

Lesson Plan

Discipline: ETC		Semester-6th Summer-2022	Name of the Teaching Faculty: Sri B B Naik (Training Superintendent)
Sl. No.	Subject-Th-4 RENEWABLE ENERGY SOURCES	No. Of Days/Week class alloted:04	Semester From date:14.03.2022 To date: 10.06.2022 ,No. of weeks: 15
Weeks/Months		Class Day	Topic
1	3rd week of march	1st	1. Energy Situation and Renewable Energy Sources 1.1 Renewable and Non-renewable Energy Sources
		2nd	1.2 Energy and Environment
		3rd	1.3 Origin of Renewable Energy Sources
		4th	1.5 Direct-use Technology
2	4th week of march	1st	2. Solar Radiation & Collectors 2.1 Solar Radiation Through Atmosphere
		2nd	1.6 Regulators (Regulating systems)
		3rd	2.2 Terrestrial Solar Radiation
		4th	2.3 Measurement of Solar Radiation
3	5th week of march/ 1st week of april	1st	2.4 Classification of Solar Radiation Instruments
		2nd	2.5 Flat Plate Collectors
		3rd	2.6 Optical Characteristics
		4th	3. Low-Temperature Applications of Solar Energy. 3.1 Swimming Pool Heating
4	2nd week of april	1st	3.2 Solar water Heating System
		2nd	3.3 Natural Convection water Heating Systems
		3rd	3.4 Solar Drying
		4th	3.5 Solar Pond
5	3rd week of april	1st	4. Passive Space Conditioning & Collectors 4.1 Principle Space conditioning
		2nd	4.2 Passive building concepts- Heating, Direct gain, Indirect Gain, Passive Cooling, Shading,Paints, Collings
		3rd	4.3 Construction of Concentrator
		4th	4.4 Energy losses
6	4th week of april	1st	5. Solar Thermal Power Plants 5.1 Introduction
		2nd	5.2 Solar Collection System
		3rd	5.3 Thermal Storage for Solar Power Plants
		4th	5.4 Capacity Factor and Solar Multiple
7	5th week of april	1st	5.5 Energy Conversion
		2nd	6. Solar Photovoltaics 6.1 Band Theory of Solids, Physical Processes in a Solar Cell ,
		3rd	6.2 Solar Cell Characteristicsaccuracy, transient accuracy, In-sensitivity and robustness.
		4th	6.3 Equivalent Circuit Diagram of Solar Cells

8	1st week of may	1st	6.4 Cell Types - Crystalline Silicon Solar Cell , Solar Cells for Concentrating Photovoltaic Systems , Dye –sensitized Solar Cell (DSC)
		2nd	6.5 Solar Module
		3rd	6.6 Further System Components -Solar inverters ,Mounting Systems,Storage Batteries ,Other System Components
		4th	6.7 Grid-independent Systems -System Configuration
9	2nd week of may	1st	6.8 Grid-connected Systems -Small Roof Top Systems ,Medium-scale PV Generator ,Centralized System
		2nd	7. Wind Energy 7.1 Wind Flow and Wind Direction
		3rd	7.2 Wind Measurements
		4th	7.3 Measurement of Pressure Head
10	3rd week of may	1st	7.4 Hot wire Anemometer
		2nd	7.5 Cup Anemometer (Robinson's Anemometer)
		3rd	7.6 Wind Direction Indicators
		4th	8. Wind Energy Converters 8.1 Historical Development
11	4th week of may	1st	8. Wind Energy Converters 8.1 Historical Development
		2nd	8.2 Aerodynamic of Rotor Blade -Wind Stream Profile - Buoyancy Coefficient and theDrag Coefficient
		3rd	8.2 Aerodynamic of Rotor Blade -Wind Stream Profile -Buoyancy Coefficient and theDrag Coefficient
		4th	8.3 Components of a Wind Power Plant -Wind Turbine -Tower - Electric Generators –Foundation
12	5th week of may	1st	8.3 Components of a Wind Power Plant -Wind Turbine -Tower - Electric Generators –Foundation
		2nd	8.4 Power Control -Slow Rotors; Poor Control Mechanism - Control of Fast Rotors
		3rd	8.4 Power Control -Slow Rotors; Poor Control Mechanism - Control of Fast Rotors
13	1st week of june	4th	9. Energy economics: 9.1 Present worth, Life cycle costing (LCC), Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
14	2nd week of june	1st	9. Energy economics: 9.1 Present worth, Life cycle costing (LCC), Annual Life cycle costing(ALCC), Annual savings. calculations for Solar thermal system
		2nd	9.2 Solar PV system,
		3rd	9.2 Solar PV system,
15	3rd week of june	1st	9.3 Wind system,
		2nd	9.3 Wind system,
		3rd	9.4 Biomass system
		4th	9.4 Biomass system