

University Physics I – Fall 2003

PHYS-110/110G

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Office: McKinley 101

Classroom: Beeghly 1

Lab room: McKinley 14

Class meeting times: Tuesday and Friday, 2:10-3:25PM

Office hours: Tuesday 10-11AM, Thursday 1-3PM, Friday 11-12noon, or by appointment

Lab Instructor: Soudabeh Nayeri

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Phone: (202) 885-2757

Office: McKinley 3

Office Hours: TBA

Tutorial Leader: Tristan White

Email: TBA

Tutorial Room: McKinley 14

Tutorial Sessions: 7-9PM, Thursdays (except test weeks)

Grader: TBA

Course description and goals: University Physics (UP) I is the first part of a two-semester introduction to many topics in classical physics. The most important goal of this class then will be to survey some of the topics of classical mechanics. In terms of the jargon of classical physics, we will learn about the kinematics and dynamics of rigid objects, conservation principles, Newton's law of universal gravitation, the kinematics and dynamics of non-turbulent fluid flow, harmonic oscillations and sound waves. This overview will focus both on the conceptual interplay between different physical aspects and on the mathematical language that can be used to describe these relationships.

A secondary goal of the class is to encourage critical scientific thinking. To that end, the course will provide many experiences where understanding and progress can only be made by combining theoretical insights with real-world experiments or practical knowledge. The wonder and utility of science is that it fulfills three roles: it predicts, describes and explains. Physics relationship to other sciences and its social and historical context will not be ignored.

A final goal of the course is to provide ample experience in problem-solving, one of the most important tools, not just for science, but also for life. Qualitative and quantitative methods of problem solving will be explored and practiced in the context of physics.

The course presupposes a solid mathematical background through pre-calculus and concurrent enrolment in or completion of a first semester introductory calculus class, such as MATH-221.

General Education Information: UP I is one of eight foundation courses in Curricular Area 5 (The Natural Sciences) in the University's General Education Program. This course is the first of a two-course sequence. Students who take UP I frequently take UP II to fulfill both the General Education requirements as well as a major requirement. The second level courses which may be taken following UP I to complete the Area 5 sequence (if you have the necessary prerequisites) are:

BIO-240G Oceanography

CHEM-205G The Human Genome

CHEM-210G General Chemistry II
CHEM-220G Environmental Resources and Energy
CHEM-230G Earth Sciences
PHYS-200G Physics for a New Millennium
PHYS-205G College Physics II
PHYS-210G University Physics II
PHYS-220G Astronomy

Course Materials:

Text: *Physics for Scientists and Engineers*, Volume 1, Serway and Jewett, Brooks/Cole—Thomson Learning, ISBN 0-534-40845-1

Laboratory manual: One sale at Campus Bookstore

Calculator: Scientific calculator that can do trigonometric, exponential, and logarithmic functions; graphing capacity not required; graphing capabilities cannot be used during on-line quizzes or in-class tests.

Communication: This course will use the Blackboard system of American University for distribution of information outside of class time.

Email: You must have an American University email account to use this system; if you use an email provider other than American, forward your American mail to that account. On-line quizzes will be taken through Blackboard, on-line discussion sessions will be managed through Blackboard, and solutions to homework and tests will be posted on Blackboard. Check your email and the class website of Blackboard frequently to stay up-to-date. I usually respond fairly promptly to email and it is my preferred method of communication outside of class and office hours.

Discussion Boards: Please make use of the discussion boards to ask questions, vent frustrations, share neat ideas or website, etc.

Privacy: For the record, I can track Blackboard viewing, i.e. count the hits on each page and see who accessed it. However, you can post on the discussion board anonymously, and I really can't see you said it.

Etiquette: Express yourself freely in this class, in email and on Blackboard. However, be respectful and polite to your fellow students.

Course requirements and grading: Your final grade will be based on the following:

On-line quizzes	10%
Lab grade	15%
Homework	20%
Class Participation	5%
Exam I	15%
Exam II	15%
Final	20%

Grading scale: Your grades and the class average grades will be released periodically throughout the semester. Students at risk for receiving a C- or lower will be notified midway through the semester. The grading scale below is guaranteed to be the maximum requirements for a grade, but may be adjusted lower to account for class performance.

