① Discipline- Branch- Electrical Eng.		Semester 6th.	Name of the Faculty:- Mr. Jiebon Kr. Nayak
Subject Renewable Energy System.		No. of days per week	Semester From: 10.02.2022 to: 10.06.2022 No. of week:-
Month.	Weeks	Class day	Topics.

① Introduction to Renewable energy.
1) Environmental consequence of fossil fuel use.
2) Importance of renewable sources of energy
3) Sustainable Design and Development.
4) Types of RE Sources.
5) Limitations of RE Sources.
6) Present Indian and International energy scenario of conventional and RE Sources.

② Solar Energy

1) Introduction to Solar Energy
2) Solar photovoltaic system operating principle.
3) photovoltaic cell concepts. Cell, module, array, Series and parallel connections
4) Maximum power point tracking (MPPT)

6) Classification of energy sources
7) Classification of energy sources.
8) Extra-terrestrial and terrestrial Radiation.
9) Azimuth angle, zenith angle, Hour angle, Irradiance
10) Solar constant.
11) Solar collectors, Types and permance Characteristics.
12) Applications: photovoltaic, Battery Charger, domestic lights. etc.
13) Doubt discussion.
14) Doubt Solving.

(3) Wind Energy:

1) Introduction to wind energy.
2) Wind Energy conversion.
3) Types of wind turbines.
4) Aerodynamics of wind rotors.
5) wind turbine control system.
6) Conversion to electrical power
7) Grid connected and self excited induction generator operation.
8) Const. voltage and const. Frequency generation with power electronic control.
9) Induction and Synchronous generators.
10) Single and double output System.
11) Characteristics of wind power plant.
12) Doubt discussion.

(4) BIO-MASS POWER

1) Energy From Bio-mass.
2) Biomass as Renewable energy Source.
3) Types of Biomass Fuels
4) Combustion.
5) Fermentation.
6) Anaerobic digestion
7) Types of biogas digester.
8) Wood gasifier.
9) Pyrolysis.
10) Applications
11) Applications: Biogas, Biodiesel.

(5) Other Energy Sources:

1) Tidal energy:
2) Energy From tides.
3) Barrage and Non barrage tidal power System.
4) Ocean thermal energy conversion.
5) OTEC

6) Geothermal energy.
7) Classification.
8) Hybrid energy system
9) Need for hybrid systems.
10) Diesel-PV.
11) Wind - PV.
12) Microhydel - PV.
13) Electric and hybrid electric vehicles.