

PHYSICS 302L, FIRST DAY HANDOUT

Spring Semester, 2015

MWF 11 - 12 noon Unique #96275-90 Pai 2.48

Instructor: Rory Coker, RLM 8.312, 471-5194, coker2@physics.utexas.edu.
 <http://tinyurl.com/cokermain> contains links to all Coker's course information.
 Or <http://tinyurl.com/coker303L> takes you directly to the 303L web page.

Text: *Physics for Engineers and Scientists*, Volume 2, by Ohanian and Markert (Third edition).

Office Hrs: Tuesdays and Thursdays 9 to 10 AM, and 2 to 3 PM in RLM 8.312.

Nature of the Course: This is the second semester of college-level physics for majors in engineering fields. You must also be concurrently enrolled in Physics 103N, a separate course which constitutes the laboratory part of the Physics 303L 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, and all aspects of integral and differential calculus at the introductory college level.

Examinations: There will be three mid-term examinations and a comprehensive final which slightly emphasizes material not covered on the mid-terms (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 *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. 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 evenings on Feb. 12, March 12 and April 23, in WEL 1.308. The room is reserved from 5:30 to 10 PM, the exam lasts from 7 to 10 PM. *Do not register for this course unless you can take the midterm exams at these specific times— they are shown clearly in the course catalog.*

TA Session: When you registered for 303L, you signed up for a specific TA session on Monday evening, weekly, in Jester A305A. Each session lasts for 1 hour, beginning at 6 PM. 56275 meets from 6 to 7 PM, 56280 meets from 7 to 8 PM, 56285 meets from 8 to 9 PM and 56290 meets from 9 to 10 PM. *Attendance is required* at these sessions and the roll will be taken. Do not sign up for this course unless you are able to attend the TA session corresponding to the unique number you registered for!

Homework: Homework is handled by the on-line College of Natural Sciences system called Quest. 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/coker303L>. 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 TA, 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 charge of roughly \$25 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 \$50/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 A. M. Jensch, e-mail alex.jentsch@utexas.edu and his office hours are RLM 10.310, Wed 3-4 and Thur 10 - 11. He teaches the weekly Monday evening TA sessions and is available by e-mail to answer questions about homework.

Laboratory: The laboratory is a separate course, 103N, and must be registered for, taken, and passed, independent of Physics 303L. You must take the lab unless this is your second time to take 303L, and you passed the lab the first time. Labs normally begin the week after classes begin, but check with your lab TA to be sure. If you have registered for 302L but not 103N, you will be automatically dropped from 303L 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 8 to 6) 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 303L, 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 $\sqrt[x]{y}$. 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 (and note that 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.

(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. Make sure you get all the class handouts. Most of them consist of *solved sample problems*.

(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 information, 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.”

COURSE SYLLABUS

Date	Topic of lecture	Midterm Exam
Jan 21	Ch. 22	
Jan 23	Ch. 22	
Jan 26	Ch. 22	
Jan 28	Ch. 23	
Jan 30	Ch. 23	
Feb 4	Ch. 23	
Feb 6	Ch. 24	
Feb 9	Ch. 24	
Feb 11	Ch. 24	
Feb 12	Quiz 1	Chs. 22, 23
Feb 13	Ch. 25	
Feb 16	Ch. 25	
Feb 18	Ch. 25	
Feb 20	Ch. 26,6	
Feb 23	Ch. 26	
Feb 25	Ch. 26	
Feb 27	Ch. 27	
Mar 2	Ch. 27	
Mar 4	Ch. 27	
Mar 6	Ch. 28	
Mar 9	Ch. 28	
Mar 11	Ch. 28	
Mar 12	Quiz 2	Chs. 24-27
Mar 13	Ch. 29	
Mar 23	Ch. 29	
Mar 25	Ch. 29	
Mar 27	Ch. 30	
Mar 30	Ch. 30	
April 1	Ch. 30	
April 3	Ch. 31	
April 6	Ch. 31	

April 8	Ch. 31	
April 10	Ch. 32	
April 13	Ch. 32	
April 15	Ch. 32	
April 17	Ch. 33	
April 20	Ch. 33	
April 22	Ch. 33	
April 23	Quiz 3	Chs. 28-32
April 24	Ch. 34	
April 27	Ch. 34	
April 29	Ch. 34	
May 1	Ch. 35	
May 4	Ch. 35	
May 6	Ch. 35	
May 8	The Big Picture	

Exact due dates and times for homework assignments are summarized on the course web page, <http://tinyurl.com/coker303L>, and of course on the specific Quest assignment itself. The final exam will be cumulative, but will slightly emphasize material which was not covered on mid-term exams. This final exam will be held on Wednesday, May 13, 9 to 12 Noon, at a place to be announced. **Do not sign up for this course if you have another final scheduled at the same day and time.**