PHYSICS 302K, FIRST DAY HANDOUT
Fall Semester, 2016
MWF 2 - 3 AM Unique #55530 Pai 2.48


Text: College Physics, 9th or later editions, Volume 1, by Serway and Vuille (© 2012 or later).

Office Hrs: tba

Nature of the Course: This is the first semester of college-level physics for majors in technical careers. You should not be in this course unless you have had a very good physics course in high school. You must also be concurrently enrolled in Physics 102M, a separate course which constitutes the laboratory part of the Physics 302K coursework. In general, you should not be in this course unless you are thoroughly familiar with all aspects of algebra and trigonometry at the level of a very good high school course or a college-level remedial course.

Examinations: There will be three mid-term examinations and a comprehensive final which slightly emphasizes material from the last month of the course (see syllabus). The examinations will cover ONLY material that has been covered in class lectures, independent of what is in the textbook chapters supposedly covered, so that good class notes and regular class attendance are an absolute necessity. Each examination will have several basic conceptual questions and several numerical or algebraic problems. All will be in multiple-choice format, answered on bubble sheets, and graded by the same Quest system that handles homework. On the mid-term examinations, you can use a "crib sheet" that you have made for yourself, handwritten by you on both sides of a single 8.5 by 11 sheet of white paper, and signed with your name. Each crib sheet is for a specific exam and should not be re-used. No other reference material may be used: no books, no old homework solutions, no notes, no nothing—unless provided by the instructor at the time of the test. There will be no makeup exams. The lowest exam grade (of 3) will be dropped in computing the class averages. The mid-term exams are held during the regular class times in the regular classroom, on Sept 26, Oct 24 and Nov 21.

Homework: Homework is handled by the on-line College of Natural Sciences system called Quest. Use of Quest is not free. The homework assignments can be viewed on your web browser or smart phone and your answers submitted there as well; the homework will consist of conceptual questions and problems to be solved; most answers are in multiple-choice format; a few will require input of a specific numerical answer. You log in with your UT-EID at https://quest.cns.utexas.edu/. A link is found on our class web-page, http://tinyurl.com/phy302K. There is a continuously-updated running table of homework due dates and times on this same
course web page; and of course the due dates and times are clearly stated on the assignments themselves. There is a severe built-in penalty for guessing. “Late Homework” and “Makeup Homework” DO NOT EXIST! Doing the homework is vital! Trouble in doing the homework is a clear indication of trouble with your study habits; don’t neglect the warning! When you need help, don’t hesitate to get it, but try to work on your own and start work well before the homework is due. It is when doing the homework, on your own, that you find out what you don’t understand and what you need to study more effectively, or ask the class TAs, or coaches, or the instructor, or your tutor for more information concerning. If you don’t find this out when doing the homework, you will first find it out when you take the relevant mid-term exam... and then it is far, far too late. The homework also directly contributes as a significant percentage of your final course grade.

The Quest homework service will require a $30 charge per student for its use, which goes toward the maintenance and operation of the resource. After the 12th day of class, when you log into Quest using the link provided above, you will be asked to pay that amount via credit card on a secure payment site. You have the option to wait up to 30 days to pay while still continuing to use Quest for your assignments. If you are taking more than one course using Quest, you will not be charged more than a total of $60/semester. Quest provides mandatory instructional material for this course, just as does your textbook. For payment questions, email quest.fees@cns.utexas.edu.

Basis of Grade: Best 2 of 3 in-class quizzes, 20% each; Homework, 25%; Comprehensive Final, 25%; lecture attendance 10%.

Teaching Assistant: The TA is Kha X. Tran, khaxtran@utexas.edu He will hold regular office hours and a weekly session to provide help and advice on homework, as well as sample problems for study. Office hours: Friday from 1 pm to 2 pm in RLM 10.210. Discussion and help session: 11 am to noon every Thursday, JES A203A, the first room right across from J2 dining hall in Jester Center. You will always find the latest information about the TA on the course web page.

