

PHYSICS 1710

Mechanics and Thermodynamics

Fall 2013

Lecture Section 001, Physics Room 102, MWF 9:00AM–9:50 AM

Recitation Sections: 204 TR 2PM-2:50PM; 208 MW 3:00PM-3:50PM; and 209 MW 1:00PM-1:50PM

Professor: Vincent Lopes
Office: Physics Bldg., Room 114
Phone: 940-891-6859
E-mail: Vincent.Lopes@unt.edu
Office Hours: Monday 10:00AM–11:00AM and by appointment

Text: Recommended text is *University Physics*, 13th Edition, by Young and Freedman. Students are required to obtain access to MasteringPhysics from Pearson.

Options with Young/Freedman textbook that include Mastering access:

- Hardcover text with MasteringPhysics access (UNT bookstore price: \$248.75)
- 3-hole punched edition with MasteringPhysics access (UNT bookstore price: \$167.50)
- MasteringPhysics access including e-book for Young/Freedman (UNT bookstore price: \$133.50)

Other calculus-based physics texts are acceptable; **the successful student will have a text.**

Topics: This course will introduce the laws of motion, inertia, acceleration, force, energy, momentum, angular momentum, conservation laws, rotational and oscillatory motion, gravitation, and thermodynamics.

Attendance/Participation: You are expected to attend all lectures and recitations for the section in which you are enrolled; your grade will depend upon your attendance and participation in class.

Exams: There will be three 90-minute exams during the semester, to be given from 3:00 to 4:30 p.m. on Friday afternoons, and a comprehensive final exam, to be given from 4:00 to 6:00 p.m. on Monday, December 9. Exam questions will be based on lecture material, material contained in the text and in the homework assignments. **You must show all of your work on your exam papers for full credit.** Questions pertaining to the grading of exam questions and problems must be directed to the instructor in writing within two weeks after the exams are returned. **There will be no makeup exams.**

Homework: All homework will be posted, collected, and graded via the internet. You will also be required to turn in written solutions to selected homework problems, which will be collected weekly and graded. You must access your assignment each week online, work the problems, and submit your solutions to the server by the due date indicated on the server. You will also be required to submit neatly written solutions to selected homework problems. They are to be placed in the mailbox labeled “1710 – Lopes” near the south end of the 2nd floor hallway in the Physics Building by the same due date and time as for the homework on the server. Details of accessing the homework server are given later in this syllabus. Address all problems with the homework server to your instructor. Selected homework problems will be discussed in recitation.

Grade: The grading in the course will be based on the total points earned from exams, homework, and lecture and recitation attendance/short quizzes. The point values for each category are given below:

Exams	1 st exam 11% ; 2 nd exam 13% ; 3 rd exam 16% ; 30% for the final;
Homework	<u>5% additional weighting will be given for your best exam.</u> 15%
Lecture & Recitation	5% for lecture participation, 5% for recitation quizzes
Total	100%

Lab Credit: You must enroll separately in Physics 1730 for laboratory science credit.

Topic Schedule – the instructor reserves the right to amend the topic schedule.

