

Texts: Modern Quantum Mechanics, revised edition by J. J. Sakurai.  
Introduction to Quantum Mechanics, 2<sup>nd</sup> Edition by David Griffiths

Additional References that some students may find useful:

Principles of Quantum Mechanics, 2<sup>nd</sup> Edition by R. Shankar – a popular graduate-level text  
Lectures on Quantum Mechanics by Gordon Baym – an older graduate-level text with a chatty style

Prereq: An undergraduate quantum course at the level of Chapters 1 – 4 of Introduction to Quantum Mechanics by David Griffiths (probability density; linear algebra; fundamental principles of quantum theory, application to one and three dimensional systems under various potentials; free particle; bound particle; harmonic oscillator, angular momentum, addition of angular momentum, hydrogen atom). Physics 6300 is not intended as a first course in Quantum Mechanics. Students without the proper preparation are encouraged to audit or register for Phys 4301, a first undergraduate QM course offered during the spring semester. Students should be familiar with Hamiltonian and Lagrangian formulations of classical mechanics, canonical transformations, and Hamilton–Jacobi theory for the fullest appreciation of the postulates of QM.

Topics: Grad QM I revisits the fundamentals, formalisms, and approximate techniques of QM in greater depth than is offered in an undergraduate course. The follow-on course, Grad QM II (Physics 6301) places a greater emphasis on applications. Material for Phys 6300 will be drawn from Chapters 1, 2 and 5 of Sakurai. The class will be asked to review some topics previously covered in undergraduate quantum mechanics independently to allow time to delve into perturbation theory.

WWW: The course WWW page is <http://www.utdallas.edu/dept/physics/Courses/izen/6300.htm>

Office hours: To be announced in class, but you are welcome to catch me at other times too.

HW: Mastering quantum theory requires that you flex your mathematical and philosophical muscles. Homework assignments and other important course announcements will be posted via a WWW based discussion Yahoo! Group typically by Thursday or Friday of each week. Please join the group by sending an email to [phys6300-subscribe@yahoogroups.com](mailto:phys6300-subscribe@yahoogroups.com) and then follow the instructions in the return email. To unsubscribe your email, use [phys6300-unsubscribe@yahoogroups.com](mailto:phys6300-unsubscribe@yahoogroups.com). You may choose to read and send postings by email or via the WWW at <http://groups.yahoo.com/group/phys6300/>. It is your responsibility to join the group and check for postings. The Yahoo!Group is also intended to be a discussion/question/answer forum for the class. You are expected to keep posts on topic, following commonly accepted practices of netiquette.

Homework normally is to be turned in during the first class meeting of the week. Your work should be neat, problems should be ordered, and pages should be stapled. Notes, homework solutions and exam solutions that are provided to the class are strictly for personal use. They do not become the property of the student, and they may not be distributed/shared with anyone outside the class, including future classes.

Students may work on homework with classmates, but are asked to write up answers independently. Outright copying is not permitted. When working on a HW problem with a group, you are required to write the names of group members who have contributed to the solution at the start of the problem. I recognize that some students will master this material better by working in peer groups.

Seeking help from an instructor solution manual, a solution posted on the Internet, a homework solution from a student who has previously studied QM, or previous exams of this instructor is expressly forbidden.

Violations will be prosecuted per the UTD Academic Dishonesty policy. My recommended penalty to the UTD Judicial Officer for any violation is likely to be a course grade of F. Possession of materials in violation of a copyright will be reported as permissible by law. Homework plays a crucial role in the mastery of this material. Several past students have admitted to me, much to their regret that copying QM homework contributed to their dismal test performance.

Exams: There will be three exams. The third exam will be given during Finals period.

Grading: HW: ~25%. Exams scores: ~25% each.