

# Physics 275 Syllabus - Fall 2013

## Professors Min Ouyang and Fred Wellstood

### Official Course Description:

**PHYS275 (PermReq) Experimental Physics I: Mechanics and Heat; (2 credits)** Grade Method: REG/P-F/AUD. Prerequisite: PHYS161 or PHYS171; and PHYS174. CORE Physical Science Lab (PL) Course only when taken concurrently with PHYS272. Methods and rationale of experimental physics. Intended for physics majors and science and engineering students who desire a more rigorous approach. Experiments chosen from the areas of mechanics (from PHYS171), gas laws, and heats. Theory and applications of error analysis.

### What the course is about:

Physics 275 is the second course in the introductory Physics lab sequence PHYS 174-275-276. The course is intended for physics majors and also for science and engineering students who desire a more rigorous introduction to experimental science. Experiments are mainly chosen in the general area of mechanics. A major component of the course concerns understanding error analysis, both learning how to do it and appreciating what a useful tool it is. The Lab meets for four hours each week in **Room 3104** of the Physics Building. Roughly three hours of this time will be spent working on the lab and one hour in discussion during the lab.

**Web Site:** To get the latest information on Physics 275, check the web site at:

<http://www.physics.umd.edu/courses/Phys275/index.html>

### Lab sections:

Lab section	Day	Time	Instructors	Teaching Assistant	Lab Room
0101	Monday	2-5:50 PM	M. Ouyang	Michael Schaubert	3104 Phys
0301	Tuesday	2-5:50 PM	F. Wellstood	Steven Cowen	3104 Phys
0201	Wednesday	2-5:50 PM	F. Wellstood	Michael Schaubert	3104 Phys
0401	Thursday	2-5:50 PM	M. Ouyang	Steven Cowen	3104 Phys

### Course Instructors:

#### Prof. Fred Wellstood

e-mail: well@squid.umd.edu  
Office: Room 0367 Physics Building  
Phone: 301-405-7649

#### Prof. Min Ouyang

e-mail: mouyang@umd.edu  
Office: Room 1366 Physics Building  
Phone: 301-405-5985

#### \* Teaching Assistants

Steven Cowen  
Michael Schaubert

#### e-mail:

[scowen@umd.edu](mailto:scowen@umd.edu)  
[mjarret@umd.edu](mailto:mjarret@umd.edu)

#### office:

Phys 4110  
Phys 3101

\* **Office Hours:** You can try stopping by our offices at any time, but if you can't find us, make an appointment by e-mail.

\* **Prerequisites:** The prerequisites for the course are Physics 174 and Physics 171 (or Physics161).

\* **Co-requisites:** You must also be enrolled in Physics 272 in the same semester in order to get CORE lab science credit.

\* **Required Texts:**

- (1) "Physics 275 Lab Manual" – Fourth Edition--June 2010
- (2) "A Practical Guide to Data Analysis for Physical Science Students" by Louis Lyons.

\* **Recommended Texts:**

- (1) "Introduction to Error Analysis" by John R. Taylor.
- (2) "Data Reduction and Error Analysis for the Physical Sciences", by P. R. Bevington.

\* **Arriving late to class:** Classes at Maryland begin right on the hour. It is important that you arrive on time so that you can get instructions for the lab and have time to finish. If you arrive more than 10 minutes late, you may not be allowed into the lab and will have to make it up during another section.

\* **Making Up Missed Labs:** You should make every effort not to miss your regularly scheduled lab. If you miss your regular lab section, you should make that lab up by going to another section that week or by scheduling a makeup lab with the TA before your next lab.

\* **Grading:** 40% Spreadsheet Lab Report  
10% Homework  
25% First Practical Exam  
25% Second Practical Exam

*Missing one Lab (and not making it up ) will cost one letter grade in your final grade. Missing one homework set will cost one-half of a letter grade in your final grade. Final grades will be computed based upon the above weightings. Standard grading will be followed (A is 90-100, B is 80-90, etc.) unless the class's distribution of scores is unusual, in which case a standard curve will be used.*

\* **Your Lab Report** - Each week, before you leave the lab, you must submit to ELMS Blackboard a Excel spreadsheet lab report of all the work you completed so far. If you need to make revisions to this report, or finish some parts, you will have until 1 PM on the first Monday after you had the lab to submit a revised version along with any assigned homework.

\* **Homework** is typically assigned at the end of each Lab. You will turn your homework and any revisions to your lab by submitting an Excel spreadsheet file as an e-mail attachment to ELMS Blackboard. You can turn in your report and homework anytime during the week, but by no later than 1 PM on the first Monday after you had the lab. Corrected homework should be available the following week.

\* **No credit will be given for late homework unless you are seriously ill and provide a written note from your physician.**

\* The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.studenthonorcouncil.umd.edu/whatis.html>.

\* **General Comments on the Lab report and Homework:**

Finishing all the lab reports and homework sets is very important. If you can't completely finish a lab and homework set, it is still important to turn in what you do have. When you are working on your report or

homework, feel free to discuss with other students to try to figure out what is going on. However, do not use these discussions as an excuse to copy someone else's report or solution, or let someone else copy yours. That is cheating and is strictly forbidden. It is also very self-defeating since a large part of your grade (50%) will come from tests. The right way to proceed is first to work through the report and arrive at a definite answer on your own. With this preparation you can then discuss intelligently with your colleagues and see if you have missed something essential. Of course, you can always ask one of your instructors.

In some of the homework assignments, you will see that there are problems labeled with an H. These are optional problems which are intended "for Hotshots only" and do not count towards your grade. If you like thinking about physics problems, and are looking for something a bit more challenging, then go ahead and try them - we made these problems just for you.

**One final thing**, if you miss something fundamental in a lab or test, you will may be assigned extra problems to solve until you master the concept.

\* **In case of Bad weather:** Winter in the Washington Metro area can bring large snowstorms that make travel dangerous. If the University is closed during a scheduled lab, class will be cancelled, and we will most likely reschedule the lab for the following week. Closing is announced over local radio and TV as well as on the [University's homepage](#).

## Important Dates for Phys275, Fall 2013

Sept 3	First day of the Fall semester
Sept 3 – 6	No Labs
Sept 9 – 13	Experiment 1 - <i>Diagnostic Exp 1</i>
Sept 16 – 20	Experiment 2 – <i>Dice and Distributions</i>
Sept 23 – 27	Experiment 3 - <i>Radioactive Decay</i>
Sept 30 – Oct 4	Experiment 4 - <i>Position, Velocity and Acceleration</i>
Oct 7 - 11	Experiment 5 - <i>Free Fall</i>
Oct 14 - 18	Experiment 6 - <i>First Review (Experiments 1-5)</i>
Oct 21 - 25	<b>First Practical Exam</b>
Oct 28 – Nov 1	Experiment 7 - <i>Standing Waves</i>
Nov 4 - Nov 8	Experiment 8 - <i>Mass and Spring Oscillator</i>
Nov 11 - Nov 15	Experiment 10 - <i>Measuring g with a Pendulum</i>
Nov 18 - Nov 22	Experiment 11 - <i>Second Review (Experiments 7,8,10)</i>
Nov 25 - Nov 27	Make-up labs
Nov 28 - Nov 29	Thanksgiving break - no labs
Dec 2 - Dec 6	<b>Second Practical Exam</b>
Dec 9 - Dec 13	Make-up Labs
Dec 13	Last Day of classes for the semester
Dec 14	Reading day
Dec 16 - Dec 20	Week of Final Exams: No Labs