Foundation of Physics
PHYS 252 - Winter 2016 - CRN24979
Updated: 3 January 2016 (this document subject to change)

Overview
In Winter term, we will apply the fundamentals of mechanics learned in Fall to the
topics of fluids, gravity, oscillations, and various wave phenomena. We will finish the
quarter with an introduction to geometric optics. These topics are a bit more
‘phenomenological’ than the foundational concepts covered in Fall, but we will use
these concepts of Force, Momentum, and Energy to explore some specific phenomena of
nature. The primary goal of this course is to develop the skills needed to solve
quantitative, non-trivial problems related to these physical phenomena.

| Instructor           | Prof. Eric Torrence       | Willamette 418, 346-4618 |
|                     | torrence@uoregon.edu      | Office Hours: Fri 2-4     |
|                     |                            | or by appointment         |
| Teaching Assistants | Maira Amezuca              | Office Hours: Tue 5-6PM   |
|                     | mamezcua@uoregon.edu       | Help Center: Mon 10AM (Will. 147) |
|                     | Jason Boucher              | Office Hours: Mon 4-5PM   |
|                     | jboucher@uoregon.edu       | Help Center: Wed. 9AM (Will. 147) |
|                     | Paul Schale                | Office Hours: Wed 11-12AM (Will. 315) |
|                     | pschale@uoregon.edu        | Help Center: Wed. 10AM (Will. 147) |
| Lecture             | MWF 9:00 - 9:50 in Willamette 100 | Please note the Participation Grading section below. |
| Tutorials           | Tutorial sections are held on Tuesday in Willamette 112. | Please note the Participation Grading section below. |
| Labs                | PHYS 290 is recommended, but not required for this course. |
| Website             | All communication will be made through the course website on Canvas | https://canvas.uoregon.edu/courses/52593 |
| Textbook            | University Physics with Modern Physics, 14th Ed., by Young and Freedman | Two copies are on reserve in the Science Library |
| Mastering Physics   | All students will need MasteringPhysics access. This came with your textbook if you bought it through the UO bookstore, or can be purchased separately. A 2-week trial is available if you are uncertain about your attendance in this course. | Our course identifier is PHYS252W16TORRENCE. |
| Pre/Co Req           | MATH 252 or equivalent |

Participation Grading

Attendance: Students are expected to attend all lectures and tutorials. Absence may result in points being deducted from the Participation Grading.

Homework: Students are expected to complete all homework assignments on time. Late homework will not be accepted.

Lab Report: Students are expected to submit all lab reports on time. Late lab reports will not be accepted.

Class Participation: Students are expected to actively participate in class discussions. Participation will be considered in the Participation Grading.

Final Exam: The final exam will be comprehensive and cover all material covered in the course. It will be administered on the last day of the term.
Schedule

The daily course schedule is provided as a separate document to facilitate keeping it up to date. All assignments will be posted on Canvas.

Grading

Course grades will be based on the following categories. Please see below for more details on course expectations and how assignments will be graded.

- HW - weekly written homework assignments - 15%
- MP - weekly online (MasteringPhysics) homework assignments - 10%
- T - tutorial participation - 10%
- P - lecture participation - 5%
- MT - two midterm exams - 15% each
- F - one final exam - 30%

The overall course evaluation will be graded on a curve to account for variations in the difficulty of exams. Historically, scores above 85-90% have earned an A, scores above ~75% have earned a B, scores above ~60% have earned a C, while scores below ~50% have failed, however the exact ranges for this course will be determined after the final exam. Grade reports will be provided after each midterm to indicate your achievement at that point.

Written Homework

The key goal of this course is for you to become proficient at solving physics problems, and homework is your primary means to practice this skill. Written homework will be assigned from the Exercises at the end of each chapter and will typically be assigned on Wednesday and due the following Wednesday at 6PM. To receive full credit you must show your work. Written homework problems will generally try to synthesize several concepts together, and your approach and thinking about the problem is more important than the final answer. We can not properly assess your reasoning without seeing your work.

Written homework should be turned in to the PHYS 252 box in the basement of Willamette Hall. Late homework will be accepted with a 25% penalty until noon the following day, when homework solutions will be posted to Canvas. Turning in homework even later is possible, but a 50% reduction of the assignment value will be applied. If your answers are clearly copied from the solutions, no credit will be given. Turning in late homework is better than not doing the homework at all, and practicing on the homework problems will clearly help you on the exams, but staying on top of the assignments and getting your work done on time is a key to achieving a good grade in this course.
Due to the size of this class, we may not grade every single homework problem in detail, and the graders will likely not make extensive corrections to your work on your homework assignment. It is your responsibility to go over your graded homework assignment and compare your answers with the posted solutions. Grades will be posted to Canvas as soon as they are ready. Please check your Canvas account regularly and report any discrepancies or possible errors as soon as you notice them.

You are encouraged to find help in doing your homework, including from other students, your TAs, the physics department drop-in help center, and the instructor during office hours. Discussing homework with other students is a very good way to discover conceptual difficulties and can be a powerful tool for improving your understanding of the subject. To facilitate students who wish to work together, we will have scheduled times in the physics drop-in center (Willamette 147) when your TAs will be present to help people with homework issues. The physics reading room in the atrium of Willamette hall is also available for students wishing to work together.

