

## EE-506: Electrical Power Generation

| Credit | L | T | P |
|--------|---|---|---|
| 4      | 3 | 1 | - |

### UNIT-I

Cost of Power Generation: running cost and fixed cost, Method for providing for depreciation factor affecting cost of generation. Load Factor, Load Curve, Demand Factor, Diversity Factor. Number and size of generation units: plant capacity factor and plant use factor. Tariffs: Flat-rate, Two part, Block rate, Maximum Demand and Power Factor, Tariff Economics of Power Factor improvements.

### UNIT-II

Selection of site, Thermal Power Plants: Types and their relative merits, Boilers accessories, Economisers, Preheater and Super Heater. Fuel, Combustion Equipment: Types of Steam Turbines, Condensers, Pumps, Cooling Towers. Layout of Plant, Pollution Control Equipments. Elements of Nuclear Power Plant. Nuclear Reactor- it's components and their functions. Types of Nuclear Reactor, Boiling water, Pressurized water fast breeder reactor and Candu Reactor, their advantages and disadvantages.

### UNIT-III

Hydro-Electric Power Plant: Selection of site. Classification based on: quantity of water available, Nature of load, Available head, Layout, it's main parts and their function: reservoir, Dam, spillways, intake, forebay, Penstock, Search tank, Prime-mover, Draft-tube. Governing of turbines, Types of Turbines and their characteristics, Comparison of various types of plants.

### UNIT-IV

Advantages of coordinated operation of different types of power plants, hydro-thermal scheduling – short term and long term.

### UNIT-V

Tidal, Wind, Geo-Thermal, Wave, Magneto-Hydro Dynamic (MHD), Photo-voltaic and Solar Power used for generation. Recent advances such as biogas generation, hydrogen, fuel cell.

### Additional topics:

Biogas generation, hydrogen, fuel cell  
Types of Turbines and their characteristics.

### TEXT/REFERENCE BOOKS

1. M. V. Deshpandae, "Elements of Electrical Power Station Design", A. H. Wheeler and Co. Pvt. Ltd. Allahabad.
2. B. G. A. Shroetzi and W. A. Vopal, "Power Plant Engineering and Economics", McGraw Hill Book Co.
3. C. L. Wadhwa, "Generation Distribution and Utilization of Electrical Engineering", New Age International, New Delhi.
4. C. L. Wadhwa, "Electrical Power Systems", New Age International, New Delhi.

### Websites

[www.nptel.ac.in](http://www.nptel.ac.in)