

## Phys 485/685 - Quantum Mechanics I - 3 credits

### Bulletin Description:

Operators, one-dimensional wells and barriers, Schrödinger equation, uncertainty, duality, Born interpretation, unstable states, bosons and fermions, central force problems, angular momentum, spin.  
Prereq: PHYS 350, MATH 266

### Course Objectives:

To master the foundations of quantum mechanics, including fundamental concepts, key experiments, theoretical methods, and practical applications to a variety of systems.

### Content Listing:

- **The Wave Function:** The Schrödinger Equation, Statistical Interpretation, Momentum, The Uncertainty Principle, Hilbert Space, Operators and Observables, Dirac Notation
- **Time-Independent Schrödinger Equation:** Stationary States, Simple Exactly Solvable Quantum Mechanical Systems
- **Quantum Mechanics in Three Dimensions:** Spherical Coordinates, The Hydrogen Atom, Angular Momentum, Spin
- **Identical Particles:** Two-Particle Systems, Fermions, Bosons, Atoms, Solids, Quantum Statistical Mechanics

**Text:** D. J. Griffiths, Introduction to Quantum Mechanics, 2nd ed. (Pearson, 2005).