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| SEMESTER <i>Eighth</i> | DEPARTMENT <i>Power Engineering</i> | COURSE TITLE <i>Power System Economics</i> |
| COURSE CODE <i>EP802</i> | HOURS: 3 UNITS: 3 | COURSE SPECIFICATIONS <i>Theoretical Content</i> |

1. Economic Operation of Power Systems:

- Determine incremental fuel cost.
- Economic dispatch neglecting transmission losses.
- Transmission loss as a function of plant generation.
- General loss formula.
- Optimum load dispatch considering transmission losses.
- Cost of electricity.
- Economic evaluation methods.
- Operation and maintenance costs.

2. Tariffs:

- Flat demand rate tariff.
- Strait line meter rate tariff.
- Block meter rate tariff.
- Two-part tariff.
- Power factor tariff.
- Seasonal rate tariff.
- Peak load tariff.
- Three- part tariff.
- Describe the operation of electromechanical and electronic energy meters.

3. Estimation and Forecasting for Power Consumption in Power Systems:

- Power conservation and load curves plotting, heating, air conditioning, lighting, street lighting, home utilizations.
- Power demand and power consumption. Power loading of installations.
- Determine factors used for load estimation: Demand factor, Diversity factor, Factor of maximum utilization, ect.

4. Basic Concepts of Market Economics.

- Modeling the consumers.
- Modeling the producers.
- Market equilibrium.
- Pareto efficiency.
- Global welfare and deadweight loss.

References:

1. *Electrical Power Systems*; Ashfaq Husain.
2. *Power Plant System Design*; Kam W. Li & A. Paul Priddy. John Willy & Sons; Newyork.
3. *Guide for Electrical Engineers*; Schneider Electric S.A.
4. *Power Plant System Design*; Li Priddy & Kam W.Li
5. *Power System Economics*; Daniel S. Kirschen; Goran Strbac University of Manchester. John Willy & Sons, Ltd. 2005.