

construction aspects of GIS, Installation and maintenance of GIS, Comparison of Air insulated substations and Gas insulated substations.

#### UNIT-IV:

**Power Factor & Voltage Control:** Causes of low power factor -Methods of Improving power factor -Phase advancing and generation of reactive KVAR using static Capacitors-Most economical power factor for constant KW load and constant KVA type loads, Numerical Problems.

Dependency of Voltage on Reactive Power flow- Methods of Voltage Control- Shunt Capacitors, Series Capacitors, Synchronous Capacitors, Tap changing and Booster Transformers.

#### UNIT-V:

**Economic Aspects of Power Generation & Tariff:** Load curve, load duration and integrated load duration curves-load, demand, diversity, capacity, utilization and plant use factors- Numerical Problems. Costs of Generation and their division into Fixed, Semi-fixed and Running Costs.

Desirable Characteristics of a Tariff Method-Tariff Methods: Flat Rate, Block-Rate, two-part, three -part, and power factor tariff methods and Numerical Problems.

#### TEXT BOOKS:

1. Principles of Power Systems by V.K Mehta and Rohit Mehta S.Chand Company Pvt. Ltd, New Delhi 2004.
2. Electrical Power Systems, PSR. Murty, BS Publications.

#### REFERENCE BOOKS:

1. A Text book of Power system Engineering, R. K. Rajput, Laxmi Publications (P) Limited.
2. Electrical Power Generation, Transmission and Distribution, S.N.Singh., PHI.
3. Electrical Power Systems by C.L.Wadhawa New Age International (P) Limited, Publishers.
4. Generation of Electrical Energy, Dr. B. R. Gupta, S. Chand.

#### Outcome:

After going through this course the student gets a thorough knowledge on thermal gas and nuclear power plants operation, AC and DC distribution systems operation, AIR insulated and GAS insulated indoor/outdoor substations operation, voltage control and power factor improvement techniques, economic aspects of power generation and different types of TARIFF methods with which he/she can able to apply the above conceptual things to real-world electrical and electronics problems and applications.