Physics 237
Quantum Mechanics of Physical Systems
Spring 2008

Prof. Lynne H. Orr
orr@pas.rochester.edu
BL451, x58528
Office hours: Tuesday 2:00–3:00 pm and by appointment

This course is an introduction to Quantum Mechanics with an emphasis on applications to physical systems. The text is *Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles* (2nd edition) by Robert Eisberg and Robert Resnick.

Course outline:

	Chapter
1. Introduction/Review: Why Quantum Mechanics?	
2. Schrödinger Theory	5
3. Solutions to the 1-D Schrödinger Equation	6
4. Hydrogen Atom	7
5. Dipole Moments and Spin	8
We will also cover selections from the following topics:	
6. Multielectron Atoms	9,10
7. Quantum Statistics	11
8. Molecules	12
9. Solids	13,14
10. Nuclei	15,16
11. Elementary Particles	17,18

Organizational details:

- Class Sessions

  Lectures: TR 12:30 – 1:45 pm, Gavett 310

  Scanned copies of the lecture notes will be available through the course web page `http://www.pas.rochester.edu/~orr/p237.html`.

  Recitations will be held weekly. You are encouraged (but not required) to attend one of the following sessions:
  Monday 5 – 6:15pm, Bausch and Lomb room 269
  Wednesday 2 –3:15pm, Hylan 203
  Wednesday 6:15 – 7:30pm, Hylan 203

(over →)

- Text and books on reserve

  The main text is *Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles* (2nd edition) by Robert Eisberg and Robert Resnick. Lectures will largely follow the text, with some deviations. The main text and the following books are on reserve at the POA library:

  The Feynman Lectures on Physics, Volume III, by R.P. Feynman

  Quantum Physics, by S. Gasiorowicz

  Modern Physics and Quantum Mechanics, by E. Anderson

- Requirements and Grading

  The final grade will be determined as follows:

  - **50% Homework.** There will be weekly homework assignments, which will be due **in class**, usually on Thursday. You are encouraged to discuss the problems with your classmates, but each student must write the problems up separately.

    Homework turned in after class will be penalized 15%. *Homework will not be accepted later than the class meeting one week past the original due date.*

    Homework solutions will be available through the course webpage.
  - **20% Midterm Exam.** There will be one mid-term exam at a date to be announced.
  - **30% Final Exam.** The final exam will be held as scheduled by the Registrar:

    Wednesday, May 7, 7:15 pm.

- Teaching Assistants

  Matt Bishara (mbishara@pas.rochester.edu) is the teaching assistant and John Golden (jgolden@mail.rochester.edu) is the teaching intern for this course. Their office hours are
  Matt: Monday 1 – 2:30pm, B&L 258
  John: Wednesday 10:30 – 11:30am, POA Library

- Web Page

  The course homepage is

  `http://www.pas.rochester.edu/~orr/p237.html`

  It can also be reached through the Department of Physics and Astronomy homepage at:

  `http://www.pas.rochester.edu/`

  or from Professor Orr's homepage at

  `http://www.pas.rochester.edu/~orr`