

PHYB10H3 Syllabus – Fall 2021

Intermediate Physics Laboratory I

Instructor: Dan Weaver
Email: dan.weaver@utoronto.ca
Office: SW 506F
Office Hours: By appointment

General description

The main objective of this course is to help students develop skills in experimental physics by experimental and theoretical study of AC and DC circuits with applications to measurements using electronic instrumentation. Practical examples are used to illustrate physical systems.

Prerequisite: PHYA21H3, [MATA36H3 or MATA37H3]

Corequisite: MATB41H3

Exclusion: (PHYB23H3)

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

Lectures: Online asynchronous

Laboratory sessions: SW 505 B

PRA01:	Tuesday	12 PM – 3 PM
PRA02:	Wednesday	9 AM – 12 PM
PRA03:	Wednesday	2 PM – 5 PM
PRA04:	Thursday	1 PM – 4 PM

COVID safety policies and procedures

This course will be delivered in person. Due to the ongoing COVID pandemic a variety of safety protocols will be in place. They will be strictly enforced. **Students will be asked and required to leave if they fail to follow COVID safety policies.**

Masks: Medical masks must be worn at all times during laboratory sessions.

UCheck: students must submit a [UCheck](#) prior to arriving each and every time they come to campus.

Hallways: Hallways in the physics area will be designated for one-directional flow. Follow posted signs.

Physical distancing: Keep 2 meters distance between students at all times.

Workspaces: Each student will be assigned a workspace and equipment. This will be posted to Quercus.

Virtual-first help: The instructor, TA, and/or the lab technician will be available for assistance on a virtual-first basis. Students will first consult with them over Zoom. If that is deemed insufficient, in person help will be available.

Do not come to campus if you have COVID symptoms or have tested positive for COVID.

Course Evaluation

Lab reports (4):	80% (20% each)
Assignment:	14%
Quizzes:	6%

Note: There is no final exam for this course.

Email policy

You can use the discussion board on Quercus to ask questions about the course and its content. Other students may offer helpful advice and suggestions.

My email policy is to respond within two business days.

Students must include PHYB10 in the email subject and provide their full name and student number in their message.

Course structure

Experiments

For each of the four experiments, each student must independently produce a lab report.

- The report shall be 5 – 10 pages in length and use 12-point font, single line spacing, and page margins no larger than 2.5 cm.
- Specific requirements may change from lab-to-lab. This will be posted on Quercus along with the lab instructions.

Late laboratory report submissions will be subject to a penalty of $N^3\%$, where N is the number of days late.

Reports must be submitted to Quercus Assignments as a PDF document.
Other file types are not accepted.

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

Report Submission Instructions:

When submitting the electronic copy of your lab report, the file format must follow this convention:

PHYB10_YYYY_Lab#_LASTNAME-FIRSTNAME.PDF

where YYYY is the current year, Lab# refers to whether it is lab 1, 2, 3, or 4 of the term (e.g., Lab1).

** Failing to follow these instructions will result in a 2% penalty. **

Writing Assignment (14%)

The purpose of the research and writing assignment is for students to research and communicate the important details of a physics experiment. Students will research the details of the experiment, including – at minimum – two scientific journal article citations, and write a plain-language version of its purpose, method, data, and outcomes.

There will be an anonymous peer review process facilitated by PeerScholar. Students will provide feedback to two of their peers. The quality of this feedback will be graded and worth 4%.

The final assignment submission will be worth 10%.

Further details about this assignment will be posted to an assignment document on Quercus.

Students are encouraged to seek out and use the resources at the UTSC Library.

Expected Course Schedule

Week	Dates	Lab session	Due dates / Notes	Lecture Topic (tentative)
1	Sept. 7 – 10	None		Course introduction
2	Sept. 13 – 17	Lab 1: Circuits		DC Circuits
3	Sept. 20 – 24		Lab Report 1 [Sept. 26]	Scientific writing and reports
4	Sept. 27 – Oct. 01	Lab 2: Filters		Filters
5	Oct. 04 – 08		Writing assignment to PeerScholar [Oct. 10]	AC Circuits
Reading week				
6	Oct. 18 – 22		Lab Report 2 [Oct.24]	Diodes
7	Oct. 25 – 29	Lab 3: Semi-conductors	PeerScholar reviews [Oct. 31]	Quiz 1
8	Nov. 01 – 05			Transistors
9	Nov. 08 – 12		Lab Report 3 [Nov.14]	Amplification I
10	Nov. 15 – 19	Lab 4: Amplifiers	Writing assignment [Nov. 21]	Amplification II
11	Nov. 22 – 26			Signal Analysis
12	Nov. 29 – Dec. 03	(optional)		Quiz 2
-	Dec. 06	-	Lab Report 4	-

Working in the physics laboratory

Arrive prepared

During the laboratory session, the instructor may ask students about background, progress, and understanding of the experiment being conducted.

The guide documents for the experiments will be posted to the Quercus course page. Students are expected to review the experiment before the laboratory session.

If there are questions or a problem with any equipment, the lab technician, TA, or instructor should be consulted.

Respect the equipment and lab space

Food and water are prohibited in the laboratory rooms. If you need a drink of water you may leave the room to do so in an appropriate space outside the physics area.

The final 10 minutes of the lab session must be used to return the equipment to the state it was found in (or better). Do not wait until the session is over to clean up your workspace.

Failure to leave equipment in good condition and the workspace in a clean and tidy manner will result in the loss of 1% of the overall course grade (each instance). This will be enforced.

Students are typically expected to attend 10 three-hour laboratory sessions and attend lectures. The final laboratory session is optional and might not be needed.

Lab books

It is recommended that students 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.

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 books will be checked during lab sessions.

If you wish to record information on a computer, this is permitted but discouraged. Speak to the instructor or TA for permission. The largest downside of doing so is that notes, e.g., in a Word document, are easily changeable. This is contrary to proper scientific practice. On a practical level, it is difficult to quickly sketch diagrams, e.g., such as circuits or instrument data.

Technical problems

If there are technical issues related to U of T tools, e.g., access to Quercus, please contact:

helpdesk@utsc.utoronto.ca

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 Room AA142) 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.