

# LESSON PLAN

SUBJECT: ENVIRONMENTAL SCIENCE

BRANCH: MECHANICAL ENGINEERING

SEMESTER: 1<sup>ST</sup> (2025-26)


NAME OF THE FACULTY: ASEEMA BARIK



## GOVERNMENT POLYTECHNIC, BHADRAK

  
HOD, Humanities & Sc

  
Academic Coordinator  
**Academic Co-ordinator**

  
Principal  
Govt. Polytechnic, Bhadrak

## **LESSON PLAN**

### **Session: 2025 – 26(Winter)**

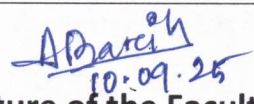
Dept. of Humanities & Science, Govt. Polytechnic, Bhadrak

Course Name : Environmental Science	Name of the Faculty: Aseema Barik
Course Code : Th 5	
Semester : 1 <sup>st</sup> Semester (odd)	Session : Winter (2025-26)
Periods/Week : 04	Date : 06-08-2025 to 04-12-2025
Total Periods : 60	No of Credits : 4

Week	Class/Day	Topics to be Covered
1	1	Structure of ecosystem, Biotic & Abiotic components Food chain and food web
	2	Aquatic (Lentic and Lotic)
	3	Terrestrial ecosystem
	4	Carbon Cycle,
2	1	Nitrogen Cycle
	2	Sulphur cycle,
	3	Phosphorus cycle.
	4	Global warming -Causes, effects, process, Green House Effect,
3	1	Ozone depletion
	2	Definition of pollution and pollutant, Natural sources of air pollution
	3	Manmade sources of air pollution (Refrigerants, I.C., Boiler)
	4	Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator)
4	1	Gaseous Pollution Control: Absorber, Catalytic Converter,
	2	Effects of air pollution due to Refrigerants, I.C., Boiler
	3	Noise pollution: sources of pollution, measurement of pollution level,
	4	Effects of Noise pollution,
5	1	Noise pollution (Regulation and Control) Rules, 2000
	2	Sources of water pollution, Types of water pollutants,
	3	Characteristics of water pollutants: Turbidity, pH
	4	Total suspended solids, total solids
6	1	BOD and COD: Definition, calculation
	2	Waste Water Treatment: Primary methods: sedimentation, froth floatation,
	3	Secondary methods: Activated sludge treatment
	4	Trickling filter, Bioreactor
7	1	Tertiary Method: Membrane separation technology
	2	RO (reverse osmosis).
	3	Causes and Effects of soil pollution
	4	Preventive measures of Soil Pollution: Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.



8	1	Solar Energy: Basics of Solar energy
	2	Flat plate collector (Liquid & Air)
	3	Theory of flat plate collector,
	4	Importance of coating, advanced collector, solar pond,
9	1	Solar water heater
	2	solar dryer
	3	Solar stills.
	4	Biomass: Overview of biomass as energy source,
10	1	Thermal characteristics of biomass as fuel
	2	Anaerobic digestion,
	3	Biogas production mechanism
	4	Utilization and storage of biogas.
11	1	Wind energy: Current status and future prospects of wind energy
	2	Wind energy in India
	3	Environmental benefits and problem of wind energy.
	4	New Energy Sources: Need of new sources, Different types new energy sources
12	1	Applications of Hydrogen energy
	2	Applications of Ocean energy resources, Tidal energy conversion.
	3	Concept, origin and power plants of geothermal energy
	4	Solid waste generation- Sources and characteristics of: Municipal solid waste,
13	1	Sources and characteristics of E- waste,
	2	Sources and characteristics of bio-medical waste.
	3	Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries.
	4	Collection and disposal: MSW 3R principles,
14	1	energy recovery, sanitary landfill,
	2	Hazardous waste.
	3	Air quality act 2004
	4	Air pollution control act 1981 and water pollution and control act 1996.
15	1	Structure and role of Central and state pollution control board.
	2	Concept of Carbon Credit, Carbon Footprint.
	3	Environmental management in fabrication industry. ISO14000: Implementation in industries, Benefits.
	4	DOUBT CLEARANCE CLASS

  
 Signature of the Faculty