

PHYC11H3 Syllabus – Winter 2019

Intermediate Physics Laboratory II

Instructor: Prof. Dan Weaver
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Office: SW 506H
Office Hours: To be announced & by appointment

General description:

The main objective of this course is to help students develop skills in experimental physics by introducing them to a range of important measuring techniques and associated physical phenomena. Students can perform experiments in physics involving electricity and magnetism, optics, solid state physics, atomic and nuclear physics.

Prerequisite: PHYB10H3, PHYB21H3, PHYB52H3

Corequisite: PHYB21H3

Exclusion: (PHYB11H3)

Course organization: 1 hour of lecture, 3 hours of laboratory time every week.

Laboratory sessions: Mondays 2 PM – 5 PM & Wednesdays 12 noon – 3 PM, SW 503

Lectures: Tuesdays, 12 noon – 1 PM, BV 361

Course Evaluation:

| | |
|-------------------------|-----|
| Formal lab reports (3): | 75% |
| Oral presentation: | 20% |
| Quiz: | 5% |

Email policy:

My email policy is to respond within two business days.

Please include PHYC11 in the email subject and provide your full name and student number in your message.

Course structure:

Students will be required to do three experiments. For each experiment, a formal laboratory report must be submitted by the deadlines listed below in the course schedule. Some experiments may be completed by two students working collaboratively. This requires instructor permission. Each student must independently produce a lab report.

Late laboratory report submissions will be subject to a penalty of 15% per day.

Reports must be submitted to the instructor in person at the beginning of a lecture and submitted by email as a PDF document. Due dates correspond to that week's lecture session. Late submissions can be emailed for time stamping purposes, provided a printed copy is submitted at the next laboratory or lecture session. If there is no laboratory or lecture within a week's time, e.g., due to reading week or the end of term, arrangements must be made with the instructor. Early submissions are welcome, e.g., at the start of a laboratory session.

Students may not begin a new experiment until the report for the previous experiment has been submitted.

Each individual student will be required to give an oral presentation on one of the experiments to the instructor and other students. These presentations will take place during the lecture sessions of the course. These presentations should be 10 minutes in length with five minutes for questions and discussion. Times for presentations will be booked on a first-come first-serve.

Working in the physics laboratory:

- When students sign in, the instructor will assess that they are properly prepared.
- During the laboratory session, the instructor may ask students about background, progress, and understanding of the experiment being conducted.
- Each student's lab notebook will be examined when the student signs out. The following week's experiment will also be arranged with the instructor.

The instruction manuals for the experiments will be posted to the Quercus course page. Students are expected to plan their experiment and consult the instructor for permission to use the equipment before the laboratory session. A limited amount of equipment is available. Thus, *experiments should be scheduled at least one week in advance.*

Students are expected to attend 10 three-hour laboratory sessions and attend lectures.

You must record all measurements and observations, as well as a description of what you do in the laboratory in a hardbound laboratory notebook. All readings, even preliminary ones, should be recorded. If some content is determined to be incorrect, you should write a note next to them explaining why. **Never erase anything from your lab book.**

Calculations and answers to questions asked in the lab manual should also be recorded.

Plot your data as you proceed through the experiments.

Lab books must be sufficiently detailed to allow you – or someone else – to read it months later and clearly understand what you did. These records will form the basis for your formal lab reports.

Lab report grades:

| PERCENTAGE | GRADE | GRADE DEFINITION |
|--|---------------|---|
| 85 – 100 80 – 84 | A 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. |
| 77 – 79 73 – 76 70 – 72 | B+ B B- | Good performance with evidence showing good 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. |
| 67 – 69 63 – 66 60 – 62 | C+ C C- | Intellectually adequate performance; an understanding of the subject matter and ability to develop solutions to basic problems in the material. |
| 57 – 59 53 – 56 50 – 52 | D+ D D- | Minimally acceptable performance; some evidence of familiarity with the subject matter and some evidence that critical and analytic skills have been developed. |
| 0 – 49 | F | Inadequate performance: there is little evidence of a superficial understanding of the subject matter; there is weakness in critical and analytic skills, with limited use of literature. |

Course schedule:

| Week | Lab session | Lecture |
|-------------------|---------------------------|--|
| Week 1 (Jan. 07) | None | Course introduction |
| Week 2 (Jan. 14) | Lab session 1 | Lecture 1 |
| Week 3 (Jan. 21) | Lab session 2 | Lecture 2 |
| Week 4 (Jan. 28) | Lab session 3 | Lecture 3 |
| Week 5 (Feb. 04) | Lab session 4 | Lecture 4 |
| Week 6 (Feb. 11) | Lab session 5 | Presentation skills; 1 st lab report due |
| Reading week | | |
| Week 7 (Feb. 25) | Lab session 6 | Feedback on reports |
| Week 8 (Mar. 04) | Lab session 7 | Oral presentations |
| Week 9 (Mar. 11) | Lab session 8 | Oral presentations; 2 nd lab report due |
| Week 10 (Mar. 18) | Lab session 9 | Oral presentations |
| Week 11 (Mar. 25) | Lab session 10 | Oral presentations |
| Week 12 (Apr. 01) | Lab session 11 (optional) | Oral presentations |
| Friday, April 05 | | 3 rd lab report due |

Relevant U of T Policies

Academic Integrity

The University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences.

Details: <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>

Potential offences in papers and assignments include using someone else's ideas or words without appropriate acknowledgement, submitting your own work in more than one course without the permission of the instructor, making up sources or facts, obtaining or providing unauthorized assistance on any assignment.

On tests and exams cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity, or falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

Recordings

Recording or photographing any aspect of a university course - lecture, tutorial, seminar, lab, etc. – without prior approval of all involved and with written approval from the instructor is not permitted. In the case of private use by students with disabilities, the instructor's consent will not be unreasonably withheld.

Accessibility

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the *AccessAbility* Services as soon as possible.

AccessAbility Services staff (located in Rm SW302, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations 416-287-7560 or email ability@utsc.utoronto.ca. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.