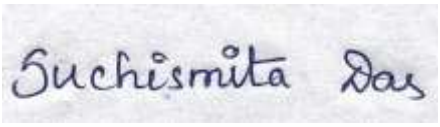
ACADEMIC LESSON PLAN OF SUMMER 2024

Discipline: Electrical	Semester: 6th (sec-A)	Name of the Teaching Faculty: Suchismita Das
Subject: Renewable Energy(TH-4)	No. of days/per week class allotted:4p/week Tutorial:1p/week	Semester From: 16th January 2024 to 26th April 2024
Week	Class/week	Theory Topics
1st	1st	1.1. Environmental consequences of fossil fuel use.
	2nd	1.2. Importance of renewable sources of energy.
	3rd	1.3 Sustainable Design and development.
	4th	1.4. Types of RE sources.
	5th	Tutorial
2nd	1st	1.5. Limitations of RE sources
	2nd	1.6. Present Indian and international energy scenario of conventional and RE sources
	3rd	2.1. Solar photovoltaic system-Operating principle.
	4th	2.2. Photovoltaic cell concepts
	5th	Tutorial
3rd	1st	2.2.1. Cell, module, array, Series and parallel connections.
	2nd	2.3. Classification of energy Sources.
	3rd	2.4. Extra-terrestrial and terrestrial Radiation.
	4th	2.5. Azimuth angle, Zenith angle, Hour angle, Irradiance, Solar constant.
	5th	Tutorial
4th	1st	2.6. Solar collectors, Types, and performance characteristics,
	2nd	2.6. Solar collectors, Types, and performance characteristics,
	3rd	2.7. Applications: Photovoltaic - battery charger, domestic lighting, street lighting.
	4th	2.7. Applications: Photovoltaic - water pumping, solar cooker, Solar Pond.
	5th	Tutorial
5th	1st	3.1. Introduction to Wind energy.
	2nd	3.2. Wind energy conversion.
	3rd	3.3. Types of wind turbines
	4th	3.3. Types of wind turbines
	5th	Tutorial
6th	1st	3.4. Aerodynamics of wind rotors.
	2nd	3.5. Wind turbine control systems; conversion to electrical power:
	3rd	3.6. Induction and synchronous generators.
	4th	3.7. Grid connected and self-excited induction generator operation.
	5th	Tutorial
7th	1st	3.8. Constant voltage and constant frequency generation with power electronic control.
	2nd	3.9. Single and double output systems.
	3rd	3.10. Characteristics of wind power plant.
	4th	4.1. Energy from Biomass.
	5th	Tutorial
8th	1st	4.2. Biomass as Renewable Energy Source
	2nd	4.3. Types of Biomass Fuels - Solid, Liquid and Gas.
	3rd	4.3. Types of Biomass Fuels - Solid, Liquid and Gas.
	4th	4.4. Combustion and fermentation.
	5th	Tutorial
9th	1st	4.5. Anaerobic digestion
	2nd	4.6. Types of biogas digester.
	3rd	4.6. Types of biogas digester.
	4th	4.6. Types of biogas digester.
	5th	Tutorial
10th	1st	4.7. Wood gasifier.
	2nd	4.8. Pyrolysis,.
	3rd	4.9. Applications: Bio gas, Bio diesel

	4th	5.1. Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems.
	5th	Tutorial
11th	1st	5.1. Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems.
	2nd	5.1. Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems.
	3rd	5.2. Ocean Thermal Energy Conversion (OTEC).
	4th	5.2. Ocean Thermal Energy Conversion (OTEC).
	5th	Tutorial
12th	1st	5.3. Geothermal Energy – Classification.
	2nd	5.3. Geothermal Energy – Classification.
	3rd	5.3. Geothermal Energy – Classification.
	4th	5.4. Hybrid Energy Systems.
	5th	Tutorial
13th	1st	5.3. Geothermal Energy – Classification.
	2nd	5.4. Hybrid Energy Systems.
	3rd	5.6. Diesel-PV, Wind-PV, Microhydel-PV.
	4th	5.6. Diesel-PV, Wind-PV, Microhydel-PV.
	5th	Tutorial
14th	1st	5.6. Diesel-PV, Wind-PV, Microhydel-PV.
	2nd	5.7. Electric and hybrid electric vehicles.
	3rd	5.7. Electric and hybrid electric vehicles.
	4th	5.7. Electric and hybrid electric vehicles.
	5th	Tutorial
15th	1st	5.4. Hybrid Energy Systems.
	2nd	5.5. Need for Hybrid Systems.
	3rd	Revision - Biomass Power
	4th	Revision - Biomass Power
	5th	Tutorial



Signature of Teaching Faculty