Course:
This course serves as an introduction to those basic concepts of physics that form the foundation of all the natural sciences. The first of a two-course sequence in Physics for the Life Sciences, this course serves to introduce the student to the fundamental laws of classical mechanics and are applied to a variety of simple systems including many from the biological sciences. Throughout the course the conservation laws serve as unifying physical principles. Mathematics, a powerful tool in the understanding of natural phenomena, assumes its natural role.

Attendance:
While attendance is not mandatory, it is expected that you will attend class on a regular basis. Material will be covered in a rapid fashion over the spring term; covering about one chapter per week. Past experience dictates that your success in this class is directly proportional to your attending. Attendance at all scheduled exams and labs is mandatory and the instructor does reserve the right to lower a grade due to excessive absences.

Course Grade:
Your course grade will be determined based on a professional judgment of your work on the following scale:

- Quizzes: 10%
- Homework: 10%
- Three in Class Exams: 30%
- Final Exam: 30%
- Lab: 20%

The overall class average at the end of the term will generally be set to a B’ letter grade. **No letter grades are ever assigned to any individual work.** An attempt will be made after every exam to give you a rough idea of an overall grade based on all work completed to date if a grade were to be assigned at that time, based on the class’ average of a B’.
Homework:

- The homework assigned is representative of the topics that will be highlighted throughout the term. It is strongly advised that you do the suggested homework as noted in class as well as other relevant problems, of your choosing, on the covered topics from the text. Variations of the assigned and unassigned homework are highly probable candidates for the quizzes and the exams.
- In general, several homework problems will be assigned each night and the problems will be collected twice during the week. The homework is due in class on Tuesday and Friday. The solutions to the problems will be posted on my website.
- The three (3) lowest homework grades will be dropped and therefore late homework will not be accepted.

I would advise you talk to me, your classmates, the Physics Crisis Center (which is open on Tuesday and Thursday evenings from 7pm – 10pm throughout the term), or just ponder the question for a day or so. Too often students’ confuse reading the solution to the problem with their actual understanding of the problem. The mathematical complexity of this course is limited to your ability to do algebra as well as basic mathematical operations.

Quizzes:

- There will be seven (7) quizzes, given at the end of class on Fridays, every week in which there is no exam scheduled. These quizzes will have a maximum length of fifteen (15) minutes.
- The lowest quiz grade will be dropped and therefore no make up quizzes will be allowed for any reason.

Exams:

- There will be three (3) in class exams, approximately one (1) hour each, and a cumulative two (2) hour final exam. The hour exams are scheduled for Friday, April 16 (week #3), Wednesday, May 5 (week #6), and Friday, May 28 (week #9). Each hour exam will not be cumulative; however they will be based on your prior knowledge.
- Emphasis will be placed on demonstration of the ability to apply the concepts and techniques learned to new situations.
- If you cannot make a scheduled exam, then it is your responsibility to contact the instructor in person a minimum of at least 24 hours in advance of the exam and make other arrangements for a make-up exam. Make-up exams will be granted only in exceptional circumstances, as determined solely by the instructor, and may be oral and will be given at the discretion and convenience of the instructor.
- The final exam will be cumulative and no make-up exam will be given for any reason. The date and time of the final is set by the Registrar and is Tuesday, June 8, 2010 from 2:30pm – 4:30pm. This is the only time that the final exam will be given.

Labs:

All labs must be attended. Everyone in Physics 110 must complete the laboratory sequence. You cannot pass the course without having passed the lab. The format for the lab write-ups will be discussed in the laboratory class.
Notes:

1. This course is heavily dependent on geometry, as well as some algebra and trigonometry. It is expected that the student is familiar with these mathematical topics. Calculus will be used very infrequently, and only to speed up a derivation. It will not be required for you to know or be able to actually do any calculus. You will need to bring a calculator (one that does basic mathematics, like trigonometry and logarithms, is fine) and your homework to class everyday. \textit{I don't have any extra calculators and you will not be allowed to share calculators during quizzes or exams.}

2. Please realize that the instructor is human, just as you the student and I will occasionally make mistakes. To that end, on exams & quizzes if I have made a mistake, please bring it to my attention and I will correct it. However, if you are just seeking to get more points back without any substantive argument as to why you deserve the points, I will be happy to re-grade the entire quiz/exam. This may result in raising or lowering the present grade on the quiz/exam.

