

Physics 660: Quantum Mechanics

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- Contact information: hu4@physics.purdue.edu; Room 268 Phys Building; Phone: 4-3044
- Notes will be distributed in class.
- Homework: Homework will be signed biweekly. They will be due in two weeks. Twenty percent deduction for each delayed day. Homework accounts for 50% of your final grade.
- Exam: Midterm exam will be a take-home exam (20%). It is due in twenty four hours. The final exam (30%) will be in class exam.
- Books recommended:
 1. R. Shankar: Principles of Quantum mechanics
 2. Quantum Mechanics by Albert Messiah
 3. Modern Quantum Mechanics by J. J. Sakurai (Hardcover)
 4. Quantum Mechanics: Non-Relativistic Theory, Volume 3, by E M Lifshitz, L D Landau

Contents:

- Chapter 1: History and Introduction
- Chapter 2: Review of Classical Mechanics
- Chapter 3: Principles of Quantum Mechanics
- Chapter 4: One Dimensional Problem
- Chapter 5: Classical Limit and WKB Approximation
- Chapter 6: Symmetry in Quantum Mechanics
- Chapter 7: Angular Momentum and Spin
- Chapter 8: Hydrogen Atom
- Chapter 9: Two state systems
- Chapter 10: Many-body problem and identical particles
- Chapter 11: Path Integral
- Chapter 12: Gauge Principle and Magnetic field
- Chapter 13: Berry Phases and Aharanov-Bohm effect
- Chapter 14: Bell inequality and quantum computing
- Chapter 15: Perturbation Theory
- Chapter 16: Scattering Theory
- Chapter 17: Transport Theory
- Chapter 18: Dirac equation
- Chapter 19: Spin-orbit coupling
- Chapter 20: Second quantization