management:** Solid waste generation- Sources and characteristics of Municipal solid waste, E-waste, bio-medical waste
8th	1	Metallic wastes from industries , Non-Metallic wastes (lubricants, plastics, rubber) from industries
	2	Collection and disposal: MSW (3R, principles, energy recovery, sanitary landfill)
	3	Collection and disposal: Hazardous waste, Air quality act 2004
	4	Air pollution control act 1981 and , Water pollution and control act1996
9th	1	Structure and role of Central and state pollution control board
	2	Concept of Carbon Credit, Carbon Footprint.
	3	Environmental management in fabrication industry
	4	ISO14000: Implementation in industries, Benefits



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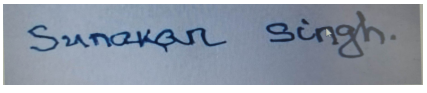

Signature of the H.O.D

Signature of the Principal