

MILLERSVILLE UNIVERSITY

**PHYS 231, Physics I with Calculus
Fall Semester 2009**

Instructor: Dr. Mehmet I. Goksu

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Lecture Time and Location:

11:00 – 11:50 Dr. Mehmet I. Goksu M, W, F Caputo 210

Recitation Time and Location:

08:30 – 09:20 T for sec 1A Roddy 154

09:30 – 10:20 T for sec 1B Roddy 154

13:00 – 13:50 T for sec 1C Roddy 154

14:30 – 15:20 T for sec 1D Roddy 154

Laboratory Time and Location:

13:00 – 15:50 Dr. M. Goksu W for sec 2A Caputo 227

09:30 – 12:20 Dr. J. Dooley R for sec 2B Caputo 227

14:30 – 17:20 N. Dushkina R for sec 2C Caputo 227

18:00 – 20:50 N. Dushkina R for sec 2D Caputo 227

18:00 – 20:50 Dr. Z. Uy W for sec 2E Caputo 227

Office Hours: 09:30 – 11:00 M, W, F Caputo 241

14:00 – 15:00 M Caputo 241

13:30 – 14:30 R Caputo 241

by appointment or walk-in, Caputo 241

Please feel free to call me or send me an email if you'd like to schedule a time to meet me. I will respond your message ASAP, usually on the same day or following day.

Required Materials:

The textbook: "Understanding Physics" by Cumming, Laws, Reddish and Cooney.

Bound lab notebook (9¾ x 7½ in, quadrille)

Calculator: A scientific calculator that can handle scientific notation and trigonometric function, exponentials.

Objectives of the Course:

The motion of objects, from particles to planets, is the focus of this course. The revolution in human understanding of mechanics, inspired by Galileo and developed by Newton and others is the lens through which our modern mechanical world is surveyed. Students will make extensive use of calculus in applying the fundamental laws of classical physics to real-world problems, and will explore the physicist's approach to inquiry through laboratory investigations. Prerequisite: MATH 161. Offered in fall, spring, summer.

At the end of this course, students should be able to:

Find the sum or difference of vectors.

Solve kinematics problems with and without gravitational acceleration.
 Use Newton's first and third laws to solve translational equilibrium problems with and without friction. Use Newton's second law to solve dynamics problems with and without friction.
 Use the definitions of work, energy, power and the law of conservation of energy to solve problems. Use conservation of momentum and kinetic energy to solve collision and related problems.
 Use the rotational analogs to the above principles to solve problems involving torque and rotation. Apply Newton's universal law of gravitation.
 Solve specific heat capacity, change of phase, and ideal gas law problems.
 Demonstrate understanding of the concepts behind all of the above.
 Choose and incorporate relevant information to solve problems.
 Apply physics principles to new situations.
 Judge the reasonableness of solutions.
 In addition, this course will reinforce the concepts mentioned above with practical laboratory experiences. While conducting the experiments, the student will learn methods of recording, using and reporting data.

Online Help Center:

There will be an “Online Help Center” between 19:00 and 20:00 on every Sunday. You can ask questions through blackboard system and get answers right away. It is a live-chat.

Blackboard/Course Documents:

We will be making use of the “Blackboard/Course Documents” Web site to manage and organize this course and to facilitate communication between the instructor and the students. You are responsible for checking the Blackboard site on a regular basis (preferably daily) for any assignments or information on that site - which may or may not be announced separately in class. Many students use an e-mail alternative to their Millersville account (Hotmail, Yahoo, etc). If you use such an alternate e-mail service, you should change either your Blackboard or Campus Pipeline profile in order to receive all e-mails at the address you check most often.

Access Students:

If you have special needs as addressed by the Americans with Disabilities Act (ADA) and need assistance, please notify the Learning Services (Extension:3178) or the course instructor immediately. Reasonable efforts will be made to accommodate your special needs.

Grading Policy:

The final grade will be based on attendance, quizzes, lab section, three tests, and final exam.

Grade Distribution:

Attendance	5 %
Quizzes	10 %
Labs	20 %
Exams	45 %
Final Exam	20 %

Grading Scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
92	88	83	78	74	70	65	60	57	54	50	<50

I may shift the borderline between certain letter grades by a small amount so that the line lands in the middle of a naturally occurring gap. Thus, it is possible you may get 87 % and end up with an A-, or you may get 88 % and end up a B+.

Attendance Requirements:

Attending the lectures is essential for the proper understanding of the material. You are expected to be present at every class. I will follow the University's official "Class Attendance Policy". Please be sure to comply with these guidelines. Please be sure to comply with these guidelines. If you have a valid conflict that does not allow you to take an exam or quiz, or to be at the lab at the scheduled time contact me as soon as possible. Missing an exam or quiz requires a valid excuse, otherwise a grade of zero will be assigned. I reserve the right to determine what is, and is not, a valid excuse. As a rule only extreme situations, such as serious medical problems, will be considered valid excuses. Alarm clock malfunctions and similar events are NOT considered valid excuses. The university attendance policy is available online at http://mustang.millersville.edu/~registrar/attendance_policy.php

Your attendance in the recitation sections will also count towards your grade.

