

## Physics 2020 Course Syllabus

### **Quick information**

Lectures: MWF 11A.M. or 1P.M. in Duane G-1B20  
Recitations: MTWRF in Duane G-2B90  
Professor: Charles Rogers  
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Web page: [http://www.colorado.edu/physics/phys2020/phys2020\\_sp99/](http://www.colorado.edu/physics/phys2020/phys2020_sp99/)

### **Introduction**

Physics 2020, General Physics 2, is the second semester of a two semester sequence in introductory physics. We will cover topics in modern physics, including electricity, magnetism, light, optics, optical instruments, properties of atoms, elementary particles, and cosmology. The course is taught with three weekly lectures (you are registered either for the 11AM (Section 100) or 1PM (Section 200) lecture time), and one weekly recitation. You will use the recitation to practice problem solving and, in alternate weeks, to complete six laboratory experiments. The material is presented at a level that requires only a background in algebra, trigonometry, and the first semester of physics (General Physics 1).

### **What we cover and why**

The material we will cover is at the foundation of our technological society. Most of the material involves discoveries no more than 150 years old (of course, even the ancients knew some things about magnetism and light). We are so comfortable with technologies like television and home computers, that it is easy to forget just how recent these developments are: Some of you have relatives old enough to remember the days before radio (first licensed broadcast station opened in 1920). We live radically more convenient and perhaps longer and more enjoyable lives due to the revolution in electric-based technology. Modern health-care, industrial, and home tools are almost entirely based upon the existence of electrical power and electronic circuitry. We will cover the physics of electricity, magnetism, and electronics. By the time we are finished, you will have a base of knowledge that will allow you not only to use electromagnetic devices, but to understand how they work.

I will cover Chapters 16 through 32 in Giancoli at a rate of roughly one chapter per week.

### **Grading**

Your course grade is determined by a combination of your performance on exams, homework, and laboratory reports. A total of 800 points are available as follows:

<b>Course component</b>	<b>Points</b>
<b>Exam 1</b> (7:30PM, Feb. 9, 1999, CHEM 140)	100
<b>Exam 2</b> (7:30PM, Mar. 9, 1999, CHEM 140)	100
<b>Exam 3</b> (7:30PM, Apr. 13, 1999, CHEM 140)	100
<b>Homework</b> (weekly assignments)	150
<b>Laboratory</b> (6 labs, alternate weeks)	150
<b>Final exam</b> (11:30 AM, May 10, 1999, location to be announced)	200
<b>Total Points:</b>	800

There will be three midterm exams, each worth 100 points. Homework will provide 150 points. Laboratory reports and associated quizzes provide 150 points. The final exam will provide 200 points.

### **Exams**

Exams are scheduled as above. You are allowed to bring a single sheet of 8.5in.x11in. paper with whatever information you care to have on it to the exam. Calculators are allowed as well.

### **The text**

The text we will use is “Physics” 5<sup>th</sup> Edition, by Douglas C. Giancoli. This is the same text that we used in the first semester, Physics 2010. Several copies of the text will be maintained on reserve at the Math / Physics Library in Duane Physics G-140. In addition to the required text, the library will keep a collection of course notes and exam solutions.

There are many excellent books covering introductory physics. Giancoli’s is one of the best. In addition, Prentice Hall maintains a web site that includes on-line questions for each chapter of the book. I have provided a link to this site in our course home page. You can also find it directly at <http://www.prenticehall.com/giancoli/>.

The textbook is one of the best tools you have in the class. READ CHAPTERS BEFORE WE COVER THEM IN CLASS. If you do, you’ll get *much* more out of my lectures.

**Laboratory**

During the course, we will have six labs covering the course material. YOU MUST COMPLETE FIVE (5) LABS TO PASS THE COURSE, NO MATTER WHAT YOUR PERFORMANCE ON OTHER PART MAY BE. Physics is first and foremost an experimental science. We want you to experience laboratory work. The laboratory manual is available online at the course web site, listed below. The first lab meets Week 2 of the course. You will need a bound laboratory notebook (the kind with quadrille ruled lines on all the pages) and laboratory data is to be written in pen. For those students with written excuses, one lab may be made up. Please see Jerry Leigh (492-7368), the laboratory coordinator, to arrange this makeup lab so that it is completed, and the lab report turned in, by the end of the week following the excused absence.

**Homework**

We will be using the CAPA on-line system for homework assignments. New homework assignments will be available Thursdays in the Physics 2020 homework bins outside of G-2B90. Homework will usually be due eight days later, on Friday evenings at 9PM. The CAPA system is available at <http://capa.colorado.edu/CAPA/class.html>, or from the course home page at [http://www.colorado.edu/physics/phys2020/phys2020\\_sp99/index.html](http://www.colorado.edu/physics/phys2020/phys2020_sp99/index.html). CAPA is a tool that provides you with immediate feedback on your solutions to homework problems. If you take the time to start homework early, there is no reason why you cannot have a perfect homework score by the end of the class. Homework the first week will review the use of CAPA.

Most of you already have used CAPA and know how it works. However, those of you who have difficulty with the CAPA system can hand in written homework solutions to me prior to the homework due date. Doing the homework early and well is the best way to practice for the exams and to get a good grade.

**The web page**

The web page for Physics 2020 provides information on the class activities, contact information for all the teachers, course notes, access to the CAPA system, etc. We are rapidly reaching the point where essentially all type of service, information, and products are available on the Internet. I strongly encourage you to use the Physics 2020 web site and provide me with feedback on course services that you'd like to see included.

**How to succeed in this course**

The course topics that we will cover in Physics 2020 are among the greatest intellectual achievements of humans. Don't be surprised if you have to think and work hard to master the material. However, try to remember that humans like you and me CAN understand all of this information. You can perform very well in this class if you follow this time-tested system:

1. Read the chapter material before lecture and recitation. If you read it first, it'll sink in faster during lecture.
2. Take notes on your reading and try to write down questions you may have. If you ask those questions in class, I (or the recitation instructors) will try to answer them.
3. Come to class. Stay involved in class and recitation. Come to office hours.
4. Start the homework early. Give yourself the time to work and understand. Remember that it's possible to have a perfect homework score by putting in the effort and time.
5. But first: Do the reading. Don't try the homework until you finish the reading.
6. Work together. Physicists often work in groups. You need to do your own thinking, but talking to others is a great way to sort out your own thoughts.
7. Don't get behind. It's very hard to catch up.
8. Don't give up. **YOU CAN DO THIS STUFF JUST LIKE OTHER HUMANS.**