

Physics 231 C

General University Physics

Fall 2012

Lecture Location: Room 155, Chem-Phys Bldg.
Lecturer: Prof. Ganpathy Murthy
Office: Room 295, Chem-Phys Bldg.
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Please read this entire syllabus carefully, and refer to it often. If you have any question about the structure or administration of the course, you are likely to find the answer here.

The lecture will be MWF 12:00-12:55pm. Also, attend the recitation section to which you have been assigned. Since there are several recitation sections which are held simultaneously, learn your recitation section number, your meeting time and place (see the SCHEDULE OF CLASSES) and your recitation instructor's name.

Course Description

PHY 231 is a UK Core compliant, introductory physics course for science and engineering students. In PHY 231, students will study the subject of *mechanics*. A primary aim of this course is to show you that physics can explain much of the natural universe from a few fundamental principles. You will learn how to apply some of these principles with the use of mathematics to interpret and make predictions about the motion of objects. The laws of physics as we know them today were developed over centuries by towering intellects who had brilliant insights. You will learn that Galileo was among the first to replace qualitative and sometimes untenable explanations (what we would now call “pseudoscience”) with reasoning based on mathematics and experiment, and how his scientific discoveries contributed to Newton's grand paradigm which truly altered humankind's understanding of the universe, and which germinated today's technological society.

Understanding and applying the basic laws of mechanics (using appropriate mathematics such as algebra, trigonometry, and calculus) will be the primary objective of this course, and a demonstration of ones understanding and proficiency at solving mechanics problems will be extensively tested in homework, in quizzes, and in examinations. To succeed, it is essential that you think analytically, and retain, organize and employ facts purposefully, critically, and effectively. Another goal is for you to strive to harness this way of thinking to help you understand, assess, appreciate and criticize modern science and technology.

A good scientist or engineer must possess knowledge of their discipline *and* be able to communicate that knowledge effectively. You are expected to make *clear, coherent, and orderly* presentations of the physics principles involved in your solution to problems in exams, using not only equations and numbers, but also words and diagrams!

Laboratory

PHY 241 is the companion laboratory course. In it you will do several hands-on projects using scientific methods to verify some of the principles we discuss in PHY 231. In both courses you will need to find, evaluate, and use information. Your laboratory reports will include a record of your data collection and analysis, and a summary of results from which you will draw conclusions. For logistical reasons, the laboratory PHY 241 is administered as a different course with a different instructor. You are strongly encouraged to take the lecture and laboratory concurrently.

Textbook and Ancillaries

The textbook for the course is **Physics for Scientists and Engineers, Eighth Edition**, by Serway & Jewett. One of the most important strategies for successfully learning the material (and getting a good grade) is for you to read the corresponding sections of the text **before** you come to class, as lectures will be spent expanding on the textbook's content.

The textbook is available bundled with a *PassCard* which contains an access code (for each of two semesters) for *WebAssign*, the on-line homework system we will use. Please note that we will not be using clickers in Lecture Section C. If you buy the textbook separately, make sure you purchase on-line a *WebAssign* access code.

Web Site

Visit <http://www.pa.uky.edu/~murthy/courses/phy231f12/>, the PHY 231 WEB SITE, which can also be reached from the departmental web site at <http://pa.as.uky.edu/>. Periodically, look for important announcements. Also, notes pertaining to my lectures will be available on the web after lectures. Because I intend to lecture using the whiteboard and not slides, and I will sometimes cover material not in the textbook, it will be useful for you to have my notes as well as the textbook.

Class Meetings

PHY 231 meets formally for four hours per week. *You should expect to spend at least two hours studying physics outside of class for each hour you spend inside.* The entire class will meet three hours per week (MWF 12 Noon) in the lecture/demonstration hall CP 155. The lectures will very roughly follow the textbook, and will augment the reading assignments; I will assume that you have read the assignment **before** coming to class. Unless explicitly mentioned in class, students are responsible for **both** material assigned as reading (*even if we do not "cover it" in class*) and material presented in lecture. These lectures will be devoted to examining your current conceptions, demonstrating physical phenomena, describing quantitatively the characteristics of physical phenomena, and establishing relationships among them. These relationships are most easily expressed with calculus-based mathematics, which is why MA 113 is a concurrent requirement (and preferably a prerequisite) for the course.

Lecture time will also be devoted to teaching problem-solving skills needed to do the assigned homework. For one hour each Tuesday, smaller groups of students will meet with a recitation instructor in a recitation class (see your SCHEDULE OF CLASSES), where some of the problems from the homework set (based on the lectures of the previous few days) will be discussed and a weekly quiz given. Make sure that you take advantage of the opportunity to *ask for help* in recitation as well as in lecture, and be prepared to communicate your points of confusion to both the lecture and recitation instructors.