To encourage attendance and participation, attendance randomly will be checked once a week during the semester. This way you can accumulate, without any effort, 5% of your overall grade.

Lectures:

If you wish to maximize your learning experience during the lecture, you should read the chapter prior to class. This will allow you to ask questions during class concerning misconceptions or difficulties that may have arisen during the reading. This procedure allows the lecture, which contains feedback to your questions from the instructor, to reinforce the reading of the material.

During the lectures, I will explain the concepts and do sample calculations to show how to apply these concepts. You should be prepared not only to ask questions but also to answer questions about the material. I will not cover everything in the text during lecture; this does not relieve you of learning the omitted material. Conversely, the lectures will contain additional information that is not in the book; you are responsible for this information as well. To be clear, you will be responsible for all the material discussed in class. Concepts not covered in class will not appear on the tests.

Recitation:

Each Tuesday we will have a recitation period where we will review assigned problems, answer questions, and review the material as necessary. During recitation you may work in groups and/or you might be called upon individually and asked to discuss your solutions to problems, both quantitative and qualitative.

Quizzes:

Quizzes will be administered once each week to test your comprehension of recently assigned lecture material and assigned problems.

Exams:

There will be three tests and a final exam. Each exam will usually consist of the following: Conceptual questions are based on the assigned book sections, the lectures, and the assigned questions at the end of a chapter.

Calculation-type problems are based on lectures examples and assigned problems.

Tentative Exam Material

Exam 1	Chapters 1 – 3
Exam 2	Chapters 4 – 6
Exam 3	Chapters 7 – 8

Final Exam Chapters 9 – 21
Final Exam: 08:00 – 10:00, Friday, December 18-2009

Labs:

The primary purpose of these laboratories is to illustrate some basic principles of physics and the methods used to test them. During this course, you will develop skills in data collection and analysis and gain experience in estimating uncertainties in measured and derived quantities.

In Physics Labs, a special effort has been made to avoid experiments and materials that present a potential hazard or require special training. However you should be aware that this is the exceptional rather than the rule in a laboratory. In those rare cases where some danger exist in Physics Laboratories such as high voltage, the experiments have been set up to minimize any danger and you will receive specific warning about how to use the equipment.

Lab time must be used efficiently in order to collect all required data and to do analysis.

All lab exercises must be completed. Otherwise the final grade for the course will be F regardless of the numerical grades.

If you cannot get to your scheduled lab due to emergency situation or medical problem, let me know ASAP.

Outlines of Topics:

Chapters	Topics	Labs	Topics
1	Measurements	1	Measuring Reaction Time
2	Motion Along a Straight Line	2	Free-fall Acceleration
3	Forces and Motion Along a Line	3	Uniform Circular Motion
4	Vectors	4	Atwood's Machine
5	Net Force and Two Dimensional Motion	5	Two-body Collisions
6	Identifying and Using Forces	6	Work and Kinetic Energy
7	Translational Momentum	7	Bouncing Ball's Energy
8	Extended System	8	Rotational Equilibrium
9,10	Energy, Work, and Energy Conservation	9	Rolling down and up a Ramp
11,12	Rotation	10	Atmospheric Pressure
13	Equilibrium	11	Motion of a Mass on a Spring
14	Fluids	12	Standing Waves on a String
15-18	Oscillations and Waves	13	Heating and Cooling
19- 21	Thermodynamics		

Academic Integrity

I am using Millersville University *Student Conduct Code* <http://mustang.millersville.edu/~handbook/codeofconduct.php> to create an environment for Academic Integrity. Academic dishonesty such as cheating and plagiarism are serious offenses in which immoral people engage. Incidents of academic misconduct will be met with a failing grade on the item in which the misconduct occurs, possible failure in the course, and the Dean of Student Affairs and the Vice President for Academic Affairs will be notified.

You are expected to do your own work. Although I often encourage students to work on homework assignments together, I suggest that you write up your own work alone.

Copying any part of another student's homework solution and submitting it for a grade is academic misconduct. Providing your work for another student to copy is academic misconduct.

Communication with anybody else during exams or quizzes is forbidden. This includes verbal,

written, electronic, and other communications, either one-way or two-way. Communication with another, if determined to be cheating, may result in an immediate grade of “F” for that exam or quiz.

Any form of cheating on exams (or quizzes) is academic misconduct. Providing assistance to a fellow student during an exam is academic misconduct.

Tips for making the course easier:

1. Don't skip class. Although you may be tired or stressed out, come to class. Listening always help.
2. Don't delay looking at your class notes. If you take notes and then delay looking at them for several days, by then they likely will have been transformed into a foreign language. A better plan is to look over class notes later that day, even if for only a short time period. Scribble in extra notes about why things were said, what principles were stressed, etc.
3. Read the book. If you get confused, don't give up. You need to learn how to sort through complicated issues to organize the main ideas.
4. Do your homework. It will also help you to prepare for exams.
5. Study with a friend, form a study group so that you can ask each other questions.
6. Always ask for help/question if you do not understand solution or concepts.

All parts of this syllabus are tentative and subject to revision.