1	28-Aug	W	Introduction; Ch. 1, Units, Physical Quantities
2	30-Aug	F	Ch. 1, Vectors
-	2-Sep	M	<i>No class Monday, Sept. 2 – Labor Day Holiday</i>
3	4-Sep	W	Ch. 1, Vectors
4	6-Sep	F	Ch. 2, Motion along a Straight Line
5	9-Sep	M	Ch. 2, Motion along a Straight Line continued
6	11-Sep	W	Ch. 3, Motion in Two Dimensions
7	13-Sep	F	Ch. 3, Projectile Motion
8	16-Sep	M	Ch. 3, Circular Motion
9	18-Sep	W	Ch. 4, Newton's Laws of Motion--Forces, 1st Law
10	20-Sep	F	Ch. 4, Newton's 2nd and 3rd Laws
11	23-Sep	M	Ch. 4, Applications of Newton's Laws
12	25-Sep	W	Ch. 4, Applications of Newton's Laws continued
13	27-Sep	F	Ch. 5, Applications of Newton's Laws
	27-Sep	F	Exam 1—Ch. 1-4: 3:00PM to 4:30 PM, Physics Bldg. Room 102
14	30-Sep	M	Ch. 5, Applications of Newton's Laws continued
15	2-Oct	W	Ch. 6, Work
16	4-Oct	F	Ch. 6, Kinetic Energy
17	7-Oct	M	Ch. 7, Potential Energy
18	9-Oct	W	Ch. 7, Energy Conservation
19	11-Oct	F	Ch. 7, Applications of Energy Conservation
20	14-Oct	M	Ch. 8, Momentum and Impulse
21	16-Oct	W	Ch. 8, Collisions
22	18-Oct	F	Ch. 8, Collisions continued, Center of Mass
23	21-Oct	M	Ch. 9, Rotation of Rigid Bodies
24	23-Oct	W	Ch. 9, Rotation of Rigid Bodies continued
25	25-Oct	F	Ch. 10, Dynamics of Rotational Motion
	25-Oct	F	Exam 2—Ch. 5-8: 3:00 PM to 4:30 PM, Physics Bldg. Room 102
26	28-Oct	M	Ch. 10, Dynamics of Rotational Motion continued
27	30-Oct	W	Ch. 10, Rolling Motion
28	1-Nov	F	Ch. 10, Angular Momentum
29	4-Nov	M	Ch. 13, Gravitation
30	6-Nov	W	Ch. 13, Gravitation continued
31	8-Nov	F	Ch. 13, Kepler's Laws and Orbits
32	11-Nov	M	Ch. 14, Periodic Motion
33	13-Nov	W	Ch. 14, Periodic Motion continued
34	15-Nov	F	Ch. 14, Periodic Motion continued
35	18-Nov	M	Ch. 15, Mechanical Waves
36	20-Nov	W	Ch. 15, Mechanical Waves continued
37	22-Nov	F	Ch. 16, Sound and Hearing
	22-Nov	F	Exam 3—Ch. 9, 10, 13 - 15: 3:00 PM to 4:30 PM, Physics Bldg. Room 102
38	25-Nov	M	Selected topics from Ch. 17: Temperature and Heat; and Chapter 18: Thermal Properties of Matter
39	27-Nov	W	Selected topics from Ch. 19: The First Law of thermodynamics
-	29-Nov	F	<i>No class Friday, Nov. 29 – Thanksgiving Holiday</i>
40	2-Dec	M	Selected topics from Chapter 20: The Second Law of Thermodynamics
41	4-Dec	W	Review for exam
-	6-Dec	F	No Class
Final	9-Dec	M	FINAL EXAM—Comprehensive—4:00-6:00 p.m., Location will be provided

Disability Accommodation: “The University of North Texas 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 you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You 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 Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at 940.565.4323.”

UNT’s policy on Academic Dishonesty can be found at: <http://www.vpaa.unt.edu/academic-integrity.htm>
Drop information is available in the schedule of classes at: <http://essc.unt.edu/registrar/schedule/scheduleclass.html>

Physics 1710 Core Objectives

This course satisfies the core course requirement by achieving four core objectives:

- (1) **Critical thinking** - analysis, evaluation, and synthesis of information.
- (2) **Effective communication** - development, interpretation, and expression of ideas through written, oral, and graphical.
- (3) **Quantitative skills** - the ability to compute and manipulate quantitative data and to reach meaningful conclusions.
- (4) **Teamwork** - the ability to consider different points of view and to work effectively as a team.

Physics 1710 Goals and Learning Strategies

The goals of instruction in Physics 1710 are to lead and to guide you to master the fundamentals of elementary classical mechanics and thermodynamics, to construct for yourself a fundamental understanding of these topics, to develop your skills of analysis using the mathematical tools of algebra and calculus, and to cultivate an interest in and an appreciation for physics in nature and in the human experience. To help in achieving these goals, you are requested to pursue the following strategies:

- (1) **Read the text chapter within the forty-eight hours prior to the class.** You should bring your questions to class or e-mail to the instructor prior to the morning of the class.
- (2) During class, **listen, observe, take notes, analyze, discuss with peers, answer questions, and solve in-class problems.**
- (3) **Review your textbook chapter summary and your notes** within twenty-four hours after class.
- (4) **Work the assigned problems** only after you have read and reviewed the material of the chapter. If you get stuck on a problem (for instance, after 3 unsuccessful attempts, or 20 minutes of effort), move on to the next problem and bring your questions to recitation, the Physics 1710 help room, or your instructor.
- (5) **Respond via e-mail** to Vincent.Lopes@unt.edu or ask during office hours whenever you have an observation or question.
- (6) **Come to class prepared:** bring a calculator, your text book.
- (7) **Work extra practice problems**, such as from the text’s end-of-chapter problems, the example problems in the text or from other comparable text books, or those posted on Blackboard.

Homework Information

In this course you will be using MasteringPhysics®, an online tutorial and homework program.
If you had access to MasteringPhysics in a previous semester, skip to the ‘Log In’ step below.

What You Need:

- ✓ A valid email address
- ✓ A student access code (Comes in the Student Access Kit that may have been packaged with your new textbook or you can purchase access online at www.masteringphysics.com.)
- ✓ The ZIP code for your school: **76203**
- ✓ A Course ID: **UNTPHYSICS1710LOPESFALL13**

Register

- Go to www.masteringphysics.com and click **New Students** under **Register**.
- To register using the Student Access Code inside the MasteringPhysics Student Access Kit, select **Yes, I have an access code**. Click **Continue**.

