

Table of Contents

- 1. Circuit Interruption and Switching**
 - Circuit breakers
 - Arc interruption
 - Switching transients
 - Insulation coordination
- 2. Transmission Line Inductance**
 - Inductance calculations
 - Conductor configuration
 - Magnetic field effects
 - Line parameters
- 3. Transmission Line Capacitance**
 - Electric field distribution
 - Capacitance calculations
 - Charging current
 - Transmission line modeling
- 4. Transmission Line Performance**
 - Voltage regulation
 - Power transfer capability
 - Line efficiency
 - ABCD parameters
- 5. Fault Calculations**
 - Three-phase faults
 - Unsymmetrical faults
 - Short-circuit analysis
 - Symmetrical components
- 6. Power System Protection**
 - Protective relays
 - Protection coordination
 - Overcurrent protection
 - Distance protection
- 7. Load Flow Analysis**
 - Bus admittance matrix
 - Gauss–Seidel method
 - Newton–Raphson method
 - Power flow studies
- 8. Power System Stability**
 - Steady-state stability
 - Transient stability
 - Rotor angle stability
 - Swing equation
- 9. Power System Operation**
 - Economic load dispatch
 - Voltage control
 - Frequency regulation
 - System monitoring
- 10. HVDC Transmission and Power Electronics**
 - HVDC systems

- Rectifiers and inverters
- Thyristor converters
- Power electronic applications

11. Power System Planning

- Reliability assessment
- Network expansion
- Economic planning
- System optimization