Please note that while discussing homework problems with other students is encouraged, copying the work of others and claiming it as your own is academic misconduct and will be treated as such. This includes copying solutions to problems found online. Since most of your course performance is determined by exam scores, and these exams will test very similar material as covered by the homework, there is very little benefit and considerable risk to not fully engaging with the homework material.

For students looking for more intensive help, or looking for more one-on-one time, there is a list of tutors available for hire in the physics office. These are typically current UO physics graduate students or advanced undergraduates, and the list is made available by the department strictly as a helpful service (to both parties). All arrangements must be made directly with the tutors.

**Online Homework**

There will be weekly online homework assignments due through *MasteringPhysics*. These assignments will typically be due Monday evening at 9PM, and generally will be a bit less involved than the written homework assignments. Late online homework assignments will not be accepted, so please make sure you are properly registered with *MasteringPhysics* before the end of the first week.

**Tutorials**

The tutorial sessions are held on Tuesday in Willamette 112. Tutorials are designed to give students the opportunity to discuss and assess their understanding of course topics in a more interactive, group setting with direct feedback from the teaching staff. On some weeks, we may also introduce new material in the tutorials. Students will work in
groups on worksheets targeted towards the subject of the week. These sessions have been shown to be a particularly effective way for students to improve their understanding of physics, and should be viewed as an integral part of the course instruction.

The tutorials will be graded for attendance and reasonable participation only. Your worksheet answers will not be graded for correctness. It is your responsibility to make sure that your attendance is properly recorded before you leave. If you are really struggling with a particular topic, you should try to use your tutorial time working with the TAs to improve your understanding. Attendance at the tutorials is mandatory, although 100% attendance is not. Please see the section below on Participation Grading. Tutorial sessions during midterm weeks will be used as a review session, and attendance at these sessions is not required.

**Lecture Participation**

Active participation in the lectures will be facilitated by the *LearningCatalytics* system which comes with *MasteringPhysics*. In-class responses will be recorded using most networked devices (smartphone, tablet, laptop, …) and avoids the necessity of having to buy a separate ‘clicker’ device. Please contact me if you have no suitable device available. For days when we are using the *LearningCatalytics* system, you must connect your device with the proper session code to receive credit for participating. Answering questions on behalf of somebody else is *academic misconduct* and will be treated as such. If you need to share with a neighbor in class, make sure each person has logged in separately.

On some days, there will be pre-lecture videos assigned, which must be viewed before class begins to receive credit. These will be posted as assignments on Canvas at least 24 hours in advance, and will contribute to the participation grade.

**Participation Grading**

Extensive research in Physics education has shown that active participation including tutorials, pre-lecture videos, and in-class interaction greatly improves student understanding in physics courses. I understand, however, that 100% participation is not always possible due to illness, school activities, or other obligations. To try to provide a flexible grading scheme that encourages participation but is not overly rigid, you will receive full credit for the combined tutorial and lecture participation component of your grade if you participate in 75% of the available activities. The tutorial and class categories will be combined before assessing what fraction of 75% has been achieved, which means that if you go to all of the tutorials you can afford to skip more class sessions. Note that each tutorial is weighted considerably higher than any single class session, in part because the total tutorial fraction of the grade is twice the in-class
participation fraction, and also because there are only 8 graded tutorials over the entire quarter. Participation over 75% will not earn ‘extra credit’ in the participation grade (but it will likely improve your performance on the exams…).

Exams

There will be two mid-term exams and a final examination. The mid-term exams will take place from 6-8PM on January 27th and February 24th, and the final exam is set for 10:15-12:15 Tuesday March 15th. These dates will not change, so please arrange your schedules to accommodate these times. In case of serious conflicts, please contact me as far in advance as possible so that we can work out a solution together. No makeup examinations will be allowed. If a higher percentage score is achieved on the final than one of your midterms, the lowest midterm score will be dropped (and replaced with the score on the final). This gives you a chance to redeem yourself if you really screw up a midterm exam.

These exams are the primary tools for assessing whether you have achieved the course goals. Exam problems will be similar to written homework problems, in that you must solve quantitative problems on the physics topics addressed. All exams will be closed book, although you may bring one handwritten, single-sided, notebook-sized sheet of notes if you wish. Scientific calculators may be needed, and will be provided on request. Cell phones, tablets, or laptops may not be used during exams (even as calculators).

Laptop and Cellphone Policy

Apart from use during the in-class clicker questions facilitated by LearningCatalytics, the use of a smartphone, tablet, or laptop computer is not allowed in class. These devices are highly disruptive to the students sitting around you, and are rarely used for any productive, course-related purpose. If you believe you have a valid, educational reason to use a device in class (such as for translation) please discuss this with me in advance.

Academic Misconduct

The University Student Conduct Code (available at conduct.uoregon.edu) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students’ obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a
common form of academic misconduct, plagiarism, is available at http://library.uoregon.edu/guides/plagiarism/students/index.html.

**Discrimination and Harassment**

No forms of discriminating, harassing, or hostile behavior in class will be tolerated.

The UO is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and gender-based stalking. If you (or someone you know) has experienced or experiences gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), know that you are not alone. UO has staff members trained to support survivors in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware that all UO employees are *mandatory reporters*. This means that if you tell me about a situation, I may have to report the information to my supervisor or the Office of Affirmative Action and Equal Opportunity. Even if I have to report the situation, you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone confidentially, you can call 541-346-SAFE, UO’s 24-hour hotline, to be connected to a confidential counselor to discuss your options. You can also visit the SAFE website at safe.uoregon.edu.