**PHYs 253 – Foundations of Physics III (CRN 35601), Spring 2013**

**SYLLABUS**

*Updated Wednesday, April 1, 2013*

| **INSTRUCTOR** | Professor Benjamin McMorran, UO Department of Physics  
Email: mcmoran@uoregon.edu  
Office (174 Willamette): Mon 1-2, Tue 3-4 & by appointment |
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| **TEACHING ASSISTANTS** | Chris Jackson (graduate TA)  
Email: cjackso9@uoregon.edu  
Office (218 Will): Tue 10-12 & by appt.  
Drop-In Help Center: Mon 10-11  
Jeremy Copperman (graduate TA)  
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Office (135 Kla): Tue 3-4  
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Thomas Sylwester (undergrad TA)  
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Drop-In Help Center: Mon 12-2 |
| **LECTURE** | MWF 11:00-11:50 am, 100 Willamette Hall |
| **TUTORIAL** | All tutorials are on Thursdays in 13 Willamette |
| **LABS** | PHYS 290 recommended, but not required for the course |
| **TEXTBOOK** | *Physics for Scientists & Engineers with Modern Physics, 4th Ed.*, by Douglas Giancoli  
Two copies are reserved at the Science Library (call # SB MCMORRAN) |
| **PRE/CO-REQ** | MATH 253 (Calculus) or equivalent |
| **DROP-IN HELP CENTER** | The Physics Drop-In Help Center is staffed by physics TAs during normal business hours. Specifically, PHYS 253 TAs will be available at the times specified above, but other TAs will be available pretty much any time during normal working hours. During all the times posted above, the Center is will be in 147 Willamette. |
| **BLACKBOARD** | We will be using Blackboard in this course to distribute course materials. URL: https://blackboard.uoregon.edu/ |
| **EMAIL** | **You must use your uoregon.edu email address** when corresponding with the instructor and TAs by email. Please mention PHYS 253 in the subject line. |

**Topics and Aims**

This term we will discuss electromagnetism. The following topics (Ch. 21-31) will be covered:

- Electrostatics – electric charge, electric field, Coulomb’s law, Gauss’ law
- Electric potential
- DC circuits – resistors, capacitors, Ohm’s law
- Magnetism – magnetic fields
- Electromagnetic Induction - Faraday's law, transformers
- Geometric Optics

Physics is intrinsically a "simple" subject in the sense that natural phenomena are explained by reducing them down to a few underlying principles. There are two important goals for this course:

- Learn the fundamental concepts underlying mechanics.
- Learn how to arrive at quantitative answers. Physics is inherently quantitative.
Solving physics problems (assigned homework *at the very least*) is the only way to master these skills.

| GRADING | 30% - homework assignments  
|          | 10% - tutorial participation  
|          | 15% - first midterm exam (tentatively Friday, Feb. 1)  
|          | 15% - second midterm exam (tentatively Friday, Mar. 1)  
|          | 30% - final exam (Thursday, June 13, 10:15 AM – 12:15 PM)  
| **Final Grade:** A=90-100%; B=80-89%; C=70-79%; D=60-69%; F<52%.  

If necessary, I may apply a curve to achieve a higher average final grade. However, you are guaranteed at least the grade listed here based on your course average. Pass/fail grading option: A passing grade requires at least the equivalent of a C- grade.

