Syllabus: General Physics I —Fall 2011

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Office Hours: See Blackboard for current offices hours

Lectures: Monday, Thursday 8:55 – 10:10am, Lecture room: McKinley 108, Labs: SCAN 111

Course description

General Physics 1 (GPI) is the first course of a two-semester introduction to physics. This course is aimed at students who are not physics, physical science, or mathematics majors. Important themes in UP1 are motion (kinematics), force (dynamics), interactions, and energy. My goal for the course is for you to learn to see the universe in a new and powerful way using the concepts, models, techniques, and language of physics. My goal for every class this semester will be to engage you in thinking deeply about the physical world. I also want classes and assignments to engage you regularly in practicing logical reasoning, critical thinking, and problem solving. Additionally, the course will attempt to provide a larger context for the topics covered, including how they fit into the broader history of scientific and intellectual thought and how physics discoveries have impacted society. Even if you never take another physics course, if you work hard this semester I believe you will find that the skills and insights you develop in this course are powerful tools that can be applied in many areas beyond physics.

Pre-requisites:

The course presupposes a solid mathematical background in algebra, trigonometry, and pre-calculus (Math-170 is a prerequisite).

General Education Information:

General Physics I (GPI) is one of eight foundation courses in Curricular Area 5 (The Natural Sciences), Cluster Two (The Physical World) in the University’s General Education Program. This course is the first of a two-course sequence. Students who take GPI frequently take General Physics II (GPII) 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:

Course Materials:

(1) **Text:** *College Physics*, Second Edition, Knight/Jones/Field, Pearson-Addison Wesley. **This text will be used for both fall and spring semesters.** It is possible to purchase just volumes I (chapters 1-15) and volume II (chapters 16-19), but this would probably end up costing you more in the end if you take General Physics.

*The text is required. It would also be nearly impossible to do well in this course without reading the text carefully.*

(2) **Student Workbook:** New textbooks generally come bundled with a student workbook. It is not required but it is highly recommended. Students that work through the workbook invariably do better in the course than they would otherwise. Many workbook exercises will be assigned.

(3) **MasteringPhysics:** We will be using an online homework system for most warm-ups (described below) and homework assignments.

- Mastering Physics has been shown to lead to significantly greater learning for most than traditional.
- MasteringPhysics gives instant feedback on work.
- MasteringPhysics is a great way to prepare for MCATs, LSATs, and other tests.
- **To register for MasteringPhysics you will need an access code. Most new texts come with access codes included. The code will work for both the fall and spring semester courses.**
- If you buy a used text or from a non-traditional source, there is a possibility the book will not come with an access code. **Access codes may be bought directly from the MasteringPhysics website.**

(4) **Laboratory manual:** To reduce costs as best we can, this fall we are experimenting with putting the laboratory manual online on Blackboard instead of having student buy a printed manual.

(5) **Calculator:** You should have a scientific calculator that can do trigonometric, exponential, and logarithmic functions. Advanced features like graphing capabilities or the ability to do calculus is not required and in fact are neither needed nor useful in this course. If you don’t have a fancy calculator, please don’t buy one for this course. **Graphing capabilities cannot be used during in-class tests.**

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

- To login to **Blackboard** you must have an American University email account (which you all should have).
- **If you use an email provider other than American, make sure to forward your American mail to that account.**
- **Email** is my preferred method of communication outside of class and office hours because I do not regularly check my AU office voice mail.
- **Make sure you check your American University email regularly.** Important information will be communicated via email outside of class.

**Etiquette:** Express yourself freely in this class, in email and on Blackboard. However, be respectful and polite to your fellow student. In my opinion, how we treat each other is (in the big picture) more important than how you do in this class. Please be kind to and patient with your fellow students.

- **Please: do not come to class to surf the web or check facebook.** This is distracting to me and other students.

**Privacy:** For the record, I can track Blackboard viewing, i.e., count the hits on each page and see who accessed it. I can also view your activities on MasteringPhysics. This is useful for helping with MasteringPhysics problems and for providing feedback. **Blackboard surveys on the other hand are anonymous.**

**Lectures:** This class will not be conducted in the traditional manner of science classes. For example:
  - Definitions, proofs, derivations, and other material that is best learned by careful reading of the text will not be introduced by lecturing. Classes will complement the text; they will not repeat it. You must read the text before class or else you will often be lost!
  - It will be assumed that students come prepared to class by having completed any assigned reading and warm-up assignments.
  - Most class time will be spent applying, practicing, and synthesizing the ideas and techniques introduced in the text. Some lecturing will occur in class, but this will mostly be for the purpose of looking at the big picture, for exploring key concepts more carefully, or for going beyond the text.
  - In most classes we will use “zappers” (personal response pads, which we will provide), demonstrations, and other in-class activities to practice conceptual thinking and problem solving skills.
  - Attendance will be crucially important to success.