A	>	93%
A-	>	90%
B+	>	87%
B	>	83%
B-	>	80%
C+	>	75%
C	>	65%

C-	>	60%
D	>	45%

On-line quizzes: Ten times during the semester, on-line quizzes will be made available over Blackboard. Most weeks, these quizzes will become available for you to take on Tuesday afternoons after class and will become unavailable at midnight on Thursdays. These quizzes are meant to test your conceptual understanding, although occasionally they will require quantitative analysis. You may use your book and notes to help you answer the questions but you must work alone. You have 30 minutes to take the quiz and there will be penalties if you go over, but the quizzing software will allow you to keep going, so pay attention to your time. Any communication about the quiz with other students about the content of or the answers to the quiz is a violation of the Academic Integrity Code (AIC) (see below). When the quiz becomes unavailable, you will be able to see what the correct answers are. Acceptable excuses for missing a quiz are explained below; you will not be allowed to make up the quiz, but it will not affect your grade.

Laboratories: Twelve times during the semester you will meet during the laboratory time in McKinley 14 to perform experiments. Your exact lab meeting time will be determined by preference sheets in class Friday, 29 August. You are expected to have read the section in the laboratory manual about that week's experiment before you arrive. Each week that the lab meets you will complete a laboratory report for that experiment to be turned in the following week to the lab instructor. If you miss a lab for an unexcused reason (see below), it is at the discretion of the laboratory instructor to allow you to make it up on a later date. Occasionally the material covered in the experiment for the week will lead the lecture; this is normal.

Homework: Ten times during the semester assigned homework will be required to be turned in. The homework assignments will be posted on Blackboard at least one week before the due date. You may work with others to complete these assignments, but you must turn in your own work. You may not copy the homework from someone else, as that is a violation of the AIC. You are encouraged to attempt all the homework on your own before seeking assistance, as that will provide the greatest practice for the tests. Optional tutorial sessions (see below) will be held weekly with a teaching assistant to help you complete this assignment. The homework will be due in class on Fridays with no extensions possible except for excused absences (see below).

Class Participation: To receive the full 5% for class participation, you must receive 70 marks. Possible ways of getting a mark are described below.

Attending a full class (start to finish)	2 marks
Attending a class (but getting there late)	1 mark
Asking a constructive question in class	1 mark
Visiting office hours	1 mark
Attending a tutorial session	1 mark
Contributing to an on-line discussion	1 mark

Exams and Final: There will be two in class exams and a final during the final exam period. They will be closed-notes and closed-book and will consist of multiple-choice questions, short written answers and free-response problems. Sample test questions will be provided before each exam and an optional tutorial session review will be scheduled. Exam II and the final are both cumulative. Test results and answer keys will be posted on Blackboard.

Regrades: If you feel homework or a test has been misgraded, DO NOT WRITE on it. Write a note on a separate piece of paper and give it to me in class or office hours or slip it in my mailbox in McKinley 102. The assignment will be regraded more carefully. Note: your grade may go up OR down based on the regrade. That's the chance you take for me looking at it more carefully.

Succeeding in this class and getting help: To succeed in this class, it is imperative that you interact with the material every day. Physics is like a foreign language, you cannot learn it just from attending class. Make sure you do the readings before class and lab, do all the quizzes and homework, solve the sample test questions, attend tutorial session, come to office hours. This is a four-hour class, so you should spend *at least* eight hours a week outside of class time thinking about and practicing physics.

On-line discussions: On Blackboard there will be on-line discussion groups. You can you this to ask me questions publicly, discuss homework with your peers and voice concerns and opinions about the material and the class.

Tutorial sessions: Once a week there will be optional sessions with a tutorial leader for you to discuss the homework. These will be held (on non-test weeks) from 7-9 PM in McKinley 14 (same as lab room; see schedule). The role of the tutorial leader is not to give you answers, but to facilitate peer-groups in working together to select the correct ideas and methodologies and to find the answers. During weeks without tests the session will be held on Thursday, and on test weeks it will be held on Monday.

Office hours: You are super-welcome to come to office hours. We have a good time there. If you can't make any of the times listed above, call or email me and we can work something out.

Students with disabilities: You should be registered with the University, who will send me a letter describing you special needs. We can accommodate your needs, but occasionally patience will be required.

Academic Integrity Code: Read it and follow it. It is your responsibility to know it and abide by it. Follow all instruction given here or given on a specific assignment or the full due process of the AIC will come down on you.

Excused absences and extensions: Severe illness, religious observance, University business, and family emergency are acceptable reasons for missing class or needing an extension on an assignment. I have the right to request reasonable documentation, in accordance with University policy. Do not notify me of an absence, such as missing an exam or needing an extension, at the last minute. Use email and notify as far in advance as possible. I will be strict about this. You will get you money's worth out of this class if I have anything to do with it.