

## Quantum Mechanics-II, Physics 911 (C. D. Lin) Kansas State University, Fall 2003.

### Primary Textbook:

*Quantum Mechanics, Third Edition, by Eugen Merzbacher, John Wiley and Sons, (1998)*

This is the textbook used in QMI. It should not be the only Quantum Mechanics book on your bookshelf. Other notable Quantum Mechanics Books like

*Quantum Mechanics*, by Albert Messiah, North Holland Publishing Co. (1961).  
*Quantum Mechanics, Third Edition*, by Leonard I. Schiff, McGraw-Hill, Inc. (1968).  
*Lectures on Quantum Mechanics*, by Gordon Baym,  
*Elementary Theory of Angular Momentum*, by M. E. Rose,  
*Quantum Mechanics, Nonrelativistic Theory* by L. D. Landau and E. M. Lifshitz  
*Intermediate Quantum Mechanics*, by H. A. Bethe and R. Jackiw  
*Quantum Mechanics I and II* by Claude Cohen-Tannoudji et al (1977)

are also widely used. The list can go on. You need to familiarize yourself with the content of at least a few of these books and go back for reference from time to time.

### Homework:

For most of you and me, Quantum Mechanics is a tool to solve real problems in the physical world. We are not to address the philosophical aspect of Quantum Mechanics in this course. We need to learn all kinds of tools to solve quantum problems. The only way to learn to solve problems is to do homeworks. This includes setting up the problem, find good approximate methods to get the answer. After all there are very few problems in quantum mechanics that can be solved analytically, so we learn from exact solutions to simple systems to familiarize ourselves with the predictions of the quantum physics, and learn approximate methods to perform calculations when exact solutions are not available.

A set of homework problems will be assigned each week. In some cases, it may not even related directly to the lectures given at the time. I will avoid "routine" problems. You can use any tools to get the answers, and usage of computers are encouraged to get numerical results. You can discuss among your fellow classmates about solving the problems. I will collect the homework but will not grade carefully. The homework is due each Thursday before the class unless otherwise announced. We will set time for discussions on homeworks.

## **Grading Scheme:**

This is the formula that I will follow:

**Homework: (20%)** I will check mostly whether you have attempted only and may decide to read some of the papers more carefully but not all the papers. You should be ready to explain your work. Do not write something you do not know to waste my time.

The questions will be posted on the web (see

<http://www.phys.ksu.edu/~cdlin/index.html>)

and a paper copy will be distributed each week. The one due at the current week will be in **red**.

### **Two exams: (25%) each**

The questions are likely to come from variations of homework problems. The exams will all be open book so do not try to memorize any equations. I may have a few questions from the lectures as well just to make sure that you get the concepts correctly.

### **Final: (30%) Comprehensive**

**Help hours: by appointment via e-mail to me ([cdlin@phys.ksu.edu](mailto:cdlin@phys.ksu.edu)).**