

PHYSICS 373, Fall 2021 UNIQUE NUMBERS: 55715 (in person), 55719 (online)

Instructor:

Willy Fischler, RLM 9.310A

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Office Hours:

Wednesdays 10:30am-11:30am on zoom, there will be no in person office hours.

Announcements will be regularly posted on Canvas: <https://canvas.utexas.edu>

PHY 373 will have an online and an in person component. The online component will be live streamed on zoom from the classroom and recorded. Both options will be available to the students. For the in person component, masks wearing is recommended as is "social distancing". Please do not congregate in front of the entrance of the classroom or bathrooms. Keep a distance of two meters between you and your neighbor at all times.

Graders:

TAs:

Tyler Guglielmo

Office Hours: tba

email: tylerguglielmo@gmail.com

tba

email: tba

Textbook:

David J. Griffiths: Introduction to Quantum Mechanics (Prentice Hall) . We will not follow the order of the material as done in the book. The book is not mandatory, there are a large number of textbooks available both online and in paper form.

Quantum Mechanics is a confusing subject, we will start by describing the mathematical formalism that is used . We will illustrate the necessity and use of this formalism in connection with the description of the Stern-Gerlach experiment. This will be followed by considering other systems which have a small number of states. After that we should be prepared to study the physics of a non-relativistic particle in one spatial dimension. This includes: - Stationary states in one spatial dimension, we will discuss the harmonic oscillator, the particle on a circle as well as other one dimensional systems.

We will then proceed to higher dimensions, starting in two dimensions where we will study the physics of a charged particle in a magnetic field. We will then proceed to three dimensions.

In three dimensions we will discuss:

- Angular momentum and applications including the rigid rotor and the Hydrogen atom

This will be followed by an introduction to approximation methods:

- Time independent perturbation theory both non-degenerate and degenerate.

- Variational principle
- Time dependent perturbation theory
- WKB method

If time permits we will discuss additional topics including spin-statistics.

The order of subject matter will deviate from the textbook and additional material not covered in the textbook will be presented. The book is not mandatory, in addition there are large number of textbooks available both online and in paper form.

Grades:

The grades will be based upon homeworks (35%), the worst homework score will be dropped, the best of three online tests (30%) and a mandatory online final exam (35%).

How the letter grades are assigned will be discussed during the first day of class.

Online tests:

Test 1: Thursday, September 30: 8:00am - 10am

Test 2: Thursday, October 28: 8:00am - 10am

Test 3: Thursday, December 2: 8am - 10am

Final online exam:

Wednesday December 15, 9:00 am - noon

Homeworks:

Homeworks will be assigned regularly, they will be posted on canvas. Homework is due at the beginning of class on the specified day.

Other:

Last day of the official add/drop period is August 30.

- If you are a student with a disability, or think you may have a disability, and need accommodations please contact Services for Students with Disabilities (SSD). You may refer to SSD's website for contact and more information: <http://diversity.utexas.edu/disability/>. If you are already registered with SSD, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations. - Academic dishonesty will not be tolerated. For more information see <http://registrar.utexas.edu/catalogs/gi09-10/ch01/index.html>

- By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

COVID 19

This section will be regularly updated

Safety and Class Participation/Masks: For every face-to-face class experience, we will all need to make some adjustments in order to benefit from in-person classroom interactions in a safe and healthy manner. Our best protections against spreading COVID-19 on campus are

masks (defined as cloth face coverings) and staying home if you are showing symptoms.

- It is highly recommended that every student wear a cloth face covering properly in class, in all campus buildings and practices social distancing at all times .
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- Sharing of Course Materials is Prohibited: No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class unless you have my explicit, written permission. Unauthorized sharing of materials promotes cheating. It is a violation of the University's Student Honor Code and an act of academic dishonesty. I am well aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure in the course.
- Class Recordings: Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.