PHYS 1410.001 General Physics I

Spring 2026 Tentative Syllabus

Lecture section, Physics 102 MWF 11:00 – 11:50 am

Recitation section 201/203 SAGE 230

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Help Hours: Monday, Wednesday 1 pm – 2pm, by appointment

Welcome! As members of the UNT community, we have all made a commitment to be part of an institution that respects and values the identities of students and employees with whom we interact. UNT does not tolerate identity-based discrimination, harassment, and retaliation. Everyone should feel comfortable being their authentic selves in our class. If you have any questions or concerns, do not hesitate to contact me.

Communication: This is a face-to-face class with occasional Zoom component. All course materials (handouts, lecture slides, etc.) and announcements will be posted in Canvas. You can contact me via email at Reiko.Lukic-Zrnic@unt.eduor by sending a message in Canvas. In most cases, you can expect to receive a response within 24 hours. You are also always welcome to come by my office during Help Hours or at other times. You are expected to check your UNT email and Canvas messages at least once a day.

Course Description: This course will cover topics in classical mechanics. You will learn about Kinematics, Newton's laws of motion, inertia, acceleration, force, energy, momentum, angular momentum, conservation laws, rotational and oscillatory motion, and (if time permits) wave mechanics.

Course Learning Objectives: Upon successful completion of this course students should be able to:

- Sketch and calculate (add, subtract, multiply, compute magnitudes, angles and components) with vectors
- Relate position, velocity, and acceleration of an object at different moments in time using both equations and graphs
- Sketch and analyze free body diagrams and apply Newton's laws to make predictions about an object in linear, curved, or rotational motion
- Distinguish between a system and the environment and apply conservation of energy and/or conservation of momentum to make predictions about collisions, explosions, and other scenarios with non-constant acceleration
- Translate information between different representations (words, equations, graphs, diagrams) and use units, sign, and order of magnitude to assess the reasonableness of an answer

PHYS-1410 also contributes to the following core course learning objectives:

- **Critical Thinking:** Creative thinking, analysis, evaluation, and synthesis of information
- **Communication:** Development, interpretation, and expression of ideas through written, oral, and graphical means
- **Quantitative Skills:** Manipulate and analyze data to reach meaningful, informed conclusions
- **Teamwork:** Consider different points of view and work effectively with others to support a shared purpose or goal

Course Pre-requisites: Recommended: proficiency in algebra and trigonometry.

Required Materials:

Mastering Physics - You are required to obtain access to the Mastering Physics online homework system in order to complete the weekly homework assignments. You can purchase an access code through the UNT bookstore. You have two options available for the access code:

- 18-week Mastering Physics access including access to the e-textbook ~ $84.99 (net price) Modified Mastering Physics with Pearson eText Access Code for College Physics: A Strategic Approach, 4th edition, Author: Knight ISBN 9780136781189

The textbook included with Mastering Physics is College Physics, 4th Edition, by Knight. Other algebra-based introductory physics textbooks are equally useful including the free online textbook OpenStax College Physics 2e.

Calculator - You will need a calculator for exams that is not also a communication device (i.e. not your phone or your smart watch). The calculator needs to be able to do trigonometric calculations, but graphing is not required.

Attendance and Participation: You are expected to attend and participate in all lectures and recitations for the section in which you are enrolled. Lectures involve quizzes for points and Recitations will frequently involve quizzes or group activities that cannot be made up if you are absent. If you are sick or know that you will miss an upcoming class, let the instructor know as soon as possible to see what arrangements can be made.

Exams: There will be three exams given during class in the lecture classroom at the dates indicated on the schedule at the end of the syllabus. There will be a comprehensive final exam during finals week. Exam questions will involve both mathematical calculations and conceptual explanations and will be based on material from lecture, recitation, and homework assignments.

- There are no make-up exams. Your final exam score can replace your lowest exam score if you miss an exam.
- Questions pertaining to the grading of exams must be directed to the instructor in writing within one week of receiving your graded exam.
- If you have a pre-scheduled commitment that conflicts with one of the exams, contact the instructor as soon as possible.

Homework: All homework will be posted and submitted online using Mastering Physics. Mastering Physics allows 6 submission attempts for each problem. Homework is intended to be practice so there is no penalty for an incorrect answer as long as you arrive at the correct answer in 6 attempts or less.

