



## LESSON PLAN

Session (2025-2026)

<b>Discipline:</b> Electrical Engg	<b>Semester:</b> 6 <sup>th</sup> , Summer/2025-26	<b>Name of the Teaching Faculty:</b> SUNANDITA SAHOO
<b>Subject:</b> Renewable Energy Theory-TH-4 (b)	<b>No. of Days/Week:</b> 04	<b>Start Date:</b> 22/12/2025 <b>End Date:</b> 18/04/2026

Week	Class Day	Theory Topics	Date of Delivery
1st	1st	Introduction to Renewable energy: Environmental consequences of fossil fuel use	
	2nd	Importance of renewable sources of energy. Sustainable Design and development.	
	3rd	Types of RE sources. Limitations of RE sources	
	4th	Present Indian and international energy scenario of conventional and RE sources. Introduction to solar Energy.	
2nd	1st	Solar photovoltaic system-Operating principle.	
	2nd	Photovoltaic cell concepts Cell, module, array, Series and parallel connections. Maximum power point tracking (MPPT).	
	3rd	Classification of energy Sources. Extra-terrestrial and terrestrial Radiation.	
	4th	Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant.	

3rd	1st	Solar collectors Types.	
	2nd	Solar collectors' performance characteristics.	
	3rd	<i>Doubt Clearing class.</i>	
	4th	Flat plate type solar collector	



4th	1st	Applications: Photovoltaic - battery charger, domestic lighting, street lighting, water pumping.	
	2nd	Working of solar cooker, Solar Pond	
	3rd	Introduction to Wind energy. Wind energy conversion.	
	4th	Types of wind turbines	
	5th	Aerodynamics of wind rotors	
5th	1st	<b>Doubt Clearing class</b>	
	2nd	Wind turbine control systems; conversion to electrical power	
	3rd	Wind turbine control systems; conversion to electrical power	
	4th	<b>QUIZ Test-1</b>	
	5th	Main parts of wind turbines	
6th	1st	Vertical and horizontal type wind turbine.	
	2nd	Types of winds turbine rotors	
	3rd	Grid connected and self-excited induction generator operation.	
	4th	Grid connected and self-excited induction generator operation.	
7th	1st	Constant voltage and constant frequency generation with power electronic control. Single and double output systems.	
	2nd	Constant voltage and constant frequency generation with power electronic control.	
	3rd	Single and double output systems.	
	4th	Characteristics of wind power plant.	
3th	1st	<b>Class Test</b>	
	2nd	Energy from Biomass. Biomass as Renewable Energy Source	
	3rd	Types of Biomass Fuels - Solid, Liquid and Gas	
	4th	Combustion and fermentation in biomass Conversion of bio-gas	
4th	1st	Anaerobic digestion.	
	2nd	Types of biogas digester Wood gassifier	



	3rd	Explain Pyrolysis	
	4th	Applications: Bio gas, Bio diesel	
10th	1st	Tidal Energy: Energy from the tides, Barrage and Non-Barrage Working of Tidal power systems	
	2nd	Ocean Thermal Energy Conversion (OTEC).	
	3rd	Ocean Thermal Energy – Classification	
	4th	Geothermal Energy – Classification.	
11th	1st	Hybrid Energy Systems.	
	2nd	Assignment Evaluation 1 & 2	
	3rd	Need for Hybrid Systems	
	4th	Explain Diesel-PV.	
12th	1st	Explain Wind-PV	
	2nd	Explain Micro-hydel-PV	
	3rd	Case studies on wind energy	
	4th	Case studies on wind energy	
13th	1st	Explain Micro-hydel energy	
	2nd	Explain Micro-hydel energy	
	3rd	Explain Micro-hydel-PV	
	4th	Electric vehicles hybrid electric vehicles	
14th	1st	Electric and hybrid electric vehicles	
	2nd	QUIZ Test-II	
	3rd	Doubt Clearing class	
	4th	Doubt Clearing class	
15th	1st	Assignment Evaluation 3 & 4	
	2nd	Discussion of Previous year questions	
	3rd	Discussion of Previous year questions	
	4th	Discussion of Previous year questions	

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20.12.2025  
Subject Expert

[Signature]  
30/12/25  
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