

ACADEMIC LESSON PLAN FOR ENVIRONMENTAL SCIENCE (WINTER-2025)

Discipline: Civil,Architectural Assistantship & Electrical Engineering	Semester: 1st	Name of the Teaching Faculty: Sasmita Moharana
Subject: Environmental Science	No of Days /per week class allotted: 4	Semester from date: 06/08/2025 to 04/12/2025 No of weeks: 15
Week	Class Day	Theory Topics
1st	1st	Ecosystem:-Structure of ecosystem,Biotic & Abiotic components
	2nd	Food chain
	3rd	food web
	4th	Aquatic (Lentic and Lotic) ecosystem
2nd	1st	terrestrial ecosystem
	2nd	Carbon Cycle
	3rd	Nitrogen Cycle
	4th	Sulphur Cycle
3rd	1st	Phosphorus cycle
	2nd	Global warming -Causes, effects, process,
	3rd	Green House Effect & Ozone depletion
	4th	Air and Noise Pollution:-Definition of pollution and pollutant, Natural and man made sources of air pollution(Refrigerants, I.C., Boiler)
4th	1st	Air Pollutants: Types, Particulate Pollutants: Effects
	2nd	Effects of air pollution due to Refrigerants, I.C., Boiler
	3rd	Air Pollution control (Bag filter)
	4th	Cyclone separator
5th	1st	Electrostatic Precipitator
	2nd	Gaseous Pollution Control: Absorber, Catalytic Converter,
	3rd	Noise pollution: sources of pollution, measurement of pollution level,
	4th	Effects of Noise pollution,
6th	1st	Noise pollution (Regulation and Control) Rules, 2000
	2nd	Water and Soil Pollution:-Sources of water pollution, Types of water pollutants
	3rd	Characteristics of water pollutants Turbidity, pH, total suspended solids, total solids
	4th	BOD and COD: Definition, calculation
7th	1st	Waste Water Treatment: Primary methods: sedimentation, froth floatation
	2nd	Secondary methods:Activatedsludge treatment,
	3rd	Secondary methods:Trickling filter,Bioreactor,
	4th	TertiaryMethod:Membrane separation technology, RO (reverse osmosis)
8th	1st	Causes of Soil Pollution-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.
	2nd	Effects of Soil Pollution
	3rd	Preventive measures of Soil Pollution
	4th	Renewable sources of Energy:-Solar Energy: Basics of Solar energy. .

9th	1st	Flat plate collector (Liquid&Air). Theory of flat plate collector
	2nd	Importance of coating. Advanced collector. Solar pond.
	3rd	Solar water heater
	4th	solar dryer
10th	1st	Solar stills.
	2nd	Biomass: Overview of biomass as energy source.
	3rd	Thermal characteristics of biomass as fuel.
	4th	Anaerobic digestion.
11th	1st	Biogas production mechanism.
	2nd	Utilization and storage of biogas.
	3rd	Wind energy: Current status and future prospects of wind energy. Wind energy in India.
	4th	Environmental benefits and problem of wind energy.
12th	1st	New Energy Sources: Need of new sources. Different types new energy sources.
	2nd	Applications of Hydrogen energy
	3rd	Ocean energy resources,Tidal energy conversion
	4th	Concept, origin and power plants of geothermal energy
13th	1st	Solid Waste Management, ISO 14000 & Environmental Management:-Solid waste generation
	2nd	Sources and characteristics of : Municipal solid waste,
	3rd	Sources and characteristics of : E- waste,
	4th	Sources and characteristics of : biomedical waste
14th	1st	Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries.
	2nd	Collection and disposal: MSW (3R, principles, energy recovery, sanitary landfill)
	3rd	Hazardous waste.
	4th	Air quality act 2004, air pollution control act 1981
15th	1st	water pollution and control act1996.
	2nd	Structure and role of Central and state pollution control board.
	3rd	Concept of Carbon Credit, Carbon Footprint.
	4th	Environmental management in fabrication industry. ISO14000: Implementation in industries, Benefits

Sasmata Moharana

Signature of the faculty