

# PHYSICS 131: Introductory Physics-I SYLLABUS Spring 2009

Last updated on 16 Jan 2009



## • COURSE

- PHYSICS 131 is a three-credit introductory course primarily aimed at science majors who are required to take an algebra-based physics course. Most students are in a life science major, and this is taken into account in the course. We will cover mechanics and waves. If time permits, we will spend some time on Thermodynamics.
- *Prerequisites:* A good working knowledge of high school algebra, geometry and basic trigonometry is required. You will need a simple scientific calculator with trigonometric functions, logarithms and exponentials.
- A blog has been set up for this course at <http://blogs.umass.edu/physics131-willocq/>. Check this blog regularly for lecture notes, exam information, discussions, etc. This will serve as the primary web site for the course. A course SPARK web site is also available at <http://spark.oit.umass.edu/>, it will be used primarily to make grades available.
- The laboratory course associated with this course is PHYSICS 133 and is taught as an entirely separate course under the supervision of Prof. Dallapiccola. If you need to take the laboratory associated with this course, you will need to specifically enroll in Physics 133. For questions about the lab, contact Prof. Dallapiccola via email at [carlod@physics.umass.edu](mailto:carlod@physics.umass.edu).

## • INSTRUCTOR Prof. Stéphane Willocq

- Office: LGRT 1042
- Phone: 5-0525
- Email: [willocq@physics.umass.edu](mailto:willocq@physics.umass.edu)

## • LECTURE

MWF 9:05 – 9:55 am in Hasbrouck 20

- During the lecture I will provide an overview of the main concepts and go through specific examples. There will be demos also, some of which may be the basis for some exam questions. However, the textbook remains the main source for definitions, derivations and more problem-solving examples.
- You are responsible for reviewing course material before the lecture; reading assignments can be found via the *lecture notes* page on the course blog. I hope that pre-lecture reading and class participation will make the lectures beneficial to all.
- There will be quizzes during most lectures via the Personal Response System (PRS). Purchase of a PRS RF clicker is *optional* but it can only help your overall grade, see the Grade section below. This will help you participate in the lecture, discuss with other students and generally provide me with feedback on how well the class is doing. There is no penalty for a wrong answer! Note that you risk getting a PRS/Written Homework grade of 0 if caught “filling in” for another student...

## • TEXTBOOK

- Recommended: *College Physics: A Strategic Approach with MasteringPhysics* Vol.1 by Knight, Jones and Field ISBN # 0805316957, see <http://www.aw-bc.com/catalog/academic/product/0,1144,0805316957,00.html>

Other equivalent textbooks are OK but you will then need to purchase access to the web-based MasteringPhysics homework system, see the homework section below.

- This book can be purchased at the TextBook Annex (incl. MasteringPhysics).

## • COURSE TOPICS

- Force and Motion
  - Concepts of Motion & Math Background
  - Motion in One Dimension
  - Vectors and Motion in Two Dimensions
  - Forces and Newton's Laws of Motion
  - Equilibrium and Elasticity
- Conservation Laws
  - Momentum
  - Energy and Work
  - Using Energy
- Properties of Matter
  - Thermal Properties of Matter
  - Fluids
- Oscillations and Waves
  - Oscillations
  - Traveling Waves and Sound
  - Superposition and Standing Waves



## • HOMEWORK

- Online homework is to be completed through the Mastering Physics web site at <http://www.masteringphysics.com>. On that site, you will first need to register using the access code that came with your book (or purchased separately). You will need to enter the course ID **PHYS131S09** as part of the registration process. The MasteringPhysics system gives you immediate feedback and allows you to solve problems multiple times. It also provides hints that will guide you through problems.



- Homework will generally be due on Tuesday and/or Friday by 8 am.
- It is possible for you to buy access to MasteringPhysics without purchasing the textbook. On the above web page, click on “New Students” and then click on “No, I need to purchase access online now”. The cost is \$45.
- In addition to the online homework problems, each assignment will also include a single problem to be solved on paper (this is referred to as “written homework” in the Grade section below). This will require that you apply problem-solving techniques to be discussed in class. Furthermore, exams will include one such handwritten problem.

## • EXAMS

- There will be three exams during the semester. The dates are:
  - Tuesday Feb 24, 7-9 pm
  - Tuesday April 7, 7-9 pm
  - Tuesday May 5, 7-9 pm

These in-semester exams will cover different material. They are not comprehensive but to the extent that this course builds later concepts upon material seen earlier, will require some knowledge acquired during the whole semester.

- There will be one final exam (during finals week—date to be determined). This exam is comprehensive, i.e., it will cover all the material covered during the semester.
- Students will need to obtain a statement of conflict from the Registrars Office to be allowed to schedule make-up exams. Such make-up exams should be taken *on the same day of or at most a day later than* the scheduled exam. You must alert me well in advance of the exam.
- Sample tests will be provided and a review session will be scheduled before each exam.
- Each exam will be worth 100 points (no difference between an in-semester exam and the final exam).

## • **GRADE**

You will be able to earn a maximum of 400 points allocated as follows

- Exams 300 points
- Online homework 70 points
- PRS / written homework 30 points

The total exam score will be computed as the sum of your 3 best exam scores, i.e., the exam with the lowest score will be dropped (either the final exam or one of the in-semester exams).

The online homework score will be computed as the sum of your 10 best online scores.

A total of 5 class absences will be allowed for the in-class PRS quizzes. The “PRS / written homework” score will be the highest of the following two scores:

- written homework
- $2/3$  PRS +  $1/3$  written homework

Letter grades will be assigned as follows

- A 340 points or above
- A- 320 to 340
- B+ 300 to 320
- B 280 to 300
- B- 260 to 280
- C+ 240 to 260
- C 220 to 240
- C- 200 to 220
- D+ 180 to 200
- D 160 to 180
- F less than 160 points

## • **GETTING HELP**

- I will have open office hours during the following times:
  - Mo & Th 3:30 - 5:00 pm (subject to change)
  - by appointment
- A Teaching Assistant will be assigned to this course (name to be determined). He/she will be holding office hours. Times and location to be determined.
- A Supplemental Instruction (SI) leader will be assigned to this course and will hold 75-minute sessions at the Learning Resource Center, see <http://www.umass.edu/lrc>.

## • **ACADEMIC REGULATIONS**

- Students are expected to be familiar with the University's academic regulations, see <http://www.umass.edu/registrar/media/academicregs.pdf>.