



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



LESSON PLAN

SUBJECT: Th-4 (RENEWABLE ENERGY)

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	6
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	8
7	Wind Energy	5	5
8	Wind Energy Converters	8	8
9	Energy economics	7	7
10	Tutorial	15	15
TOTAL		75	75

Discipline: ELECTRICAL&E LECTRONICS ENGG.	Semester: 6TH	Name of the Teaching Faculty: RANJAN KUMAR PADHI
Week	Class Day	Theory / Practical Topics
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	CLASS TEST
2nd	1st	Direct-use Technology
	2nd	Solar Radiation & Collectors Solar Radiation Through Atmosphere
	3rd	Terrestrial Solar Radiation
	4th	Measurement of Solar Radiation
	5th	CLASS TEST
3rd	1st	Measurement of Solar Radiation
	2nd	Classification of Solar Radiation Instruments
	3rd	Flat Plate Collectors
	4th	Optical Characteristics

	5 th	CLASS TEST
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	CLASS TEST
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	CLASS TEST
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	CLASS TEST

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	CLASS TEST
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	CLASS TEST
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	CLASS TEST

10th	1st	Cell Types - Crystalline Silicon Solar Cell , Solar Cells for Concentrating Photovoltaic Systems , Dye –sensitized Solar Cell (DSC)
	2nd	Solar Module
	3rd	Further System Components -Solar inverters ,Mounting Systems,Storage Batteries ,Other System Components
	4th	Grid-independent Systems -System Configuration
	5th	CLASS TEST
11th	1st	Grid-connected Systems -Small Roof Top Systems ,Medium-scale PV Generator ,Centralized System
	2nd	Wind Energy Wind Flow and Wind Direction
	3rd	Wind Measurements Measurement of Pressure Head
	4th	Hot wire Anemometer
	5th	CLASS TEST
12th	1st	Cup Anemometer (Robinson's Anemometer)
	2nd	Wind Direction Indicators
	3rd	Wind Energy Converters Historical Development
	4th	Aerodynamic of Rotor Blade -Wind Stream Profile -Buoyancy Coefficient and the Drag Coefficient
	5th	CLASS TEST

13th	1st	Aerodynamic of Rotor Blade -Wind Stream Profile -Buoyancy Coefficient and the Drag Coefficient
	2nd	Components of a Wind Power Plant -Wind Turbine -Tower -Electric Generators –Foundation
	3rd	Components of a Wind Power Plant -Wind Turbine -Tower -Electric Generators –Foundation
	4th	Power Control -Slow Rotors; Poor Control Mechanism -Control of Fast Rotors
	5th	CLASS TEST
14th	1st	Power Control -Slow Rotors; Poor Control Mechanism -Control of Fast Rotors
	2nd	Energy economics Present worth, Life cycle costing (LCC), Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
	3rd	Energy economics Present worth, Life cycle costing (LCC), Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
	4th	Energy economics Present worth, Life cycle costing (LCC), Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
	5th	CLASS TEST
15th	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	CLASS TEST