Examinations and Grading

Your course grade will be determined as follows:

In-class exam #1	15%
In-class exam #2	15%
In-class exam #3	15%
Final exam	30%
Homework grade	15%
Recitation grade	10%
<hr/> Total	<hr/> 100%

You will receive a course grade of “A” if your total score at the end of the semester is 90% or above, a “B” for 75% or above, a “C” for 60% or above, and a “D” for 50% or above. However, these thresholds may be revised downward if the overall class average is low. After each exam, an estimate of your current letter grade will be given. A midterm grade will be sent to the registrar based on these criteria.

Lectures

Physics is not a spectator sport! You will make best use of the lectures if you attempt to become actively engaged. I prefer to teach on the whiteboard so that you can see the process by which I arrive at the results as well as the results themselves. It is essential for you to ask questions about what you have read and make predictions about the outcomes of real or imagined experiments. Often in lecture, we will go over several “*concept quizzes*”; the purpose is to focus our attention on important concepts, and for the lecturer to receive feedback on how well the class is understanding a concept. As part of these quizzes, and even sometimes in the middle of an explanation, I may ask you a question. Some of you may be startled and perhaps even annoyed at being asked questions in class, but this is an essential part of my teaching method. Hopefully you will soon get used to it and we will have lively discussions in class. Though there is no grade associated with lectures, these are an essential part of the course. If you miss a lecture for medical or other reasons, please read my notes for that lecture, and also come by to find out if I discussed anything not in the textbook.

Exams

There will be three fifty-minute exams and a two-hour final exam, which will be comprehensive. All exam dates are indicated on the **READING ASSIGNMENT SCHEDULE**. *Any student who cheats on an exam will be subject to severe disciplinary action by the university.*

If you anticipate missing an exam (for example, if you are a member of an inter-scholastic athletic team which will be out of town on the day of the exam), provide me with a written request and supporting documents (such as provided by your team) *at least one week in advance*. Notify me as soon as possible after unexpected emergencies in your immediate family. If you are physically unable to take an exam due to illness, contact me by e-mail before or very soon after the exam, and be prepared to provide documentation (a *contact phone number from a physician* or a *signed note from a university official*). **If you miss an exam without a valid excuse, you will receive a zero for the exam.**

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a *Letter of Accommodation* from the *Disability Resource Center*. (Their Web site is <http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/>).

If you miss a single exam with an excused absence, you will be given either a make-up exam (which will not be less demanding than the exam missed), or, at my discretion, a calculated replacement grade to restore the points lost on the missed exam. In the latter case, your grade for the missing exam will be calculated from your ranking on the other two fifty-minute exams.

If you miss the final examination or two fifty-minute exams, you may, at my discretion, get an *I*-grade *only* if you have a valid excuse and the average of your exam scores indicates a possibility of passing the course. You will have to complete the course at another time.

If you wish to submit an exam for re-grading, *first make sure that you understand how to do the problem correctly* (see the posted solutions, for example). Then, within a couple of days of receiving your exam back, provide an explanation of your request on a separate signed sheet of paper, and hand it to your recitation instructor who will forward it to the grader. Make no marks on the solution that you submit for re-grading, so that it can be compared with the photocopy on file. (Exams will be photocopied before they are returned.) **Any appeals concerning grades for exams must be resolved within two weeks of receiving your exam back. At semester's end, do not appeal to your recitation instructor for a reconsideration of a score assigned weeks previously.**

Homework

Homework will be administered on-line through *WebAssign*. All students will have the same generic numeric questions; however, each student has different parameters and hence different answers. Collaboration is encouraged, but rote copying of answers and random guessing will be fruitless. After the weekly homework submission deadline, you can view answers to the problems and your updated homework scores.

Please peruse the **READING ASSIGNMENT SCHEDULE (RAS)** for a list of topics to be covered each lecture, and for the due dates of the homework sets. About when a homework set is due, a new homework set will be available. The problems will be on material covered on a few (typically three) lectures; these are grouped between horizontal lines in the RAS. In order to keep current with the material, you should try working out the appropriate problems after each lecture and before the next. On the following Tuesday in recitation, the recitation instructor will discuss some of the problems pertaining to that week's homework assignment. (You are expected to participate and make this process interactive.) After recitation, continue to work out the problems off-line (some may take some time), then log back in and continue to submit answers (including retries) at your own pace (over several sessions if desired) until all of your questions are answered correctly, or until the **deadline at 5 PM, usually on either the Wednesday or Friday after recitation**, as indicated in the RAS. Answers to **all** problems should be entered, even those discussed in recitation.

