LESSON PLAN FOR RENEWABLE ENERGY (Th4)

Dicipline : Electrical Engineering		Semester: 6th	Name of the Teaching Faculty: Sri. Mahesh Kumar Biswal
Subject: RENEWABLE ENERGY	no of days per week class alloted 05	no of weeks 15	Semester From Date : 04/02/2025 to Date: 17/05/2025

week	class day	theory
1st	1st class	introduction class
	2nd class	introduction class
	3th Class	1.1. Environmental consequences of fossil fuel use.
	4th Class	1.2. Importance of renewable sources of energy.
	5th Class	1.3. Sustainable Design and development.
2th	1th Class	1.4. Types of RE sources
	2th Class	1.5. Limitations of RE sources.
	3th Class	1.6. Present Indian and international energy scenario of conventional and RE sources
	4th Class	Tutorial
	5th Class	2. Solar Energy:
3th	1th Class	2.1. Solar photovoltaic system-Operating principle.
	2th Class	2.2. Photovoltaic cell concepts
	3th Class	2.2.1. Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).
	4th Class	2.2.1. Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).(contd.)
	5th Class	Tutorial doubt clearing
4th	1th Class	2.3. Classification of energy Sources.
	2th Class	2.3. Classification of energy Sources(contd.)
	3th Class	2.4. Extra-terrestrial and terrestrial Radiation.
	4th Class	2.4. Extra-terrestrial and terrestrial Radiation.(contd.)
	5th Class	Tutorial
5th	1th Class	2.5. Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant.
	2th Class	2.5. Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant.(contd.)
	3th Class	2.6. Solar collectors, Types and performance characteristics,
	4th Class	2.7. Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond.
	5th Class	Tutorial
6th	1th Class	Class Test
	2th Class	3. Wind Energy:
	3th Class	3.1. Introduction to Wind energy.
	4th Class	3.2. Wind energy conversion.
	5th Class	3.3. Types of wind turbines
7th	1th Class	3.3. Types of wind turbines(contd.)
	2th Class	Tutorial
	3th Class	3.4. Aerodynamics of wind rotors.
	4th Class	3.5. Wind turbine control systems; conversion to electrical power:

	5th Class	3.6. Induction and synchronous generators.
8th	1th Class	3.7. Grid connected and self-excited induction generator operation
	2th Class	Tutorial
	3th Class	3.8. Constant voltage and constant frequency generation with power electronic control.
	4th Class	3.9. Single and double output systems.
	5th Class	3.10. Characteristics of wind power plant.
9th	1th Class	4. Biomass Power:
	2th Class	4.1. Energy from Biomass.
	3th Class	4.2. Biomass as Renewable Energy Source
	4th Class	Tutorial
	5th Class	4.3. Types of Biomass Fuels - Solid, Liquid and Gas.
10th	1th Class	4.3. Types of Biomass Fuels - Solid, Liquid and Gas.(contd.)
	2th Class	4.4. Combustion and fermentation.
	3th Class	4.5. Anaerobic digestion
	4th Class	Tutorial
	5th Class	4.6. Types of biogas digester.
11th	1th Class	Class Test
	2th Class	4.7. Wood gassifier.
	3th Class	4.8. Pyrolysis,.
	4th Class	4.9. Applications: Bio gas, Bio diesel
	5th Class	(Tutorial)
12th	1th Class	5. Other Energy Sources
	2th Class	5.1. Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems.
	3th Class	5.1. Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems.(contd.)
	4th Class	5.2. Ocean Thermal Energy Conversion (OTEC).
	5th Class	5.2. Ocean Thermal Energy Conversion (OTEC)(contd.)
13th	1th Class	5.3. Geothermal Energy – Classification.
	2th Class	Tutorial
	3th Class	5.3. Geothermal Energy – Classification(contd.)
	4th Class	5.4. Hybrid Energy Systems.
	5th Class	5.4. Hybrid Energy Systems.(contd.)
14th	1th Class	5.5. Need for Hybrid Systems.
	2th Class	Tutorial
	3th Class	5.6. Diesel-PV, Wind-PV, Microhydel-PV.
	4th Class	5.6. Diesel-PV, Wind-PV, Microhydel-PV(contd.)
	5th Class	5.7. Electric and hybrid electric vehicles.
15th	1th Class	Class Test
	2th Class	5.7. Electric and hybrid electric vehicles(contd.)
	3th Class	Tutorial
	4th Class	revision
	5th Class	revision

05/02/25

signature of HOD(elelctrical)

signature of academic coordinator

signature of course coordinator