Instructor: Howard Haber
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Office Hours: Mondays 2–4 pm

COURSE WEB PAGE:
http://scipp.ucsc.edu/~haber/ph216/

CLASS HOURS:
Lectures: Tuesdays and Thursdays, 12:00–1:45 pm, ISB 235

REQUIRED TEXTBOOKS:
Lectures On Quantum Mechanics, by Gordon Baym

SUGGESTED OUTSIDE READING:
Modern Quantum Mechanics, 2nd Edition, by J.J. Sakurai and Jim Napolitano
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, 4th Edition, by Frank Schwabl
Advanced Quantum Mechanics, 4th Edition, by Frank Schwabl
Quantum Mechanics, by Gennaro Auletta, Mauro Fortunato and Giorgio Parisi
Quantum Mechanics: A New Introduction, by Kenichi Konishi and Giampaiero Paffuti

PREREQUISITES:
It is assumed that you are familiar with the material covered in Shankar’s textbook, chapters 1, 4–6, 7, 9, 11–14, 15.1 and 15.2; and in Baym’s textbook, chapters 3–7, 14, and 15.
Course Outline for Physics 216

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<th>Topics</th>
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<tr>
<td>1. Advanced topics in angular momentum theory</td>
<td>Shankar, section 15.3; Baym, chapter 17</td>
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<td>2. Path Integral Formulation of Quantum Theory</td>
<td>Shankar, chapter 8</td>
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<td>3. The WKB Approximation</td>
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<td>4. The Variational Method</td>
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<td>5. Time-independent Perturbation Theory</td>
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<td>6. Quantum Theory of Scattering</td>
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<td>7. Time-dependent Perturbation Theory</td>
<td>Shankar, sections 18.1–18.3; Baym, chapter 12</td>
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<td>8. Quantum Theory of Radiation</td>
<td>Shankar, section 18.5; Baym chapter 13</td>
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<td>9. Identical particles</td>
<td>Shankar, chapter 10; Baym, chapter 18</td>
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<td>10. Second quantization</td>
<td>Baym, chapter 19</td>
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Course Grading and Requirements

45% Homework (5 problem sets)
20% Midterm Exam (take-home exam; Thursday May 10–Friday May 11, 2012, due at 6 pm)
35% Final Exam (Wednesday June 13, 2012, 8–11 am)

Homework assignments are not optional. Homework assignments will be due on every second Thursday of the academic quarter, with the exception of the first assignment, which is due on Tuesday April 17, 2010. The homework problem sets are not optional. 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 exam will be a take-home exam handed out in class on Thursday May 10 and due at the end of the following day. The final exam will be open book/open notes in-class exam 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 course material addressed by the first three problem sets, and the final exam will cover the complete course material. You must take the final exam to pass the course.