ELCT 221 Syllabus

Part I – DC circuits

Chapter 1: Basic concepts
Systems of Units, Charge and Current, Voltage, Power and Energy, Circuit Elements

Chapter 2: Basic Laws
Ohm's Law, Nodes, Branches, and Loops, Kirchhoff's Laws, Series Resistors and Voltage Division, Parallel Resistors and Current Division

Chapter 3: Methods of Analysis
Nodal Analysis, Mesh Analysis, Nodal and Mesh Analyses by Inspection, Nodal Versus Mesh Analysis, Circuit Analysis with PSpice, Applications examples

Chapter 4: Circuit Theorems
Linearity, Superposition, Source Transformation, Thevenin's and Norton's Theorem
Part II – AC circuits

Chapter 6: Capacitors and Inductors
Capacitors, Series and Parallel Capacitors, Inductors, Series and Parallel Inductors

Chapter 7: RC and RL Circuits
Step Response of an RC and RL Circuits, Transient Analysis with PSpice

Chapter 9: Sinusoids and Phasors
Sinusoids, Phasors, Impedance and Admittance, Kirchhoff’s Laws in the Frequency Domain

Chapter 10: Sinusoidal Steady-State Analysis
AC Nodal and Mesh Analysis, Superposition, Thevenin and Norton Equivalent Circuits, AC Analysis Using PSpice

Chapter 11: AC Power
Instantaneous and Average Power, Maximum Average Power Transfer, Effective or RMS Value, Power Factor

Chapter 12: Three-Phase Circuits
Balanced Three-Phase Voltages, Balanced Wye-Wye, Wye-Delta, Delta-Delta and Delta-Wye Connections, Power in a Balanced System
Computer tools and simulators

In ELCT 221

(Room 1D15)

MATLAB

PSPICE