

PHYA22H3 Syllabus – Winter 2021

Physics II for the Life Sciences

Instructor: Prof. Dan Weaver
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Office: SW 506F
Office Hours: Tues. 3 – 4 PM; Fri. 3 – 4 PM,
& by appointment
(held in Bb Collaborate Course Room)

Required text

Physics for Scientists and Engineers: A Strategic Approach, 4th Edition by Randall D. Knight.

General course calendar description

The course covers the main concepts of Waves, Optics, Electricity and Magnetism, and Atomic and Nuclear Physics. It provides basic knowledge of these topics with particular emphasis on its applications in the life sciences.

Prerequisite:

[PHYA10H3 or PHYA11H3 or (PHYA01H3)] and [MATA29H3 or MATA30H3 or MATA31H3]

Corequisite: (MATA21H3) or MATA35H3 or MATA36H3 or MATA37H3.

Exclusion: PHYA21H3, (PHY110Y), PHY132H, PHY135Y, (PHY138Y), PHY152H

Please note: pre-requisites and co-requisites are enforced. You will be removed from the course automatically if you do not have them.

Course organization

Asynchronous lectures & 2 hour synchronous online practical every week.

Course Evaluation

Course policy quiz:	1%
Practical Activities:	9%
Lab report:	8%
Video assignment:	5%
Problem sets:	9%
Test 1:	16%
Test 2:	16%
Final Exam:	36%

“I forgot” is not a legitimate reason to request an extension for any work for this course.

Requests for re-grading of any coursework must be submitted to the instructor and/or TA within one week of being returned.

Lectures

There will be asynchronous lecture videos posted each week to Quercus. Lecture slides and notes will also be posted to Quercus.

Tentative lecture schedule:

Textbook content should be read before the lecture. This schedule may change during the term.

Week & dates	Topic	Textbook section(s)
Week 1	Course intro & electric charge	Chapter 22
Week 2	Electric Fields	Chapter 23
Week 3	Electric Potential	Chapter 25 & 26
Week 4	Electric Current	Chapter 27
Week 5	Electric Circuits	Chapter 28
Reading Week		
Week 6	Magnetism	Chapter 29
Week 7	Optics	Chapter 33
Week 8	Lenses	Chapter 34
Week 9	Optical Instruments	Chapter 35
Week 10	Atomic Physics	Chapter 37 & 38
Week 11	Atomic Physics	Chapter 41 sections 1, 6 & 7
Week 12	Nuclear physics	Chapter 42

Questions & Email Policy

Use the [discussion board on Quercus to ask questions about the course](#). Often, you will not be the only student with this question – it may already have a discussion and answer posted. Other students may respond to new posts/questions on the discussion board quicker than TAs or I will. By posting questions there, you will help other students with the same question.

If there are questions that are not appropriate for this forum, send email to me [using your official utoronto.ca email address](#) – other addresses are filtered out automatically.

You must include the course code (PHYA22) in the email subject and provide your full name and student number in your message. Otherwise, a reply to your message may be delayed significantly. Your student number is necessary to uniquely identify you in any records/database.

My email policy is to respond within two business days. Please plan accordingly.

Course Components

Practicals (17%)

Practical sessions are held every week, starting in week two, online using Blackboard Collaborate. These weekly practical sessions will involve a mix of problem solving and activities. You must attend your assigned practical session throughout the term. Your TA will be a valuable source of guidance and help – your success in the course will greatly benefit from regular practical attendance.

There will be one lab. It will be worth 8%.

There will also be three activities. These will be worth 3% each for a total of 9%.

The lab requires the submission of a lab report. Additional details about report expectations will be posted to Quercus. Activities require submission of answers to questions only.

Submitted work should include your student name and number, course code, and PRA section.

Lab reports and activities will be done and submitted by each student individually. This work should be submitted using the Quercus Assignments.

You are welcome to submit work before the deadlines.

The penalty for late practical work (i.e., lab report) will be 15% per day.

Note: TAs offer assistance during practical hours and will have office hours booked before tests and the exam. Help from TAs is not generally available over email. Please only email your TA for short administrative issues or quick clarifications.

