

University of Maryland
Department of Physics
Physics 270 – Fall 2024
“General Physics: Waves, Optics, Relativity and Modern Physics”

Instructor: Anson Hook email: hook@umd.edu Office: 3160 PSC

Sections 0301 – 0304:

Lecture Date and Time: MWF 11:00 – 11:50 AM

Lecture Room: 1410 Physics Building

Office Hours: W 12 – 1 PM or by appointment

TBA - Additional office hours on Friday by an undergrad TA

Discussion schedule:

Section	Date/Time	Room	TA
301	W 1 – 1:50 PM	PHY 1219	Kelsey Jackson kaj22475@umd.edu
302	M 2 – 2:50 PM	MTH 106	Kelsey Jackson kaj22475@umd.edu
303	M 1 – 1:50 PM	PHY 405	Kelsey Jackson kaj22475@umd.edu
304	F 3 – 3:50 PM	PHY 405	Taylor St. Jeans tstjean@umd.edu

Textbook:

<https://openstax.org/details/books/university-physics-volume-1>

<https://openstax.org/details/books/university-physics-volume-3>

Course Description:

Prerequisite: PHYS261, MATH241, and PHYS260.

Corequisite: PHYS271.

Third semester of a three-semester calculus-based general physics course. Waves, sound, electromagnetic waves, optics, special theory of relativity, and modern physics.

Midterm Exams: September 25, November 04, November 22

Final Exam: Whenever they tell me, I'll let you know

Important Notes:

1. Lectures:

Students are required to attend lectures, where announcements will be given, exams will be announced and administered, and the course material will be presented.

Not all material will be directly covered in lectures. Students are responsible for reading and understanding all material in assigned chapters, whether or not this material is explicitly treated in the lectures.

This Physics course is extremely fast paced and demanding. You will be learning new concepts every lecture and missing even one lecture can make you fall behind simply because the concepts build on the ones covered in earlier sessions. Hence, attendance to lectures and discussions are mandatory.

2. Discussions:

You must attend your discussion section and you must go to the section you have been assigned. Your TA will cover material (homework and exams) that may not be covered elsewhere. Please come prepared so you can ask questions, i.e. read the assigned chapter and work on the homework problems. Remember, the TA is there to explain things and give help when you are stuck, not to dole out answers.

3. Homework Assignments:

The Homework can be found on ELMS. Due EVERY Monday will be an Expert TA assignment. Sometimes there will be an additional part to the HW which is a slightly harder question assigned and submitted via ELMS.

Why You Need to do the Homework: One of the main ways you can understand Physics is by doing the homework. Do not wait until the night before it's due to start working on your homework. The homework can be expected to be difficult and it counts a lot towards your final grade in enabling you to succeed on your exams. A sure way to get an F in this course is to not do the homework or not give yourself enough time to work on it. Late homework will incur a penalty. **For every day you are late you will incur 10% penalty. All homework assignments will be closed for submission by the end of the class date.**

It is your responsibility to check elms.umd.edu frequently to make sure you do not miss any due date.

4. Exams

There will be three 50-minute mid-term exams and a 2 Hr. Final exam. You must take the Final exam in order to pass the course.

All exams are closed book and closed note exams. For each exam, you may have one "cheat sheet" that contains physical constants and formulas. You may also have a calculator.

NO Exam will be dropped.

5. Grading:

The final grade will be based on the components with the following weights:

Mid-term exams: $3 \times 15\% = 45\%$

Comprehensive Final Exam = 30%

Homework = 25%

At the end of the semester all the exam and homework grades will be added with the above weighting and a final letter grade will be assigned depending on the total scores.

I will be guided by the University of Maryland grading policy, quoted below:

- A+, A, A- denotes excellent mastery of the subject and outstanding scholarship. (90-100)
- B+, B, B- denotes good mastery of the subject and good scholarship. (80-90)
- C+, C, C- denotes acceptable mastery of the subject and the usual achievement expected. (70-79)
- D+, D, D- denotes borderline understanding of the subject. It denotes marginal performance, and it does not represent satisfactory progress toward a degree. (60-70)
- F denotes failure to understand the subject and unsatisfactory performance. (< 60)

Using the above normal scale, if the total score distribution doesn't allow enough number of A's, B's, and C's, there will be curving. Assuming that the distribution is reasonably bell-shaped, letter grades will be assigned so that students with scores in the top 20% will receive an A (A+, A, A-), the next lower 40% will receive a B (B+, B, B-), the next lower 25% will receive a C (C+, C, C-), and the remaining 15% will be split between D and F.

6. Excuses

Missing an exam is not allowed without a valid documented excuse as defined by the University (medical problem, religious holiday, or serious family crisis). In all cases, a makeup exam must be completed in a reasonable amount of time or you will receive a score of zero for the exam. The makeup test or assignment, and the due date, must be arranged by consulting with the Professor as soon as possible after it becomes apparent that an exam date will be missed.

Turning in late homework is not encouraged as it will result in a reduction of 10% of the points for every day late. If you are going to miss an assignment because of a religious holiday, it is your responsibility to inform the instructor in advance so that suitable arrangements can be made.

7. Students with Disabilities:

Students with disabilities should meet with the instructor at the beginning of the semester so that appropriate arrangements can be made to accommodate the student's needs.

8. Academic Integrity:

All students will be expected to comply with the University of Maryland's academic integrity policies, including the [code of academic integrity](#) and the [honor pledge](#). Failure to comply will result in a failing grade and will be reported to the Honor Council.

9. University closure:

In the event of a University Closure the department will do its best to accommodate students by scheduling make-up sessions or revision of the lab schedule.

Phys 270 Schedule for SPRING 2024 (subject to change)

Week	Chapter	Topics
1 – 8/26-8/30	Vol 1 Ch. 16	Traveling waves
2 – 9/2-9/6	Vol 1 Ch. 16-17	Standing waves; resonance; sound
3 – 9/9-9/13	Vol 1 Ch. 17	Sound perception, standing sound waves; decibel scale; Doppler
4 – 9/16-9/20	Vol 3 Ch. 1	Light; ray model; reflection; refraction; Snell's law;
5 – 9/23-9/27	Vol 3 Ch. 2	Geometric optics
5 – 9/25		MIDTERM
6 – 9/30-10/4	Vol 3 Ch. 3	Interference
7 – 10/7-10/11	Vol 3 Ch. 4	Diffraction
8 – 10/14-10/18	Vol 3 Ch. 5	Relativity; simultaneity; time dilation; Lorentz transformation
9 – 10/21-10/25	Vol 3 Ch. 5	Relativistic kinematics; Doppler effect
10 – 10/28-11/1	Vol 3 Ch. 6	Blackbody Radiation; Compton scattering; Photoelectric effect
11 – 11/4		MIDTERM
11 – 11/4-11/8	Vol 3 Ch. 6	Bohr model, matter waves, wave-particle duality
12 – 11/11-11/15	Vol 3 Ch. 7	Wave functions, uncertainty principle, Schroedinger eq.
13 – 11/18-11/22	Vol 3 Ch. 7	Particle in a box, quantum harmonic oscillator
13 – 11/22		MIDTERM
14/15		Catch-up