Lectures: David Zych
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CLASS MEETINGS

This course has two one-and-a-half-hour lectures (MW 10-11:30) and two one-hour recitations (TR 2-3) each week. Lectures and recitations will be held in the Concourse classroom (16-160).

In addition, our undergraduate TAs will hold physics tutorial sessions in the Concourse lounge to answer your questions and help you wrestle with the problem sets. Check your email and the weekly Concourse agenda to find out when tutoring will be available.

HANDOUTS

Course handouts will be distributed in class or placed in your folders in the Concourse lounge. If you need extra copies of anything, please speak to Cheryl. We will also do our best to make the handouts available through the course website, which is located at

`http://web.mit.edu/concourse/8.01/`

TEXTBOOKS

This course uses two texts, but **you do not need to buy both of them**. Rather, we recommend that you look carefully at each text and choose the one whose style appeals to you.

Douglas C. Giancoli, Physics for Scientists and Engineers: Volume I (3^{rd} edition). Prentice Hall, 2000. (ISBN 0-13-021518-X)

Giancoli is a text often used by mainstream 8.01. It provides thorough introductions to the basic concepts, and contains many straightforward examples to help you develop your problem-solving skills and physical intuition. If you are concerned about your physics background, or if you are in doubt about which book to choose, we recommend that you work with Giancoli.

Daniel Kleppner and Robert J. Kolenkow, An Introduction to Mechanics. McGraw-Hill, 1973. (ISBN 0-07-035048-5)

K&K is the text used by mainstream 8.012. It is an outstanding book for students with a strong physics background; it is more formal and mathematical than Giancoli, and its presentations are concise and extremely elegant. However, its examples are generally more advanced than those in Giancoli, and some of the basic introductory material is either absent or presented very briefly. Students who wish to take advantage of the 8.012 credit option must use K&K.

PROBLEM SETS

There will be eight problem sets, with a range of problems drawn from both textbooks and from other sources. Completed problem sets should be turned in to the mail slot on the door of Cheryl's office (16-135) by 2pm on the due date. **Late problem sets will not be accepted.**

You are encouraged to be sensible about doing the problem sets. We don't expect you to be able to solve all of the problems by yourself the first time you see them; some of them will be quite challenging, and you should feel free to collaborate with other students and to ask the tutors for help when you get stuck. However, it is critical that you maintain a sense of balance. There is no point in working so completely with others that you end up simply copying what others have done without understanding it and learning it yourself; you won't be able to pass the exams if you do that. On the other hand, there is also no point in frustrating yourself by sitting in your room and banging your head against the wall on a problem that seems thoroughly intractable. The bottom line is that you are a grown-up and you should use your judgment.

Some problem sets may include optional problems that are harder or more complex than the required problems; these are included primarily for the benefit of students who intend to take advantage of the 8.012 credit option, but we encourage everyone to try them. Optional problems will be graded for "pseudo-extra credit" that can make up for any points you may have lost on other problem set problems but cannot increase your total problem set score past 100%.

EXAMS AND GRADING

There will be four in-class exams (given during regular lecture periods), worth 100 points each, plus an "optional" final exam. The problem set grades are averaged and scaled to be worth a total of 200 points. If by the end of the semester you have accumulated at least 420 points (out of a possible 600), you may choose to pass the course without taking the final exam. In this case, you can calculate your grade using the following scale:

$$[A \geq 520,\ B \geq 460,\ C \geq 420]$$

The optional final exam is worth 300 points. If you take the final, you can calculate your grade using the following scale (out of a possible 900 points):

$$[A \geq 720,\ B \geq 630,\ C \geq 540,\ D \geq 450]$$

Note that you need a grade of C or better (that's 420 points without the final, or 540 points including the final) to pass the course and fulfill this half of your freshman physics requirement.

You **must** take the final exam if you have accumulated fewer than 420 points, or if you have missed any of the in-class exams (see below). However, you may choose to take the final exam even if these conditions do not apply to you; as you can see from the two grading scales, a good score on the final exam can significantly improve your overall grade for the course.

Finally, we reserve the right to adjust these grading scales in your favor at the end of the semester if we feel that the exams have been abnormally difficult.

ABSENCES FROM EXAMS

We are not able to provide make-up tests for missed exams. If you are excused from an exam (note that acceptable excuses are very rare and will in general be granted only for verifiable and significant medical reasons or matters of family or personal emergency), the missed exam will simply not count toward your grade; your scores for the remaining three exams will be averaged and scaled to be worth 400 points instead of 300. However, any student who has missed one of the in-class exams will be required to take the final exam (even if he or she has accumulated 420 points or more).

You will not be excused from an exam for non-emergency travel, oversleeping, a doctor's appointment, etc. **An unexcused missed exam will result in a grade of zero for that exam**.

Institute rules govern absences from the final exam.

REGRADE REQUESTS

We do our best to ensure that your work in this course is always graded fairly and appropriately, but we acknowledge that we are human and may occasionally make a mistake. If you feel that your solution to a problem set or exam problem was not given as many points as it deserved, you may request that the problem be regraded; however, you must submit your request **within one week of the day the exam or problem set is returned to you**.

Be aware that regrades take up substantial time and energy on my part and the part of the staff. I do not mind doing this when the reason for the request is a sincere belief on the student's part that something was graded inappropriately, but merely hoping that something might be worth a point or two more is not good enough; you must be able to give me a solid, convincing argument that your solution was clearly not given as many points as it deserved.

Regrade requests for problem set problems should first be submitted to the person who originally graded the problem set (usually a tutor). If you are not able to resolve the issue to your satisfaction by talking to the original grader, you may then come to me.

Regrade requests for exam problems should be submitted directly to me.

8.012 CREDIT

If by the end of the semester you have accumulated at least 520 points (out of 600) and are interested in receiving credit for 8.012 instead of 8.01, you can do so by taking and passing the mainstream 8.012 final examination. This will require some extra preparation, and is not recommended for the faint of heart.

THE PROSE REQUIREMENT

Your solutions to the problems on problem sets and exams are to be written up in coherent English, with concise prose to explain the logic of your argument wherever necessary. Your

goal is not merely to "get the answer", but rather to **demonstrate that you understand how to solve the problem**. To put it another way, someone who knows the material but has not seen this particular problem before should be able to read your solution and easily understand what you did and why.

HOW TO SUCCEED IN CONCOURSE PHYSICS

Come to class. Be an active participant, and ask questions if you don't understand.

Work hard on the problem sets, and make sure you really understand them. Ask yourself: "if this problem showed up on the next exam, would I get full credit for it?" Study until the answer is yes. As the exam nears, review your problem sets again, and make sure the answer is still yes. Do this at least a day ahead of time, so that you can **get enough sleep** the night before the exam.

Seek help early, and often, if you're worried that things aren't going well. Don't panic, and don't wait until you're in the middle of a full-fledged disaster to come talk to us.

Have **FUN!** Even if you don't think you'll ever need this material again, and you've never liked it, and you plan to major in basket-weaving (Course 21B?)… just *try* approaching physics with the idea that it *might* be fun. It can't hurt, and you just might be pleasantly surprised!