

# Physics 103: Principles of Physics, Spring 2008

Section 01 M,W,F, 8:30-9:45 am; Section 02 M,W,F 1:00-2:15 pm

## General Info

Dr. James van Howe, Science 205, 794-3403, [jamesvanhowe@augustana.edu](mailto:jamesvanhowe@augustana.edu)

**Office Hours:** Tuesday 10:30-11:30 am, Science 205; also Tuesday 8:30-10:20 am during lab, Science 119 (note lab students will have priority); also by appointment

**Email hours:** I will respond to emails on Tuesday and Thursday afternoons; for extremely urgent matters come find me in person or call.

**Help Sessions:** TBA

**Course web page:** <http://helios.augustana.edu/~jvh/courses/103>

## Course Description and Goals

The overarching goal of the course is to improve your ability to approach and solve problems in science using analytical and quantitative methods, approximation, estimation, creativity, abstract thinking, and common sense (crucial and often overlooked). With these tools you will be expected to solve problems that you have never seen before. The goal will be to **apply** good scientific methods to solving problems, not memorizing particular problems or material. Specific topics will include light, optics, special relativity, quantum mechanics, nuclear physics, particle physics, and atomic physics.

## Required Materials

*Physics: Principles with Applications*, Douglas C. Giancoli, 6<sup>th</sup> Ed. (2005).

*Principles of Physics Laboratory Manual*, Department of Physics and Astronomy, Augustana College, (2008). Available for purchase at the college bookstore

Qwizdom remote, model Q4. Available for purchase at the college bookstore.

WebAssign account and access code (available for purchase at the college bookstore)

## Grade Distribution

<b>In-class work</b>	<b>5%</b>
<b>Homework</b>	<b>15%</b>
<b>Laboratory</b>	<b>20%</b>
<b>Exams (3x 20%)</b>	<b>60%</b>

## Homework

Homework assignments will be posted and turned in through WebAssign: <https://webassign.net/student.html>. Your username is your first and last name run together, all lowercase. Your password is your student ID number (note omit any zeros at the beginning of your ID). Homework sets will consist of two or three problems due at 2:00 am on the day of class. Extensions may be granted in rare circumstances. No work will be accepted after solutions are posted. I will drop your three lowest homework scores. At least one problem will be on uncovered material as prep for the following lecture, the remaining will be on covered material.

### **In-class work**

In class work will consist of using Qwizdom (a personal responder system similar to “polling the audience”), quizzes, in-class activities, exercises, and participation in discussion. On Qwizdom, you will get credit just for answering the questions: 50% for any answer, 100% for a correct answer. So make sure to participate! In-class work requires your attendance and cannot be made up. I will drop your three lowest in-class grades.

### **Labs**

Labs will meet in Science 119 and begin during **Week 2 for Mon., Tues. sections**, and **Week 3 for Wed., Thurs. sections**.

### **Course Resources**

At Augustana you pay good money for resources, however, how you use those resources is your responsibility. Take responsibility for your own learning. The resources you have for this class are lecture, lab, the book, each other, help sessions, and me (during class or office hours). Note that you may discuss problem solving methods together on homework, but your work should be your own (good practice since exams will be done individually).

### **Course Organization:**

Weeks 1-4: Light, optics, interference, and diffraction; Chapters 22-25

Weeks 5-7: Relativity and quantum physics; Chapters 26-28

Weeks 8-10: Constituents of matter, cosmology; Chapters 29-33

The schedule may change due to your competency in material (we may need to speed up or slow down), and your interest- we can decide as a group how much time/emphasis to spend on chapters 32 and 33 (the most interesting material, but the least critical to your respective fields).

### **Important Dates:**

**March 21:** Good Friday, no class

**March 24:** Easter Monday, no class

**March 25:** Though really a Tuesday, Augie treats it like a Monday. Be prepared for back-to-back classes March 25 and 26.

**April 4:** Exam 1 covering chapters 22-25

**April 25:** Exam 2 covering chapters 26-28

**May 20, 9:00 am:** Final Exam for Section 01, 80 % covering chapters 29-33, 20% review

**May 22, 12:00 pm:** Final Exam for Section 02, 80 % covering chapters 29-33, 20% review