Course Syllabus

Description

PHYS 101 is an introduction for non-science majors to the core concepts of physics: motion, force, mass, momentum, energy, temperature...

The laws governing these concepts are formulated in the language of mathematics. We'll use high-school level algebra to apply the laws of mechanics to everyday phenomena. Numerical and conceptual problems will be assigned in homework sets. Many phenomena will be illustrated in lecture demonstrations, animations and computer simulations. The level of the class assumes no prior knowledge of physics whatsoever. If you're a physics or math major, you should consider taking PHYS 251 instead of PHYS 101.

It will help you succeed in this course if you come to class with a desire to dig deeper into the causes of things you see around you. Words you'll be hearing a lot are: "why," "how" and "what if" - because curiosity is what makes scientists tick. Physics doesn't have all the answers to humanity's questions, but it provides a set of tools that have given us an unprecedented level of insight about the natural world. Because of this, the course also serves the broader purpose of highlighting the significance of basic science in modern society. To decide if this course is right for you, a good place to start is chapter 1 of the textbook (see below).

Most of this course focuses on mechanics and its manifestations. Newton's laws of motion and of gravity provide an early example of the changes in western thought embodied by The Enlightenment. Physics unifies our understanding of 'heavenly' and 'earthly' forces, and in the process provides a framework that extends all the way into the microscopic world of atoms, too. This will allow us to explore the characteristics and various states of matter in the latter part of the course.

Schedule

This list is an approximate breakdown of topics for weeks 1 - 10. Chapters refer to the textbook:

**Paul G. Hewitt, Conceptual Physics** (10th edition or above).

1. Ch 1-3: Velocity, acceleration
2. Ch 4-5: Force
3. Ch 6: Momentum, Collisions
4. Ch. 7: Work and Energy
5. Ch 8: Rotations, torque, angular momentum
6. Ch. 9-10: Gravity, projectiles, satellites

https://canvas.uoregon.edu/courses/124756/assignments/syllabus
7. Ch 11-12: Atoms, solids
8. Ch 13-14: Liquids, pressure, gases
9. Ch 15-16: Temperature, heat transfer
10. Ch 16-18 Phase changes, thermodynamics

Administrative details

Instructor: Prof. Jens Noeckel (noeckel@uoregon.edu)
Room: Willamette 100
TAs: Philippe Nguyen (pnguyen@uoregon.edu), Kahli Burke (kahl@uoregon.edu), Vinny Roma (vroma@uoregon.edu)
Website: All course materials will be on Canvas

Meeting times: Classes are Mondays, Wednesdays and Fridays 11:00 am to 11:50.
Office hours:
TBA

Grading: Grades for the course will be based on quizzes, homework, two midterm exams, and a final exam. The relative weights will be as follows:

Quizzes: 10%
Homework: 35%
Midterm exam 1: 15%
Midterm exam 2: 15%
Final exam: 25%

Quizzes: To test your retention of the assigned reading, short quizzes will be posted on Canvas, due at noon on the day of the next class. Additional quizzes will be given randomly in class, but they are scored only based on participation, not accuracy of the response. The point of the quizzes is to add incentive to do your assigned reading before class, and the questions are designed to be easy if you've done the reading. I will drop your lowest 3 reading quiz scores (but not the in-class quiz scores) in computing your final grade (missed quizzes count as zero scores). In-class quizzes will be conducted using Plickers, a feedback system that optically scans an answer card you hold up in class. I'll divide you into groups of 3 to 4 students who share the same Plickers card. If you lose the card, it's easy to print a new one by going to https://help.plickers.com/hc/en-us/articles/360008948034-Get-Plickers-Cards
Homework: weekly homework sets will be assigned on the course web site. Homework is due Wednesdays (except in midterm weeks) at 11:59 pm. Submissions must be made online through Canvas. If you're not done by the deadline then upload what you have. If late (up to 24 hrs maximum), turn in to Canvas for a maximum of 80% credit. To upload your homework, you'll need to create a PDF file.

If you write answers by hand, the recommended app to convert your work to PDF format is Camscanner, available on most phones. It can be used without registering and allows you to save multi-page PDF to Google Drive or other folders. On iOS 11 or above, you can also create a scan using the built-in Notes app (open new note, click + and "scan").