3. All grading must be contested within twenty-four (24) hours after the original assignment was returned. \textit{Contestations must be accompanied by a full written explanation of how your solution was incorrectly penalized.} I will not look at anyone’s appeal without a written explanation. I will return the appeal and the decision of points after 24 hours. I will only consider grade changes during this twenty-four (24) hour period. This does not apply to arithmetic errors.

4. This course is going to be very demanding on you. It will be one of the most challenging courses you will take at Union College. You cannot sit idly by and assume that you know or will learn the material the night before the quiz/exam. It will require a lot of work on your part, as well as mine. If we work together, I hope, by the end of the term the beauty and applicability of physics will be evident in your everyday lives.

5. This class may be numbered as a 100 level class. It is by no means a trivial introduction to the study of physics. Physics underlies every other subject and as such its importance cannot be trivialized. This is a very demanding class and cannot be emphasized enough. The difficulty level of this class is on par with Bio-225 (Cell & Molecular Biology) and Chm-231 & 232 (Organic Chemistry I & II).

6. I realize that in this technological age people without computers, high-definition TV, beepers and cell phones are in the minority. For those of you that have any of these sorts of devices and need to bring them to class with you, please turn them off (or at least put them on vibrate.)

7. For exams and quizzes, cell phones will not be allowed anywhere on your person. Please shut them off and hide them away in your bags. Quizzes and exams may be removed from you for using a cell phone.

8. Please know that I am aware that my homework solutions do exist out in the universe and you can get copies of them should you choose. I would strongly advise you not use ill-gotten homework solutions as this will not prepare you for the exams and quizzes and will leave you with a feeling of why can I not do the quiz and exam problems.
Tentative Course Outline

**Week # 1**
Mon. Mar. 29  Introduction/Policies/Course Outline/Read Chapter 1

Tues. Mar. 30  Ch. 2  1-D Motion  
                Section 2.1

Wed. Mar. 31  Ch. 3  1-D Motion  
                Section 3.1

Fri. Apr. 2  Problems involving 1 & 2-D Motion

**Week # 2**
Mon. Apr. 5  Problems involving 1 & 2-D Motion  
                Ch. 5  Vectors and Motion in more than 1-D  
                Sections 5.1 – 5.2

Tues. Apr. 6  Ch. 2  Forces  
                Sections 2.2 - 2.6

Wed. Apr. 7  Problems involving 1 & 2-D Motion

Fri. Apr. 9  Ch. 3  1-D Motion and Force, Applications of Newton’s Laws  
                Section 3.3

**Week # 3**
Mon. Apr. 12  Ch. 5  Motion and Forces in 2-D  
                Sections 5.3 - 5.5

Tues. Apr. 13  Problems involving Forces

Wed. Apr. 14  Ch. 5  Motion, Forces and Energy in 2D  
                Sections 5.5 - 5.6

Fri. Apr. 16  **Exam #1 Chapters 1 - 3, 5**

**Week # 4**
Mon. Apr. 19  Ch. 4  Work and Energy  
                Sections 4.1 - 4.3

Tues. Apr. 20  Ch. 4  Work and Energy  
                Sections 4.3 - 4.4

Wed. Apr. 21  Ch. 4  Work and Energy  
                Sections 4.4 - 4.5
Fri.  Apr. 23  Chapter 4 Problems

**Week # 5**
Mon.  Apr. 26  Chapter 4 Problems
Tues.  Apr. 27  Ch. 6  Momentum
                Sections 6.1 – 6.2
Wed.  Apr. 28  Ch. 6  Momentum
                Sections 6.1 – 6.2
Fri.  Apr. 30  Chapter 6 Problems

**Week # 6**
Mon.  May 3  Chapter 7 Rotational Motion
            Sections 7.1 – 7.3
Tues.  May 4  Ch. 7  Rotational Motion
            Sections 7.1 - 7.3
Wed.  May 5  **Exam #2 Ch. 4 & 6**
Fri.  May 7  No Class – Steinmetz Symposium

**Week # 7**
Mon.  May 10  Ch. 7  Rotational Motion
              Sections 7.4, 7.7
Tues.  May 11  Chapter 7 Problems
Wed.  May 12  Chapter 7 Problems
Fri.  May 14  Ch. 8  Fluids
              Sections 8.1 - 8.2

**Week # 8**
Mon.  May 17  Ch. 8  Fluids
              Sections 8.3 - 8.4
Tues.  May 18  Ch. 8  Fluids
              Sections 8.5 - 8.6
Wed.  May 19  Chapter 8 Problems
Fri.  May 21  Ch. 10 Waves and Resonance
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