**Reading and self-study:** I’m repeating myself, but let me say it again. The book is excellent if read carefully and regularly. You should read every chapter at least twice (once before lecture, once after). I will do everything I can to help you understand what is in the book, **but reading the text first is absolutely required.**

**What to expect:**

Although it may take less time for a few students with especially strong backgrounds, **you should expect to spend at least 8 hours outside of lecture and lab per week.** In some case (or during some weeks) significantly more time may be needed.
Course Structure and grading: Your final grade will be based on the following:

- Warm-ups ...........................................10%
- Class Participation ............................... 5%
- Lab grade.............................................15%
- Homework .......................................... 25%
- Exam 1 or Exam 2................................. 15%
- Final .................................................. 30%

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%

Re-grades: If you feel homework or a test has been mis-graded, DO NOT WRITE on it. Write a note on a separate piece of paper and give the note and test back to me in class or office hours or slip it in my mailbox in McKinley 102 within one week of the date it was returned. After one week grades are final.

Warm-ups:

- On typical Mondays there will be an assignment that is to be completed before class, either online or turned in at the start of class.
- Because the entire purpose of warm-ups is that they be done BEFORE class, no late warm-ups will be accepted but I will drop the 2 lowest warm-up grades.

Homeworks:

- On typical Thursdays there will be homework due, usually completed online using MasteringPhysics. Be prepared to spend at least 4-8 hours on homeworks. (In some cases more.)
- Therefore there will be an automatic 20% deduction for each day late up.
- However, the maximum deduction will be 60%. That is, it is possible to earn up to 40% of the credit for a problem up until the class final.
- Please note, MP only makes the deduction on the part of a homework assignment that is not yet submitted.
- Each student will be allowed 1-week extensions for homeworks on two occasions. These are designed to cover valid university excuses, but I will also allow them so that students have some flexibility to work around other classes, etc. Please email me if you need the extension. You do not have to email before the due date.
- Students are encouraged to work collaboratively on homeworks, however, do not rely on peers to solve everything or you will not develop the skills to do well on tests and in future solo endeavors.
Exam 1 or 2, and Final:

- There will be two exams in the course, in addition to the midterm.
- I will automatically drop the lower of the two exam grades; the higher of the two exam grades will count for 15% of the course grade.
- The final is cumulative.

Class Participation:

- One class participation (CP) point will be assigned at the start of lecture, using either zappers or a sign-up sheet.
- One C Point will be assigned for participation during lecture, based on recorded zapper answers or other in-class assignments.
- Every student starts the semester with 6 bonus points.

Labs:

- There will be 11 laboratory sessions.
- The laboratory instructor will determine your grade for this part of the course.
- See the lab instructor’s syllabus for details.

Scheduled exams: If you cannot make one of the scheduled test dates for a valid reason, let me know as soon as possible. The final exam dates are scheduled by the university and cannot be changed. If you have a valid conflict, let me know as soon as possible.

Revisions to schedule: The draft class schedule handout is subject to revision as necessary. The most recent schedule will be kept posted on Blackboard and you should always check there if you need to know a due date. If the schedule is revised to adjust for the pace of the class or because of other unanticipated contingencies, students will be given ample notice.

Succeeding in this class and getting help: To succeed in this class, it is imperative that you interact with the material every day. Make sure you do the readings before class, and before doing homework. Skipping reading and hunting for answers to homework problems in the text will not work!!

For more help, come to office hours, and go to TA (supplemental instruction and GEFAP) help sessions.

Please understand: it is impossible to cover in class everything needed for the homework. I will do everything in my power to help you learn physics, but ultimately you are in charge of your own learning.

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.

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.

**Academic Integrity Code and Academic Dishonesty:** I take plagiarism and academic dishonesty very seriously, and I am required to report cases to the Dean of the College of Arts and Sciences, whose policy is to fail students for the course. Please read the university's Academic Integrity Code closely, and be sure to ask me if you have any questions.

The code is available online at [http://www.american.edu/academics/integrity/index.htm](http://www.american.edu/academics/integrity/index.htm).

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.

**EMERGENCY PREPAREDNESS**

In the event of a declared pandemic (influenza or other communicable disease), American University will implement a plan for meeting the needs of all members of the university community. Should the university be required to close for a period of time, we are committed to ensuring that all aspects of our educational programs will be delivered to our students. These may include altering and extending the duration of the traditional term schedule to complete essential instruction in the traditional format and/or use of distance instructional methods. Specific strategies will vary from class to class, depending on the format of the course and the timing of the emergency. Faculty will communicate class-specific information to students via AU e-mail and Blackboard, while students must inform their faculty immediately of any absence due to illness. Students are responsible for checking their AU e-mail regularly and keeping themselves informed of emergencies. In the event of a declared pandemic or other emergency, students should refer to the AU Web site ([www.prepared.american.edu](http://www.prepared.american.edu)) and the AU information line at (202) 885-1100 for general university-wide information, as well as contact their faculty and/or respective dean’s office for course and school/college-specific information.