

EE 504:COMPUTER AIDED POWER SYSTEM ANALYSIS (3-0-0: 3)

Network Modeling and Power Flow

System graph loop, cutset and incidence matrices, Y-bus formation, sparsity and optimal ordering, power flow analysis, Newton Raphson method, decoupled and fast decoupled method, formulation of three phase load flow , DC load flow, formulation of AC-DC load flow, sequential solution technique.

Fault Studies

Analysis of three phase symmetrical and unsymmetrical faults in phase and sequence domain, phase shift in sequence quantities due to transformer, open circuit faults.

Stability Studies

Transient stability analysis, swing equation, stability of multi-machine system using modified Euler method and Runge-Kutta method.

Power System Security

Factors affecting security, State transition diagram, contingency analysis using network sensitivity method and AC power flow method, introduction to state estimation.

Text Books & References

1. D P Kothari, I J Nagrath, "Modern Power System Analysis", McGraw Hill.
2. George L Kusic, "Computer Aided Power System Analysis", CRC Press.
3. M A Pai, "Computer Techniques in Power System Analysis", McGraw Hill.
4. J Arrillaga, N R Watson, "Computer Modeling of Electric Power System", Wiley.
5. Hadi Saadat, "Power System Analysis", McGraw Hill.
6. G T Heydt, "Computer Analysis Methods for Power Systems", Macmillan Company.