Physics 114, Spring 2015, Rick Matthews

Welcome

Welcome to Physics 114, Sections D and E and lab sections K and L, General Physics II.

Description

Physics 114, General Physics II, is the second semester of a two-semester survey of the principal topics of physics. This semester is focused on the science underlying most of modern technology, including electricity, magnetism, and light.

Physics 113 or its equivalent is a prerequisite for this course.

Goals

My goals for the course are to have you:

- Learn the concepts of physics;
- Learn to think analytically and logically;
- Learn to articulate scientific arguments;
- Become good at working really hard problems using only a small number of basic concepts;
- Learn what science is and how science progresses;
- Learn to describe, explain, and predict many everyday phenomena;
- Find the world a more interesting place.

Toward that end, physics concepts will presented in the context of real-world examples, applications, and demonstrations. You will learn to explain many things around you using only a few fundamental concepts. You will discover that science is a process, rather than a set of results. The class will be highly interactive, as we seek to *do* science not just learn to apply the discoveries of others. We will develop models and theories, based on observation of classroom demonstrations.

Much traditional lecture content will be delivered outside of class time in short videos. Reasons for this include:

- I do not want to waste the precious time we are together just delivering content that can be delivered as well or better by video.
- Lecturing on all topics in class would consume just about all our class time, leaving little or no time for interactive engagement.

- Research on learning demonstrates that *all* physics classes with high levels of learning spend substantial amounts of class time on interactive activity.
- By making lecture content available in video, you can watch as often as you like, can discuss with classmates, and can pause and rewind.
- When I lecture in class, students sometimes find themselves forced to choose between capturing what I am saying and understanding what I am saying.
- Interactive activities are fun.

Logistics

Required materials for class:

- Text: *Physics for Scientists and Engineers,* Serway and Jewett, 9th edition. This is available in split volumes, and we will be using the second volume.
- WebAssign
- Your laptop.
- A scientific calculator.
- Because of figures and equations, most people find it hard to take notes on a laptop. You will probably want to use pen or pencil and paper.

Homework

Working homework is essential to understanding physics. Your performance on the tests is determined almost completely by the effort you bring to working homework. Expect to work hard on homework. We assign hard problems, because only by working hard problems do your problem-solving abilities develop. Perhaps the most important feature of our studio class is that you will spend lots of class time in group problem solving, so that you are well prepared for homework.

Homework is assigned and submitted through WebAssign (http://webassign.net). If a license is not included with your new text, you will need to purchase a WebAssign license within two weeks. Licenses are available at the bookstore. You can also purchase them directly from the WebAssign web site with a credit card.

Login information:

I will create a WebAssign account for each of you. Your credentials will be:

- Username: same as your Wake Forest username.
- Institution: wfu.
- Password: your Wake Forest student ID number.

Homework is due on the date specified in WebAssign. Initially, reading quizzes will be due the class after they are posted, and "homework" will usually be the Tuesday at 8:30 a.m., Thursday at 8:30 a.m., and Friday at 5:00 p.m. This pattern of assignment due dates is subject to revision.

Correct answers are available at the site after the deadline for homework comes due.

I permit and encourage forming study groups for working homework. Copying another student's homework is wrong, but collaboration is not. Your homework should always represent your own efforts.

Tutorials

Regularly scheduled tutorial sessions will be announced that will provide opportunities for help in working problems or understanding concepts.

Laboratory

For this section of Physics 1154, laboratory and class do not meet at separate times, but rather they are an integrated activity. We will move through roughly the same lab topics as other sections, and you will have lab write-ups that are graded much as in other sections.

Attendance

Classroom participation is expected and important, perhaps more important than in any class you have taken. We will intensely probe very nuance of the concepts. Excessive absences will adversely affect your final grade. If you do not plan on coming to class, do not take this course.

Excused absences: Please send me e-mail well in advance notifying me of any class you will miss with a University-approved excuse. If there is test that day, you must also give me a copy of the excuse. Be sure to arrange for a make-up before the test. Homework and reading quizzes are still due at the normal time even if you are on university travel.

Hour Tests

Two tests are given during the course of the session. Alternate test times are normally given only in the event of infirmary confinement or university mandated travel. Please notify me of such a problem prior to the test. Dates:

- TBD
- TBD

Final examination

The final examination will be given only at the regularly scheduled time as specified in the class schedule published by the Registrar's Office. There will be no alternate exam times.

For Spring 2015, the final exam is at 9:00 a.m. December 9. Unofficial assignment: confirm that this fits with our class time slot!

Grading

Your final grade will be composed of the following contributions:

- Final exam: 35%
- Lowest hour test score: 17%
- Best hour test score: 25%
- Homework: 10%
- Lab: 10% *
- Other feedback activities: 5%

*Your lowest two lab grades are dropped.

Refer to class session discussion for mapping of numerical scores to letter grades. Course letter grade cutoffs are weighted averages of each of the contributing scores.

Office hours

Please see the shared Google Calendar once classes begin. These are times you can generally expect to find me in my office without an appointment, but I am on campus with available time nearly every weekday. If the posted office hours do not fit your schedule, give me a call and I can usually see you promptly.

Be sure to click on the calendar for this course and make it visible in your Google Calendar. Once you have done so, you should see all our regular class meetings appear, along with test dates and office hours (at least a week in advance). Important: I must add you manually to the calendar. If you do not see "P114DE S2014" in your calendar list, email me.

Electronic communications

Initially we will depend on sakai.wfu.edu and WebAssign for homework postings and other class information. We may choose other tools as the semester develops.

You may also mail me directly at matthews@wfu.edu.

Pandemic and campus closing plan

Our pandemic plan will be distributed within two weeks of start of the semester. It will provide means of continuing the course in the event the university closes.

Logistics

- **Office:** 201 Kirby
- **E–mail**: matthews@wfu.edu
- **Phone**: (336) 758-5340
- **Web**: http://users.wfu.edu/matthews
- **Office hours**: Check class Google Calendar
- **Text:** *Physics for Scientists and Engineers,* 9th edition, by Serway and Jewett, Vol. II (chapters 23–46), or continue with the combined volume that includes chapters 1–46.
- **WebAssign**: Homework will be submitted using WebAssign at the link: https://www.webassign.net/login.html. The access license can be purchased through the WFU bookstore or on-line from the WebAssign web site. I will create WebAssign accounts for you based on your WFU accounts. To login use your WFU username as username (for example if your e-mail address is abcdef13@wfu.edu, then your WebAssign username is abcdef13). Your initial password will be set as your student ID number. You should change it first time you login. Note that your WebAssign account is NOT related to your WFU account, thus any
  change in the WFU password will not affect your WebAssign account.
- **Laboratory**: Lab and class are integrated. You must sign up for *both*
  - PHY 114D: Gen Physics II-Studio Format, CRN 21055 *and*
  - PHY 114L K: Gen Physics II-Studio Format, CRN 21056.
  - (Students currently enrolled in Physics 113D should register for the complementary section discussed in class.)
- **Tutorial sessions**: During tutorial sessions, graduate students will assist you with homework questions and exam preparation. Attendance is not mandatory, but please take this opportunity to discuss the homework assignments and to clarify concepts and phenomena that were not sufficiently clear during lectures. The location and schedule of tutorial sessions will be announced later.