

General Physics 95.104 Spring 2014 Information / Course Policy

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Course Websites <http://faculty.uml.edu/slaycock>
www.masteringphysics.com **Course Code: GPHYS2S2014**
<https://piazza.com/uml/spring2014/95104/home>

Co-Requisite 96.104 General Experimental Physics II (Laboratory course)

Course Schedule

Lectures: Monday 8AM, Wednesday 8AM (In Olney 150)
Recitations: M/W or Tu/F

Office Hours: See Piazza for schedules or make an appointment.

The Course is structured in weekly blocks of two lectures and two recitations,

Course Materials: ***Physics, Principles with Applications*** by Giancoli, 7th edition,
(course textbook, see webpage for options)

MasteringPhysics account for homework and study assignments. Access code comes with Giancoli text if bought new, or buy online, www.masteringphysics.com. Account lasts for 2 years, so do not purchase again if you already have it.

Clicker . -Must bring to all lectures. Register it online at www.iclicker.com. Do not purchase, one will be loaned to you at the first lecture of the semester.

Scientific Calculator –Must bring to all classes. (graphing calc. is OK, network connectable devices e.g. smartphone, tablet etc., are not an acceptable substitute and will not be allowed in exams/quizzes)

The above are all available at the UML bookstores on North and South campus.

Course Coverage: Electricity, Magnetism, Light, Optics, Special Relativity, Quantum theory, Nuclear and Particle Physics (Giancoli Chapters 16-32). General Physics I & II emphasize real-work applications of Physics, and include many examples from other fields, especially the biological/health sciences. The course covers all the physics topics listed in the MCAT requirements.

Course Outline

General Physics (I & II). covers a lot of ground, as it is nothing less than a survey of the inner workings of the physical world. In order to make this course useful to you, I will focus on *Concepts, Tools, and Understanding*. The course will feature frequent examples and demonstrations relating to your own fields of study and interest.

Unlike some subjects, you won't be able to pass physics by memorizing facts; problem solving is a key physics skill that employers pay a premium for out in the real world. So completing your homework and attending all recitations, will be vital to gaining proficiency.

At every stage, YOU need to ask the following questions:

1. Why is this useful?
2. Where did it come from?
3. How does it fit into what I already know?
4. How can I use it to solve a problem I care about?

Lectures

Please read the relevant chapter before each lecture - Clicker questions based on the reading will be interspersed throughout the lectures, and comprise 10% of your final grade. If you know that you will miss a lecture for unavoidable reasons, please contact me in advance for advice on reading etc.

Homework

There is a homework assignment to go with every lecture in the course, to guide your exploration of the material covered in the lectures. Each assignment will contain problems and concept questions on material covered in the lecture, and some reading questions to prepare you for the next lecture.

Plan on devoting several hours to the homework each week. Experience shows that working problems is far more effective as a study technique than blindly re-reading the textbook. This homework is intended as the CORE of your physics studies; so of

the 6-9 hours a week that you spend studying, don't worry if most is occupied by the HW.

Homework is assigned using the *MasteringPhysics* online system. Problems have randomized variables, so that although you all do the same problems, the numerical answers will be different from those of your classmates. Grades are determined from a combination of : (1) *MasteringPhysics* which automatically scores and corrects your answers, (2) a score given by the TA's who will check your HW after you hand it in.

You need to be writing out your HW problems, drawing diagrams and treating it just as if the questions were assigned from a book, instead of a computer. Hand in your written homework in class, the following Monday. It will be reviewed and returned to you within 7 days with feedback and a grade indicating whether you are exhibiting competent problem-solving skills. Bring your homework notebook to the recitations, where we will work through some of the problems.

Deadlines are programmed into the Mastering software, and are listed in the course schedule. This strict approach to homework deadlines is to help you! It will prevent you falling behind and building up a backlog of work.

Tutoring

Tutors are provided free of charge by the university at the "Centers For Learning", located on both North and South campuses. The Physics Department also provides graduate student tutors every day in the physics dept. office in Olney Hall. Check the schedule posted on the door for times.

Some tutoring-style help is provided by the "Mastering Physics" online system, which parallels the Giancoli text and end of chapter problems. Mastering provides hints, and collects and assesses your answers.

I strongly suggest you do not see the tutors until you have tried the HW problems yourself using the textbook and lecture notes to guide you.

Recitations

Recitations provide an opportunity for you to interact with your instructors in a smaller group (typically 19 or fewer students). This will help us get to know one another, and provide you with intensive coaching in problem solving. Recitation sessions will involve solving by hand, selected complex problems from Giancoli, plus some special ones provided by the instructor. A short quiz will be administered each week (for credit = 10%). Most importantly your instructor will provide guidance on the homework problems, this should be a big incentive to attend. *You must attempt the MasteringPhysics homework before class* to get the most benefit, and so we can see your progress, and tailor the recitation accordingly.

Reading

Read the Giancoli chapters indicated in the master schedule before each lecture. I suggest you spend an hour familiarizing yourself with the upcoming material sometime during the weekend. Grab a coffee, and enjoy it, free from the pressure of solving yet another problem. Maybe make some notes, don't worry if you don't understand it yet, you will get a lot more out of the lecture this way. (And don't forget there are quizzes on this material).

Team Research Challenge

In small teams, you will research and write about a complex piece of technology that relies entirely on the principles of Physics encapsulated by this course. There will be a list of suggestions, or your group can propose a new one. Each team member is responsible for a different component of the system, while the leader has to provide the big-picture systems viewpoint, and pull all the sections together. Each team will present their report to the class during recitation.

Piazza

This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than automatically emailing questions to the teaching staff, I encourage you to post your questions on Piazza so that everyone can benefit from the dialog.

Find our class page at: <https://piazza.com/uml/spring2014/95104/home>

If you have any problems or feedback for the developers, email team@piazza.com.

Rules/Policies

1. You must make your own notes in the lectures.
2. You must bring your clicker to every class.
3. Bring your Scientific Calculator to every class.
4. No phone calls, no U-tube, no Emailing, no web browsing, no distractions.
5. Contact me *in advance* to make arrangements if you will miss a class (or monthly quiz) for a valid reason.
6. Do the reading before each lecture.
7. Don't ask for extensions on homework deadlines. Your lowest 3 homeworks and 3 quizzes will be dropped in computing the final grade. Use these "lifelines" wisely.
8. Absences for University sports, or other personal reasons must be notified and agreed upon one week prior to the event in question.

Exams

There will be a monthly in-class exam (3 in total) plus a final exam, as laid out in the class schedule. Monthly exams are held in Olney 150 at 8am.

Final Exam: Date TBD, Coverage – The Entire Course

You will need a Scientific Calculator and a Pen (Blue/Black) to take the tests and final exam. (Ruler, compass, square, pencil, and eraser may be useful). No other equipment will be allowed.

Grading Scheme

Homework	20%
Recitation Quiz	10%
Lecture Quiz (Clicker)	10%
Team Research	10%
Monthly Exams	25%
Final Exam	25%

Pre-Requisites

General Physics 2 assumes you have taken General Physics 1 or equivalent. It is expected that you have graduated from High School (or equivalent), and thus are proficient in basic mathematics (arithmetic, algebra, trigonometry, geometry, logarithms, scientific notation, graphing). Advanced math such as Calculus will **not** be needed.

If you feel "rusty" in any of these areas, please take the time to remind yourself, or find a tutor to help you hone your skills. Everything in science will make much more sense if you can visualize relationships. This is no different than mastering some simple piano pieces *before* tackling Rachmaninov.....