Late Homework: If an extension is not requested within 24 hours of the due date, there is a 10% deduction per day. A homework extension can be requested to avoid any late penalty.

Mastering Physics Instructions: Go to our Canvas page and click Access Pearson then Open Pearson then Open MyLab & Mastering. If you have already paid for access to Mastering Physics, use the same username and password to access MyLab and Mastering through Canvas. If you do not have a username and password, you can set that up and enter your access code (from the bookstore) when accessing MyLab and Mastering through Canvas.

Learning From Mistakes: Learning necessarily involves making mistakes. If you never make mistakes, then you are not being sufficiently challenged. The goal is to make most of your mistakes on homework and during in-class practice so that you can ask questions and review your notes/textbook to learn from those mistakes before you get to the exam. When you make a mistake on an exam, your goal is to understand what you did wrong and to learn from that mistake so that you do not make the same mistake on a future exam.

Because learning involves making mistakes, you should be able to make mistakes without negatively impacting your grade. Here is how this works in our class.

In class Quizzes – Use of Learning Catalytics integrated within Pearson's Mastering Physics (starting 3rd week of classes)

Homework - You have 6 tries on each homework problem (or one fewer try than there are choices on multiple choice questions). You receive full points regardless of whether you get the answer correct on your first try or your 6th try.

Recitation - In each unit, your exam score can replace your lowest recitation score from that unit. This way if you have an off day or need to be absent from a recitation, you can earn those points back on the exam.

Recitation - Quizzes will be given in the recitation as a means of recording attendance and the recitation grade will depend on attendance at the recitation session to which you are assigned according to the following table:

Percentage Quizzes Score > 78% = 12% ,65-77% = 9% , < 64% = 6%

Unit Exams - Your final exam score can replace your lowest exam score and it can be averaged with any other exams scores that are lower than your final exam score.

FINAL comprehensive exam will be on Monday, May 4th, 2025, 10:00 am – 12:00 pm. Final exams CANNOT be made up

Being Successful in PHYS-1410

Actively Participate in Class: Class is a wonderful opportunity to practice problems, ask questions, and discuss concepts with your neighbors. If all you do is listen to the instructor, you will get a false sense of understanding. You need to attempt problems on your own or with your neighbor so that when the instructor shows the solution you recognize the subtle or confusing parts.

Ask Questions: It is OK to ask a question that has already been answered. Any time you ask a question, it shows that you are thinking and you are trying to learn and that's the goal. When you come up with a question at home, write it down so you can ask it next class or in during my Help Hours.

Utilize the Learning Goals: Each unit has a set of learning goals and practice problems with solutions posted on Canvas. If you are stuck on the homework, check if there is a similar example in the learning goals. When you prepare for an exam, work through the learning goals so that you know the specific skills that will be assessed on that exam.

Physics Resource Center (PRC): A Help Room on the second floor of **Hickory Hall room 266** is staffed weekdays by tutors to assist you with questions regarding class, homework, or lab. This is a **free service** and does not require any reservations - just drop in. There is plenty of seating and computers in the PRC so you can go there to work on your homework and have tutors available nearby if you get stuck.

Course Grades: Course grades will be calculated as follows

Dynamic Study Model	4 %
In-class Quiz Questions	3%
Mastering Physics Homework*	10%
Recitation	12%
Exam 1	16 %
Exam 2	16 %
Exam 3	16 %
Final Exam	23%

*The purpose of homework is to develop your skills for the exams. If your exams scores are higher than your homework score I will substitute your homework grade with the exam grade.

Exams scores will not be curved.

Semester grades will be rounded to the nearest percent:

>= 90% = A

80-89.9% = B

70-79.9% = C

60-69.9% = D.

Throughout the semester, you can monitor your grade in Canvas.

Lab Credit: You must enroll separately in Physics 1430 for laboratory science credit.

Course Evaluation: The Student Perceptions of Teaching (SPOT) is a requirement for all organized classes at UNT. This short survey will be made available to you on-line at the end of the semester and will provide you with an opportunity to provide feedback to your course instructor. SPOT is considered to be an important part of your participation in this class. You will receive an email from "UNT SPOT Course Evaluations" from no-reply@iasystem.org with the survey link. You will have separate SPOT evaluations for lecture, recitation, and lab. During fall and spring semesters SPOT surveys are open to students to complete two weeks prior to final exams.

