

Solar Energy Utilization

(Credits: 04)

Theory/Demonstration: 30(15/15) Lectures

Introduction to Fossil fuels and Alternate Sources of energy: Fossil fuels and nuclear energy, their limitation, need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity. (5 Lectures)

Solar Energy: Solar energy, solar water heater, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and construction of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems. (5 Lectures)

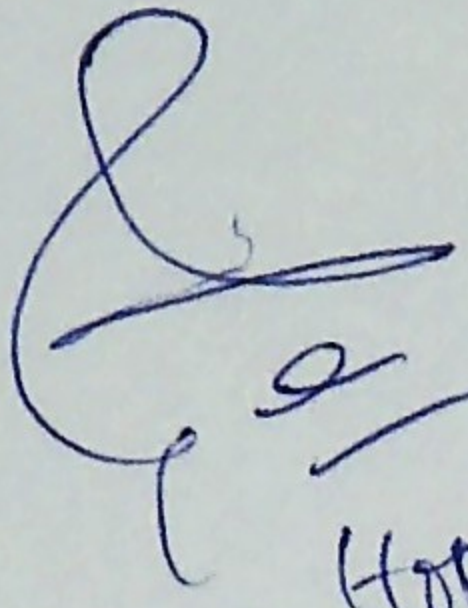
Wind Energy Utilization: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies. (4 Lectures)

Ocean Energy: Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. (3 Lectures)

Geothermal Energy: Geothermal Resources, Geothermal Technologies. (4 Lectures)

Hydro-Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources. (5 Lectures)

Piezoelectric Energy Utilization: Introduction, Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, Piezoelectric parameters and modelling piezoelectric generators, Piezoelectric energy harvesting applications, Human power (4 Lectures)


HOD Electronics