To get started, you must set up and learn to use your computer homework account. You will not be able to log on unless your name appears on the UK registrar's official *PHY 231* class roster. *Log on from your Blackboard account*. Once on Blackboard, click WebAssign under Tools; this will automatically log you on at WebAssign at <http://webassign.net/>. (If it does not, please see the *PHY 231* web site for troubleshooting tips, which can be rather nuanced.) Then read and follow the instructions. You will be granted access gratis for a few days; before the grace period expires, you will need the access code from the *WebAssign PassCard* which comes packaged with your textbook. If you do not have one (because you bought the textbook elsewhere, without the code) you may purchase one on-line at your WebAssign home page. Once you're logged on, click on "Help" to peruse the Student Instructions, etc.. Learn enough so that you can access the first homework assignment and how to submit answers. Work at least one (easy) question and submit your answer as soon as possible so that you are familiar with the technicalities of the homework service. Make sure you familiarize yourself with the scoring procedure and the correct syntax to use when entering your answers.

Your lowest two weekly homework scores (out of a total of twelve) will be dropped before calculating the semester's homework score. This is very lenient, so don't ask me to let you submit an assignment after the deadline. You should print a copy of your scores weekly for your own records.

Our emphasis will be on an understanding of the underlying physics concepts as well as on problem-solving skills. In addition to being able to solve all of the assigned problems, you will also be expected on exams to be able to apply the concepts involved in these problems to somewhat different situations. Focus

on gaining an understanding of the physical concepts involved rather than merely learning to memorize formulas and plug in numbers. This may involve qualitative and sometimes creative answers to questions or problems. It will thus be good practice for the exams if you attempt to do additional problems from the textbook. (Numerical answers to odd-numbered problems appear in the back of the textbook.)

Recitation Grade

To encourage you to keep up with the material and to motivate you to avoid postponing attempting the homework until after recitation, most of the **recitation sessions** will include a quiz to be taken for credit. The quiz will consist of a problem similar to one of that week's homework problems, or one which you will be able to do after having read the corresponding sections of the textbook and having attended the recitation session.

Your lowest two weekly recitation quiz scores will be dropped before calculating the semester's recitation grade. This is very lenient, and is intended to offer you flexibility in case you must miss a couple of recitations due to illness. Accordingly, please do not petition your recitation instructor for an excused absence from recitation; essentially, you are offered two automatically, so save them in case you really do get sick. You should make a copy of your scores weekly for your own records.

Course Evaluations

Course evaluations are an important component of our Department's instructional program. An on-line course evaluation system was developed to allow each student ample time to evaluate the course and instructor, thus providing the Department with meaningful numerical scores and detailed commentary. The evaluation window for Fall 2012 will be open Nov. 14 – Dec. 5. To access the system during this time, simply go to **<http://pa.as.uky.edu>** and click on "Course Evaluation"; then follow the instructions. You will need to use your student ID number to log into the system, and this will also allow us to monitor who has filled out the evaluation. However, when you log-in you will be assigned a random number that will keep all your comments and scores anonymous.

Rights and Responsibilities

Please review the student code (see <http://www.uky.edu/StudentAffairs/Code/index.html>) of rights and responsibilities, especially with regard to academic integrity (good), cheating and plagiarism (bad), and decorum and civility in the classroom (good).

Resources

PHY 231 is an intensive and demanding course. Consult often with your *lecturer* and *recitation instructor*. You are encouraged to ask both of them, or *any* of the other recitation instructors, questions during their posted office hours. (See the RECITATION SECTION page for a list of office hours.)

- PHY 231 WEB SITE at <http://www.pa.uky.edu/~murthy/courses/phy231f12/>
 - Can be surfed from <http://pa.as.uky.edu/>, the Web Site of the DEPARTMENT OF PHYSICS & ASTRONOMY.
 - Contains important announcements you may have missed in class.
 - Contains an updated copy of this SYLLABUS, the READING ASSIGNMENT SCHEDULE, and the list of office hours for the instructors of each RECITATION SECTION.
 - Access lecture notes.
 - Contains links to other useful sites.
 - Is a convenient place from which to e-mail your lecturer.
- PHY 231 BULLETIN BOARD
 - Is where exam and homework solutions will be posted.
 - Is located on the second floor in the hallway closest to Rose street.
- BLACKBOARD at <https://elearning.uky.edu/>
 - Access the course.
 - Access portal to *WebAssign*.
 - Grades will be posted here.
 - The syllabus, lecture notes, and homework and exam solutions will be available here as well as at the course website.
- TEXTBOOK WEB SITE at <http://www.cengage.com/us/>
- HOMEWORK WEB SITE at <http://webassign.net/>
- RESOURCE ROOM in ML King Library, Room 310
 - Is staffed several times throughout the week with teaching assistants *who are paid to answer your questions*.
- UNIVERSITY COMPUTER ACCOUNTS
 - For assistance, contact UK INFORMATION TECHNOLOGY (<http://www.uky.edu/UKIT>).
- Fellow students

- You are encouraged to consult on in-class work and on homework problems.
- For the homework, you must enter your own answers on-line. (The questions and answers will differ numerically from those of fellow students.) **On exams and recitation quizzes, you must show only your own work, not consult with others, and not look at their papers.**