UNT Policies

Academic Integrity Standards and Consequences: According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

ADA Accommodation: UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu.

Emergency Notification & Procedures: UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

Sexual Assault Prevention: 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.

Class attendance and participation is required. Students must be alert, attentive, energetic, and eager to learn. Students who exhibit disruptive behavior or show disrespect to a teacher in the classroom are subject to severe disciplinary sanctions. The Academy does not authorize absences from class. Students must report all absences to the Academic Office within 36 hours of the absence by completing a form in the Academic Office. A student will be assessed 5 disciplinary points for each class absence, unless the absence can be justified. Faculty will also be reporting absences to the Academic Office. A student will be assessed 15 disciplinary points for failure to report an absence that is reported by a faculty member.

Tentative Lecture Schedule

Session	Date	Day	Lecture Topic	Assignments Due
1	12 Jan.	M	Introduction to Motion	Into and Math
2	14 Jan.	W	Units, Physical Quantities	
3	16 Jan	F	Velocity	Ch1 HW 1
4	21 Jan.	W	1D Motion Uniform Motion	

5	23 Jan.	F	Velocity, Acceleration, Motion with Constant Acceleration	Ch2 HW 2
6	26 Jan.	M	Free Fall	
7	28 Jan.	W	Vectors, Vector's Components	
8	30 Jan.	F	Projectile Motion, Solving Problems	Ch3 HW 3
9	2 Feb.	M	Circular Motion,Motion and Forces	
10	4 Feb.	W	Newton's Laws 2nd and 3rd	
11	6 Feb.	F	Free Body Diagram	
12	9 Feb.	M	Applications of Newton's laws Mass and Weight, Normal and Friction Force	
13	11 Feb.	W	Ropes and Pulleys	Ch 4&5
14	13 Feb.	F	Uniform Circular Motion	HW 4
15	**16 Feb**	**M**	**Exam1 Chapters 1-4**	
16	18 Feb.	W	Newton's Law of Gravity	
17	20 Feb.	F	Rotational Motion, Rigid Body Rotation Torque	Ch 6 HW5
18	23 Feb.	M	Rotational Dynamics, Moment of Inertia	
19	25 Feb	W	Newton's 2nd Law for Rotation	
20	27 Feb	F	Torques and Static Equilibrium	Ch 7 HW6
21	2 Mar.	M	Static Equilibrium	
22	4 Oct.	W	Springs and Hook's Law Impulse	
23	6 Oct.	F	Linear Momentum, Impulse Momentum Theorem	Ch 8 HW 7
24	16 Mar	M	Law of Conservation of Momentum	
25	**18 Mar**	**W**	**Exam2 Chapters 5-8**	
26	**20 Mar**	**F**	Inelastic and Elastic Collision	Ch 9 HW 8
27	23Mar.	M	Angular Momentum	
28	25 Mar.	W	Energy and Work, Kinetic and Potential	
29	27 Mar.	F	Conservation of Energy Law	Ch 10 HW9
30	30 Mar.	M	Energy in Collisions and Power	
31	1 Apr.	W	Fluids, Density and	
32	3. Apr.	F	Pressure Buoyancy, Fluids	Ch 13 HW10
33	6 Apr.	M	in Motion Oscillations	
34	8 Apr.	W	SHM and SHM Energy	
35	10 Apr.	F	Examples	Ch 14 HW11

36	13 Apr.	M	Pendulum	
37	**15 Apr.**	**W**	**Exam 3 Chapters 9,10 and 1**	
38	17 Apr	F	Traveling Waves	
39	20 Apr.	M	Sound and Light Waves	
40	22 Apr.	W	Intensity and Energy of the Waves Loudness	
41	24 Apr.	F	Doppler Effect	Ch15 HW12
42	27 Apr.	M	Review	
43	29 Apr.	W	Review	
44	1 May	F	**Reading Day (no class)**	
Final Exam	**4 May**	**M**	**Comprehensive Final Exam in PHYS 102, 10am-12:00pm**	