Physics 225
Fundamental Physics: Mechanics
Spring 2014

Instructor
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Office McCarthy Hall 601B
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Office hours Tuesdays, 2:00 PM – 3:00 PM
Thursdays, 2:00 PM – 4:00 PM
or by appointment

Supplemental Instruction (SI) Leader
Omar Yousuf
Email omaryousuf@cus.fullerton.edu

Course information
Meetings McCarthy Hall room 513
Tuesdays & Thursdays, 11:30 AM – 12:45 PM

SI study sessions McCarthy Hall 629
Tuesdays & Thursdays, 10:00AM – 11:15AM

Required materials • There is no required textbook for the course. However, you may wish to use the optional textbook: “Physics For Scientists and Engineers” by Paul A. Tipler and Gene Mosca, Vol. 1, 6th edition.

• A login for http://www.smartphysics.com to allow access to the homework, pre-lecture videos, and other materials (see below). It is your responsibility to purchase access to the online course materials. Go to www.smartphysics.com and click on “Students” to create an account. Then, click the “Enrollments” tab, and click the “[Join a Course]” link. Enter code “GL_225_S14” to access our course materials. Finally, you can click “Purchase”. The cost for access to the course materials is $30.
**Required materials (cnt’d)**

- A login for [http://piazza.com](http://piazza.com) to allow you to access the course web page and question & answer feed (see below).
- An “ABCD” voting card (provided on the first day of class) for voting on multiple choice questions in class.

**Web page**


You will need to log into piazza.com and join the California State University, Fullerton PHYS 225 course page. This page will have handouts and announcements. There is also a “Q & A” panel (see below). *It is your responsibility to visit the course web page and select a password, so that you can receive announcements and other important information about the course.*

You can log into the course for the first time by visiting [https://piazza.com/fullerton/spring2014/phys225](https://piazza.com/fullerton/spring2014/phys225).

**Exam dates**

- Midterm 0-6: February 18, 11:30AM-12:45PM
- Midterm 7-11: March 11, 11:30AM-12:45PM
- Midterm 12-18: April 15, 11:30AM-12:45PM
- **Final 19-26: May 15, 12:00PM-1:50PM**

**Course objectives, learning goals, and prerequisites**

In this course, you will learn about some topics in fundamental physics. Physics is a way of learning about the world through measurements. In this course, we will primarily focus on the branch of physics called *mechanics*, which is concerned with motion: how and why things move. You will learn physical concepts, how these fundamental concepts apply to real-world situations, and how to use the physical concepts you will learn to solve problems. You will also gain hands-on understanding of the physical concepts you learn in the corequisite lab course, Physics 225L.

In this course, we won’t just use mathematics to talk about physical ideas—many of the ideas themselves are mathematical. So to master these concepts (and thus to succeed in this course), you will need to be familiar with some mathematics, especially algebra, trigonometry, and calculus. This is why, to take this course, you must have successfully completed MATH 150a “Calculus.”

If it’s been a while since you’ve last done any algebra, trigonometry, or calculus, you can still succeed in this course; however, I strongly suggest that you start practicing
and reviewing the mathematics as soon as you can. One good way to do this is to work through practice problems and solutions. See also “Getting Help” below.

**Study time**

To succeed in this course, you should expect to spend about 6-12 hours outside of class each week.

**Grading policy**

*Grading scheme:* Your grade will be based on class participation, weekly homework, 3 midterm exams, and a final exam.

All grades in this course are based on percentages, not on an absolute number of points. The percentage of the maximum possible points that you earn will be weighted as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
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<tbody>
<tr>
<td>Class participation</td>
<td>5%</td>
</tr>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Prelecture and checkpoints</td>
<td>10%</td>
</tr>
<tr>
<td>Exam (each)</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

Of the 4 exams (3 midterm exams, 1 final exam), only 3 will be counted in your final grade (see “Make-up policy” below for details).

Your letter grade will be assigned using the following *approximate* scale:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90% - 100%</td>
<td>A</td>
</tr>
<tr>
<td>80% - 89%</td>
<td>B</td>
</tr>
<tr>
<td>70% - 79%</td>
<td>C</td>
</tr>
<tr>
<td>60% - 69%</td>
<td>D</td>
</tr>
<tr>
<td>&lt; 60%</td>
<td>F</td>
</tr>
</tbody>
</table>

This course will not award +/- grades. *This course will not be graded on a curve,* so your grade depends only on the percentage of the total possible points that you earn—not on anyone else’s grade. So it is in your best interest to help each other as you learn physics.

*Make-up policy:* Prelecture questions, checkpoints, and homework will be submitted electronically using SmartPhysics.com on the assigned due date—see the calendar on SmartPhysics.com for precise due dates. (Homework is typically due at 11:59PM on
Thursdays, while prelectures and checkpoints are typically due at the start of class, 11:30AM.) Late homework, prelecture questions, and checkpoints will not be accepted under any circumstances, there will be no make-up class participation under any circumstances, and no make-up exams will be offered under any circumstances.

