

Physics 275 Syllabus - Spring 2017

Professors Fred Wellstood and Drew Baden

Official Course Description: PHYS275 - Experimental Physics I: Mechanics and Heat (2 credits) (*PermReq*) Grade Method: REG/P-F/AUD. *Prerequisite: PHYS161 or PHYS171; and PHYS174. Additional information: 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. You should expect that roughly three hours of this time will be spent working on the lab and one hour in discussion with your instructors and other students during the lab.

Web Site: To get the latest information on Physics 275, check ELMS Canvas or:

<http://umdp.physics.umd.edu/academics/courses/962-physics-275-experimental-physics-i.html>

Lab sections:

Lab section	Day	Time	Instructors	Teaching Assistant	Lab Room
0201	Monday	1-4:50 PM	Fred Wellstood	Tornike Ghutishvili	3104 Phys
0301	Tuesday	2-5:50 PM	Drew Baden	Bilal Baqai	3104 Phys
0101	Wednesday	2-5:50 PM	Fred Wellstood	Tornike Ghutishvili	3104 Phys
0401	Thursday	2-5:50 PM	Drew Baden	Bilal Baqai	3104 Phys

Note that the Monday section starts at a different hour than the other three sections.

*Course Instructors:

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

Prof. Drew Baden
 e-mail: drew@umd.edu
 Office: 3208D Physical Sciences Complex
 Phone: 301-405-6069

* Teaching Assistants	e-mail:	office:	phone:
Tornike Ghutishvili	tornike@umd.edu	0220 Toll Physics Building	405-5969
Bilal Baqai	bilalmbaqai@gmail.com	2126 Martin Hall	403-8681

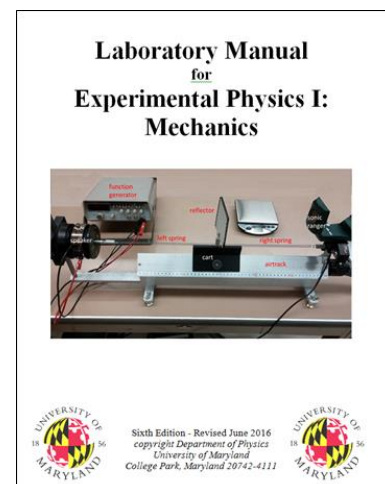
* **Office Hours:** You can try stopping by our offices at any time, but if you can't find us, make an appointment by e-mail.

* **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) "*Laboratory Manual for Experimental Physics I*" – 7th Edition- January 2017. This Lab Manual and access to the Homework Questions for PHYS275 are only available electronically from the online service Expert TA. In order to purchase the lab manual from Expert TA, follow the steps listed below in the Expert TA section. If the University bookstore incorrectly lists "*no textbook required*" for the course, don't be fooled - you need to purchase electronic access to the lab manual and questions by going to Expert TA. You will need a "class code" to buy the manual online, and this should have been emailed to you. Contact your lab instructor if you don't have it.
- (2) "*A Practical Guide to Data Analysis for Physical Science Students*" by Louis Lyons.



Purchasing the Lab Manual from Expert TA and access to Homework:

1. Locate your section number in the table below and then find the **class code** for your specific section. Make sure you have the correct section and the correct code.
2. Go to <https://www.theexpertta.com/registration/>
3. Follow the instructions... be sure to enter the correct class code for your section listed below.

Lab sections:

section	Day	Time	class code	Instructors	Teaching Assistant	Lab Room
0201	Monday	1-4:50 PM	USH22MD-643E72-1I2	Fred Wellstood	Tornike Ghutishvili	3104 Phys
0301	Tuesday	2-5:50 PM	USH22MD-3BA067-1I5	Drew Baden	Bilal Baqai	3104 Phys
0101	Wednesday	2-5:50 PM	USH22MD-E7645F-1I3	Fred Wellstood	Tornike Ghutishvili	3104Phys
0401	Thursday	2-5:50 PM	USH22MD-9C7B79-1I4	Drew Baden	Bilal Baqai	3104 Phys

*** 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 Reports
 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 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 must submit a revised report before the start of your next lab session.

* **Homework** is assigned on **Expert TA**. Typically there is a homework assignment at the end of each Lab and it is due before the start of your next lab session. To get credit for completing the homework, you must log into your own area in Expert TA and submit your answers via **Expert TA** before the deadline.

* **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.

* **In case of Bad weather:** Winter in the Washington metro area can bring large snowstorms that make travel difficult and 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](#).

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

Physics 275 Schedule, Spring 2017

(preliminary as of Dec 21, 2016)

Wednesday -Jan 25	First day of the Spring semester
Jan 25 - Jan 26	Labs will not be meeting
Jan 30 - Feb 2	Experiment 1 - <i>Introduction and Diagnostic</i>
Feb 6 - 9	Experiment 2 - <i>Dice and Distributions</i>
Feb 13 - 16	Experiment 3 - <i>Statistics of Radioactive Decay</i>
Feb 20 - 24	Experiment 4 - <i>Position, Velocity and Acceleration</i>
Feb 27 - Mar 2	Experiment 5 - <i>Free Fall</i>
Mar 6 - 9	Experiment 6 - <i>First Review (Experiments 1-5)</i>
Mar 13 - 16	Experiment 7 - First Practical Exam
Mar 20 - 23	Week of Spring Break - No Labs
Mar 27 - 30	Makeup week
Apr 3 - Apr 6	Experiment 8 - <i>Standing Waves</i>
Apr 10 - Apr 13	Experiment 10 - <i>Driven Harmonic Motion</i>
Apr 17 - Apr 20	Experiment 12 - <i>Measuring g with a Pendulum</i>
Apr 24 - Apr 27	Experiment 13 - <i>Second Review (Experiments 7-10)</i>
May 1 - May 4	Experiment 14 - Second Practical Exam
May 8 - May 11	Make-up Labs
Thursday May 11	Last Day of classes for the semester
Friday May 12	Reading day
May 13 - May 19	Week of Final Exams: No Labs
May 21 - May 22	Commencement