Physics 275 Syllabus - Fall 2017

Professors Alberto Belloni and Min Ouyang

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	**Registration URL for Expert TA**
0101	Monday	2-5:50 PM	M. Ouyang	TBA	3104 Phys	http://goeta.link/USH22MD-50876D-1JP
0301	Tuesday	2-5:50 PM	A. Belloni	TBA	3104 Phys	http://goeta.link/USH22MD-4A98E0-1L1
0201	Wednesday	2-5:50 PM	M. Ouyang	TBA	3104 Phys	http://goeta.link/USH22MD-E1BA7C-1JO
0401	Thursday	2-5:50 PM	A. Belloni	TBA	3104 Phys	http://goeta.link/USH22MD-B62CFF-1L0

Course Instructors:

Prof. Alberto Belloni
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Phone: 301-405-6058

Prof. Min Ouyang
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Office: Room 1366 John Toll Physics Building
Phone: 301-405-5985

*** Teaching Assistants**	**e-mail**:	**office**:
TBA (sections 03 and 04)	TBA	TBA
TBA (sections 01 and 02)	TBA	TBA

*** 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:** Only electronic manual is required for this course (students are required to purchase electronic lab manual from **Expert TA**, https://www.theexpertta.com. See below for instruction of registration of **Expert TA**).

*** Recommended Texts:**

(1) "*A Practical Guide to Data Analysis for Physical Science Students*" by Louis Lyons.
(2) "*Introduction to Error Analysis*" by John R. Taylor.
(3) "*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 an 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. Graded lab report should be available the following week.

*** Homework** is typically assigned in **Expert TA** course website. You will finish and submit your homework through **Expert TA**. *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.

*** University Course Policies**

Please find below a link to the Office of Undergraduate Studies Course Policies for Undergraduates: http://www.ugst.umd.edu/courserelatedpolicies.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.

* **Expert TA Registration Info**:

- Open registration URL below based on your lab section. Make sure you register for correct section.

Section	***Class Registration URL***
0101	http://goeta.link/USH22MD-50876D-1JP
0201	http://goeta.link/USH22MD-E1BA7C-1JO
0301	http://goeta.link/USH22MD-4A98E0-1L1
0401	http://goeta.link/USH22MD-B62CFF-1L0

- Complete registration and payment.

Important Dates for Phys275, Fall 2017

Aug 28-Sept 1	Experiment 1 - *Diagnostic Exp 1*
Sept 4-8	No Labs (Labor day)
Sept 11 -15	Experiment 2 – *Of Dice and Distributions*
Sept 18-22	Experiment 3 – *Statistics of Random Decay*
Sept 25 -29	Experiment 4 - *Position, Velocity and Acceleration*
Oct 2 -6	Experiment 5 - *Free Fall of a Mass*
Oct 9 -13	Experiment 6 - *First Review (Experiments 1-5)*
Oct 16 -20	**First Practical Exam**
Oct 23 -27	Experiment 8 - *Standing Waves on a String*
Oct 30 –Nov 3	Experiment 10 – *Forced Harmonic Motion*
Nov 6 -10	Experiment 12 – *Designing an Experiment to Measure g to 0.1%*
Nov 13 -17	Experiment 13 - *Second Review (Experiments 8, 10 and 12)*
Nov 20 -24	Thanksgiving break - no labs
Nov 27 –Dec 1	**Second Practical Exam**
Dec 4 -8	Reserved