However, your lowest 2 homework assignments will not be counted toward your final grade, the first missed checkpoint will not count against your final grade, and the first missed pre-lecture will not count against your final grade.

Also, as long as you take the final exam, your lowest exam grade (midterm or final) will not count toward your final grade. Instead, your best 3 exam scores will each be worth 25% of your final grade.

If you do not take the final exam for any reason, then the final exam (with a grade of F [0%]) and your best 2 exam scores will each be worth 25% of your final grade. In this scenario, it is highly likely that you will fail the course, so please do not miss the final exam.

Attendance policy and class participation: Attendance will not be taken.

However, class-participation credit will be awarded for completing exercises given during our class meetings (typically worth 1 point per class).

To get credit for class participation, you must send your in-class work by email to phys225_sec04_sp2014@yahoo.com no later than 11:59PM the day of the class where it was assigned. You must send from your official CSUF email. If your work was done on paper, you can send your answer as a JPG or PDF file (by taking a picture on your phone, or by scanning it). Sometimes, I will pose a question where you can send your answer as a plain-text email.

Exams: Each exam will be based on what we have covered in class and on the homework, pre-lectures, and checkpoints. They will include both conceptual and quantitative questions.

Exams will be primarily multiple choice and will be closed-book and closed-note. I will provide a formula sheet and the scantron form, but you will need to bring #2 pencils, an eraser, and a scientific calculator. (Check that your calculator works before coming to the exam!) You will not be permitted to use any other aids during the exams.

Because the material itself is cumulative, each exam will be cumulative, meaning I could potentially ask you about anything we have covered in class up to that point. However, the exams will typically emphasize the material introduced since the most recent exam. The units emphasized on the exam are indicated by a numeric range, e.g. Midterm 0-6 covers units 0-6 (with “Unit 0” being the first day of class).

Prelecture questions: There is no assigned book for the course! Instead, you will watch pre-lecture videos at SmartPhysics.com and then answer some questions. You will get
full credit for completing a pre-lecture assignment; incorrect responses will not count against you. However, you must eventually get the correct answer to continue to the next pre-lecture slide. *Prelectures are due 9AM before each class. That will give me time to take your responses into account when planning my lecture later that morning.*

**Checkpoints:** After completing each prelecture, you will gain access to checkpoints on SmartPhysics.com. Checkpoints are not graded for correctness, but you must make a good faith effort to complete them. *Checkpoints are due 9AM before each class. That will give me time to take your responses into account when planning my lecture later that morning.*

**Homework:** Homework assignments will be on SmartPhysics. Homework must be submitted by 11:59PM on the due date to receive credit.

**Extra credit:** If you contribute at least twice to our piazza.com forum (see “piazza.com” in “Where to get help” below), either by asking a question or contributing to a collaborative “student answer” to a question, you will earn +0.5% extra credit added to your final grade. If you earn this extra credit and are among the top 10 student contributors (askers or answerers), then you will earn an additional +1% extra-credit added to your final grade.

**Questions about grades:** If you have any questions about your grade, please come to my office (during office hours or by appointment), and I would be happy to discuss your grade with you in person. Please note that I do not discuss grades electronically (by email or through piazza).

**Academic Integrity:** The CSUF University Policy Statement on Academic Dishonesty (UPS 300.021, available online at [http://www.fullerton.edu/senate/documents/PDF/300/UPS300-021.pdf](http://www.fullerton.edu/senate/documents/PDF/300/UPS300-021.pdf)), explains that you are accountable for the honesty and integrity of your work. You are responsible for knowing your responsibilities as set out in this policy statement.

You may also find the document “Titan Integrity: Guide to Understanding and Avoiding Academic Dishonesty” (available online at [http://www.fullerton.edu/deanofstudents/judicial/Titan%20Integrity.pdf](http://www.fullerton.edu/deanofstudents/judicial/Titan%20Integrity.pdf)) helpful in learning your responsibilities as a student.

In this course, you are encouraged to discuss the course material (in person or through the course Q&A panel on piazza.com). You may look at the homework assignment and discuss it; however, you are not permitted to simply give or receive answers without talking it over to make sure you both understand the “why” behind the answer.
All exams will be closed-book, closed-note. You may not look at anyone else’s exam or scantron form, and you may not communicate with anyone besides the course instructor or exam proctor until you have turned your exam in. You may not refer to any unauthorized material during an exam. You must not receive any help from another student when completing an exam, and no one else may complete an exam and turn it in using your name. You may not use any calculator beyond a scientific calculator; graphic calculators, calculators that can be programmed or that can store text files, and calculators with a qwerty keyboard are prohibited during exams.

