

Portland State University
Department of Physics

Physics 201: General Physics: Mechanics
Fall 2007: 10am-11:50am, CH 53

Instructor: Ralf Widenhorn

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Office hours: Monday 2pm-3pm and Thursday from 12pm to 1pm in SB2 #450

Text: Giambattista, Richardson, Richardson, College Physics 2/e

Web: <http://www.physics.pdx.edu/~ralfw/physics/>

Username: physics, password: physics

Course outline:

The course covers Newtonian Mechanics: Vectors and Scalars, concepts of kinematics (velocity, acceleration, free falling objects), applications to Newton's laws (forces, systems in equilibrium, friction, springs, circular motion), laws of conservation (energy, momentum), work, rotational kinematics (torque, moment of inertia, angular momentum), gravity, fluids and more.....

Grading:

The course grade will be determined from three exams. They will count 25%, 35%, and 40% respectively. The exam with your lowest score will be counted least; the one where you received the highest score will be counted most. So even if you didn't do well on the first exam, not everything is lost. You can still improve your grade significantly by doing better on the next two. The grade of each exam follows the traditional scale:

- 90% or better is an A/A
- 80% to 89% is a B/B⁺
- 70% to 79% is a C/C⁺
- 60% to 69% is a D

Exams:

The three exams will cover the following chapters:

10/18/06 10:00am - 11:50am Exam 1: Ch1-Ch4

11/08/06 10:00am - 11:50am Exam 2: Ch5- Ch6

12/04/06 10:15am - 12:05pm Exam 3: Ch7, Ch8, parts of Ch9

The exams are non-comprehensive, but exam 2 and exam 3 may include general concepts already covered in the previous exams.

The exams will contain two parts. The first Part will be multiple-choice (no partial credit, I will post some sample multiple-choice questions before each exam.) and the second part will contain problems that have to be solved in detail (you can receive partial credit

for those problems). You can bring one piece of paper (8.5" x 11") with **handwritten notes** to the exams.

Make-up exams are on Dec 5th at 6 pm in #113 SB2.

Make-up exams will be only given in case of emergencies or illness (with proof).

Homework:

The homework problems are posted on my webpage. Here, you will learn how to apply the concepts from the lecture to solve actual problems. Doing the homework should also help you to review the material and prepare for the exams. **Keeping up with the homework is essential for doing well in this class.** Guided solutions to most homework problems are also available on ARIS (www.aris.mhhe.com) (physics, Giambattista, Richardson, Richardson, College Physics 2/e). To get to the material for this course enter the section code 33B-69-378. For first time ARIS users: To use the guided solution you need to sign-up for ARIS at www.aris.mhhe.com. The registration costs \$20 and is valid for the whole school year. There is also a self study guide component to ARIS which is free of charge. Go to (www.aris.mhhe.com) (physics, Giambattista, Richardson, Richardson, College Physics 2/e) and click on the "Self Study" tab.

Extra credit:

1. Multiple Choice: (maximum of 10 points extra credit)

There will be a short in-class Multiple Choice Quiz every Tuesday. I will calculate the average percentage of your best seven quizzes (there are nine in total). This percentage multiplied by 10 points gives you the Multiple Choice Quiz extra credit.

2. Workshop or Term paper (5 points extra credit)

a.) Workshop

Complete the class "Workshop for Ph201" successfully. The workshops meet weekly for 1h50min sessions. It is a one credit class and you need to sign-up for it (the schedule is on my webpage). To pass the workshop students must attend all workshops and participate actively. You will work under the guidance of a workshop leader in small groups on problems sets corresponding to the material of the general physics lecture.

b.) Term paper

Write a term paper on a topic which is relevant to this course. Some possible topics are listed below, but you are free to choose another subject that sparks your interest. You need to submit an outline of your paper, with a list of references **by Oct 31st**. The paper should be 6-8 pages long (double spaced, font size 12) plus pages with figures and

references. The paper is due before the final exam. **I only accept papers of people that have submitted the outline. No late work will be accepted for the outline and the paper submission.**

- Conservation laws in physics
- The SI unit system and the definition of the basic SI units
- The laws of physics in daily life. e.g. Sports (Skiing, Figure Skating, cycling), car....topics such as friction, air resistance, or centripetal force can be discussed in detail
- The use of calculus and other mathematical tools in physics
- The understanding of physics during the time of:
 - a.) Ancient Greeks
 - b.) Galileo Galilee
 - c.) Isaac Newton

Here is an example on how to calculate your final grade:

Exam 1: 75, Exam 2: 90, Exam 3: 65, 70% of the extra credit MC, attended workshop

Total score= $(0.4 \times 90) + (0.35 \times 75) + (0.25 \times 65) + 7 \text{ (MC)} + 5 \text{ (Workshop)} = 90.5 \rightarrow A^-$
best exam 2nd best exam 3rd best exam extra credit

(Without the extra credit the same exam grades would have resulted in a C⁺)