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 ENGG.	Semester: 6TH	**Name of the Teaching Faculty: ER BIJAYA KUMAR BEHERA**
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
	5th	CLASS TEST

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	CLASS TEST
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	CLASS TEST
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	CLASS TEST

7th	**1st**	Energy losses
	2nd	**Solar Thermal Power Plants** Introduction
	3rd	Solar Collection System
	4th	Solar Collection System
	5th	CLASS TEST
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	CLASS TEST
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	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