

PHYSICS 151

UNIVERSITY OF NEW MEXICO

FALL 2014

Instructor: Dr. Mark Morgan-Tracy
Email: mtracy@unm.edu

Course Number: PHYC 151
Section Number: 003

Meeting Place: CTLB 330
Meeting Time: MWF 12:00-12:50 PM

Office Hours in 109 Regener Hall:
Wednesday, 1:30-5:00
Thursday, 1:00-5:00

Office Hours in 114 Regener Hall:
Friday, 1:15-3:30

Home Page: panda.unm.edu/Courses/morgan-tracy/151/BAMDPHys151Fall14.htm

Mastering Physics: www.masteringphysics.com

Mastering Physics Access Code: **PHYC151BAMDFALL2014**

Course Description

Welcome to the special BA/MD program version of Physics 151, the first semester of algebra-based introductory physics. This semester we actively cover the basics of physics: kinematics and dynamics in one and two dimensions, rotational motion, and conservation of energy and momentum. (All studied without the use of calculus or other scary higher mathematics) We will also get to study thermodynamics, fluids, oscillatory motion, and waves. This course is fantastic in that satisfies premedical, predental, preoptometry, and certain technical requirements. No previous knowledge of physics is assumed; however, problem solving requires good algebra skills and a working knowledge of trigonometry is helpful.

I hope that you do well in this course. You will need to work hard to succeed. I can only do so much to cram the concepts that we will cover into your brain, the rest is up to you. If you are willing to really think about what you are reading, to participate in class, to do the homework, and most importantly to let me know when you're still not getting something, then I'm sure we can have a very successful class for everyone.

Prerequisite: Math 123 (Trigonometry).

Prerequisite: Math 150 (Pre-Calculus) or Math 162 (Calculus I) or Math 180 (Elements of Calculus I).

Text

The textbook used for this class is the third edition of **College Physics: A Strategic Approach** by Knight, Jones, and Field, Pearson Addison-Wesley, 2015. The second edition of the textbook will be fine for reading assignments, but you *must* get a third-edition Mastering Physics access code.

Learning Outcomes

The overall objective is that the students can describe physical phenomena using a variety of models and develop certain analytical skills associated with problem solving. By the end of the course, the student should be able to:

- Convert units within the S. I. system as well as between S. I. and the U. S. customary system.
- Analyze vectors by
 1. resolving a vector into components
 2. finding the magnitude and direction of a vector from its components
 3. performing vector addition using both the graphical and component methods.
- Select the appropriate equation to use in solving new and different one and two-dimensional constant-acceleration problems.
- Sketch free body diagrams.
- Apply Newton's laws of motions to solve for unknowns in new and different static and dynamics problems.
- Apply conservation of momentum to predict characteristics of collisions.
- Use the law of conservation of energy in solving new and different motion problems.
- Apply the first law of thermodynamics to predict certain thermal responses of a substance.
- Calculate the pressure in a stationary fluid at arbitrary depths.
- Describe the fundamental properties of waves and periodic motion.

Office Hours

I will be available to provide additional tutoring and to help students with their homework in room 109 of Regener Hall on Wednesdays 1:30-5:00 and on Thursdays 1:00-5:00. (Please note that if there are many students seeking help we may relocate to a larger nearby room.) On Fridays 1:15-3:30, I will be in room 114 of Regener Hall. I realize that these times will, most likely, be inconvenient to those students who have jobs or other classes, and I encourage you to contact me to set up an appointment for a different time. Email is the best and quickest way of contacting me. I will try my best to accommodate your schedule.

Calculator

While Physics, at this level, is an excellent example of the power and uses of algebra, its numerical calculation requirements are fairly simple. To that end, you do not need a scientific or graphing calculator for this class. The basic requirements is that your calculator must be able to do scientific notation as well as simple trigonometric (sine, cosine, and tangent) functions. If you have a scientific calculator, I encourage you to use it to its full capacity; however, its extraordinary use (like solving quadratic equations) on homework and tests must be clearly indicated.

Course Requirements

Worksheets: In this class, you will actively participate in your learning. I will perform very little lecturing. Class time will instead be spent working together in groups of three or four students on the concepts and problems that you will see on the homework and exams. The groups will be assigned by the instructor. Students will be given training in their group roles during the first week of class. Each worksheet question will be worth one point. Partial credit will be given for any attempted problem. Each group will turn in a single worksheet and each member will be awarded the same score. When determining your average at the end of the term, your three lowest scores will be dropped. **Note:** Students who make a habit of not attending class and miss more than 25% of the total number of worksheets will be given a zero for this portion of their class grade.

Reading Quizzes: One of the main tenets of active learning is that students should make contact with the material *before* coming to class; therefore, specific reading assignments will be posted on the class's webpage at least two days in advance. Students are expected to read this material and then take a short (three or four questions) online quiz about it. These reading quizzes will be administered on the Mastering Physics website. They will be available in advance and are due by 10:00 AM prior to lecture. There is no time limit on the quizzes (In fact, students are encouraged to look back in the textbook when they do not know the answer to a question), but any answers submitted after 10:00

AM will receive no credit. When determining your average at the end of the term, your three lowest reading quizzes will be dropped.