Laboratory: The laboratory is a separate course, 102M, and must be registered for, taken, and passed, independent of Physics 302K. You must take the lab unless this is your second time to take 302K, and you passed the lab the first time. Labs begin the week of 8/29. If you have registered for 302K but not 102M, you will be automatically dropped from 302K after one warning e-mail from the registrar.

Clickers and Attendance: In large physics classes we take attendance with a so-called iClicker, which can be purchased at the UT Co-op. There are two different kinds of clickers, the old iClicker and a newer iClicker2. Both should work in the classroom PAI 2.48. Attendance is specifically checked by a so-called in-class “Attendance clicker quiz,” a single question which you have to answer with your clicker. The standard approach is to assign full credit if the question is answered correctly, half-credit if it is answered incorrectly, and zero credit (absence) if the clicker was not used. Once you purchase a clicker you must go to “My Profile” in Quest and enter
the serial number on the back of your clicker (include leading zeroes). When you return to the Quest menu and select this course, you should find a “Clicker Box #” in the information box. You will need this number to verify that your clicker works in class. The clicker itself also flashes a green light when the classroom system confirms that it is working, during an attendance check, and projected on a screen during the check is a grid including your box number, which will also turn green when your choice is recorded. It is your responsibility to get your clicker working for the course as soon as possible, so that your attendance is correctly recorded. The “Clicker FAQ” page on Quest tells you what to do if you purchased a used clicker which has its serial number rubbed off; following the instructions you can create a new serial number. If you have a used clicker, make sure it is set to the standard classroom channel, AA. Do not come up halfway through the semester and ask how to register your clicker or ask why your attendance has not been counted.

Coaching: Coaches will be available at certain posted hours per day (typically 9 to 5) at tables near the elevators on the 5th level of the physics building, RLM Hall. Please do not ask coaches to do your homework for you! They are there to answer questions you might have, set up and solve example problems, and explain concepts that you are having trouble with. Be aware that some coaches may give you incorrect information!

Tutors: If you find yourself having trouble with understanding the material, or keeping up, it is important as soon as possible to take steps to improve your situation. Do not wait until the course is half over and you have flunked two or three exams! One thing that helps many is to hire a tutor. The physics undergraduate student office on the 5th level of RLM Hall has a list of physics graduate students available for tutoring. Rates and hours must be arranged individually between you and the tutor. If this is your second time to take 302K, i.e., if you have already had to drop the course, or took the course previously and made D or F, you should definitely get and work closely with a competent tutor from the very first day of the class. Be highly specific in explaining what you want the tutor to help you with, e.g., strategies and techniques for physics problem solving, starting from a thorough review of basic principles and concepts. Have the tutor watch as you work out examples, so that he or she can see specifically where you go off the tracks.

Other Information: For the homework and mid-term quizzes in this course you will need a good “scientific” calculator, and the knowledge of how to use it rapidly and accurately. The calculator should use “scientific” (powers of ten) notation and have keys for at least the following functions: \( \sin, \sin^{-1}, \cos, \cos^{-1}, \tan, \tan^{-1}, e^x, \ln x, \log x, 10^x, x^2, \sqrt{x}, y^x \) and \( \sqrt{y} \). Such a calculator typically costs not much more than $10, at any drugstore or grocery store. Do not waste money on a fancier calculator with fancier features, unless you really need them for some other course. Beware of, and do not waste money on, any calculator that lacks basic functions such as \( e^x \), or any of the other necessary functions listed above. During exams you cannot use any device that can be connected to the internet, such as for example the calculator app on a pocket phone (almost all pocket telephones have a scientific
calculator on them somewhere).

