PHYS 1710.002
University Physics I: Mechanics
Syllabus

Joe Watson

Fall 2025

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TBD

Lecture	PHYS 104	08:00-09:20	Tuesdays & Thursdays
Recitation 1	PHYS 116	09:30–10:20	Tuesdays & Thursdays
Recitation 2	PHYS 116	10:30–11:20	Tuesdays & Thursdays
Recitation 3	PHYS 116	11:30–12:20	Tuesdays & Thursdays

You are required to be in *one* Recitation session.

This is a *face-to-face* (in person) course. All course materials (except MasteringPhysics or the textbook) will be posted to Canvas.

Communication

All communication should be conducted through appropriate emails shown above. *Do not message us through Canvas*—it doesn't always come through in a timely manner. In most cases, you can expect a response within 24 hours. I will not expect my TA to respond over weekends or holidays.

Course Description

PHYS 1710 is the first course in a calculus-based sequence designed for science and engineering majors. This course introduces the fundamental principles of Newtonian mechanics, including motion, forces, energy, momentum, and rotation. However, this is not just a class about solving equations—it is a course in learning how to think. Students will engage deeply with the concepts behind the math, using physics as a framework for understanding reality and developing analytical reasoning. Lectures blend historical context, philosophical insight, and hands-on problem-solving to help students build lasting intuition—not just test-taking skills.

Prerequisites/Corequisites

Student must complete MATH 1710 (Calculus I) with a grade of C or better. This is to include all the prereqs for Cal I as well.

Required Materials

- Textbook and Online Homework
  - *University Physics*, 15^{th} ed. by Young and Freed.
  - You are required to obtain access to the Mastering Physics online homework (the book itself is not mandatory).
  - at UNT Bookstore
    - 24-month Mastering Physics access including access to the e-textbook $\approx$ \$190
    - 18-week Mastering Physics access including access to the e-textbook $\approx$ \$110
- Scientific calculator (I suggest the TI-36x Pro).
- Access to Canvas during leture period for quizzes.

Course Objectives

Successful students:

1. Build a deep, conceptual understanding of classical mechanics—not as a list of formulas, but as a logical framework for describing and predicting real-world behavior.
2. Connect core physical quantities like force, acceleration, energy, and momentum through cause-and-effect reasoning, rather than rote memorization.
3. Learn to model systems using vectors, diagrams, and calculus, with clear attention to units, structure, and logical consistency—skills essential in engineering problem-solving.
4. Approach unfamiliar problems with confidence by applying first principles, estimating outcomes, and breaking complex systems into simpler parts.
5. Develop fluency in applying mathematical tools to analyze motion, forces, energy transfer, and stability in physical systems—laying groundwork for all future engineering coursework.
6. Understand the historical and philosophical foundations of science to better appreciate how engineering stands on a tradition of inquiry, experimentation, and clarity of thought.
7. Be well-prepared for future STEM coursework by mastering foundational physics skills.
8. Learned how to learn.

Course Structure

- **Lectures**

  will include explanations, discussions, and examples. Often, I will explain a theory with an example. I will try to make the examples as similar to the exam as possible, but they will not be 1 : 1. Thus, do not memorize how to solve that specific problem, but the method of approach.

- **Quizzes**

  will *randomly* be done during lecture time and will usually take $10-15$ minutes with 1 or more questions (on anything) being asked. You must be physically present within the classroom boundaries to gain credit. Taking the quiz while not in the room will result in an automatic 0 and a referral for academic dishonesty.

- **Demonstrations**

  I will dedicate time in each unit to demonstrate my claims. I will ask for volunteers, but might also randomly call on someone to assist.

- **Exams**

  Exams will be held roughly according to the schedule. I will explain exams in detail during lectures. In short

  - I will give the conceptual multiple-choice test bank in advance (at least 7 days in advance). These will be the exact questions asked on the exam, though randomly selected. Anticipate approximately $10-15$ of these on the exam. The order will be randomized.
  - You will be given one of the long form questions in advance, but you will be asked more than one.
  - Exams will be in person during normal lecture times—you will have from 08:00–09:20.
  - Once the first exam is turned in, no one will be allowed to start afterwards.
  - You will be provided with
    - The exam
    - ScanTron
    - Formula Sheet (will be posted in advance)
    - Extra paper upon request

    You are responsible for anything else.

    You may not bring an outside formula sheet

- **Assignments**

  Will be a mix of online and problem sets I create and give to you—we will alternate weeks with Week 1 being a problem set I give you.

