

PHYS 1211 *University Physics I*

Winter Quarter, 2007

Course Syllabus

INSTRUCTOR

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Office Hours:
M&F 11am-12pm
Th 2-4pm
(or by appointment)

COURSE GOALS

This is the first in a three-quarter course sequence that will introduce you to the basic concepts and practice of physics. The topics and tools presented provide the foundation for future study in engineering, astronomy, biology, chemistry, and interdisciplinary fields, as well as physics. This quarter's course will cover elementary mechanics of particles and rigid bodies, Newton's laws, work and energy, and conservation of momentum and energy. This course is required for physics majors and all students in engineering, and recommended for any other science majors who are also required to take calculus.

This will be a rigorous course, but will hopefully be a fun and rewarding one as well. The course material is challenging, but please remember that as your instructor, **I AM HERE TO HELP!!** My job is NOT to make the material harder, but to do what I can to make sure you learn what physics is, why you should care, and how to successfully apply the ways of thinking, quantitative methods, and concepts that make up introductory physics to your future studies, and perhaps to life in general! By the end of this sequence you should find that you can answer many questions about the world that you couldn't before. If those answers make you ask even more questions, congratulations! You just might be a scientist...

PREREQUISITES

MATH 1951 *Calculus I*

MATH 1952 *Calculus II* (concurrent enrollment)

PHYS 1221 *University Physics Lab I* (concurrent enrollment)

CLASS SCHEDULE

Lectures: Monday, Wednesday, Thursday, and Friday 10:00-10:50 AM, Olin 105

Laboratory (PHYS 1221): You **MUST** be enrolled in ONE of the following sections that meet in Physics B7:

Section 1: Tuesday, 8:00-9:50 AM

Section 2: Tuesday, 11:00 AM-12:50 PM

Section 3: Tuesday, 1:00-2:50 PM

Section 4: Tuesday, 3:00-4:50 PM

IMPORTANT DATES

Exams:

Midterm Exam I Thursday, January 25, 10-10:50 AM, Olin 105
 Midterm Exam II Thursday, February 22, 10-10:50 AM, Olin 105
 Final Exam March 16, 9-10:50 AM, Olin 105

Exams are closed book, though you will be allowed to bring one letter sized sheet of paper to each exam with whatever information you like on it. However, be sure your “cheat sheet” is legible with the naked eye; no magnifying glasses, scanning electron microscopes, etc. will be allowed in exams. You should also bring a calculator, pencil, and eraser. Paper will be provided, and **NO OTHER ITEMS** will be allowed in the lecture hall during exams.

Homework: Assigned every Monday, due the following Monday in class at 10 AM.

Quizzes: Every Monday, the first 10-20 minutes of lecture. The problems will be very closely based on material presented either in lecture, homework, or labs. If you are keeping up with the course and attending lecture, the quizzes should be easy!

GRADING POLICY

The assignments and exams are weighted to give your final score in the following manner:

Assignment	Weight
Lab Work	20%
Quizzes	10%
Problem Sets	20%
Midterm Exam I	15%
Midterm Exam II	15%
Final Exam	20%

You CAN get an A in this course if you WORK hard, LEARN the material, and DEMONSTRATE your learning through performance on the assignments and exams. The final grade will not simply be assigned at fixed point cut-offs, but will be based on how well each student’s scores demonstrate mastery of the material. If your performance demonstrates that you learned only enough physics that you won’t need to repeat the course, expect a C. If you demonstrate a comprehensive command of the material, expect an A. If you are somewhere in between, expect a B. Individual scores will be compared to the overall performance of the class in order to avoid a particularly difficult assignment or exam adversely affecting everyone’s grade. Overall scores will be presented frequently in class, and are always available on <http://blackboard.du.edu>. If you are worried about your grade, **come to office hours!** We can discuss ways to improve.

