

Syllabus

COLLEGE PHYSICS 124x Spring 2023

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

Office Hours: Physics Dept. (Rm. 120): TBA (ONLINE via Zoom)

Lab TA

Pralhad Itani: pitani@alaska.edu

Office: RM 128 REIC

TA office hours

https://docs.google.com/document/d/1QaoyM4ng0xhzVo2I7KIMShfPOWCgu5R0Az4YxnHSeA/edit?usp=share_link

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:

https://docs.google.com/document/d/1R4HMyHcyRH1mo0G06uekHsrAixLoEITgIXGZ8xrmW48/edit?usp=share_link

Web Connection: UAF Canvas

Homework: TheExpertTA (<https://theexpertta.com/>)

COURSE SPECIFICS:

Prerequisites: Physics 123 or equivalent, or permission of the instructor (me).

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>). The course emphasizes critical reasoning and sensemaking in physics. The topics covered and tentative schedule is as follows:

Due Friday at 23:59	HW #	Homework due on these chapters	Quiz / Exam
1/27/2023	1	18: charge and electric field	
1/27/2023	2	19: electric potential	
2/3/2023	3	20: Ohm's Law	Quiz 1 on Chapters 18+19
2/10/2023	4	21: circuits with resistors	Quiz 2 on Chapter 20
2/17/2023			MT1 on Chapters 18-21
2/24/2023	5	22: Magnetism	
3/3/2023	6	23: EM induction and AC circuits	Quiz 3 on Chapter 22
3/10/2023	7	24: EM waves	Quiz 4 on Chapter 23
3/17/2023	8	25 and 26: Geometric optics, lenses and mirrors	Quiz 5 on Chapter 24
3/24/2023			MT2 on Chapters 22-26
3/31/2023	9	27: Wave optics	
4/7/2023	10	29: Quantum physics	Quiz 6 on Chapter 27
4/14/2023	11	30: Atomic physics	Quiz 7 on Chapter 29
4/21/2023	12	31 and 32: Radioactivity and Nuclear Physics	Quiz 8 on Chapter 30
4/28/2023	13	33 and 34: Particle Physics and Beyond	Quiz 9 on Chapter 31+32
5/2/2023			Final exam

Although you will not be assessed on Chapter 28 (special relativity) in class, resources will be provided to students who request them for independent learning.

Materials Needed:

Required Text: *OpenStax Physics (free)*

Laboratory Kit (purchased directly from Science Interactive, see the lab course on Canvas)

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.

Homework: The homework is web-based and accessed through TheExpertTA (<https://theexpertta.com/>). Homework will be due once a week on Friday (at 11:59PM). Solutions will be posted on Canvas shortly after the due date; consequently **NO LATE HOMEWORK WILL BE ACCEPTED.**

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. You will have 30 minutes to complete each quiz. These quizzes will be administered via Google Quiz. You may use a provided equation sheet and your calculator for algebraic manipulation on the quizzes, but are otherwise 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 via eCampus. Like with the quizzes, you may use a provided 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 online.

Exam Dates:

MidTerm Exam 1 (MT1): Feb. 17th (covering Chapters 18-21 tentatively)

MidTerm Exam 2 (MT2): Mar. 24th (covering Chapters 22-26 tentatively)

Final Exam: May 2nd (Two hours+: Roughly 1/2 covering chapters 18-26 and the rest covering chapters 27+29-34)

Laboratory: There is a lab associated with this course. You will need to purchase the lab kit directly from Science Interactive. The Lab TA will be available to guide you in performing the laboratory kit experiments. **ALL LABS MUST BE COMPLETED TO GET A PASSING GRADE FOR THIS COURSE (10 total).**

April 21st 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-).

Midterm Exam 1	15%
Midterm Exam 2	15%
Quizzes (9)	15%
Final Exam	25%
Homework (13)	15%
Lab (12)	15%
Total	100%

Special Needs: The office of Disability Services implements the Americans with Disabilities Act (ADA), and insures 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 or 474-5359.

Last Day to Drop this Class (refunded, course does not appear on academic record): Jan. 27

Last Day to Withdraw from this Class: March 31st