

P.G Diploma in Solar Renewable Energy

PGDRE-105: Renewable energy sources

(52 Hours)

Sub Code: PGDRE-105	No. of Lecture Hours Per week : 04
Total Ccredit:04	Internal Marks : 30 and Exam Marks: 70=100

Objectives of the paper :

- To know Renewable energy sources
- To understand Solar Thermal Technologies
- To understand significance of Renewable energy sources

Module- I

10 Hours

Background :

Need of Energy systems and materials, Application to supplement and Expedite energy conservation efforts, Addressing Environmental Concern. Suitability as CDM .

Module- II

10 Hours

Renewable and Non-renewable energy sources:

Renewable (Non-conventional) energy sources, Non-renewable energy sources, Alternative energy Sources, Energy Seenario in India context, Electricity Generation from Non-Conventional energy Sources, impact on environment, Fuels, Classification of fuels, Solid fuels, Liquid fuels, Gaseous fuels.

Module- III

10 Hours

Solar Thermal Technologies:

Solar Thermal Energy Systems: Absorption and Radiation, Heat Gain and Loss, Solar Cooking Systems, Principle of Cooking, Cooking by Boiling, Speed of Cooking, Energy Required for Cooking, Types of Solar Cooker, Solar Distillation System, Distillation Natural Process for Purifying Water.

Module- IV

12 Hours

Wind Energy:

Wind Flow, Motion of Wind, Vertical Wind Speed Variation, Distribution of wind Speeds, Power in the wind, Conversion of Wind Power; Wind Turbine, Efficiency of wind power Conversion: CP, Types of Wind Turbines, Components of a Wind Turbine, Worldwide wind installations wind Turbine sizing and systems Design, Energy Derived from a Wind Turbine.

Module- V

10 Hours

Non-conventional Energy Sources:

Introduction to No-Conventional energy sources, Solar energy. Wind energy/Power, Energy from biomass and biogas. Ocean Energy. Wave energy, Tidal energy/power, Geothermal energy, Hydrogen energy, Thermo-electric power, Fuel cell, Magneto-Hydro-dynamic (MHD) generator.

References

- Aldo vleira Da Rosa Fundamentals of renewable energy process third edition
- B.H.Khan Non conventional energy resources
- Chetan Singh (2008) Renewable energy Technologies; A Practical Guide for Beginners, Solanki, PHI School Books
- D.Mukherjee (2011), Fundamentals of Renewable Energy Systems Paperback –, New Age International Publisher; First edition
- Dr. H. Naganagouda (2014), Solar Power Hand Book, Director, NTC for solar technology , Banagluru.
- Fang Lin Luo Hong ye Renewable energy systems advanced conversion technologies and applications
- G.D Rai, Non-conventional Sources of Energy, Khanna Publishers, Delhi,
- Kothari D.P. and Singal k.C (2011) Renewable Energy Sources and Emerging Technologies, New Arrivals –PHI; 2 edition