



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. ELINA JAYASINGH

Branch :- Electrical and Electronics Engineering

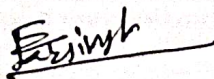
Session :-2024-25

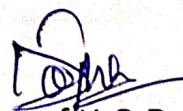
Semester :- 6th

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

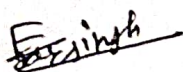

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Discipline: Electrical and Electronics Engineering	Semester: 6TH	Name of the Teaching Faculty: Er. ELINA JAYASINGH	
		SESSION : 2024-25	EXAMINATION : 2025 (S)
Week	Class Day	Topics to be Covered	
1 st	1 st	Energy Situation and Renewable Energy Sources Renewable and Non-renewable Energy Sources	
	2 nd	Energy and Environment	
	3 rd	Origin of Renewable Energy Sources	
	4 th	Potential of Renewable Energy Sources	
	5 th	Tutorial class	
2 nd	1 st	Direct-use Technology	
	2 nd	Solar Radiation & Collectors Solar Radiation Through Atmosphere	
	3 rd	Terrestrial Solar Radiation	
	4 th	Measurement of Solar Radiation	
	5 th	Tutorial class	
3 rd	1 st	Measurement of Solar Radiation	
	2 nd	Classification of Solar Radiation Instruments	
	3 rd	Flat Plate Collectors	
	4 th	Optical Characteristics	
	5 th	Tutorial class	
4 th	1 st	Low-Temperature Applications of Solar Energy Swimming Pool Heating	
	2 nd	Solar water Heating Systems	
	3 rd	Solar water Heating Systems	
	4 th	Natural Convection water Heating Systems	
	5 th	Tutorial class	
5 th	1 st	Solar Drying	
	2 nd	Solar Pond	
	3 rd	Passive Space Conditioning & Collectors Principle Space conditioning	
	4 th	Passive building concepts- Heating, Direct gain, Indirect Gain, Passive Cooling, Shading, Paints, Collings	
	5 th	Tutorial class	

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

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

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


Sign of Faculty


Sign of U.O.D