Instructor: V. Paolone
Office: 409 Allen Hall
E-mail: vipres@pitt.edu
August 25, 2025

Modern Physics 0477 (18856)

- **Where:** 11 Thaw Hall
- **When:** 11:00-11:50(12:15) am MW(F)
- **Textbook:** "Modern Physics" by Bernstein, Fishbane, and Gasiorowicz (ISBN 0-13-955311-8)
- **Homework:** Several Problems will be assigned approximately every week. The homework will be due approximately one week after the problems are handed out. I will be specific as to due date at the time of assignment. Late homework will be docked 10% per day for up to three days – after that the homework will not be accepted. Homework will assigned either as problems out of the textbook and to be worked out in detail and handed in (in this case **ONLY** 2 to 3 random problems from each set will be graded).
- **Midterms:** There will be two ~1 hour long mid-terms given during the semester. The mid terms will all be open book + personal equation sheet (but no other materials).
- **Final:** The final is cumulative and also open book + personal equation sheet (but no other materials).
- **Grade Breakdown:**
  → 2 Midterm Exams = 50% (25% each)
  → Weekly Homework = 15%
  → Final Exam = 35%
- **Office Hours:** Monday and Wednesday from 1:30pm to 2:30pm (Via Zoom (let me know if you plan on attending): Zoom link: https://pitt.zoom.us/j/97209680803). However, if my office door is open and I'm not in the middle of something I'll be glad to talk to you. However it would be better to setup an appointment if you are unable to attend regular office hours.
- **Website:** Standard Courseweb site (https://canvas.pitt.edu/courses/337971)**:** At this site you'll find all class materials – homework assignments, exam dates, topic for lecture period, and anything else I think may be useful

Course description:

This is the third term of a three-term sequence in university physics. Previous familiarity with introductory mechanics, the basics of electromagnetism and waves, and calculus plus basic linear algebra is required. Physics 0477 will provide introductions to quantum mechanics, atoms, statistical mechanics and thermodynamics, and special relativity

Specifically this course addresses two of the great revolutions in science of the twentieth century: relativity and quantum mechanics. These revolutions were indispensable in reaching an understanding of physical phenomena at the atomic and subatomic scales. The twentieth century also involved major advances in understanding

and analyzing a series of phenomena in macroscopic systems. In addition this course will include intros to thermal and statistical physics, essential for appreciating the complexities of an ensemble of particles.

Approximate Class Schedule (The midterm dates are FIXED):

WEEK	TOPIC
Aug 25, 27, 29	Intro to Course and SR (Chap 2)
Sept 3, 5	Special Relativity (Chapters 2 and 3)
Sept 8,10,12	
Sept 15, 17, 19	Waves and Particles (Chapter 4)
Sept 22, 24, 26	
Sept 29 , Oct 1, 3	Waves and Particles, Bohr Atom (Chapters 4 and 5)
Oct 6, 8, 10 (Fall break)	***1st Exam*** (October 8th)
Oct 13, 15, 17	Schrödinger Equation and Uncertainty Principle (Chapter 6 and 7)
Oct 20, 22, 24	
Oct 27, 29, 31	Barriers and Wells, Quantum Mechanics in 3D- Hydrogen Atom (Chapter 8 and 9)
Nov 3, 5, 7	
Nov 10, 12, 14	Spin(Chapter 9)
Nov 17, 19, 21	***2nd Exam*** (November 21st)
Dec 1, 3, 5	Thermodynamics and Statistical Mechanics (Chapters 10 and 12)
Week of Dec 8	Finals Week

Course Policies:

• Academic Integrity:

Students in this course will be expected to comply with University of Pittsburgh's Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

Honor Code:

Students are expected to uphold the University's standard of conduct relating to academic honesty. Students assume full responsibility for the content and integrity of the academic work they submit. Students shall be guilty of violating the honor code if they:

1. Represent the work of others as their own
2. Use or obtain unauthorized assistance in any academic work
3. Give unauthorized assistance to other students
4. Modify, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit
5. Misrepresent the content of submitted work

Any student violating the honor code is subject to receive a failing grade for the course and will be reported to the Vice President of Academic Affairs.

• Disabilities:

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

• Civil Rights and Title IX:

The University of Pittsburgh does not tolerate any form of discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, familial status, sex, age, sexual orientation, veteran status or gender identity or other factors as stated in the University's Title IX policy. The University is committed to taking prompt action to end a hostile environment that interferes with the University's mission. For more information about policies, procedures, and practices, visit the Civil Rights & Title IX Compliance web page.

I ask that everyone in the class strive to help ensure that other members of this class can learn in a supportive and respectful environment. If there are instances of the aforementioned issues, please contact the Title IX Coordinator, by calling 412-648-7860, or e-mailing titleixcoordinator@pitt.edu. Reports can also be filed online. You may also choose to report this to a faculty/staff member; they are required to communicate this to the University's Office of Institutional Engagement and Wellbeing. If you wish to maintain complete confidentiality, you may also contact the University Counseling Center (412-648-7930).

• Statement on Classroom Recording

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written(or electronic) permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

• No Use of Generative AI Permitted

Intellectual integrity is vital to an academic community and for my fair evaluation of your work. All work completed and/or submitted in this course must be your own, completed in accordance with the University's Guidelines on Academic Integrity. You may not engage in unauthorized collaboration or make use of ChatGPT or any other generative AI applications at any time.