

ECE 4613: Power Transmission Systems

Text: Power System Analysis and Design, J.D. Glover & M. Sarma, Third Edition

Topical Outline of Course

Topics Covered in Chapters 1-6, 12 and 13

1. Fundamentals of balanced three phase networks
 - a. Phasors and Complex Power
 - b. Three phase circuits
 - c. Transformers
 - d. Per-Unit System
 - e. Network Equations and Y-Matrix formulation
2. Transmission Lines Modeling and Steady State Performance
 - a. Line Parameters (R,L,C) including solid, stranded and bundled conductors
 - b. Equivalent Circuit
 - i. Lossless, Long, Medium and Short line presentation
 - ii. Equivalent and nominal π representation
 - iii. Maximum Power Flow and Line Loadability
 - iv. Reactive Compensation Techniques
3. Power Flow
 - a. Solutions of Linear and Nonlinear Algebraic Equations
 - b. Power-Flow Problem
 - c. Power-Flow Solutions by Gauss-Seidel and Newton-Raphson
 - d. Fast Decoupled Power Flow
4. Transient Operations and Transient Stability
 - a. The Swing Equation
 - b. Equal-Area Criterion