Course Syllabus

Description

The technology that enables the internet in its current form is the result of the efforts of tens of thousands of physicists, engineers, and computer scientists over more than a hundred years. The development of the Internet is an amazing story of the transformation of fundamental physics discoveries into practical systems. This course is a one-term, non-science major's introduction to the physical concepts that explain how information is stored, transmitted, processed, and retrieved. Fundamental issues in physics will be discussed using only elementary math and simple algebra. By providing an overview over selected topics with particular relevance to technologies that pervade every aspect of our lives, the course also serves the broader purpose of highlighting the significance of basic science in modern society.

Administrative details

Instructor: Prof. Jens Noeckel (noeckel@uoregon.edu)
Room: 115 Lawrence
TA: Kahli Burke (kahli@uoregon.edu)

Website: All course materials will be on Canvas

Meeting times: Classes are Mondays 12:00 noon to 1:40 pm, and Wednesdays 12:00 noon to 12:50 pm. Class is shorter on Wednesdays because we’re not going to be using all four assigned periods for lectures. Instead, from 12:50 to 1:40 pm on Wednesdays I’ll hold an (optional) office hour in 115 Lawrence, where you’re allowed to ask questions about the homework due that same afternoon.

Additional office hours: Kahli Burke will be available Tuesdays 11am-noon (463 Willamette Hall) and at the Physics Drop-In Help Center (see also below) Thursdays noon to 1pm.

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: 25%
Midterm exam 1: 20%
Midterm exam 2: 20%
Final exam: 25%

Quizzes: To test your retention of the assigned reading, short quizzes will be posted on Canvas after most classes, 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 quiz scores in computing your final grade (missed quizzes count as zero scores). In-class quizzes will be conducted using Plickers; for this, you need to make sure to always bring the Plickers card with your number that was handed out in class. If you lose the card, it's easy to print a new one by going to https://plickers.com/cards and downloading the "Standard" card set.

Homework: weekly homework sets will be assigned on the course web site. Homework is due each Wednesdays at 4:30 pm in the homework box for PHYS155 in the basement of Willamette Hall (below lecture hall 100; our box is near the top right). I will not
accept late homework, so if you're not done by the deadline then turn in what you have. 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 (whew).

**Midterm exams:** there are two one-hour midterm exams, to be held in class on Wednesday, 18 October, and Wednesday, 8 November. Immediately after the midterms, I'll be available to discuss the solutions.

**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 12:15 pm on Monday, December 4.

**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

The required text for the course is *The Silicon Web* by Michael Raymer (available at the Duck Store). You’ll also 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 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 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/ (http://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.