

# Syllabus for PHYS 211/212

PHYS 211/212 Science/Engineering Physics I,II. Corequisite: Second Semester Calculus. Topics: Vectors, Kinematics, Dynamics, Momentum, Work and Energy, Waves, Thermodynamics, Electricity and Magnetism, Optics, Modern Physics

**INSTRUCTOR:** Mr. Martin Hackworth (Martin)

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**MATERIALS:** *Physics For Scientists and Engineers with Modern Physics*, by Serway, Beichner (note: this textbook comes bundled with a veritable cornucopia of supplementary materials almost all of which I think you will find useful), *CRC Standard Mathematical Tables*, a scientific calculator (I recommend the TI-30Xa that is used in labs), internet access (the website for this class is: <http://www.physics.isu.edu/~hackmart/engphys.htm>), a pencil with eraser. *Serway*, incidentally, is a wonderful textbook that I think you will find very helpful if you take the time to read it.

**OBJECTIVES:** To introduce the student to introductory mechanics, wave phenomena, and thermodynamics, to develop problem-solving strategies, to promote critical thinking.

**GRADING:** This course will be graded on a point system. You may acquire points from the following sources:

1. QUIZZES - A short (usually 5 - 10 minute) quiz will be given most class periods. Questions will be selected from lecture material and sections in the text covering material relevant to what is currently being discussed in class. All quiz points count toward the final total and there are no makeup quizzes given. These may be given anytime during the class period.
2. EXAMINATIONS - Four mid term exams will be given. All examination points count toward the final total and no makeup exams will be given. You will not be permitted to take an exam if you arrive after the first person to finish leaves. You must supply a student ID to be admitted to an exam. See the website for details.
3. FINAL EXAM – A comprehensive final will be given. Calculator rule is in effect. The makeup final will be an oral/essay exam administered by appointment. You will not be permitted to take the final exam if you arrive after the first person to finish leaves.
3. CLASS PRESENTATION – A 15 minute presentation before the class on a topic mutually agreed upon by you and me. You must submit lecture materials and a short paper of at least 2000 words. For more information go to: <http://www.physics.isu.edu/~hackmart/engphysannounc.htm>
4. POTPOURRI – TBA, but I am well known for awarding points based on class discussion, outside reading, contributions to the listserv, etc.

**Approximate Point Values:** Quizzes are worth 5 - 20 points each, exams are worth 50 points each, the final exam is worth a minimum of 100 points, class presentations are worth 50 points.

<b>Totals:</b> Exams	200+ points
Quizzes	150+ points
Final	110 points
Presentation	50 points
Miscellaneous	0 – 100 points

**610 + points available**

Final grades will be based upon the following scale:

- “A” > 400 points
- “B” > 325 points
- “C” > 250 points
- “D” > 175 points

Any student accumulating a total of 350 points or more before the end of the semester will be excused from the comprehensive portion of the final exam and awarded a grade of “A” in the course.

**ATTENDANCE:** My attendance policy is that I have none. I believe that our class time will be informative and will be useful to you. But if you choose not to attend class or if for some reason you are unable to attend class that’s OK with me. As there are numerous opportunities for you to make up lost points from quizzes and exams, and many extra points built into the grading structure, there will be no makeup quizzes or exams. None, nada, zilch. Please don’t ask about makeup exams or taking an exam early.

**WHAT THE CLASS IS ALL ABOUT:** Engineering Physics is an advanced, calculus-based survey of physics course. We will cover a wide variety of topics in fairly rapid succession. You need to be prepared for the necessary caliber of effort. I don’t expect you to know much about physics (though if you do it’s a bonus). I *do* expect you to have a reasonable comprehension of math through first semester calculus. Very early in the first semester of this course you will be required to grapple with some fairly sophisticated mathematics. You will probably find your calculus textbook a useful reference.

Homework will not be regularly collected or graded. Nonetheless, I strongly suggest that you work as many of the problems in the back of each chapter as you can (consider all odd numbered problems assigned). If you want to guarantee yourself a good grade this would be a good way of going about it. I will post example problems for you to work through on the website for this course. Feel free to see me if you have any trouble with any problem either in the book or on the site. If you will remember to ask me in class when we finish a chapter I will be happy to suggest my favorite homework problems for you to have a look at.

If you pay attention during lecture, read the textbook, do homework, work through the examples on the web, and put forth a reasonable amount of effort, I believe that you will find this course rewarding and not impossibly difficult.

A syllabus spells out the terms of a contract between us and so it is necessary to cast it in formal language. Don’t let it worry you too much. I have generally had a lot of fun with my engineering physics classes. I like teaching a lot. I will do everything I can to make this course interesting. Don’t be afraid of asking questions in class. My office door is generally open. If you are having a problem with this course (or with anything else for that matter) do not hesitate to come by. I hope that you all do well. Best of luck.

### **How to make an “A” in Engineering Physics (a 12-step program)**

1. Read the textbook *thoroughly* before coming to class.
2. Attend class.
3. Download the notes on the web and take good notes during class.
4. Review your notes and the text after class
5. Start on assigned problems immediately.
6. Work as many homework problems as you can.
7. If you are unable to make headway on a problem after 20 minutes, punt.
8. Make use of the instructor's office hours for help with problems.
9. Begin studying for exams several days early.
10. Review notes, quizzes, homework, and the textbook thoroughly before each exam.
11. Take pride in you preparation for quizzes and exams.
12. Recognize that you are in the most difficult college course you are going to take and that you must rise to the challenge in order to succeed.