

## Syllabus

### COLLEGE PHYSICS 124x Spring 2025

4 credits

**Online asynchronous course with weekly assignments (quizzes, homework and labs)**

**Instructor:** Dr. Michael M. Hull

**Office:** In the Physics Department: Rm 120 REIC. Tel. 907-474-6106 Tel. 474-7339 (Physics office)

**Email:** [mmhull2@alaska.edu](mailto:mmhull2@alaska.edu) (please allow two business days for a response)

**Office Hours:** Physics Dept. (Rm. 120): Thursday 10:00-noon (hybrid, online option via Zoom at <https://alaska.zoom.us/j/82865533738?pwd=Nml2RjhOSWxSYm9XSUdDNFZKUTBnQT09>)

**Class Management System:** UAF Canvas

### COURSE SPECIFICS:

**Prerequisites:** Physics 123 or equivalent, or permission of the instructor

### **Course Content:**

Physics 124 is a very fast paced course which will cover chapters 18-34 in the free online OpenStax Physics text (<https://openstax.org/details/books/college-physics>). My goal for you in this course is not for you to master every nuance of each of these chapters; rather, scientific literacy is the objective. My goal is also for you to develop in your critical reasoning and physics sensemaking as we explore the electric world in which we live, first looking at what causes charge to move, and then discovering the implications of moving charge, in a vast range of contexts including electric heaters, wireless cell phone chargers, and the aurora. The topics covered and tentative schedule is as follows:

Due Friday at 23:59	Homework due on these chapters	Quiz / Exam
1/24/2025	18: Charge and electric field AND 19: Electrical potential	
1/31/2025	20+21: Circuits with resistors	Ch18 Quiz AND Ch19 Quiz
2/7/2025	22: Magnetism	Ch20+21 Quiz
2/14/2025		Exam1 on Chapters 18-22
2/21/2025	23: EM induction and AC circuits	
2/28/2025	24: EM waves	Ch23 Quiz
3/7/2025	25+26: Lenses and mirrors	Ch24 Quiz
3/21/2025	27: Wave optics	Ch25+26 Quiz
3/28/2025		Exam2 on Chapters 23-27
4/4/2025	29: Quantum physics	
4/11/2025	30: Radioactivity	Ch29 Quiz
4/18/2025	31+32: Nuclear physics	Ch30 Quiz
4/25/2025	33+34: Particle physics and beyond	Ch31+32 Quiz
4/29/2025		Final Exam on all content

**Materials Needed:**

- Text: [OpenStax Physics \(free\)](#)
- Laboratory Kit from Hands on Labs (refer to the lab Canvas site, PHYS124L, for details)
- Calculator (see below)
- Subscription to ExpertTA as online homework platform (see below)
- Subscription to HonorLock as online exam proctor (see below)

Calculators: **You will need a calculator for homework and exams.** A basic, simple scientific calculator with trigonometric, exponential, and logarithmic functions is all that you need but buy a fancy one if you want – just learn how to use it! Note that exams are closed-book, and calculators may only be used for algebraic manipulations.

**Participation:** Research has shown that students learn very poorly from watching lectures, be they in person or online. Learning happens through active involvement in learning, and effective lectures include frequent "breaks" in which students respond to the content. In this course, students will do this by responding to ConcepTests interspersed in the recorded lectures. The recordings are within Canvas, and students will submit responses directly into the videos themselves. **The participation grade will NOT be based upon correctness of responses, but rather upon engagement with the ConcepTests.**

**Homework:** The homework is web-based through TheExpertTA (**approximately \$50, access through Canvas by clicking on the homework**). Homework will be due once a week on Friday (at 11:59PM). Education research has shown that students learn best when they receive prompt feedback on their work. Solutions to homework will be visible on ExpertTA immediately after the due date; consequently **NO LATE HOMEWORK WILL BE ACCEPTED.** For extenuating circumstances (medical emergencies, etc.), please email me.

Note: Working in study groups on the homework is encouraged, but take care that you walk away with a personal understanding that you will be able to demonstrate on the quizzes and exams (which are taken individually).

**Quizzes:** There will be an online quiz due together with homework on many Fridays. The quizzes will be timed. These quizzes will be administered via GradeScope or ExpertTA. You may create your own equation sheet on a single-side of an A4 sheet of paper, or you may use the provided equation sheet. You may use your calculator for algebraic manipulation on the quizzes. Other than these aids, you are to take the quizzes alone without other assistance. The primary goal of these quizzes is to identify course content that you are struggling with, so you can better prepare for the exams.

**Exams:** All exams are closed book and will be proctored online via HonorLock (approximately \$15). If you are in a location with unsteady internet, you may use an in-person proctoring similar to eCampus' Testing Services (for example, you might ask your public library). Like with the quizzes, you may use an equation sheet and your calculator for algebraic manipulation on the exams, but are otherwise to take the exams alone without other assistance. Violation of this constitutes a breach in the UAF Honor Code and will be dealt with appropriately. Exams will include mostly problems with some short answer and multiple choice. They will cover concepts and examples from the text, lecture material, homework problems, recitation problems and laboratory exercises. Solutions to exams will be posted on Canvas.

