

Subject: Renewable Energy

Code: PM406

Class: 4th Year

Pre-requisite: None

Theoretical: 3 hrs/wk

Practical: ---

Tutorial: 1 hr/wk

Units: 3

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Overview of energy use: Today's energy use, Fossil fuels and environmental impact, Renewable energy source and devices,

Solar Energy: Solar radiation, solar thermal energy, Photovoltaics (Solar cells), CO₂ capture and solar fuels

Wind Energy and Hydroelectricity: Availability of wind energy, Wind turbines, wind parks and power control,

Water sources and power: Water turbines and hydroelectric plants.

Energy Storage: Smart grid systems, Hybrid vehicles, Forms of energy storage, Batteries, Super-capacitors. Overview on Hydrogen and Fuel Cells, Coal-fired plants and integrated gasifier fuel cell (IGFC) systems, Biomass and Bio-energy

Thermoelectricity and Waste-Heat Utilization. Utilization of Renewable energy plants as Distributed generation sources in power systems.