| HOMEWORK | Working (and struggling) on textbook problems yourself provides the only opportunity to gain insight into the concepts you're learning and prepare for the exams. Turning in complete homework on time is crucial to getting a good grade in the class. Homework is due each Wednesday before class starts, either at the front of class or in the appropriately labeled dropbox in the basement of Willamette. Late homework turned in before 5:00 PM Wed gets a 25% penalty, and before noon on Thursday gets a 50% penalty. In calculating final grades, the lowest homework score of the term will be deleted, assuming the homework has been turned in and valid attempts have been made at all the problems. Thus, even if a homework is late (even after Thursday) you are encouraged to turn it in so that it can be checked for completion and the low score can be removed during final grading.  
|          | Feel free to discuss the questions with others, but of course, *the work you submit should be your own*. It is not recommended to look for solutions to problems online, but if you do you must cite your source (URL) and include your own additional comments. Simply copying these or not citing them will do you no good, and will be treated as a violation of the Academic Code of Conduct. Again, you are discouraged from seeking solutions to problems. Solutions to all the problem sets will be posted – *study* these.  
|          | Homework will be a set of problems from your book like those from last term, and occasionally another 1-3 exercises. **You must circle your answers.** Only a few homework problems may be graded for correctness (we will try to mark which ones) – the rest will be graded for completion. This is because (a) there a large number of students in the class and very few graders, and (b) we want to eliminate the attraction of looking up solutions online. **Students are expected to compare their answers to the posted solutions.**  
|          | Grades will be posted to Blackboard on or by the Monday after homework is turned in. Please check your Blackboard account regularly and report any discrepancies or possible errors as soon as you notice them.  

| MIDTERM EXAMS | There will be two in-class midterms: one on Friday, Apr. 26, and the other on Friday, May 24. **There will be no makeup exams.** If there is a serious (e.g. involving illness) and well-documented (e.g. with a doctor’s note) reason for missing the midterms, the final exam score will count extra, in place of the missed tests.  

| FINAL EXAM | The final exam will be held from 10:15 am - 12:15 pm on Thursday, Jun. 13. You must take the exam at this time. (No exceptions.) Bring a calculator to the final.  

| ACADEMIC MISCONDUCT | Students have the responsibility to behave honorably in an academic environment. The University Student Conduct Code (available at conduct.uoregon.edu) defines academic misconduct. Academic dishonesty, including cheating, fabrication, facilitating academic
dishonesty, and plagiarism, devalues the reputation of our institution, its faculty, its students, and the degrees we offer. Moreover, academic misconduct is particularly unfair for the students who do their work with integrity and honor. All incidences of suspected academic misconduct will be reported to the Office of Student Conduct and Community Standards. The procedures for handling academic misconduct cases are outlined in Oregon Administrative Rule OAR517-021-0215.

You must work by yourself on exams. On homework and in tutorials, you are allowed (and encouraged) to work with other students, the physics drop-in help center, your TA and your instructor. However, you should not just directly copy from them. Doing so is not only dishonest, but will hurt your ability to do the problems on the exams.

### Laptops and Phones in Class (None)

The use of laptop computers and phones in class is discouraged. Why? Several studies show that students using laptops in class spend a great deal of time on non-class-related activities (texting, FB, playing games, etc.) and that these distractions negatively impact both learning and grades. This alone isn’t a reason to ban laptops – you’re responsible for your own performance in class. In addition, however, studies have shown that laptop use distracts and impacts the learning of other students nearby. (E.g. Fried, C. B. *Computers & Education* 50, 906-914 (2008).) Plus, students have complained about the environment created by their classmates’ laptop use. Taking notes by hand, by the way, is more effective in cementing concepts in your mind – you can always take a quick photo of your notes if you want a digital copy.

### How to Do Well in the Course

- Attend class.
- Read the suggested chapters in the textbook before coming to class.
- Participate in tutorial discussions (both talking and listening)
- Do the homework, and study the solutions.
- Work on understanding all the concepts and example questions discussed in the lectures and the homework. “Understanding” does not mean “it sounds like it makes sense to me,” but more deeply, “I could explain this concept to one of my classmates.”
- Come to office hours with questions – we’re nice!
- A suggestion: *Sleep!* Numerous studies show that sleeping helps both memory and understanding.
- And another: Avoid low blood sugar during exams (and all class periods) by eating a snack or meal beforehand.

### Students with Special Needs

If there are aspects of the instruction or design of this course that result in barriers to your inclusion, please notify me as soon as possible. You are also welcome to contact Disability Services in 164 Oregon Hall, 346-1155.