

Applied Quantum Mechanics
Physics 709

Fall 1998
TU 9:30 - 10:45

Kansas State University
Cardwell 146

Text 1: *Introduction to Quantum Mechanics*, by David J. Griffiths. Text 2: *Quantum Physics: Atoms, Molecules, Solids, Nuclei, and Particles*, by Robert Eisberg and Robert Resnick. The first is the primary textbook, however, I will supplement the course with material from the second.

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Office Hours: TU 1:30–2:30 p.m., or by appt.
WWW: <http://www.phys.ksu.edu/~wysin/>

Overview: This course is intended for advanced undergraduates and beginning graduate students in physics and engineering. The goals include reviewing Schrodinger's theory of quantum mechanics, one electron atoms, multi-electron atoms, quantum statistics, spectra of molecules, perturbation theory, variational approximation, scattering, and other selected topics in quantum mechanics.

Grading: The final grade will be based on 25 % Homework assignments, 75 % exams.

Tentative Schedule:

- Ch. 1-3: Review of Schrodinger equation, wavefunctions.
- Ch. 4: Review of Hydrogen atom, one-electron atoms.
- Ch. 4: Review of Angular momentum, spin.
- Ch. 5: Identical particles, bosons, fermions.
- Ch. 5: Quantum statistics.
- Ch. 6: Time independent perturbation theory.
- Ch. 6: Atomic fine structure.
- Ch. 7: Variational Principle.
- Ch. 7: Helium atom, hydrogen molecule.
- Ch. 8: WKB Approximation.
- Ch. 8: Nuclear decay.
- Ch. 9: Time dependent perturbation theory.
- Ch. 9: Emission and absorption of radiation.
- Ch. 10: Adiabatic Approximation.
- Ch. 11: Scattering.

I made add other special topics as time permits. If anyone wants to suggest some topics I will be happy to consider them.

Disabilities: If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it or which will require academic accomodations, please notify me and contact the Disabled Students Office (Holton 202) in the first two weeks of the course.

Academic Dishonesty: Plagiarism and cheating are serious offenses and may be punished by failure on the exam, paper or project, failure in the course, and/or expulsion from the University. For more information refer to the "Academic Dishonesty" policy in [K-STATE Undergraduate Catalog](#).