530.104 – Introduction to Mechanics II  
Spring 2010

Lectures MW 1:30-2:30, Shaffer 304
Problem session F 2-3, Latrobe 107

Instructor  Prof. Lester K. Su  
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Office hours  M 4-5, F 9-10, lunch Friday  
also come by whenever my door’s open

TAs  Guangli Hu, Latrobe 231, huguangli@jhu.edu  
Office hours: T 3-4

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Office hours: M 11-12

Web page  http://imaging.me.jhu.edu/courses104.html (a link to the WileyPLUS site will be on this page)

Text  Halliday, Resnick, and Walker, Fundamentals of Physics, 8th ed., Wiley (same book as for 530.103 last semester) - you will also need WileyPLUS access

Grading  
Homework 30%
Midterms (2) 40%
Final 30%

Goals  This course is the continuation of 530.103, Introduction to Mechanics I, which you will have taken last semester. This semester will we cover the motion of solid bodies (as opposed to point masses), rotation, gravitation, equilibrium, and waves. Since we’re mechanical engineers, we’ll also touch on some aspects of thermodynamics and fluid mechanics, which you wouldn’t ordinarily get in an introductory physics class.

The overriding aim of the 530.103/104 sequence is for you to gain an intuitive physical sense that will allow you to approach unfamiliar problems with a solid conceptual foundation. We want to avoid the traps of trying to memorize tons of equations and/or attempting to solve problems by first embarking on a haphazard hunt for the right formula. Instead, we will strive to develop a level of fluency with (a) physical arguments, (b) the use of those arguments to set up problems mathematically, and finally (c) the math tools necessary to solve the problems, that will allow you to derive formulas and find solutions instead of having to cram your brain with seemingly unrelated and unsystematic formulas.
Course philosophy – Mechanics II – Su

Office hours. Besides the office hours posted, any time my door is open you should feel free to stop in and ask questions. Also, on Fridays anyone is welcome to join my research group and me for lunch (meet in my office at noon – we go somewhere on or near campus).

Course text and lecture notes. The material covered in the course will be primarily drawn from the course text by Halliday/Resnick/Walker. Occasionally I may choose either to cover material not included in the text, or to take a different approach to material that is covered in the text; in those instances I will usually distribute supplemental lecture notes. However, you are responsible for any material that I cover in class whether or not it’s in the text or any printed notes.

Homework. Written homework will always be due at 5 pm in my office on the given date, which will generally be on Tuesdays. I don’t make homework due in class because I don’t like people working on homework in class. So don’t work on homework in class.

Any written assignments turned in late will be automatically subject to 50% deductions, unless prior permission has been requested and granted. Such permission will only be given if there is an unavoidable conflict. “I didn’t realize it was due today” does not constitute an unavoidable conflict. No credit will be given for homework submitted after solutions have been posted on the website or distributed in class. Also, I will not accept any written work that is not stapled together (paper clips are not sufficient), or that still has the annoying notebook perforation residue attached.

I will post WileyPLUS problems during the semester, but we will use these for exam review only.

Exams. Exams will be open book, open notes, to avoid having them turn into memorization contests. They will consist of some short answer questions to test intuition, and longer, more mathematical, problems more reminiscent of the homework. My philosophy on exams is that I want them to rank accurately your understanding of the material. This requires that my grade distributions be wide and that the average scores be relatively low. I’m not actually trying to demoralize people with hard exams.

Grading. We will strive to make the grading as transparent, consistent and fair as possible. For all written work we will distribute solutions and point distributions that make clear why we deducted any points. If you ever suspect that we’ve made a mistake on the grading, you are encouraged to appeal to whichever of us graded that particular problem. In exchange for our extreme concern for grading fairness, we expect you to conform to high standards of personal integrity. Which brings us to the matter of academic ethics....
Course philosophy – Mechanics II – Su

Academic ethics. The following is our mandatory syllabus insert on ethics.

Cheating is wrong. Cheating hurts our community by undermining academic integrity, creating mistrust, and fostering unfair competition. The university will punish cheaters with failure on an assignment, failure in a course, permanent transcript notation, suspension, and/or expulsion. Offenses may be reported to medical, law or other professional or graduate schools when a cheater applies.