–OR– **Purchase access online:** Select **No, I need to purchase access online now**. You will be asked to select your textbook—choose **Young/Freedman University Physics 13e**, but you *don’t* need to purchase the e-book. Click **Continue**. Follow the on-screen instructions to purchase access using a credit card. The purchase path includes registration, but the process may differ slightly from the steps printed here.

- **License Agreement and Privacy Policy:** Click **I Accept** to indicate that you have read and agree to the license agreement and privacy policy.
- Select the appropriate option under “Do you have a Pearson Education account?” and supply the requested information. Upon completion, the **Confirmation & Summary** page confirms your registration. This information will also be emailed to you for your records. You can either click **Log In Now** or return to www.masteringphysics.com later.

Log In

- Go to www.masteringphysics.com.
- Enter your Login Name and Password and click **Log In**.

Enroll in Your Instructor’s Course and/or Access the Self-Study Area

Upon first login, you’ll be prompted to do one or more of the following:

- ✓ **Join your MasteringPhysics course** by entering the **Course ID: UNTPHYSICS1710LOPESFALL13**

Click **Save** and **OK**.

Congratulations! You have completed registration and have enrolled in your instructor’s MasteringPhysics course. To access your course from now on, simply go to www.masteringphysics.com, enter your Login Name and Password, and click **Log In**. If your instructor has created assignments, you can access them in the **Assignments Due Soon** area or by clicking **View All** in this area. Otherwise, click on **Study Area** to access self-study material.

Support

Access Customer Support at www.masteringphysics.com/support, where you will find:

- System Requirements
- Answers to Frequently Asked Questions
- Additional contact information for Customer Support, including Live Chat

Please note that some problems in any given assignment may not be for credit. You can identify which problems are for credit by looking at the point value immediately after the problem number. The problems assigned zero credit are for your extra practice if you choose to take advantage of them, which you are encouraged to do.

You will also be required to submit written solutions to some of the assigned problems, which will be collected weekly and graded. Your neatly written solutions to all the homework problems that require written work must be turned in to the mailbox labeled “**1710 – Lopes**” near the south end of the 2nd floor hallway in the Physics Building by the same due date and time as for the homework on the server. Be sure to staple all your work together and **put your name and the assignment number on your papers**. Your graded work will be returned to you in the alphabetized column of open

boxes labeled “**Physics 1710**” to the right of where homework is handed in. Every effort will be made to return graded homework to these boxes within one week of the due date. ***It is strongly recommended that you photocopy your work before handing it in.***

Selected homework problems and related problems will be discussed in recitation.

Homework grading policy:

- a. The computer-generated score is to be the starting point for determining your grade.
- b. If you have earned computer credit for a problem, you must show sufficient work in your written HW to retain that credit. For each such problem, the grader will verify that:
 - i. there is an explanation of the problem’s solution in your written work;
 - ii. the solution presented is reasonable, i.e., essentially correct as shown;
 - iii. there is sufficient detail in the explanation to allow someone to understand all the steps of the solution.

If these three conditions are clearly not met, then you will receive reduced or no credit for the problem.

- c. If you are unsuccessful in obtaining the correct numerical solution to a problem, but have done work that you believe to be conceptually correct, **indicate clearly on your written solutions that you would like the problem to be graded for partial credit.** These problems will be graded on the basis of the correctness of the work presented, and may be assigned up to 90% of full credit.

Ancillary Materials

Blackboard Learn will be used to post some useful course materials and your grades. To get to this resource, go to <http://learn.unt.edu> and follow the UNT link to log on. (You will log on using your UNT EUID and password.) Once logged on, select this course. You will find an electronic copy of this syllabus, copies of the Power Point presentations from lecture, extra problems with solutions for practice, copies of old exams with keys, the equation sheets for exams, and you will be able to access your exam and quiz grades.

Also available for your extra problem-solving practice is a text similar to the one used for this class, with a full set of solutions for all of the problems in the backs of the chapters. These materials are on reserve in the Science and Technology Library.

A **Help Room** (PHY 116) will be staffed on Monday (3:00PM to 6:00PM) and Tuesday (3:00PM to 3:30PM and 5:00PM to 6:30PM) by teaching assistants to assist you with questions regarding any aspect of the course, including homework assignments. Hours will be posted on the door of the Help Room, as well as at the beginning of lecture. TA contact information will also be posted on the Help Room Door.

Course Evaluation

The Student Evaluation of Teaching Effectiveness (SETE) 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 remain open through the week of finals, providing you a chance to comment on how this course is taught. Your participation in SETE provides valued feedback for improving the course and its delivery, and is strongly encouraged.

Note to Members of TAMS

The Texas Academy of Mathematics and Science (TAMS) administration has made the followings statement and has asked us to include it in our syllabus for members of the Academy:

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.

If you are a TAMS student and if you are absent for any reason, you are required to file an absence report with the TAMS Academic Office in Marquis Hall 134.