Homework: Each week, I will be assigning 5-10 homework problems from the textbook and the Mastering Physics website. The purpose of the homework is to make sure that you are keeping pace with the class and understanding the topics being discussed. I encourage you to form study groups with other students in this class and work on the homework together; physics is a collaborative subject.

Homework assignments will be a combination of online questions that will be collected using the Mastering Physics system, as well as, written questions that will be turned in to me. *You need to purchase an access code to use Mastering Physics. Access codes are associated with the textbook. You must get a code associated with the third edition of the textbook.* Mastering Physics access codes can be obtained by purchasing a new textbook, through the bookstore, or online. The course ID for this term is **PHYC151BAMDFALL2014**. The Mastering Physics assignments will be due by 11:59PM of the due date (usually Fridays). A late assignment may still be done with an automatic 10% deduction for each day that it is late.

Written assignments must show all steps and should be neatly written in pencil. Each problem will be given partial credit based on the level of completion and **organization**. Written assignments are due to me at the end of my Friday office hours at 3:30 PM. Late written homework assignments may be turned in for a 65% participation grade.

I do not drop a homework score! Students are expected to do every problem assigned. It is highly recommended that you do *NOT* give up on Mastering Physics problems. The penalty for doing so is always much higher than attempting the problem multiple times.

Exams: There will be four in-class exams given throughout the semester. (See schedule for dates.) Exams will consist entirely of written questions that will be graded like the written homework problems. Your lowest exam score will be dropped when determining your exam average.

Final Exam: An in-class, comprehensive final exam will be given on Friday, December 12 from 10:00 AM until 12:00 PM. In the event of a UNM closure on the date of the final exam, final grades for students will be calculated based upon the work assessed up to that point.

Course Grade: At the end of the semester, the course grade will be calculated based upon the following percentages. In the case that the average of *all four* exam grades exceeds the homework average that higher average will be used for your homework score.

Reading Quiz: 5%	Worksheets: 15%	Homework: 20%	Exams: 45%	Final Exam: 15%
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Letter grades will be assigned according to the following scale:

A+ : 99-100	A : 93-98.99	A- : 90-92.99	B+ : 87-89.99	B : 83-86.99	B- : 80-82.99
C+ : 77-79.99	C : 73-76.99	C- : 70-72.99	D+ : 67-69.99	D : 63-66.99	D- : 60-62.99

Attendance Policy

Regular and punctual attendance is required. UNM Pathfinder policies apply, which in part means instructor drops based on non-attendance are possible. This policy applies regardless of the grading option you have chosen.

Accommodation Statement

Accessibility Services (Mesa Vista Hall 2021, 277-3506) provides academic support to students who have disabilities. If you think you need alternative accessible formats for undertaking and completing coursework, you should contact this service right away to assure your needs are met in a timely manner. If you need local assistance in contacting Accessibility Services, see the Bachelor and Graduate Programs office.

Course Calendar

Here is the listing of all important dates, including exams, and a general schedule of the topics to be covered. Students should consult the class webpage for specific information about which sections of each chapter will be covered during a particular class.

<u>Week</u>	<u>Date</u>	<u>Topic</u>	<u>Week</u>	<u>Date</u>	<u>Topic</u>
1	Aug. 18	Ch. 1 - Concepts of Motion	9	Oct. 13	Ch. 9 - Momentum
2	Aug. 25	Ch. 2 - Motion in One Dimension	10	Oct. 20	Ch. 10 - Energy and Work
	Aug. 29	Last day to Enroll or Change Sections			
3	Sep. 1	Labor Day	11	Oct. 20	Ch. 7 - Torque
		Ch. 3 - Vectors			
	Sep. 5	Last day drop with 100% refund			
4	Sep. 8	Ch. 3 - 2D Motion	12	Nov. 3	Ch. 8 - Equilibrium
	Sep. 12	Last day to change grading options		Nov. 5	Exam 3
				Nov. 7	Last day to withdraw without approval
5	Sep. 15	Ch. 4 - Forces and Newton's Laws	13	Nov. 10	Ch. 11 - Using Energy
	Sep. 17	Exam 1			
		Ch. 4 (continued)			
6	Sep. 22	Ch. 5 - Applying Newton's Laws	14	Nov. 17	Ch. 12 - Thermal Properties of Matter
7	Sep. 29	Ch. 6 - Circular Motion	15	Nov. 24	Ch. 13 - Fluids
				Nov. 26	Exam 4
				Nov. 28	Thanksgiving
8	Oct. 6	Ch. 6 (continued)	16	Dec. 1	Ch. 14 - Oscillations
	Oct. 8	Exam 2			Ch. 15 - Waves
	Oct. 10	Fall Break		Dec. 5	Last day to withdraw with approval
			-	Dec. 10	Final Exam