Violations can include cheating on exams, plagiarism, reuse of assignments without permission, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. Ignorance of these rules is not an excuse.

On every exam, you will sign the following pledge: "I agree to complete this exam without unauthorized assistance from any person, materials or device. [Signed and dated]"

For more information, see the guide on "Academic Ethics for Undergraduates" and the Ethics Board web site (http://ethics.jhu.edu).

On a more personal note, I detest cheating in any endeavor with every fiber of my being. I personally grade one problem on each assignment, so I can get an idea of how you are all doing, but it will also be very obvious to me when people are cheating. You are encouraged to work together on assignments but what you submit must be your own work. I don’t want to be put in the position of adjudicating any ethics incidents, so any time I suspect that cheating is taking place, I will first notify the Associate Dean of Students, Dorothy Sheppard (dsheppard@jhu.edu), that you are under suspicion, then we will adhere to the following procedure:

• If Dean Sheppard informs me that you have not previously been found guilty of an ethics violation at JHU (either by confessing, or in a hearing of the Undergraduate Academic Ethics Board), you have two options:

  1. You can confess to a violation, in which case you will be given the standard sanction, which is a zero on the assignment in question, plus a partial-grade deduction after the course grades are computed (e.g. A to A-, or B- to C+, etc.). I will also inform Dean Sheppard that you have confessed to a violation. She will file a report of the incident and there will be no further punishment.

  2. You can maintain your innocence and request that Dean Sheppard convene the Undergraduate Academic Ethics Board for a hearing on your case. This could result in your exoneration, or in a more severe punishment than the standard sanction above. Be aware that the Ethics Board can impose any punishment it chooses, including notations on your transcript, all the way up to expulsion from the University.

• If you have previously been found guilty of a violation in this class or any other, your case will automatically, by JHU policy, be referred to the Ethics Board.
I do want to make clear that I’m aware that the vast majority of students are honest, and the last thing I want to do is discourage students from working together. After all, working together on assignments is one of the most effective ways to learn, both through learning from and explaining things to others. The ethics rules are in place to ensure that the playing field is level for all students. The following examples will hopefully help explain the distinction between what constitutes acceptable cooperation and what’s not allowable.

**Student F:** Wow, that homework due today was im-possible! I spent, like, days on problem 3 and couldn’t even figure out how to start it!

**Student M:** Totally! My brainiac roommate figured it out though. You know, the super-dweeby guy with the huge laptop? He like left his homework just sitting on our living room table last night, so I copied it. Hello, perfect score!

**Student F:** Are you sure that’s cool? You know, like, copying?

**Student M:** What’s the problem? The homework was like right out there. It can’t be cheating if he wasn’t even trying to hide it, right?

- Yes, it's still cheating, since student M is submitting work that isn’t his. Plus the super-dweeby roommate is liable too for facilitating plagiarism.

**Ross:** I’m so lost. What the heck does this stuff on problem 1 mean? I mean, it asks “How are velocity and acceleration related”... how the ***** am I supposed to know?

**Rachel:** Dude, have you like even cracked the book open? That stuff is covered in section 1.1.

**Ross:** I’ll check it out then. And I don’t appreciate your tone.

- This interaction is totally acceptable. It's perfectly fine for Rachel to point Ross in the right direction.

**Ron:** Well, since there’s two of us, let’s each do half of the homework problems. I’ll do one and two and you can do three and four. With the time we save we can play some Xbox later.

**George:** Are you sure this is OK? Seems fishy to me. Plus you suck at Xbox.

**Ron:** What’s the problem? It’s not like we’re copying the entire assignment. Two problems each is still a lot of work.

- This is clearly wrong. Copying is copying even if it’s only part of an assignment.

**Diane (just before class):** Hey, can you help me? I lost my calculator, so I’ve got all the problems worked out but I couldn’t get the numerical answers. What’s the answer for problem 1?

**Sam:** Let’s see (flips through assignment)... I got 2.16542.

**Diane:** (Writing) Two point one six five four two...what about number 2?

**Sam:** For that one... I got 16.0.

**Diane:** (Writing) Sixteen point oh...great, got it, thanks. Helping out a friend totally rules!

- Helping out a friend this way does not rule, totally or partially. As minor as this offense seems, Diane is still submitting Sam’s work as her own when she gets the numerical answer and copies it in this way.