# PHY 6646 - Quantum Mechanics II
# Spring 2021 - Course Schedule

January 11: The Hartree-Fock approximation

January 13: The degeneracies of the Hydrogen Atom and of the Isotropic Harmonic Oscillator

January 15, 20: Spin

January 20: Gyromagnetic ratios

January 22: Paramagnetic resonance

January 25: Spin-Orbit interactions

January 27, 29, February 1: Addition of angular momenta

February 3, 5: Irreducible Tensor Operators

February 8: The Wigner-Eckart Theorem

February 10: The Variational Method

February 12, 15: The Wentzel-Kramers-Brillouin Method

February 17, 19: Bound states and the Bohr-Sommerfeld quantization rule

February 22, 24: The Eikonal approximation

February 26, March 1: Time-independent Non-degenerate Perturbation Theory

March 3: Selection rules

March 5, 8: The Stark effect

March 10: Degenerate Perturbation Theory

March 12, 15: Fine Structure of the Hydrogen Atom

March 17: Time-dependent Perturbation Theory

March 19: Periodic perturbations and Fermi's Golden Rule

March 22: Absorption and Emission of Light by Atoms

March 26, 29: Adiabatic perturbations

March 31: The Heisenberg Picture and Interacting Picture Formulations

April 2: Scattering Theory, the Optical Theorem

April 5: The Born Approximation

April 7: The Partial Wave Expansion

April 9: Analyticity and Resonant Scattering

April 12: The Dirac Equation

April 14: Plane wave solutions and the Dirac Sea

April 16: The Electron magnetic moment and the fine structure of Hydrogen revisited

April 19: Motion in a periodic potential

April 21: The parametric resonator