Grading

Item	Max Points	Grading
Exam 1	110	A $\geq$ 900 pts
Exam 2	110	B = 800 pts
Exam 3	110	c = 700 pts
Exam 4	110	D = 600 pts
Final	210	F $<$ 600 pts
Quizzes	100	
Homework	150	
Recitation	100	
Optional	200	
Tot Possible	1200	

- **You must take all four exams, without exception**. Failure to take an exam will result in disqualification from using "Optional" points.
  - A proper excuse, with documentation, will allow for the exam to be rescheduled at earliest possible time.
  - Curve is already built in.
  - Exams will not be dropped.
  - Cheating on an exam will result in an automatic zero and a referral.
- **Homework will be due on the Friday** of the week in which we covered the topic. For example, Assignment 1 will be due on Friday 8/22 at 11 : 59 pm CST. Homework will be evaluated based on the following order: appropriateness of the methods used, the clarity of logical reasoning, and the accuracy of the mathematics. Homework will be graded at the end of semester thusly:

$80-100\%$	100 pts
$70-79\%$	75 pts
$60-69\%$	50 pts
$40-60\%$	25 pts
$<40\%$	no points

  Assignments will receive a 10% penalty for everyday late.
- **Recitation attendance is required**. The purpose of recitation is time to practice problems with your classmates and your TA and to ask your TA questions. At the end of the semester, I will take what grade the TA gave you and apply it accordingly:

$90-100\%$	100 pts
$80-89\%$	75 pts
$70-79\%$	50 pts
$<70\%$	no points

- **Optional points are extra credit.** These will be assignments posted throughout the semester, but are not required. There will be more than 200 pts worth, but 200 is the maximum that will count toward your final grade.

Tentative Schedule

1 Tentative Schedule

Week	T	TH	Date
1	Lecture 00: Introduction	Lecture 1: What is physics?	8/18–8/22
2	Lecture 2: Motion II	Lecture 3: Motion III	8/25–8/29
3	Newtons Laws I	Newtons Laws II	9/1–9/5
4	Newtons Laws III	Newtons Laws IV	9/8–9/12
5	Newtons Laws V	**Exam 1**	9/15–9/19
6	Impulse	Momentum	9/22–9/26
7	Work	Energy I	9/29–10/3
8	Energy II	**Exam 2**	10/6–10/10
9	Rotaional Dynamics I	Rotaional Dynamics II	10/13–10/17
10	Rotaional Dynamics III	Rotational Dynamics IV	10/20–10/24
11	Rotational Dynamics V	**Exam 3**	10/27–10/31
12	Waves I	Waves II	11/3–11/7
13	Waves III	Waves IV	11/10–11/14
14	Open Discussion	**Exam 4**	11/17–11/21
15	THANKSGIVING	THANKSGIVING	11/24–11/28
16	Review	Review	12/1–12/5
17	**FINAL 12/9 @ 08:00**		12/8–12/12

Assignments are due every Friday by 11 : 59 pm, CST.

You must note that students will be notified by Eagle Alert if there is a campus closing that will impact a class and describe that the calendar is subject to change, citing the Campus Closures Policy (https://policy.unt.edu/policy/15-006).

Course Policies

During Class

Don't do *anything* that will distract from me or others.

In this course, we elevate the conversation. We don't waste time tearing people down—we challenge ideas, test assumptions, and pursue understanding. Engage with each other's ideas based solely on their logical coherence, not on personal or moral judgments. This expectation applies both during and after class. Any form of harassment or targeting of another student for comments made in class will not be tolerated. Said students will be referred.

Part of becoming a Scientist,Technologist, Engineer, or Mathematician is learning how to conduct yourself in a professional, respectful, and focused environment. That starts now, in this room. Etiquette isn't about rules for their own sake. It's about creating a space where intellectual effort is possible.

Attendance Policy

You are required to be present inside the lecture hall for any quizzes or exams. If you have a grade for either, but you were not personally and physically present, you will receive a 0 and a referral.

Policies on Incomplete Grades and Late Assignments

Many extensions have I given, just ask. If permission not given to you, and late it is, 10% off the grade for each day late. Last day to turn any work in will be 12/5.

Academic Integrity and Honesty

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct. This mostly applies to exams. Cheating on an exam will result in an automatic zero and a referral.

Accommodations for Disabilities

The University of North Texas makes reasonable accommodations for students with disabilities. To request accommodations, you must first register with the Office of Disability Access (ODA) by completing an application for services and providing documentation to verify your eligibility each semester. Once your eligibility is confirmed, you may request your letter of accommodation. ODA will then email your faculty a letter of reasonable accommodation, initiating a private discussion about your specific needs in the course.

You can request accommodations at any time, but it's important to provide ODA notice to your faculty as early as possible in the semester to avoid delays in implementation. Keep in mind that you must obtain a new letter of accommodation for each semester and meet with each faculty member before accommodations can be implemented in each class. You are strongly encouraged to meet with faculty regarding your accommodations during office hours or by appointment. Faculty have the authority to ask you to discuss your letter during their designated office hours to protect your privacy. For more information and to access resources that can support your needs, refer to the Office of Disability Access website (https://studentaffairs.unt.edu/office-disability-access).

Etiquette

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and lectronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at (deanofstudents.unt.edu/conduct.)

Survivor Advocacy

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence

Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565-2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

AI

In this course, you are encouraged to use Generative AI (GenAI) tools (e.g., Claude, ChatGPT, Grok, etc) to support your learning and develop skills for a GenAI-oriented workforce. However, GenAI should complement, not replace, our course materials. See the AI rubric. If something seems unclear, feel free to ask.