If you are caught engaging in academic dishonesty on any assignment or exam in this course, you will receive a grade of F (0%) for that work. You will also be reported to Dr. Jim Feagin, chair of the Physics Department, and to Judicial Affairs in the Dean of Students Office, where the incident will be recorded on your permanent record.

Where to get help
There is no such thing as a dumb question! The material in this course will often be challenging and counterintuitive—and new ideas will be built on earlier ideas. If you are unsure about something or are just curious, please ask! It’s much better to ask for help right away than to realize you’re in trouble right before an exam. Here are some resources available to you:

- Questions in class: Please feel free to ask questions during our class meetings; however, because of time constraints, I might not be able to fully answer your question until afterward or during office hours.

- piazza.com online Q&A: Discussion outside of class, for questions about the course content and also logistics (due dates, etc.) will take place on our piazza.com forum. Our course page (containing the syllabus, handouts, lecture slides, etc.) is here. There is also a “Q&A” (“Question and Answer”) panel where you can post any questions you might have about the material. You can suggest an answer or edit an answer that has already been suggested by other students (see “Extra Credit” above).

I will regularly review this page and will post answers (or endorse student-provided answers as correct). When I taught this class in Fall 2013, the overall average response time on our forum was about 1 hour.

- For questions that you would like to ask me in private: you can send me a private message from piazza.com, and alternatively you can contact me by email or phone, though I may not respond as quickly by phone or email. Please note that I do not discuss grades over email or piazza.com. If you send me email, please put “PHYS 225” in the subject line and sign your full name.
• For questions you would like to ask me in person, or if you would like to discuss your grade, I will hold 3 regular office hours during the week, and will also be available by appointment.

• Supplemental Instruction: Omar Yousuf is a Supplemental Instruction (SI) Leader. Omar has taken this course recently and will be attending lectures. Please feel free to contact him if you have questions about any material covered in the course; Omar will be leading an SI section (time & place listed on page 1 of the syllabus) where he and students who choose to attend will work through example problems similar to those appearing on the homework and the exams.

• Tutoring: The University Learning Center (Pollak Library, 2nd Floor, http://www.fullerton.edu/toolbox/tutoringcenters/universitylearningcenter.html) offers tutoring for PHYS 225. I encourage you to make an appointment to see them if you would like additional assistance in the course. You might also wish to visit the math tutoring center (http://www.fullerton.edu/toolbox/tutoringcenters/mathtutoringcenter.html) if you need assistance with the math used in this course.

• Math review: If you would like to review some math, I recommend you check out the Khan Academy videos, and make sure you can work the example problems in the videos on your own:
  http://www.khanacademy.org/math/algebra
(evenly “Systems of equations and inequalities”)
  http://www.khanacademy.org/math/trigonometry
(evenly “Functions & their graphs”, “Exponential and logarithmic func.”, & “Basic trig”)
  http://www.khanacademy.org/math/calculus
(evenly “Taking derivatives” and “Indefinite and definite integrals”)

Disability statement
If you have any documented special needs, you have the right to accommodation through the Disabled Student Service Office (University Hall 101, (657) 278-3117, http://www.fullerton.edu/DSS/). Please inform me as soon as possible if you have a special need so that arrangements can be made in advance; arrangements cannot be made retroactively. (E.g., accommodations for an exam cannot be arranged after the scheduled exam date.)
General education requirements met by course
This course, together with its corequisite PHYS 225L, meets General Education requirement B1, “Scientific Inquiry and Quantitative Reasoning: Physical Science.”

Classroom safety & emergency information
Information on what to do if a campus emergency occurs is available at http://prepare.fullerton.edu/campuspreparedness/Default.asp.

- Important phone numbers in case of emergency:
  - Emergency call: 911
  - Non-emergency call to campus police: (657) 278-2515
  - 24-hour recorded emergency information: (657) 278-4444

Classroom management
You may use electronic devices during class meetings only for note taking or for other uses directly tied to the class. Please silence your mobile devices, and please do not use electronic devices for email, texting, social networking, gaming, etc., during class. If you receive a call that absolutely cannot wait, please quietly leave the class before taking the call; please do not talk on mobile phones in class.

Course meetings will start precisely at 11:30 AM. Please make every effort to arrive on time. In case you are ever unavoidably late, I suggest that you make arrangements with a classmate for copying class notes, etc.

Please do not eat, drink, make disruptive or distracting noise (such as talking or whispering off-topic), or do anything else that would make it harder for you or your classmates to learn during our course meetings.

Titanium
I will periodically post grades to Titanium for everything not included in the grade reported at smartphysics.com. To compute your final grade, see “Grading policy” above.

Course schedule
The course schedule is listed in a separate document, which will be posted to the piazza.com course page and will be updated throughout the semester.