

## **PHYS 851 Quantum Mechanics I**

### **Fall Quarter 2009**

Class Hours: MWF 10:20 AM to 11:10 AM

Class Location: 1420 BPS

Textbook: Quantum Mechanics, Volume One, Claude Cohen-Tannoudji

Webpage: <http://www.pa.msu.edu/~mmoore/851.html>

Instructor: Prof. Michael Moore

Office: 4230 BPS

Office Hours: Friday 11:10 AM to 1:10 PM

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#### GRADING POLICY:

Grades will be based on HW and two Exams.

The weight will be 40% HW, and 60% Exams.

HW will be assigned on Mondays, due the following Monday at the start of class.

Late HW will not be accepted.

HW and solutions will be distributed via the Web-page.

#### **Tentative Schedule:**

- Weesk 1+2: 9/2-9/11 Dirac Notation (Chapter 2).
- Week 3: 9/14-9/19 Postulates of QM and Fundamental Concepts (Chapters 2 & 3).
- Week 4: 9/21-9/25 Fundamental Concepts and Representations (Chapter 2).
- Week 5: 9/28-10/1 Matrix Methods and the theory of Quantum Resonance (Chapter 4).
- Week 6: 10/5-10/9 Simple Problems and scattering in 1d (Chapters 1& 3).
- Week 7: 10/12-10/16 WKB Approximation and Variational Theory.
- Week 8: 10/19-10/23 Wave-packet Dynamics and the Classical Limit (Chapter 1).
- EXAM I: 10/26, 1 hour, in-class
- Week 9: 10/28-10/30 Algebraic Approach to the 1d Harmonic Oscillator (Chapter 5).
- Week 10: 11/2-11/6 Coherent States and Heisenberg Uncertainty Relations (Chapters 3 & 5).
- Week 11: 11/9-11/13 Angular Momentum and Spherical Symmetry (Chapter 6).
- Week 12: 11/16-11/20 Hydrogen Atom (Chapter 7)
- Week 13: 11/23-11/25 Symmetry and its Consequences in QM (Chapters 2 & 3).
- Week 14: 11/30-12/4 Passive and Active Unitary Transformations (Chapter 3).
- Week 15: 12/7-12/11 Quantum Entanglement.
- FINAL EXAM: Fri. 12/18 10:00 AM TO 12:00 NOON, 2 hours, in-class.