

LESSON PLAN

SUB: ENVIRONMENTAL SCIENCE(THEORY)

BRANCH:- MECHANICAL ENGG.

SEMESTER:1ST

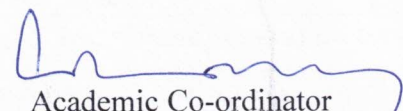
NAME OF FACULTY: MAHESWARI SAMAL (GUEST FACULTY IN CSE)

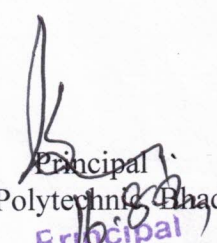


**GOVERNMENT POLYTECHNIC,
BHADRAK**

(SESSION: 2024 – 25)


Hod, Math&Sc(I/C)


Academic Co-ordinator
Academic Co-ordinator


Principal
Govt. Polytechnic Bhadrak
**Principal
Govt. Polytechnic
Bhadrak**

LESSON PLAN

Session: 2024 – 25 (Winter)

Course Name: Environmental Science Course Code: Th 5 (a) Semester: 1 st Semester (odd) Periods/Week: 04 Total Periods: 60	Name of the Faculty: Maheswari Samal Guest faculty: (CSE) Session: Winter 2024-25 Date: 16-08-2024 to 24-12-2024 No of Credits: 4
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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

Course Beyond Syllabus:

Unit	Topics beyond Syllabus
1	Ecological pyramids
	Ecological succession
	Water cycle
	Acid rain
2	Bio-degradable pollutants, non-biodegradable pollutants
	Primary and secondary pollutants
	Pathways of pollutants, receptor of pollutants
3	Lime soda process (cold and Hot)
	Ion exchange process
4	Energy cropping
	Petro plants
5	Industrial waste management
	On-site disposal options and off-site disposal options

Maheswari Samal.
Signature of faculty