

THE UNIVERSITY OF TEXAS AT EL PASO
COLLEGE OF SCIENCE
DEPARTMENT OF PHYSICS

- Course #, Title and credits: 12261, PHYS 4355, **Introduction to Quantum Mechanics**, 3 credit hours
Term: Fall 2022
- Course Meetings & Location: M W 12:00-1:20 PM, Physical Science Bldg. room 222A.
- Prerequisite Courses: MATH 2326, PHYS 3325 or equivalent or consent of the instructor.
- Instructor and coordinates: Ramon Ravelo, PSCI 223E, 915-747-5620, ravelo@utep.edu
- Office Hrs: W 2:00 – 3:00 PM or by appointment
- Textbook(s), Materials: Required: **Introduction to Quantum Mechanics** by David J Griffiths and Darrel F. Schroeter, 3rd edition (Cambridge Univ Press. 2018).
- Suggested: **Quantum Physics** by Stephen Gasiorowicz
Website: <http://www.wiley.com/college/gasiorowicz>
Schaum's Outline of Theory and Problems of Quantum Mechanics by Yoav Peleg, Reuven Phini, Eliahu Zaarur and Reuven Pnini, (Schaum's Outline Series, McGraw-Hill). It reviews fundamentals and has many solved problems.
- Course Objectives (Learning Outcomes): This course offers an introduction to the Quantum Mechanics “machinery” for physics and engineering majors. It will cover the Schrödinger equation in one and three dimensions, the Hydrogen atom, angular momentum and spin. For more detailed on topics to be covered, see course schedule below.
- Course Activities/Assignments: Class will be composed of two 80 minutes lectures. There will be weekly homework assignments and in class quizzes.
- Assessment of Course Objectives: Assessment will be through weekly homework, quizzes and several exams.
- Grading Policy: Grade will be determined based on 2 midterm exams (50%), one final exam (30%) and weekly homework and quizzes (20%).
- Make-up Policy: **Exams.** Make up exams are given only on extraordinary cases of severe illnesses or emergencies. In all cases, documentation will be required. There will be no make-up quizzes.
- Academic Integrity Policy: Any student who commits an act of academic dishonesty is subject to discipline. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures, and available on the homepage of the Dean of Students at www.utep.edu/dos, may result in sanctions ranging from disciplinary probation, to a failing grade on the work in question, to a failing grade in the course, to suspension or dismissal, among others.
- Civility Statement: During class, please:
— Turn off cell phones and any devices, which might disturb class.

Disability Statement: If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

Military Statement: Students being called for military duties need to contact the instructor as soon as possible.

COVID-19 Statement:

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID 19 testing.

Course Schedule:

Week	Content		Observations
Aug 22– 26		Introduction to Quantum Mechanics	
Aug 29 – Sep 2	Ch 1: § 1-2	The Schrödinger equation	
Sep 5 – 9	Ch 1: § 3-6	Probability interpretation, density and normalization	Sep 5: Labor Day University Closed Sep 7: Census day
Sep 12 – 16	Ch 2: § 1-2	The Schrödinger equation in one dimension; Eigenvalues, Eigenfunctions	
Sep 19 – 23		Midterm I, Wed Sep 21	
Sep 26 – 30	Ch.2: § 1-2	Applications in one dimension	
Oct 3 – 7	Ch.2: § 3-4	Quantum Mechanics formalism	
Oct 10 – 14	Ch 3	Angular Momentum	
Oct 17 – 21	Ch 3	Schrödinger’s Equation in Three Dimensions	
Oct 24 – 28		Midterm II, Wed Oct 26	Oct 28: Course drop deadline No automatic “W” after this day
Oct 31 – Nov 4	Ch 4: § 3	Hydrogen Atom	
Nov 7 – 11	Ch 4: § 1	Infinite Spherical Well	
Nov 14 – 18	Ch 4: § 1-2	Matrix Representation of Operators	
Nov 21 – 25	Ch 4: § 4.1-4.2	Spin	Nov 24-25 Thanksgiving holidays

Nov 28 – Dec 2	Ch 4: § 4.3	Addition of Angular momentum	Dec 1: Last day of classes Dec 2: dead day
Dec 5 – 9		FINAL EXAM (Comprehensive) Fri Dec 9, 1:00-3:45PM	Final Exams