

LESSON PLAN

SUB:-RENEWABLE ENERGY SYSTEMS.

BRANCH:- ELECTRICAL ENGG.


SEMESTER: 6TH

SESSION:2022-2023


NAME OF FACULTY: - SUSHANTA KUMAR NAYAK



GOVERNMENT POLYTECHNIC,
BHADRAK


HOD Electrical
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Academic Co-ordinator


Principal
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Discipline: ELECTRICAL ENGG.	Semester: 6th	Name of the Teaching Faculty : SUSHANTA KUMAR NAYAK
Subject: RENEWABLE ENERGY SYSTEMS	No. of Days/per week class allotted:4	Semester from date: 23.02.2023 To Date: 23.05.2023 No. of Weeks:15
Week	Class Day	Theory
1 st	1 st	Introduction to Renewable energy: Environmental consequences of fossil fuel use
	2 nd	Importance of renewable sources of energy.
	3 rd	Sustainable Design and development.
	4 th	Types of RE sources. And Limitations of RE sources
2 nd	1 st	Present Indian and international energy scenario of conventional and RE sources
	2 nd	Solar Energy: . Solar photovoltaic system-Operating principle.
	3 rd	Photovoltaic cell concepts
	4 th	Cell, module, array, Series and parallel connections.
3 rd	1 st	Maximum power point tracking (MPPT)
	2 nd	Classification of energy Sources.
	3 rd	Extra-terrestrial and terrestrial Radiation.
	4 th	Azimuth angle, Zenith angle, Hour angle,
4 th	1 st	Irradiance, Solar constant.
	2 nd	Solar collectors,
	3 rd	Types and performance characteristics,
	4 th	Applications: Photovoltaic - battery charger,
5 th	1 st	domestic lighting, street lighting
	2 nd	water pumping
	3 rd	solar cooker,
	4 th	, Solar Pond.
6 th	1 st	Wind Energy: Introduction to Wind energy
	2 nd	Wind energy conversion
	3 rd	Types of wind turbines
	4 th	Aerodynamics of wind rotors.
7 th	1 st	Wind turbine control systems; conversion to electrical power:
	2 nd	Induction and synchronous generators.
	3 rd	Grid connected and self excited induction generator operation.
	4 th	Constant voltage generation with power electronic control.
8 th	1 st	Constant frequency generation with power electronic control.
	2 nd	Single output systems.

	3 rd	Double output systems.
	4 th	Characteristics of wind power plant.
9 th	1 st	Biomass Power: Energy from Biomass
	2 nd	Biomass as Renewable Energy Source
	3 rd	Types of Biomass Fuels - Solid,
	4 th	Types of Biomass Fuels - Liquid
10 th	1 st	Types of Biomass Fuels - Gas
	2 nd	Combustion and fermentation.
	3 rd	Anaerobic digestion.
	4 th	Types of biogas digester
11 th	1 st	Wood gassifier
	2 nd	Pyrolysis.
	3 rd	Applications: Bio gas
	4 th	Applications: Bio diesel
12 th	1 st	Other Energy Sources Tidal Energy:
	2 nd	Energy from the tides,
	3 rd	Barrage Tidal power systems.
	4 th	Non Barrage Tidal power systems.
13 th	1 st	Ocean Thermal Energy Conversion (OTEC)
	2 nd	Ocean Thermal Energy Conversion (OTEC).
	3 rd	Geothermal Energy - Classification
	4 th	Geothermal Energy - Classification
14 th	1 st	Hybrid Energy Systems
	2 nd	Need for Hybrid Systems.
	3 rd	Diesel-PV,
	4 th	Wind-PV,
15 th	1 st	Microhydel-PV.
	2 nd	Electric vehicles.
	3 rd	Hybrid electric vehicles.
	4 th	Hybrid electric vehicles.
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10-02-2023