People who lack emotional maturity and good study habits rarely pass physics courses. Experience indicates that the following advice may fall upon deaf ears for some fraction of the class, but here goes anyway:

(1) ATTEND CLASS. Missing even one class can get you so far behind that you will never be able to catch up again. There is an avalanche effect: when you miss a class, you don’t understand anything being said in the next class you come to, and you soon stop coming to class at all... and do not pass physics. Teachers in the K-12 system tell me that if a student is regularly absent 2 or 3 times per month, that student is pretty certain to drop out eventually. The same kind of situation is seen in college classes in physics. If something makes you miss class 2 or 3 times per month, you are not likely to complete the course.

(2) TAKE THE BEST NOTES IN CLASS YOU POSSIBLY CAN. Rewriting these notes later into neater form, with all logic and math steps clearly explained by yourself, to yourself, will create a document you can study effectively with the greatest of ease: a physics text you wrote yourself!

(3) DO THE HOMEWORK ON YOUR OWN and submit it in plenty of time before the deadline. Doing the homework on your own teaches you what you need to know to do well on the tests. Working with another student or a tutor in doing the homework is almost always a bad idea, simply because you will be on your own on the mid-term tests and final, and obviously therefore you need to learn the class material on your own! Where you have trouble with homework, you have a crystal clear indication before the test that you don’t understand certain concepts. This gives you time to study, talk to coaches, tutors or the instructor, and master the concepts, so that you can do well on the midterm tests.

(4) STUDY! You are kidding yourself if you don’t put in at least 2 to 3 hours per night of study time for each hour of class lectures, NOT COUNTING TIME SPENT ON HOMEWORK. Many students do not seem to know how to study physics. It is vital to study with the very specific aim of thoroughly understanding the general concepts. What you have to learn is Physics! That is, to pass the course you have to understand the abstract ideas well enough to be able to use them in concrete situations. There is absolutely no way to “practice” solving homework problems or doing test problems. Doing sample homework or test problems is useful only in pinpointing areas where you need more study... where you need to really understand the material at a much deeper level than you currently do.

(5) See the instructor as soon as you find yourself in difficulty, so that you can get prompt help or advice. There is not much that can be done for you after you have flunked two exams. Studying and doing the homework diligently is required to pinpoint your problems before testing on the material.

UT Legal BS: (1) “The University of Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more infor-
mation, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY.”

(2) “This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.”

Ground Rules: The following rules are based on elementary courtesy and common sense, but it won’t hurt to state them here.

(1) TURN OFF AND PUT AWAY ALL personal electronic devices, including pocket phones, netbooks, lap-top computers, iPods, iPads, tablets, eBook readers, other media players, PDAs and any other kind of electronic junk. [An obvious partial exception might be made if you are using some kind of device to take notes. However, such devices are usually totally unsuitable in physics classes, because what we present is a mixture of mainly mathematical logic and only short verbal interludes.]

(2) COME TO CLASS ON TIME. It doesn’t matter whether you come to class 5 minutes late or 30 minutes late, you will have no idea whatsoever what the day’s lecture is about. Be there when it starts.

(3) READ NEWSPAPERS OR MAGAZINES AND CHAT WITH BUDDIES OUTSIDE OF CLASS. If you have a lecture-related question, ask it to the instructor during the lecture, not to the student sitting beside you.

## COURSE SYLLABUS

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<tr>
<th>Date</th>
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<td>Sept 7</td>
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Oct 7  Ch. 7 up to Sec 7.4
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Nov 21  Quiz 3 Chapters 7.5-6, 9, 13 and 14
Nov 28  Ch. 11
Nov 30  Ch. 11, 12
Dec 2   Ch. 12
Dec 5   Ch. 12

Exact due dates and times for homework assignments are summarized on the course web page, http://tinyurl.com/302kcoker, and of course on the specific Quest assignment itself. The final exam will not cover the material just covered on Quiz 3, and will slightly emphasize Chs. 10, 11 and 12 which were not covered at all on mid-term exams. This final exam will be held at a time and place to be announced about mid-semester.