

Physics Laboratory PHYC11H 2017

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Structure of the Course

The laboratory course PHYC11H3 offers a range of experiments related to topics covered in PHYB21H3 - Electricity and Magnetism, PHYB52H3 – Thermal Physics, PHYB56H3 – Introduction to Quantum Physics, and PHYB54H3 – Mechanics: From Oscillations to Chaos. Students will be expected to carry out three experiments and submit three formal lab reports. The due dates for the lab reports are given in the Timetable below.

- a) Students in C11H will be required to do three experiments.
- b) Students will be required to submit 3 laboratory reports by the deadlines in the Timetable. A penalty of 20% of the mark awarded per working day (to a maximum of 100%) will be assessed against any report handed in after the deadline. Your report must be submitted to the instructor in person by the beginning of your laboratory session on the due date. You must submit both a printed copy and a PDF electronic copy which can be emailed to the instructor.
- c) No student whose report is overdue will be allowed to start work on another experiment until the overdue report is handed in.
- d) Each student will be required to give an oral presentation on one of the experiments to the instructors and other students. Ten minutes will be allowed for each presentation, with an extra five minutes for questions and discussion. The oral presentations will begin on Mar. 10, 2014; each student must book a time for their presentation.

LAB TIMETABLE:	LAB WEEK
	2, 3, 4 January - No Lab or Lecture
1st lab - 9, 11 January	12 January (Lecture 1)
2nd lab - 16, 18 January	17 January (Lecture 2)
3rd lab - 23, 25 January	24 January (Lecture 3)
4th lab - 30 J, 1 February	31 January (Lecture 4)
1st report due - Friday	3 February
5th lab - 6, 8 February	7 February (Lecture 5)
6th lab - 13, 15 February	14 February (Quiz 1)
7th lab - 27 Feb, 1 March	28 February (Lecture 6)
8th lab - 6, 8 March	7 March (Orals)
2nd report due - Friday	10 March
9th lab - 13, 15 March	14 March (Orals)
10th lab - 20, 22 March	21 March (Orals)
11th lab - 27, 29 March	28 March (Quiz 2)
3rd report due	End of Term

Hours

Lab. Hours: Monday 2 p.m. – 5 p.m. or Wednesday 12– 3 p.m.
Lectures: Tuesday 12 – 1 p.m.

Course Credit

3 formal reports	75%
2 quizzes	10%
oral presentation	15%

Note that PHYB10 is a prerequisite and PHYB21 is a corequisite for PHYC11. If you have not passed PHYB10 and or are not registered in PHYB21, your registration in PHYC11 will be cancelled.

Working in the Intermediate Physics Laboratory

- a) At the time the student signs in, the lab Instructor will ascertain that she or he is properly prepared.
- b) During the lab period the Instructor may quiz each student about background, progress and understanding.
- c) Each student's lab notebook will be examined when the student signs out (or before the Instructor leaves). The following week's experiment will also be arranged with the Instructor.
- d) There will be two quizzes on the dates given in the timetable, which will contribute 10% to the final course grade.

Lectures and Laboratory Procedures

The lectures will be on geometrical optics and polarized light. They will cover the material in Chapters 3, 4 and 5 of *Theory and Problems of Optics*, by E. Hecht (Schaum Outline, McGraw-Hill). Notes will also be supplied on the treatment of experimental errors. There will be two quizzes covering the topics discussed in the lectures and the treatment of experimental errors.

The instruction manuals for the experiments are posted on the web page. In order that you use your time effectively, you are expected to plan your experiment in detail, and to consult with the lab instructor **before** the laboratory period. Because only a limited amount of equipment is available, experiments should be scheduled at least **one week** in advance. You are expected to be present and working in the laboratory for 11 three-hour periods, and to attend all of the orals.

You must record all your measurements and observations, and a narrative of what you do in the lab, in a hard bound laboratory notebook. **All readings**, even preliminary ones, should go into it. If some measurements prove to be incorrect, you should write a note next to them explaining why, but **never erase anything from your book**. Calculations and answers to questions asked in the lab manual should also be recorded there. Be sure to plot graphs of your data (where appropriate) **as you go along**. The book must be sufficiently comprehensive and accurate for you later to reconstruct the experiment in your mind, since it will form the basis of your formal report.

Grades will be assigned according to the following criteria:

Percentage	Grade	Grade Definition
85-100	A	Exceptional performance with strong evidence of original thinking, good organization, capacity to analyze and synthesize; a superior grasp of the subject matter with sound critical evaluations; evidence of an extensive knowledge base.
80-84	A-	
77-79	B+	Good performance with evidence of a grasp of the subject matter, some evidence of critical capacity and analytic ability, and reasonable understanding of the relevant issues under examination; evidence of familiarity with the literature.
73-76	B	
70-72	B-	
67-69	C+	Intellectually adequate performance of a student who is profiting from his university experience; an understanding of the subject matter and an ability to develop solutions to simple problems found in the material.
63-66	C	
60-62	C-	
57-59	D+	Minimally acceptable performance; some evidence of familiarity with the subject matter and some evidence that critical and analytic skills have been developed.
53-56	D	
50-52	D-	
0-49	F	Inadequate performance in which there is little evidence of even a superficial understanding of the subject matter; in which there is weakness in critical and analytic skills, with limited or irrelevant use of literature.