Each problem set will be assigned at least one week before it is due. Your lowest homework score will be dropped in computing your final grade, so you can bomb or miss one assignment without affecting your grade.

Midterm exams: there are two one-hour midterm exams, to be held in class:

Midterm 1: February 4, 11:00 - 11:50 am,
Midterm 2: February 25, 11:00 - 11:50 am

Makeup exams: the exams are scheduled during class time. Thus, there will be no makeup exams for this course. If you have a serious and documented reason for missing an exam (death in the family, serious illness), your final exam score will count in place of the exam score. That is, your final exam score will account for almost double what it would otherwise. Otherwise, you'll receive a zero score for a missed exam.

Final exam: the final exam will be held from 10:15 am to noon, Monday, March 18.

Pass/fail grading option: a passing grade requires the equivalent of a C grade on all course work (quizzes, homework, midterms, and final).

Grading scale: the nominal grading scale for this course is below. If the final class average is excessively low, I may apply a curve for a higher average final grade. However, you are guaranteed at least the grade listed below based on your final average; you are not competing with others in the class for your grade.

97-100=A+, 93-96.9=A, 90-93.9=A-, 87-89.9=B+, 83-86.9=B, 80-82.9=B-, 77-79.9=C+, 73-76.9=C, 70-72.9=C-, 67-69.9=D+, 63-66.7=D, 60-62.9=D-, <60=F

Required materials

Textbook:

Paul G. Hewitt, Conceptual Physics (10th edition or above)

You'll need a scientific calculator to be used in homework and exams.
Your Responsibilities

You need to read the assigned material before each class. This is crucial to your getting the most out of attending class. Note that in class, we won't necessarily cover everything that's in the assigned reading—while the exams will concentrate mostly on topics I emphasize in the homework and in class, anything from the assigned reading is fair game for an exam question. In class, I will review the more difficult and important concepts in class, answer any questions you have, show you demonstrations and videos to illustrate the concepts and help you build a mental model for understanding physics, and elaborate on additional aspects of the material (examples, applications, etc.). Attendance is not required, but you will have more opportunities to accumulate good quiz scores if you do come to class regularly.

Academic Honesty

Students are expected to abide by university policies on academic honesty, avoiding plagiarism, fabrication, cheating, and academic misconduct. The Student Conduct Code (conduct.uoregon.edu) provides definitions of these terms and explanations of the university policy on the subject. The UO Library also provides a guide to avoiding plagiarism (libweb.uoregon.edu/guides/plagiarism/students/). You are responsible for understanding these regulations and abiding by them. Students should be particularly careful to avoid plagiarism in out-of-class assignments, as well as projects and exams. Academic dishonesty will be dealt with severely, as it is disrespectful to your fellow students and your instructor, as well as being against both university regulations and state laws.

Physics Drop-In Help Center, other resources

Free help with any standard math or physics question can be obtained in 147 Willamette Hall. The Drop-In Help Center is staffed 5 days a week and most of the day (hours are posted on the door).

If you have questions about lectures, assignments, readings, or other matters, please visit office hours, or communicate via Canvas or by email. Individual appointments can readily be arranged to accommodate schedule conflicts with the regular office hours. The University’s Academic Learning Services (ALS) center provides a variety of workshops, individual consultations, writing assistance labs, and more to assist UO students. For more information see als.uoregon.edu, or call (541) 346 3226. The University’s Teaching and Learning Center also provides workshops and courses – see tlc.uoregon.edu and tlc.uoregon.edu/learningservices/workshops.html.
Students with disabilities

If there are aspects of the instruction or course design that result in barriers to your inclusion, please notify Prof. Noeckel (noeckel@uoregon.edu) as soon as possible. You are also welcome to contact Disability Services in 164 Oregon Hall, 346-1155.

Course Summary:

<table>
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<tr>
<th>Date</th>
<th>Details</th>
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<tbody>
<tr>
<td>Wed Jan 9, 2019</td>
<td><a href="https://canvas.uoregon.edu/courses/124756/assignments/690916">Reading Ch. 2, first half</a> due by 11am</td>
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<td>Fri Jan 11, 2019</td>
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<td>Wed Mar 6, 2019</td>
<td><a href="https://canvas.uoregon.edu/courses/124756/assignments/690926">Ch. 8, second half</a> due by 11am</td>
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