



UNIVERSITY OF  
MARYLAND

Department of Physics  
College Park, MD 20742

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SYLLABUS  
Physics 174, Fall 2003 semester  
Physics Laboratory Introduction  
Sections 0103, 0104, 0106  
1 credit

*Note: this syllabus is subject to change; last update Aug 28, 2003*

**Prerequisite or co-requisite:** Math 140.

**Instructor:**

Prof. Glenn Mason

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**Teaching Assistants:**

Sejin Han; e-mail [sejinhan@glue.umd.edu](mailto:sejinhan@glue.umd.edu)

James Hart; e-mail [jhart4@physics.umd.edu](mailto:jhart4@physics.umd.edu)

**Course Purpose:**

Physics 174 is an introductory Physics Lab that meets for two hours each week in Room 3120 of the Physics Building. In this course you will be expected to master a few basic ideas and tools which you will need for later labs, including: understanding experimental errors, using computer spreadsheets for analyzing, plotting and fitting data, and working with simple electrical circuits and electrical measuring equipment.

**Texts:**

- (1) "Physics 174 Laboratory Manual," Department of Physics, University of Maryland, 7th Ed., June 2003
- (2) "A Practical Guide to Data Analysis for Physical Science Students" by Louis Lyons (publ. Cambridge U. Press)
- (3) Also recommended: "EXCEL 97 at a Glance" by Microsoft (out of print).

**Sections (all meet in Physics Bldg. room 3120):**

Section	Time	TA
0103	Th 2:00-3:50 pm	<a href="#">James Hart</a>
0104	Th 9:00-10:50 am	<a href="#">James Hart</a>
0106	Th 12:00-1:50 pm	<a href="#">Sejin Han</a>

**Arriving late to class:** Classes at Maryland begin right on the hour. It is important that you arrive on time to Physics 174 so that you can get instructions for the lab and have time to finish. If you arrive more than 10 minutes late, you will probably not be allowed into the lab and will have to make it up in another section during the week.

**Office Hours:** You may stop by my office at any time, but if this does not work, make an appointment with me or the teaching assistant by phone or e-mail.

**Lab Makeup Time:** If you miss your regular lab section, then you should make that lab up by going to another section that same week. (Prof. Eno's sections meet on Wednesday; you need to ask her permission to do this) If you have questions about the lab, the equipment, or the homework, you can also stop by during this time. If you cannot attend another section, contact your instructor ASAP and a time for a makeup lab will be arranged. In general, this should be done the same week as the lab is scheduled.

**Grading:**

Grades will be based on the course work approximately as follows:

30%	Lab Spreadsheets
30%	Homework
20%	Test on spreadsheet, errors & measurements (Exercise 7 - Oct 16)
20%	Test on oscilloscope and electrical circuits (Exercise 14 - Dec 11)

**Note:** missing one lab (and not making it up before the next lab) will cost one letter grade on the final grade. Missing one homework will cost one-half of a letter grade in the final grade.

**Homework:** is assigned at the end of each write-up in the laboratory manual. You will turn your homework in by e-mail (we'll tell you how to do this) and you can turn it in anytime during the week, but by no later than 6 PM on the day before your next lab. Graded homework should be available a week after you turn it in. No credit will be given for late homework unless you are seriously ill and provide a written note from your physician.

**General Comments on Homework:** Finishing all the labs and homework sets is very important. If you can't completely finish a homework set, turn in what you do have. When you are working on the homework sets, feel free to discuss among yourselves to try to figure out what is going on. However, do not use these discussions as an excuse to copy someone else's solution to the homework, or let someone else copy your solution. That is cheating and is strictly forbidden. It is also very self-defeating since another part of your grade will come from tests. The right way to discuss the homework is to first work through a problem on your own and arrive at a definite answer. 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. One final thing, if you get something fundamental wrong on a homework set, you will probably be assigned extra problems to solve until you master the concept.

**Religious Observances:** University policy is that is the student's responsibility to inform the instructor of any intended absences for religious observances in advance, in particular for the Exams Oct 16 and Dec 11. *Notice should be provided as soon as possible but no later than the end of the schedule adjustment period (4:30 pm Monday, September 15, 2003).*

**Class Schedule:**

Date	Exercise	Content
4-Sep	1	Introduction to Excel
11-Sep	2	Measurements, Errors, and Uncertainties
18-Sep	3	Propagation of Errors
25-Sep	4	Straight Line Fits Using Excel and $c^2$
2-Oct	5	Using $c^2$ and Error Propagation (not in manual)
9-Oct	6	First Review
16-Oct	7	<b>EXAM</b> on Errors & Spreadsheets
23-Oct	8	Resistors and Multimeters
30-Oct	9	Measuring Currents & Voltages
6-Nov	10	Introduction to the Digital Oscilloscope
13-Nov	11	The Oscilloscope and AC signals
20-Nov	12	Reflection of Pulses
27-Nov	--	Thanksgiving -- no class
4-Dec	13	Review of Circuits
11-Dec	14	<b>EXAM</b> on Circuits and Error Analysis (last class)