

Elective course (Disciplinary)

EPH- 501: ENERGY TECHNOLOGY AND STORAGE SYSTEMS

UNIT- I:

ENERGY TECHNOLOGY:

Geothermal Energy: Introduction, Applications, Utilization of Geothermal Energy, Geothermal Energy Resources, Hydro Geothermal Resources, Hot Dry Rock Geothermal Resources.

Wind Energy: Introduction, Applications of Wind Energy and Historical Background, Merits and limitations of Wind energy Conversion, Nature and Origin of Wind, Wind Energy Quantum, Variables in Wind Energy Conversion systems, Wind power density, Power in wind Stream, Wind turbine Efficiency.

Ocean EnergyTechnologies: Introduction to energy from Ocean, Ocean Energy Resources, Off-shore and On-shore Ocean energy conversion Technologies, Advantages and limitations of Ocean energy conversion Technologies.

UNIT - II:

ENERGY STORAGE SYSTEMS:

Introduction, Energy storage systems for Electrical UTILITY Peak Shaving, Pumped Hydro Energy Storage Plants and Underground Pumped Hydro, Compressed Air Energy Storage, Battery Energy Storage Systems, Lead Acid Battery Cells Nickel-Cadmium Battery, Advanced Batteries, Supper Conducting Magnet Energy Storage, Advanced Flywheel Energy Storage, Thermal Energy Storage-thermal sensible heat storage and Latent heat energy storage, Chemical Energy Storage.

References:

- (1) Energy Technology by S.Rao and Dr. B.B. Parulekar, Khanna Pub.-1995 1st edition
- (2) Solar Energy conversion, An introductory course By A. E. Dikon and J. D. Loslie
- (3) Principles of Energy Conversion By Archie W. Cupl Jr.