

## PHY308: Quantum Mechanics I

**Instructor:** Professor V. J. Goldman, office: B-137 in Physics building  
office hours: Tue, Thu, Fri 11:30 - 12:30  
email: Vladimir.Goldman@StonyBrook.edu

**TA:** TBA, office: TBA

**Text:** D. J. Griffiths, Introduction to Quantum Mechanics, 2nd edition, 2005

### Course organization and grading:

- Two 1.5 hour lectures per week (Javits 103, Tue, Thu 8:30 - 9:50 am)
- **Homeworks** will be posted on Thursdays, due next week Thursday in class (on paper only)
- Late HW: in B-137 only (slide under the door, if closed), **not** in mailbox, **not** to TA
- Late HW penalty: 20% per day, so that model solutions can be posted promptly
- Exams: one Midterm (March 26, in class) and Final (Tue, May 12, 11:15 - 1:45 pm)
- Exams are closed book, except can bring 1 **handwritten** page; the Final is comprehensive
- Course grade = 20% HW + 30% Midterm + 50% Final
- There is no provision for doing extra or outside work to improve your grade

### Course outline:

1. The wave function: Schrödinger equation, interpretation, uncertainty principle
2. Time-independent Schrödinger equation in one dimension: stationary states for bound and free particles
3. Formal quantum mechanics: Linear algebra, Hilbert space, generalized statistical interpretation, Dirac notation
4. Three dimensions: separation of variables, Hydrogen atom, angular momentum, spin
5. Many particle systems: identical particles, many electron atoms, quantum stat mechanics

Material will be presented primarily in lectures, readings assignments from the text, and homework problems. Lecture will cover the material to be learned, some important examples, and will direct your study from the text, however some material will be presented in class that is not in the text. Generally, students who attend the lecture do better on exams, and have better overall class experience. Thus, you should attend class, pay attention while there, and take notes. You should plan on 2-4 hours of study and doing problems outside of class for every lecture. The material in the latter parts of the course will be based upon material in the earlier parts of the course, therefore you will have to commit the material to long-term memory.

**Working together:** Students are encouraged to study in small groups, discuss the material and HW problems. It should be perfectly clear that each person is responsible for completing and submitting the work. It is NOT acceptable to divide the problems, when one solves problem 1 and the other problem 2. Exchange of any information between the students during an exam is unacceptable.

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