

## **Syllabus**

**UNIVERSITY PHYSICS 212x Spring 2024**

**4 credits**

**Calculus-based physics 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>)

## **Lab TA's**

**TBD**

**Office:** REIC. 128 or REIC. 126

TA office hours

[https://docs.google.com/document/d/18Bnwkw1lXfZJGw8ckZiNc-WsaZGgT\\_NZuESQhTSdc4/edit?usp=sharing](https://docs.google.com/document/d/18Bnwkw1lXfZJGw8ckZiNc-WsaZGgT_NZuESQhTSdc4/edit?usp=sharing)

**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/1OmbYQLD6Ad-6oVQfjYyGJ427zESodJJDSbWfYJO2CFY/edit?usp=sharing>

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

**Class Management System:** UAF Canvas

## **COURSE SPECIFICS:**

**Prerequisites:** Concurrent enrollment in MATH F253X; PHYS F211X or ES F208 or concurrent enrollment in ES F210; placement in WRTG F111X

**Course Content:**

Physics 212 is a very fast paced course which will cover chapters 1-16 in the free online OpenStax University Physics Vol. 2 text (<https://openstax.org/details/books/university-physics-volume-2>). 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
1/26/2024	<b>1+</b>	5+6: Electric charges and fields &	
	<b>2</b>	7+8: Electric potential	
2/2/2024	<b>3</b>	9+10: Circuits with resistors	Quiz 1 on Chapters 5+6 & Quiz 2 on Chapters 7+8
2/9/2024	<b>4</b>	11+12: Magnetism	Quiz 3 on Chapters 9+10
2/16/2024			Exam1 on Chapters 5-12
2/23/2024	<b>5</b>	13+14: EM induction	
3/1/2024	<b>6</b>	15: AC circuits	Quiz 4 on Chapters 13+14
3/8/2024	<b>7</b>	16: EM waves	Quiz 5 on Chapter 15
3/22/2024	<b>8</b>	Vol. 3, 10: Radioactivity	Quiz 6 on Chapter 16
3/29/2024			Exam2
4/5/2024	<b>9</b>	1: Temperature and heat	
4/12/2024	<b>10</b>	2: Kinetic theory of gases	Quiz 7 on Chapter 1
4/19/2024	<b>11</b>	3: First Law of Thermodynamics	Quiz 8 on Chapter 2
4/26/2024	<b>12</b>	4: Second Law of Thermodynamics	Quiz 9 on Chapter 3
5/2/2024			Final exam

**Materials Needed:**

**Required Text:** *OpenStax University Physics (free)*

<https://openstax.org/details/books/university-physics-volume-2>

**Calculators:** You will need a calculator for homework and exams. 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. To participate in these discussions will require students to prepare for class ahead of time by reading the textbook and/or watching lecture videos.

**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). Solutions are released by ExpertTA immediately 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. 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. 16th (covering Chapters 5-12 tentatively)

**Exam 2:** March 29th (covering Ch. 13-16 and Ch. 10 in Volume 3 tentatively)

**Final Exam:** Thursday May 2nd: Roughly 1/2 covering chapters 1-4

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. ALL labs and reports must be completed to get a passing grade for the lab (10 total). A PASSING GRADE IN THE LAB IS NECESSARY TO PASS THE COURSE. Labs may only be made up if excused and with permission of the course instructor. Questions about the lab should be directed to the teaching assistant in charge of your lab or as a last resort, Joe Storm, the lab supervisor.

**April 19th 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)	20%
Final Exam	20%
Homework (12)	15%
Lab (10)	15%
<b>Total</b>	<b>100%</b>

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. 26**

**Last Day to Withdraw from this Class: March 29**