Topics and Subtopics
• Basic physics of semiconductors and pn junctions
  • Crystals and crystal structures
  • Energy bands
  • Density of states
  • Electron and hole effective masses
  • Equilibrium and nonequilibrium properties
  • Fermi-Dirac statistics
  • Mass action
  • Quasi-Fermi levels
  • Recombination/generation
  • Carrier transport
• Quantum mechanics
  • Particle-wave duality
  • The Bohr model
  • Particle in a box

Suggested Reference Materials
• Pierret, Semiconductor Device Fundamentals
• Jasprit Singh, Modern Physics for Engineers, John Wiley & Sons, 1999

Suggested Reference Courses
• EEE 3396 - Solid State Electronic Devices
• EEE 4420 – Introduction to Nanodevices (formerly EEL 4351)

Sample Questions
• End-of-the-chapter problems in the suggested reference materials.