

**Physics 226**  
**Solid State Physics**  
**(3.0; 3 credits)**

**Textbook:** Solid State Physics

By: Ashcroft & Mermin  
(Saunders College Publishing)

**Contents:**

1. Electrons in one dimensional periodic lattices
2. Vibrations in one dimensional periodic lattices
3. Geometrical description of crystals: Direct and reciprocal lattices
4. Drude and Sommerfield free-electron theory of metals
5. The one-electron approximation and beyond: Hartree-Fock. Band Theory
6. Excitons, Plasmons, polarons and dielectric screening
7. Interacting electronic-nuclear systems and the adiabatic principles
8. Lattice dynamics of crystals
9. Intrinsic, extrinsic and inhomogeneous semiconductors
10. Magnetic ordering in crystals
11. Superconductivity
12. Electron gas in magnetic field

**N.B. Prerequisite: Physics 218**  
**Fall 2000**