

LESSON PLAN

Subject :- TH:4 (b) Renewable Energy (Code) TH-4b **Name of faculty:-** Er Harekrushna Sahu

Semester :-6th

Class allotted 4p/w

Branch :- Electrical Engineering

Discipline	Semester:-6 TH	From date:-23/12/25 To date:18/4/26	
Subject:RE	No. of days/ per week 4p/w:	Theory –Topics/Lesson	45P/45H
DATE	PERIOD	TOPIC COVERED	REMARKS

23/12/25 to 15/1/26		<p>Unit No. I : Introduction to Renewable energy:</p> <p>1.1. Environmental consequences of fossil fuel use.</p> <p>1.2. Importance of renewable sources of energy.</p> <p>1.3. Sustainable Design and development.</p> <p>1.4. Types of RE sources.</p> <p>1.5. Limitations of RE sources.</p> <p>1.6. Present Indian and international energy scenario of conventional and RE sources</p>	
16/1/26 to 07/02/26		<p>Unit No. II: Solar Energy:</p> <p>2.1. Solar photovoltaic system-Operating principle.</p> <p>2.2. Photovoltaic cell concepts</p> <p>2.2.1. Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).</p> <p>2.3. Classification of energy Sources.</p> <p>2.4. Extra-terrestrial and terrestrial Radiation.</p> <p>2.5. Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant.</p> <p>2.6. Solar collectors, Types and performance characteristics,</p> <p>2.7. Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping, solar cooker, Solar Pond.</p>	

09/02/26 to 27/02/26		<p>Unit No. III: Wind Energy:</p> <p>3.1. Introduction to Wind energy.</p> <p>3.2. Wind energy conversion.</p> <p>3.3. Types of wind turbines</p> <p>3.4. Aerodynamics of wind rotors.</p> <p>3.5. Wind turbine control systems; conversion to electrical power: 3.6. Induction and synchronous generators.</p> <p>3.7. Grid connected and self excited induction generator operation. 3.8. Constant voltage and constant frequency generation with power electronic control.</p> <p>3.9. Single and double output systems.</p> <p>3.10. Characteristics of wind power plant.</p>	
28/02/26 to 21/03/26		<p>Unit No. IV: Biomass Power:</p> <p>4.1. Energy from Biomass.</p> <p>4.2. Biomass as Renewable Energy Source</p> <p>4.3. Types of Biomass Fuels - Solid, Liquid and Gas.</p> <p>4.4. Combustion and fermentation.</p> <p>4.5. Anaerobic digestion.</p> <p>4.6. Types of biogas digester.</p> <p>4.7. Wood gassifier.</p> <p>4.8. Pyrolysis,.</p> <p>4.9. Applications: Bio gas, Bio diesel</p>	
23/03/26 to 18/4/26		<p>Unit No. V: Other Energy Sources</p> <p>5.1. Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems.</p> <p>5.2. Ocean Thermal Energy Conversion (OTEC).</p> <p>5.3. Geothermal Energy – Classification.</p> <p>5.4. Hybrid Energy Systems.</p> <p>5.5. Need for Hybrid Systems.</p> <p>5.6. Diesel-PV, Wind-PV, Microhydel-PV.</p> <p>5.7. Electric and hybrid electric vehicles.</p>	
Signature of HOD		Signature of Faculty	