

P.G Diploma in Solar Renewable Energy

PGDRE-104: Solar Photovoltaic Technology

(52 Hours)

Sub Code: PGDRE-104	No. of Lecture Hours Per week : 04
Total Credit:04	Internal Marks : 30 and Exam Marks: 70=100

Objectives of the paper :

- To know basic of Solar Photovoltaic system
- To understand solar conversion and green construction
- To understand Solar photovoltaic applications

Module- I

10 Hours

Basics of Solar Photovoltaics:

Latitude and longitude, History of photovoltaic effect, overview of photovoltaic system, Advantages/ Disadvantages of Photo-voltaic system. Principle of photovoltaic conversion.

Module- II

10 Hours

Photovoltaic effects:

Basics, fundamentals of solar cell, theory of solar cell, structure of solar cell, types of solar cells, photovoltaic module technology, photovoltaic module in India. Economics of solar photovoltaic systems.

Module- III

12 Hours

Solar Photovoltaic energy conversion and utilization

Photovoltaic power generation systems., Off – grid power control and management systems Grid connected systems, Technology for fabrication of photovoltaic devices, Components of photovoltaic power system- solar power, Organic solar cell, Electrochemical energy storage: Batteries.

Module- IV

12 Hours

Solar Photocatalysis

Solar photocatalysis : Mechanism, Kinetics, Nano – catalysts: system design, Performance parameters, Applications of solar photo – catalysis. energy conservations in green buildings-building energy, key factors, programmes of ministers, implications of energy efficiency guidelines. Policies/programmes to mainstream green construction. energy conservation building code,

Module- V

10 Hours

Solar photovoltaic systems and applications:

Solar; potential in India, solar power generation. Applications of solar energy, applications of solar PV system. Types of PV installations, Types of outdoor solar lightings. Solar energy science kits and solar toys.

Nano coatings for solar panels and applications:

Introduction regarding Nano coating, Nano coating materials, different types of methods used for Nano coating. Advantages and disadvantages

References

- B.H.Khan Non conventional energy resources
- Chetan Singh (2013) Solar Photovoltaic Technology and Systems: A Manual for Technicians, Trainers and Engineers, Solanki PHI: (1 January).
- Chetan Singh (2015) Solar Photovoltaics: Fundamentals, Technologies and Applications, Solanki PHI: 3 edition.
- Dr. H. Naganagouda (2014), Solar Power Hand Book, Director, NTC for solar technology , Banagluru.
- From Sunlight to Electricity: A Practical Handbook on Solar Photovoltaic Applications, Suneel DEambi, Other relevant books also be used.
- P Jayram Reddy(2010) Science & Technology of Photovoltaics, BS Publications CRC Press.
- The Energy and Resources Institute, TERI (30 January 2009).