

Syllabus

UNIVERSITY PHYSICS 211x Fall 2024

4 credits

Calculus-based physics course with weekly assignments (quizzes, homework and labs)

Instructor: Dr. Michael M. Hull

Office: Reichardt Rm 120 Tel. 907-474-6106 Tel. 474-7339 (Physics office)

Email: 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>)

Lectures: REIC 201/Mondays, Wednesdays, and Fridays, 10:30 am - 11:30 am

Class Management System: UAF Canvas

COURSE SPECIFICS:

Prerequisites: Calculus and high school physics. Algebra, trigonometry and calculus will be used extensively.

Course Content:

Physics 211 is a very fast paced course which will cover chapters 1-17 in the free online OpenStax Physics text (<https://openstax.org/details/books/university-physics-volume-1>). My goal for you in this course is for you to develop your critical reasoning and physics sensemaking as we explore the dynamic world in which we live. We will focus on forces and changes to motion in a vast range of contexts including swimming pools, cars, and outer space. The topics covered and tentative schedule is as follows:

Due Friday at 23:59	Homework due on these chapters	Quiz / Exam
9/6/2024	1+3: Kinematics AND 2+4: Two-dimensional kinematics	
9/13/2024	5: Newton's laws of motion	Quiz 1 on Chapters 1+3 AND Quiz 2 on Chapters 2+4
9/20/2024	5: Friction and drag	Quiz 3 on Chapter 5
9/27/2024		Exam1 on Chapters 1-6
10/4/2024	7+8: Work and energy	
10/11/2024	9: Linear momentum	Quiz 4 on Chapters 7+8
10/18/2024	10+11: Rotation	Quiz 5 on Chapter 9
10/25/2024	12: Equilibrium and elasticity	Quiz 6 on Chapters 10+11
11/01/2024		Exam2 on Chapters 7-12
11/08/2024	13: Gravitation	
11/15/2024	14: Fluids	Quiz 7 on Chapter 13
11/22/2024	15: Oscillations	Quiz 8 on Chapter 14
12/06/2024	16+17: Waves and sound	Quiz 9 on Chapter 15
12/11/2024		Final exam

Materials Needed:

Required Text: *OpenStax Physics (free)*

Laboratory Kit from Hands on Labs (refer to the lab Canvas site, PHYS123L, for details)

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 mathematical manipulations.

Participation: Research has shown that students learn very poorly from watching lectures, regardless of how coherent or interesting those lectures may be. 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 engage by responding to ConcepTests interspersed in the lectures. Furthermore, a few lectures will be replaced with group-based learning modules (Tutorials) for which your attendance is required. **The 3% participation grade will NOT be based upon correctness of responses, but rather upon engagement with the ConcepTests and Tutorials.**

Homework: The homework is web-based and accessed through TheExpertTA (<https://theexpertta.com/>) (costs approximately \$50). 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. 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).** Alternatively, you may use eCampus' Testing Services. Like with the quizzes, you may use an equation sheet and your calculator for mathematical 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, and laboratory exercises. Solutions to exams will be posted on Canvas.

Exam Dates:

Exam 1: Sept. 27th (covering Chapters 1-6 tentatively)

Exam2: Nov. 1st (covering Chapters 7-12 tentatively)

Final Exam: **Wednesday Dec. 11th** (Roughly 1/2 covering chapters 1-12 and the rest covering chapters 13-17)

Each exam will last two hours. You may take the exams at any point during the designated days.

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. **ALL LABS AND REPORTS MUST BE COMPLETED TO GET A PASSING GRADE FOR THIS COURSE (12 total).**

Labs may only be made up if excused and with permission of the lab supervisor, Joe Storm:

jhstorm@alaska.edu

Questions about the lab should be directed to the teaching assistant in charge of your lab or to the lab supervisor.

Dec. 8th 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 (during Tutorials and ConcepTests)	3%
Lab (12)	15%
Total	100%

The lab component of this course (15%) and participation points (3%) do not appear in the Phys211X 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 211, do the following:

"Total" column in Phys211X * 0.82

+ Lab grade (from Phys211L Canvas page) * 0.15

+ 0.03 (assuming you have participated in the Tutorials and ConcepTests)

For your reference, the weightings leading up to the "Total" column in Phys211X 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: REIC. 126

TA office hours:

TBD

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:

TBD

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.

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
- 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/sssf/>

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 or 474-5359.

Last Day to Drop this Class (refunded, course does not appear on academic record): Sept. 6

Last Day to Withdraw from this Class: Nov. 1