PARTIAL CREDIT

Homework, quiz and exam questions will ALWAYS be graded to give “partial credit,” meaning that a final correct answer is NOT the only part of the grade. In fact, demonstrating your thought process and setting up the problem correctly is a LARGE part of your grade. A correct answer given to a problem with no evidence of how you arrived at that answer is NOT WORTH ANYTHING! As you are completing your homework, imagine you are teaching the grader your method for doing each problem. To give yourself the best chance for high grades, make sure your work is clear and easy to follow. You will probably want to rewrite your solutions after your first time through the assignment.

REQUIRED TEXT

David Halliday, Robert Resnick, and Jearl Walker, *Fundamentals of Physics*, 8th edition, Part I, Wiley 2006 (ISBN: 0-470-04475-6)

SUPPLEMENTARY READING

Feynman, Leighton, and Sands, *The Feynman Lectures on Physics*, Addison-Wesley (any edition)

Clifford Swartz, *Prelude to Physics*, Wiley, 1983

Dare A. Wells and Harold S. Slusher, *Physics for Engineers and Science, Schaum's Outline Series*, McGraw-Hill, 1983 (or similar newer edition)

Jerry D. Wilson, Anthony J. Buffa, *College Physics*, 5th ed., Prentice Hall, 2003

John D. Cutnell, Kenneth W. Johnson, *Physics*, 6th ed., Wiley, 2003

Douglas C. Giancoli, *Physics: Principles with Applications*, 5th ed., Prentice Hall, 1998.

Larry Gonick and Art Huffman, *The Cartoon Guide to Physics*, Harper-Perennial, 1990 (?)

INTERNET RESOURCES AND COMMUNICATION

This syllabus, along with any other course information such as homework assignments, exam solutions, etc. are ALWAYS available online in at least two places, the course homepage on <http://blackboard.du.edu> and my personal web page, <http://portfolio.du.edu/bzink2>, under Teaching. The most recent course grades are also ALWAYS available on <http://blackboard.du.edu> and any questions regarding current grades will be referred to blackboard.

You should have already received at least one e-mail message from me. E-mail is a very reliable way to communicate with me, and the best way to arrange office hours by appointment if you cannot attend at the times posted above. I will likely communicate with the class via e-mail during the quarter, so it is good to get in the habit of checking your e-mail frequently, if you don't already do so.

WAYS TO GET HELP

Every student in this course has multiple ways to get help with problem sets, pre-labs and lab reports, general concepts, or other problems. These include:

- **Physics Help Desk:** Graduate Teaching Assistants are available to any physics student nearly all hours of the week at the Physics Help Desk, located in the 1st floor lobby of the Physics Building. The current Help Desk schedule will be handed out in class, and also available on <http://blackboard.du.edu> and at my portfolio page, <http://portfolio.du.edu/bzink2>, in the Teaching folder.
- **GTA Office Hours:** Each of the physics Graduate Teaching Assistants (GTAs) has office hours in addition to Help Desk. Times are posted with the Help Desk schedule.
- **My Office Hours:** I have set aside time for weekly Office Hours on Monday and Friday from 11am-12pm, and Thursday from 2-4pm. I will be in room 404 in the Physics Building, or easily found nearby. If you cannot attend these times, call or e-mail me to make other arrangements.
- **Tutoring:** If you desire additional individual help, the Physics Department maintains a list of private tutors. See Barb Stephens in the Physics Office (2nd Floor of the Physics Building) for more information.

ESTIMATED SCHEDULE OF LECTURES

- Week 1 What is Physics? Units, measurement, and how to approach a physics problem.
- Week 2 Motion in one dimension
- Week 3 Vectors, motion in two and three dimensions
- Week 4 Force and motion - Newton's laws
- Week 5 Force and motion - Friction
- Week 6 Kinetic energy and work
- Week 7 Potential energy, conservation of energy
- Week 8 Systems of particles, linear momentum and conservation
- Week 9 Rotation
- Week 10 Rolling, torque, angular momentum and conservation

HONOR CODE VIOLATIONS

You have all read, understood, and signed the University of Denver Honor Code. I expect you to follow the Honor Code. Violations will be taken seriously, and are potential grounds for failing the course. If you cheat, you LEARN less, and you violate everyone's trust. I will be grumpy, to say the least.