Physics 211
Engineering Physics I
Spring 2008

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email: cole@physics.isu.edu
Lecture times: MTWF 10:00 - 10:50 AM
Lecture location: Physical Sciences Building, room 132
Class website: http://www.physics.isu.edu/~cole/Class/Phys211/phys211.html

Physics 211 is the first semester of a two-semester sequence of calculus-based courses for science and engineering majors and other interested students. In Physics 211 we will cover several topics in classical mechanics: kinematics, Newton's laws, gravitation, simple harmonic motion, work and energy, conservation laws, linear & angular momentum, and rotational dynamics with applications in static equilibrium. In the last four weeks of the course, we will study the kinetic theory of gases and the principles with applications of thermodynamics. That is to say we will cover almost all of Vol I of your text **Physics for Scientists and Engineers with Modern Physics** by Douglas Giancoli, except for chapters 13, 15, and 16, i.e. fluids, wave motion and sound. The second course in this engineering physics sequence, Physics 212, will take off where we leave off and will cover waves, optics, and electricity & magnetism (Vol. II of Giancoli).

General Information

This four-credit course includes lectures/demonstrations (4 meetings per week MTWF 10 AM). Please note that physics is not a spectator sport. As a rough guide, you should expect to spend two to three hours studying physics outside of class for each hour you spend inside. DO NOT FALL BEHIND. The material we will be covering is cumulative and a student falling behind will find class time increasingly useless. Our emphasis will be on an understanding of the underlying physical concepts as well as on problem solving skills. This means that in addition to being able to solve all the assigned problems and questions, you will also be expected to be able to apply the concepts involved in these problems to somewhat different situations. This may involve qualitative and sometimes creative answers to questions or problems. To do this successfully, the student is encouraged to focus on gaining an understanding of the physical concepts involved rather than merely learning to memorize formulas and plugging in numbers. The more that is understood, the less there is to memorize.

The required textbook is **Physics for Scientists and Engineers with Modern Physics,** *by Douglas Giancoli (Pearson/Prentice Hall Publishers, 2008, 4/E).* Reading assignments are listed in the attached Schedule. **Students are expected to read the text before class.** The lectures will roughly follow the text but will also augment and expand on the readings. Unless explicitly noted in class, the students are responsible for material covered in the readings as well as in lectures.

Elementary calculus and will be used freely in this class. Students are encouraged to work together in small study groups with friends and classmates to discuss physics problems and to work on the homework. My experience has been that such collaboration is an efficient and oftentimes enjoyable studying technique. Assignments to be handed in, however, should be submitted individually.

Examinations and Grading

Your course grade will be computed as follows:

In-class tests (4 of them)	40%
Final exam	20%
Lecture quizzes	20%
homework	20%
Total	100%

While it is not possible to make numerical assignments for final grade cuts now, an *approximate* breakdown of final grades is as follows: A, 15%; B, 25%; C, 40%; D/F, 20%.

Tests: There will be four one-hour examinations and a two-hour final examination. The final exam will be cumulative, with an emphasis on material covered since the last hour exam. If you miss a test without a valid excuse, you will receive a zero for the test. Students who miss an exam due to an unavoidable emergency (illness, death in the family, *etc.*) must discuss the situation with the professor as soon as possible *before* the exam. An excused absence requires a written request (*e.g.* a signed note from a physician or a university official). If you miss a single test with an excused absence, you will receive a calculated replacement grade based on your performance on the other hour exams. If you miss the final examination or two one hour tests, you may, upon request, get an *I*-grade *only* if you have a valid excuse and the average of your test scores indicates a possibility of passing the course. You will then have to complete the course at another time. If you wish to submit a test for regrading, first make sure you understand how to do the problem correctly. Then, provide an explanation of your request on a separate signed sheet of paper. Make no marks on the solution that you submitted for regrade and the professor will regrade the entire examination.

Homework Assignments: Homework will be administered through the Mastering Physics online service (www.masteringphysics.com). Homework problems will be made available through Mastering Physics at least one week prior to the due date. The lowest four homework grades will be dropped. The homework will consist of multi-step Skill-Building and Self-Tutoring problems, as well as more traditional problems taken from Giancoli, Physics for Scientists and Engineers. If you are unfamiliar with Mastering Physics, please take the time to read Getting Started with Mastering Physics, a how-to student booklet, available under Contents. Mastery of the homework is necessary if you wish to do well on the tests.

