Physics 216	Non-Relativistic Quantum Mechanics II	Spring 2010

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Office Hours:	Mondays and Thursdays, 2–3 pm

COURSE WEB PAGE:

`http://scipp.ucsc.edu/~haber/ph216/`

CLASS HOURS:

Lectures: Tuesdays and Thursdays, 10:00–11:45 am, ISB 235

REQUIRED TEXTBOOK:

Principles of Quantum Mechanics, 2nd Edition, by Ramamurti Shankar

STRONGLY RECOMMENDED TEXTBOOK:

Lectures On Quantum Mechanics, by Gordon Baym

SUGGESTED OUTSIDE READING:

Modern Quantum Mechanics, 2nd Edition, by J.J. Sakurai

Quantum Mechanics, by Ernest S. Abers

Quantum Mechanics, Volumes 1 and 2, by Claude Cohen-Tannoudji, Bernard Diu and Franck Laloë

Quantum Mechanics, 3rd Edition, by Eugen Merzbacher

Quantum Mechanics (Non-relativistic Theory), by L.D. Landau and E.M. Lifshitz

Quantum Mechanics: Fundamentals, by Kurt Gottfried and Tung-Mow Yan

Quantum Mechanics, by K.T. Hecht

PREREQUISITES:

Physics 214 and Physics 215.

It is assumed that you are familiar with the material in Chapters 1, 4–7, 9, 11–15 of Shankar's textbook.

Advanced Topics in Non-Relativistic Quantum Mechanics

Course Outline for Physics 216

Topics	Readings
1. Path Integral Formulation of Quantum Theory	Shankar, Chapter 8
2. The WKB Approximation	Shankar, section 16.2
3. Quantum Mechanics in an External Electromagnetic Field	Shankar, sections 2.2 and 18.4
4. The Variational Method	Shankar, section 16.1
5. Time-independent Perturbation Theory	Shankar, Chapter 17
6. Quantum Theory of Scattering	Shankar, Chapter 19
7. Time-dependent Perturbation Theory	Shankar, sections 18.1–18.3
8. Quantum Theory of Radiation	Shankar, section 18.5
The following additional topics may be covered, time permitting:	
9. Identical Particles	Shankar, Chapter 10
10. Second Quantization	Baym, Chapter 19

Course Grading and Requirements

40% Homework (5 problem sets)
20% Midterm Exam (Thursday May 13, 2010, 10–11:45 am)
40% Final Exam (Wednesday June 9, 2010, 11 am–2 pm)

Homework assignments are *not* optional. Homework assignments are due on Tuesdays (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.

The midterm and final exams will be open book/open notes in-class exams that will be held in the same classroom as the lectures. You will be permitted to consult Shankar and Baym, your class notes, and any class handout. The midterm exam will cover the first five topics of the course syllabus, and the final exam will cover the complete course material. You must take the final exam to pass the course.