NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: RENEWABLE ENERGY(TH-4)

Name Of The Faculty :-Er. SHRADDHA PRIYADARSHINI
Branch :- Electrical Engineering **Semester** :- 6th
Session :-2024-25 **Examination** :-2025(S)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Energy Situation and Renewable Energy Sources	5	5
2	Solar Radiation & Collectors	6	7
3	Low-Temperature Applications of Solar Energy	6	6
4	Passive Space Conditioning & Collectors	7	7
5	Solar Thermal Power Plants	8	8
6	Solar Photovoltaics	8	10
7	Wind Energy	5	5
8	Wind Energy Converters	8	8
9	Energy economics	7	10
10	Tutorial	15	15
	TOTAL	75	81

Sign of Faculty

Sign of H.O.D.

Discipline: Electrical Engineering	Semester: 6TH	Name of the Teaching Faculty: Er. SHRADDHA PRIYADARSHINI
		SESSION : 2024-25 EXAMINATION : 2024 (S)
Week	**Class Day**	**Topics to be Covered**
1st	1st	**Energy Situation and Renewable Energy Sources** Renewable and Non-renewable Energy Sources
	2nd	Energy and Environment
	3rd	Origin of Renewable Energy Sources
	4th	Potential of Renewable Energy Sources
	5th	Tutorial class
2nd	1st	Direct-use Technology
	2nd	**Solar Radiation & Collectors** Solar Radiation Through Atmosphere
	3rd	Terrestrial Solar Radiation
	4th	Measurement of Solar Radiation
	5th	Tutorial class
3rd	1st	Measurement of Solar Radiation
	2nd	Classification of Solar Radiation Instruments
	3rd	Flat Plate Collectors
	4th	Optical Characteristics
	5th	Tutorial class
4th	1st	**Low-Temperature Applications of Solar Energy** Swimming Pool Heating
	2nd	Solar water Heating Systems
	3rd	Solar water Heating Systems
	4th	Natural Convection water Heating Systems
	5th	Tutorial class
5th	1st	Solar Drying
	2nd	Solar Pond
	3rd	**Passive Space Conditioning & Collectors** Principle Space conditioning
	4th	Passive building concepts- Heating, Direct gain, Indirect Gain, Passive Cooling, Shading,Paints, Collings
	5th	Tutorial class

Week	Class Day	Topics to be Covered
6th	1st	Passive building concepts- Heating, Direct gain, Indirect Gain, Passive Cooling, Shading,Paints, Collings
	2nd	Passive building concepts- Heating, Direct gain, Indirect Gain, Passive Cooling, Shading,Paints, Collings
	3rd	Construction of Concentrator
	4th	Construction of Concentrator
	5th	Tutorial class
7th	1st	Energy losses
	2nd	**Solar Thermal Power Plants** Introduction
	3rd	Solar Collection System
	4th	Solar Collection System
	5th	Tutorial class
8th	1st	Thermal Storage for Solar Power Plants
	2nd	Thermal Storage for Solar Power Plants
	3rd	Capacity Factor and Solar Multiple
	4th	Capacity Factor and Solar Multiple
	5th	Tutorial class
9th	1st	Energy Conversion
	2nd	**Solar Photovoltaics** Band Theory of Solids, Physical Processes in a Solar Cell
	3rd	Solar Cell Characteristics
	4th	Equivalent Circuit Diagram of Solar Cells
	5th	Tutorial class
10th	1st	Cell Types - Crystalline Silicon Solar Cell , Solar Cells for Concentrating Photovoltaic Systems,Dye –sensitized Solar Cell (DSC)
	2nd	Cell Types - Crystalline Silicon Solar Cell , Solar Cells for Concentrating Photovoltaic Systems,Dye –sensitized Solar Cell (DSC)
	3rd	Solar Module
	4th	Further System Components -Solar inverters ,Mounting Systems,Storage Batteries ,Other System Components
	5th	Tutorial class

Week	Class Day	Topics to be Covered
11th	1st	Grid-independent Systems -System Configuration
	2nd	Grid-connected Systems -Small Roof Top Systems , Medium-scale PV Generator ,Centralized System
	3rd	Grid-connected Systems -Small Roof Top Systems , Medium-scale PV Generator ,Centralized System
	4th	**Wind Energy** Wind Flow and Wind Direction
	5th	Tutorial class
12th	1st	Wind Measurements Measurement of Pressure Head
	2nd	Hot wire Anemometer
	3rd	Cup Anemometer (Robinson's Anemometer
	4th	Wind Direction Indicators
	5th	Tutorial class
13th	1st	**Wind Energy Converters** Historical Development
	2nd	Aerodynamic of Rotor Blade -Wind Stream Profile -Buoyancy Coefficient and the Drag Coefficient
	3rd	Aerodynamic of Rotor Blade -Wind Stream Profile -Buoyancy Coefficient and the Drag Coefficient
	4th	Aerodynamic of Rotor Blade -Wind Stream Profile -Buoyancy Coefficient and the Drag Coefficient
	5th	Tutorial class
14th	1st	Components of a Wind Power Plant -Wind Turbine -Tower -
	2nd	Components of a Wind Power Plant -Wind Turbine -Tower -Electric Generators –Foundation
	3rd	Power Control -Slow Rotors; Poor Control Mechanism -Control of Fast Rotors
	4th	Power Control -Slow Rotors; Poor Control Mechanism -Control of Fast Rotors
	5th	Tutorial class

Week	Class Day	Topics to be Covered
15th	1st	**Energy economics** Present worth,Life cycle costing (LCC)
	2nd	Present worth,Life cycle costing (LCC)
	3rd	Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
	4th	Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
	5th	Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
16th	1st	Energy economics Present worth,Life cycle costing (LCC), Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
	2nd	Solar PV system,
	3rd	Wind system
	4th	Biomass system
	5th	Tutorial class

Sign of Faculty

Sign of H.O.D