Syllabus 2013
Introduction to Power System Analysis

1. Introduction 1
   - Modern power system, System protection, Computer analysis and application

2. Fundamentals 3
   - Phasors
   - Power in single-phase ac circuits,
   - Complex power and balanced three-phase circuits
   - Per phase and balanced three phase system

3. Power transformers – the per unit system 3
   - Ideal transformer and practical transformers in equivalent circuits
   - The per-unit system
   - Two winding transformers and three phase transformer connections
   - Autotransformers and transformers with off-nominal turns ratios

4. Transmission Line Parameters 4
   - Line resistance, inductance, and capacitance
   - Three phase transmission line, Effect of bundling
   - Electric Field strength at conductor surfaces
   - Parallel circuit three-phase lines

5. Line Model And Performance 3
   - Short-line, Medium-line, and Long-line models
   - Transmission line differential equations
   - Equivalent π model and loading condition
   - Complex power flow through transmission line
   - Reactive power compensation

6. Power Flow Analysis 4
   - Bus admittance matrix, Solution of non-linear algebraic equations
   - Power flow solution – Gauss-Seidel, Newton-Raphson, Fast-decouple algorithms

TEXTBOOK:
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Homework 20%, Three exams 75%, Attendance 5%
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