Problem Sets (9%)

This course uses Mastering Physics (MP). This online component of the textbook can be accessed through the course Quercus page. You can purchase access to MP alone or in a package with the textbook.

MP will involve nine assignments, worth 1% each. Graded items are titled “Problem Set ...”.

Problem Set 10 is a bonus assignment worth +1%.

You do not need a “Course ID”: access MP through Quercus directly.

MasteringPhysics is best viewed using Chrome web browser. Safari does not work.

Please contact Pearson directly about technical issues. If they are unable to resolve the issue, please let me know at that point.

Note: grades are regularly synchronized between Mastering Physics and Quercus. However, this does *not* happen in real-time. It may take a day or two past the deadline to see updates.

Quiz (1%)

There will be an online quiz covering course policy and syllabus content.

Video Problem Solving Assignment (5%)

You will create a video in which you guide the viewer through the solution to a physics problem you create. There are three components: the question, the video, and a copy of your written solution. The video should be about five minutes long. Videos longer than 10 minutes will not be accepted.

This assignment does not require you to do any sophisticated video production. The goal is for you to demonstrate problem solving skills and an understanding of a specific physics topic. You can create a simple video using a smartphone, pen, and paper.

The video must show the calculation and detailed explanation of how the problem is solved. A TA will evaluate it; however, you should design the content with other students as the audience.

Additional details are in a document posted to Quercus.

Tests (16% each)

Two term tests will be scheduled during the term. They will cover content from the lectures, practicals, and assigned sections of the textbook. Both tests are cumulative and will consist of multiple choice and calculation questions.

The tests will be online using Quercus Quizzes.

Collaboration between students is a serious academic integrity offense. Use of online websites to acquire answers is also a serious academic integrity offense.

Exam (36%)

The exam will be scheduled during the exam period: **April 13 – 23**. It will be 3 hours long. The format will include multiple choice and calculation questions. The exam will cover the lectures, practicals, and assigned sections of the textbook. The exam is cumulative – it will cover content from the entire course.

The exam will be online. Collaboration between students is a serious academic integrity offense.

Absences

There are no make-up options for practicals, formal reports, or the tests. In the event of legitimate medical absences, please provide official documentation from UTSC Health Services or a medical professional to the instructor. If it affects the practical content, please provide this documentation to your TA.

In the case of an appropriately documented absence from the first test, the weight of that test will be added to the second test. In the case of a documented absence from the second test, the weight will be transferred to the final exam.

Resources

In addition to the instructor, TA, and textbook, the following resources are available:

Facilitated Study Group (FSG)

FSGs are organized by the Centre for Teaching and Learning.

Information can be found here: <https://www.utsc.utoronto.ca/ctl/facilitated-study-groups-fsg>

“Facilitated Study Groups are weekly collaborative learning sessions for students who want to improve their understanding of challenging content in selected courses at UTSC.”

Physics Study Centre (PSC)

The PSC offers free tutoring for first-year physics students.

Information and tutoring schedule: <https://www.myepsa.ca/tutoring/physics-centre/>

Writing Centre

The Writing Centre is a resource for all UTSC students. They offer support for any stage in the writing process and for all fields of study. You can make appointments or drop-in during designated hours for writing help.

Writing skills **are** important for science students! Formal lab reports will be a significant part of your science degree. There are high expectations for writing quality.

Website: <https://utsc.utoronto.ca/twc/>

UTSC Library

The library is a valuable resource, e.g., to consult physics books beyond your textbook, clarify how to properly cite references, or find reference material to improve the introduction to your formal lab report.

Website: <https://utsc.library.utoronto.ca>

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 documentation, including (but not limited to) doctor's notes.

Academic integrity rules are monitored and strictly enforced.

Code of Student Conduct

Students are required to conduct themselves in a considerate, respectful, and professional manner. These expectations are outlined by the Code of Student Conduct:

<https://www.uts.utoronto.ca/vpdean/code-student-conduct>

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.

Course materials are the intellectual property of the instructor. Sharing or posting them online is prohibited.

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.uts.utoronto.ca. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.