Physics 475.007
Special Problems, Intro to Quantum Mechanics, CRN 22255
Spring 2020

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Office Hours: MW 9:30-10:30, M 1:30-3:30, T 8:30-10:30 or by appointment

This is an independent study course. Class time & lab time will be arranged by mutual agreement during the first week of the semester.

This course is being used as a substitution for Introduction to Quantum Mechanics.

**Course Description:** For undergraduate credit only. Experimental or theoretical independent study in research. Prerequisites: 12 semester hours of physics and permission of instructor.


**Course Requirements:** The student will meet weekly with the instructor at an agreed upon time, weekly homework, 2 exams, a comprehensive final exam. This course requires students to read 1-2 chapters per week, work through weekly homework assignments and example problems. This typically takes 1-2, 2-3 and 1-2 hours of work respectively.

**Course Calendar:** A more detailed calendar follows on the next page. The exams will be scheduled during the week listed below.

| TBA | Exam I | Chapters 1-3 |
| TBA | Exam II | Chapters 4-6 & review questions |
| TBA | Final Exam | Comprehensive Exam |

**Grading Policy:** The laboratory and lecture grades will be combined to form a single grade for both PHY441 and PHY441L.

| Homework | 20 % | 90-100 % | A |
| Exam I | 20 % | 80-89 % | B |
| Exam II | 20 % | 70-79 % | C |
| Weekly Discussions | 20 % | 60-69 % | D |
| Final Exam | 20 % | < 60 % | F |

**Attendance Policy:** If you are going to miss class for a university excused absence you should notify the instructor in advance. It is your responsibility to make arrangements to make up any missed work. If you are sick it is your responsibility to abide by university guidelines in dealing with your absence. The final grade of any student with four or more unexcused absences (in lectures and/or labs) will be dropped.
one letter grade. It is the responsibility of the student to provide documentation of any
excused absence to Dr. Musser within one week of the absence. Failure to provide the
documentation within one week of the absence will result in the absence being
considered unexcused.

**Program Learning Outcomes:** No specific program learning outcomes for this major
are addressed in this course.

**General Education Core Curriculum:** This course is not part of the core curriculum.

**Student Learning Outcomes:** By the end of the course, a successful student will be
able to:
1. Geometrical Optics - Apply the laws of reflection and refraction to plane and spherical
surfaces, and discuss the principles of various optical instruments.
2. Wave Optics – Explain wave propagation of light, interference, diffraction, and
polarization of light waves, and the electromagnetic nature of light.

Topics by Chapter
Chapter 1, Wave Function
Chapter 2, Time-Independent Schrodinger Equation
Chapter 3, Formalism
Chapter 4, Quantum Mechanics in Three Dimensions
Chapter 5, Identical Particles
Chapter 6, Time-Independent Perturbation Theory
Chapter 7, Variational Principle
Chapter 8, WKB Approximation
Chapter 9, Time-Dependent Perturbation Theory
Chapter 10, Adiabatic Approximation
Chapter 11, Scattering

**Calendar**
We will take about two weeks per chapter. We will attempt to get through 6-7 chapters.

**Students with Disabilities**
To obtain disability related accommodations, alternate formats and/or auxiliary aids,
students with disabilities must contact the Office of Disability Services (ODS), Human
Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in
the semester. Once verified, ODS will notify the course instructor and outline the
accommodation and/or auxiliary aids to be provided. Failure to request services in a
timely manner may delay your accommodations. For additional information, go to
http://www.sfasu.edu/disabilityservices.

**Academic Integrity (A-9.1)**
Abiding by university policy on academic integrity is a responsibility of all university
faculty and students. Faculty members must promote the components of academic
integrity in their instruction, and course syllabi are required to provide information about
penalties for cheating and plagiarism as well as the appeal process. Definition of Academic Dishonesty Academic dishonesty includes both cheating and plagiarism. Cheating includes, but is not limited to: (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) falsification or invention of any information, including citations, on an assignment; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism include, but are not limited to: (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from the Internet or another source; and (3) incorporating the words or ideas of an author into one's paper or presentation without giving the author due credit. Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp and http://www.sfasu.edu/policies/academic_appeals_students.asp Penalties may include no credit or failure in the course.

Withheld Grades - Semester Grades Policy (A-54)
At the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future semesters, the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.
http://www.sfasu.edu/policies/student_conduct_code.asp