Physics 139B **Quantum Mechanics II** **Fall 2009**

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Office Hours:	Mondays and Tuesdays, 2–3 pm

COURSE WEB PAGE:

`http://scipp.ucsc.edu/~haber/ph139B/`

CLASS HOURS:

Lectures: Tuesdays and Thursdays, 12:00–1:45 pm, ISB 231

REQUIRED TEXTBOOK:

Introductory Quantum Mechanics, 4th Edition, by Richard L. Liboff

SUGGESTED OUTSIDE READING:

Quantum Physics, by Stephen Gasiorowicz
Introduction to Quantum Mechanics, by David J. Griffiths
Introduction to the Quantum Theory, by David Park
Quantum Mechanics, by P.J.E. Peebles
Quantum Mechanics, by Richard W. Robinett
Principles of Quantum Mechanics, by R. Shankar
A Modern Approach to Quantum Mechanics, by John S. Townsend

PREREQUISITES:

Physics 116C and Physics 139A.

It is assumed that you are familiar with the material in Chapters 1, 3, 4, 5, 6, and sections 7.1–7.7, 8.1–8.6, 9.1–9.3, 10.1–10.3, 10.5, 10.6 of Liboff's textbook.

Course Outline for Physics 139B

Topics	Readings
1. Elements of matrix mechanics	Liboff, sections 11.1–11.5
2. Introduction to spin	Liboff, sections 11.6–11.9
3. Addition of angular momentum	Liboff, sections 9.4, 9.5, 11.10
4. Quantum mechanics in an external electromagnetic field	Liboff, sections 10.4
5. Time-independent perturbation theory	Liboff, sections 13.1–13.3
6. Applications to atomic and molecular physics	Liboff, sections 12.1–12.7
7. Quantum theory of scattering	Liboff, sections 14.1–14.6
8. Time-dependent perturbation theory	Liboff, sections 8.8, 13.5–13.8
9. Quantum theory of radiation	Liboff, sections 10.7, 13.9

Course Grading and Requirements

40% Homework (5 problem sets)
25% Midterm Exam (Thursday, October 29, 2009)
35% Final Exam (Wednesday, December 9, 2009, 12–3 pm)

Homework assignments are *not* optional. Homework assignments are due on Thursdays (with two weeks allotted for each homework set). You are encouraged to discuss the class material and homework problems with your classmates and to work in groups, but all submitted problems should represent your own work and understanding.

All exams are open book exams. Specific details concerning the midterm exam will be announced at a later date. The final exam will be held in the same classroom as the lectures. The final exam will cover the complete course material. You must take the final exam to pass the course.