

**SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES,
CHITTOOR -517127
(AUTONOMOUS)
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING**

B.TECH II-I SEM (E.E.E)

L	T	P	C
3	1	0	3

SUB CODE: 16EEE213

GENERATION OF ELECTRIC POWER

OBJECTIVES:

- To demonstrate knowledge on layout of various power plants and their operation on Conventional energy sources.
- To demonstrate knowledge on layout of various power plants and their operation on Nonconventional energy sources.

UNIT-I: Thermal Power Stations

Line Diagram of Thermal power station (TPS), showing paths of coal, steam, water, air, ash and flue gases-brief discussion of TPS components; Economizers, Boilers, Super heaters, Turbines, Condensers, Chimney and cooling towers.

UNIT-II: Hydro-Power Stations (HPS)

Hydro-Power Stations: Selection of site, classification, layout, description of main components. Estimation of developed power from a given catchment area – penstocks water hammer, surge tank; head and tail races.

UNIT-III: Nuclear Power Stations

Nuclear Power Stations: Nuclear Fission and chain Reaction - Nuclear Fuels - Principle of Operation of Nuclear Reactor- Reactor Components; Moderators, Control Rods, Reflectors and Coolents - Radiation Hazards; Shielding and Safety precautions - Types of Nuclear Reactors and Brief Description of PWR, BWR and FBR.

UNIT-IV: Basics of Solar, Wind Energy Generation

Role and Potential of Solar Energy Options, Principles of Solar Radiation, Flat plate and Concentrating Solar Energy Collectors, Different methods of Solar energy Storage - Solar applications; Heating Energy, Cooling, Distillation and Drying - Economic aspects. Role and Potential of Wind Energy option, Horizontal and Vertical axis Wind Mills-Performance Characteristics - Betz criterion – Application - Economic Aspects.

UNIT-V: Basics of Bio-Gas, Geothermal and Ocean Energy Generation

Principles of Bio - Conversion, Types of Bio-Gas Digesters - Characteristics of Bio-Gas-Utilization - Economic and Environment Aspects. Principles of Geothermal Energy - Methods of Harnessing - Principles of Ocean Energy - Tidal and Wave Energy – Mini - Hydal Plants-Economic Aspects.

COURSE OUTCOMES:

On completion of the course, student will be able to

1. Acquire knowledge on

- layout of various power plants and their operation.
- combined operation of power stations.
- concept of different types of turbines and their usage in different types of power generation stations.
- Nonconventional energy sources.

2. Analyze

- the water power equation.
- load sharing between power stations.

TEXT BOOKS:

1. A Text Book on Power System Engineering by M.L.Soni, P.V.Gupta, U.S.Bhatnagar, A.Chakrabarthy, Dhanpat Rai & Co Pvt. Ltd.
2. Principles of Power Systems By V.K.Mehta and Rohit.Mehta, S.Chand & Company Ltd., New Delhi 2004.

REFERENCE BOOKS:

1. Non-Conventional Energy Sources by G.D.Rai

University Nominee

Dr.G.V.Marutheswar
Professor, EEE Dept.
S.V.U CE Tirupathi

Subject Expert

Dr.T.Gowri Manohar
Professor, EEE Dept.
S.V.U.C.E,Tirupathi

Subject Expert

Dr. V.Rajnikanth
Professor,Dept. of EEE,
S.K.I.T, SriKalahasti

Industry Expert

Mr. K.Somashekar M.Tech
SE in Electrical department
SAPA Alluminium company,
Kuppam

Alumni Student

Mr.K. Hemachandra Reddy
Assistant Professor,Dept. of
EEE, REVA
University,Bangalore.

Dept. BOS Chairman

Prof. Ramesh Halakurki
HOD EEE
SITAMS, Chittoor