Before you go online, make sure you have the following items:

- Valid email address
- Course ID MPCOLEPHYS211
- Student ID. Use your six-digit Bengal number
- Student Access Code. This is a six "word" printed code supplied beneath the pull-tab inside the MasteringPhysics *Student Access Kit.* Each code is valid for one individual student only.

You cannot edit the Course ID or Student ID after you have recorded it. BE VERY CAREFUL.

This is how you log in and set up you account.

- go to http://www.masteringphysics.com
- click on the Giancoli book cover
- use the access code from your *Student Access Kit*. The comes with the book if bought new. If purchased used, you must go online and buy an access code number with your credit card. With this access code you will set up your unique ID/Password.
- There will be two additional fields:
  - Course ID: MPCOLEPHYS211.
  - Student ID. Please use your six-digit Bengal number.

Now you are ready to do your homework.

- Click on the button assignment list.
- You will see the assigned problems and due date.
- You can freely ask for hints and the unopened hint bonus is 2% per part. You will be allowed five attempts per answer. Multiple choice questions are penalized as described in the online help. Credit for problems submitted late will decrease to 50% after seven days (168 hours) once the deadline has passed. This is to say, you will be penalized 7% per day for up to a maximum of 50% of the total credit. If you turn in your homework three days late, the maximum credit you can receive will 79% of the total possible score. After one week past the due date, you can still turn in your homework but it will be valued at one half the total possible score. The last day to turn in the homework assignments will by on Monday, May 5, 2008 at 6:00 AM. For better or worse, all e-mail messages you send to Mastering Physics are directed to the professor, so be nice.

Quizzes There will be several unannounced quizzes (at least 6) during the course of the semester. They will be handed out at 10:00 AM sharp. These quizzes are designed to assist you in keeping up with the course, and to allow for the instructor to assess your progress. Since you will be able to drop the lowest two quizzes from your total, there will be no makeup quizzes. Because the quizzes constitute 20% of your grade, it is not in your interest to skip too many classes.

Accommodation of Students with Disablilities The Americans with Disabilities Act (ADA) is the civil rights guarantee for persons with disabilities in the United States. The Idaho State University ADA & Disability Resource Center is committed to providing an equal educational opportunity for all qualified students with disabilities. It is the objective of Idaho State University to provide reasonable accommodations to the academic, social and professional environment based on individual needs. To request an accomodation please refer to the webpage http://www.isu.edu/ada4isu/index.shtml. The ADA & Disabilities Resource Center is located in Graveley Hall, Room 123 (282-3599).

Corequisite:	MATH 175 Calculus II (or equivalent). This assumes you have passed MATH 170 Calculus I (or equivalent) with a C− or better.
Extra Credit:	No extra credit will be given.
Cell Phones:	Turn them off before coming to class and they must always be stowed away.
Calculators:	Programmable calculators are not allowed during quizzes or exams.
Drop Date:	January 28, 2008
Withdrawal Date:	March 21, 2008
Academic Integrity:	The use of unauthorized materials during a test constitutes cheating. All *suspected* instances of cheating will be immediately referred to the Dean of Students. This breach of academic integrity may result in expulsion from the University and an F in this course. DON'T CHEAT! see: http://www.isu.edu/studenta/handbook/conduct.shtml

Other books:

If you have difficulty understanding something in the course textbook, or perhaps want to see additional worked examples, the following textbooks may be of interest:

Fundamentals of Physics, Fourth Edition, Halliday, Resnick and Walker.
University Physics, Eighth Edition, Young.
Physics, Wolfson and Pasachoff.
Physics, Cutnell and Johnson.
Fundamentals of College Physics, Nolan.
College Physics, Serway and Faughn.

Some fun books:
Thinking Physics, by L.C. Epstein.
The Flying Circus of Physics with Answers, by Jearl Walker.
The Cartoon Guide to Physics, by L. Gonik.

And for an intuitive and a slightly more advanced viewpoint on classical mechanics:
The Feynman Lectures on Physics (Vol. I) by Feynman, Leighton, and Sands.

Old Tests:

Solutions to old tests will be posted on the class website. In your studying, use these as a guide only. Your tests will be different.

Physics 211 is a difficult class. A good grade in this course is something to be really proud of. Good luck!