PHY 6646 - Quantum Mechanics II
Spring 2020 - Course Schedule

January 6: The degeneracies of the Hydrogen Atom and of the Isotropic Harmonic Oscillator

January 8: The Hartree-Fock approximation

January 10, 13: Spin

January 13: Gyromagnetic ratios

Januay 15: Paramagnetic resonance

January 17: Spin-Orbit interactions

January 22, 24, 27: Addition of angular momenta

January 29, 31: Irreducible Tensor Operators

February 3: The Wigner-Eckart Theorem

February 5: The Variational Method

February 7,10: The Wentzel-Kramers-Brillouin Method

February 12, 14: Bound states and the Bohr-Sommerfeld quantization rule

February 17, 19: The Eikonal approximation

February 21, 24: Time-independent Non-degenerate Perturbation Theory

February 26: Selection rules

February 28, March 9: The Stark effect

March 11: Degenerate Perturbation Theory

March 13, 16: Fine Structure of the Hydrogen Atom

March 18: Time-dependent Perturbation Theory

March 20, 23: Adiabatic perturbations

March 25: Periodic perturbations and Fermi's Golden Rule

March 27: Absorption and Emission of Light by Atoms

March 30, April 1: The Heisenberg Picture and Interacting Picture Formulations

April 3: Motion in a periodic potential

April 6: The parametric resonator

April 8: Scattering Theory

April 10: The Optical Theorem

April 10: The Born Approximation

April 13: The Partial Wave Expansion

April 15: Analyticity and Resonant Scattering

April 17: The Dirac Equation

April 20: Plane Wave Solutions and the Dirac Sea

April 22: The Electron Magnetic Moment and the Fine Structure of Hydrogen revisited