Course Type	Course Code	Name of Course	L	T	P	Credit
DC	EEC311	Power System Analysis and Control	3	0	0	9

Course Objective

To provide fundamental knowledge in power system analysis that includes basic concepts of power systems operation, fault analysis, and load frequency control aspects

Learning Outcomes

Upon successful completion of this course, students will be able to:

- understanding the Load Flow, Short circuit analysis of the power system,
- solve the problems related to the economic dispatch of power plant,
- knowledge about latest developments in the field of Load Frequency Control.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Load Flow Studies: Introduction, Bus classification, Nodal Admittance Matrix, Development of load flow equations, Methods of load flow equations, Gauss-Seidal method and Newton-Raphson method, comparison of load flow analysis method	9	Understanding different types of load flow analysis.
2	Nature of faults in Electrical systems, symmetrical components and sequence networks: symmetric and asymmetric faults.	9	Study of different types of fault in power system.
3	Transient stability: review of equal area criterion, methods of improving transient stability studies, representation of excitation system and its inclusion in stability studies. Introduction of Multi-machine transient stability, its mathematical formulation.	9	Find out different techniques of transient stability studies.
4	Economic operation: Introduction, Characteristics of generating units, Economic dispatch neglecting transmission losses ,hydro-thermal scheduling	8	Understanding Economic load dispatch.
5	Load frequency control: concept of control area, analysis of single area load frequency control, Two area (multi area) load frequency control problem and tie line control.	7	Knowledge about latest developments in the field of LFC.

Text Books

1. Power System Engineering by D. P. Kothari and I. J. Nagrath
2. Electric Energy Systems Theory by O. J. Elgard
3. Electrical Power Systems by C. L. Wadhwa

Reference Books:

1. Power System Analysis by J. J. Grainger and Wolliam D. Stevenson