**Exam Dates:**

**Exam 1:** Feb. 14th (covering Chapters 18-22 tentatively)

**Exam2:** March 28th (covering Chapters 23-27 tentatively)

**Final Exam:** **Tuesday April 29th** (Roughly 1/2 covering chapters 18-27 and the rest covering chapters 29-34)

**Laboratory:** There is a lab associated with this course that is vital for your learning of the content. You will need to purchase the lab kit. The Lab TA will be available to guide you in performing the laboratory kit experiments. You must pass the lab in order to pass the course. **Students who do not complete at least nine of the ten labs and submit the corresponding lab reports will automatically fail the lab (and, hence, the course).** The lowest lab grade will be dropped.

**April 18th is the last day lab reports will be accepted and graded!**

**Grading:**

Grades given will be on a five step A-F scale (with +/- grades assigned if appropriate). The final, cumulative scores will be curved and final grades assigned on that basis; however, a final percentage score of 90% or above will be at least an A-, 80% will be at least a B-, 70% at least a C-, and 60% at least a D-.

Midterm Exam 1	15%
Midterm Exam 2	15%
Quizzes (9)	20%
Final Exam	20%
Homework (12)	12%
Participation (responding to ConcepTests in lecture videos)	3%
Lab (10)	15%
<b>Total</b>	<b>100%</b>

The lab component of this course (15%) and participation points from lecture recordings (3%) do not appear in the Phys124X Canvas page and so the column "Total" you see in the far right of Grades accounts for only 82% of your course grade. To calculate your grade in Physics 124, do the following: "Total" column in Phys124X \* 0.82 + Lab grade (from Phys124L Canvas page) \* 0.15 + 0.03 (assuming you have been responding to the ConcepTests in the videos)

For your reference, the weightings leading up to the "Total" column in Phys124X are:  
Homework (12% of the course) --> 14.5% of 82%  
Quizzes (20%) --> 24.5% of 82%  
Exams (Exam 1, Exam 2, and Final) (50%) --> 61%

## SUPPORT SERVICES

### Lab TA

TBD

Office: TBD

TA office hours

TA Office Hours Spring 2025

**Weekly Homework Help Sessions:** We will hold Online Help Sessions via Zoom. On campus, you can drop by my office and/or make an appointment. The Physics Department also holds Homework help sessions in the Physics conference room (REIC 122). The schedule is here:

HW Help Spring 2025

### Noyes Lab Access:

Every student enrolled in a physics course is given access to the Noyes Computer Lab in REIC 101. Computers with logger pro software, a scanner and a printer are available here. You may access the room by swiping your PolarExpress card. If you are unable to gain access to the room, please contact Liya Billa, Physics Office Manager, in the physics front office (REIC 102), or at [lkbilla@alaska.edu](mailto:lkbilla@alaska.edu).

### UAF eCampus Student Services

Student Services helps students with registration and course schedules, provides information about lessons and student records, assists with the examination process, and answers general questions. Our Academic Advisor can help students communicate with instructors, locate helpful resources, and maximize their distance learning experience. Contact the UAF eCampus Student Services staff at 907.455.2060 or toll free 1.800.277.8060 or contact staff directly – for directory listing see: <http://ecampus.uaf.edu/contact>

### Office of Information Technology Help Desk

Go to <http://www.alaska.edu/oit/> to see about current network outages and news.

Reach the Help Desk at:

- e-mail [helpdesk@alaska.edu](mailto:helpdesk@alaska.edu)
- fax: 907.450.8312
- phone: 450.8300 (in the Fairbanks area) or 1.800.478.8226 (outside of Fairbanks)

### UAF Writing Center

[The writing center](#) offers writing tutoring to students, staff, faculty and the wider community in any discipline, 6 days/ week. They also offer [phone tutorials](#).

### **CTC Learning Center**

The Learning Center offers tutoring in writing and math. For hours of operation and information about [online tutoring](#) for writing, check [their website](#).

### **UAF Math Lab**

The [math lab](#) offers tutoring to students at all levels.

### **UAF Library**

The Rasmusen Library [reference help desk](#) is available to assist students with library research and other questions.

### **Student Support Services**

Find help with advising, tutoring, mentoring, course selection, financial aid, career advising and more at Student Support Services. <https://www.uaf.edu/ss/>

### **Special Needs:**

The office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials. We work with the Office of Disabilities Services (203 WHIT, to 474-7043) to provide reasonable accommodation to students with disabilities.

Plagiarism and Cheating: Plagiarism and cheating are matters of serious concern for students and academic institutions. I take it seriously as well. Quizzes and Exams are to be your work ONLY! with no help from others or online resources. The UAF Honor Code (Student Code of Conduct) defines the academic standards expected at UAF and is adhered to in this class as well.

Complaints and concerns: I encourage you to talk to me about concerns you have with the class etc., however, if the situation warrants, you can contact the Physics Department Chairman, Dr. Martin Truffer at [mtruffer2@alaska.edu](mailto:mtruffer2@alaska.edu) or 474-5359.

**Last Day to Drop this Class (refunded, course does not appear on academic record): Jan. 24**

**Last Day to Withdraw from this Class: March 28**