PHYA11H3 Syllabus – Fall 2021

Physics I for the Life Sciences

Instructor:	Prof. Dan Weaver
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Office:	SW 506F
Office Hours:	Mon. 11 AM – 12 noon, Fri. 2 – 3:00 PM, & by appointment (Zoom)

Required text: *Physics for Scientists and Engineers, 5th Edition by Knight*

General course description

This course is intended for students enrolled in the life sciences. The course covers the main concepts of classical physics and its applications to macroscopic systems. The main themes are kinematics, dynamics, oscillations, and waves. It provides basic knowledge of these topics with emphasis on its applications in the life sciences.

Pre-requisites**:**	Grade 12 Advanced Functions and Grade 12 Calculus & Vectors
Co-requisite:	MATA29H3 or MATA30H3 or MATA31H3
Exclusions:	PHYA10H3, PHY131H, PHY135Y, PHY151H

Note: Pre-requisites and co-requisites are enforced.
Students will be removed from the course automatically if they do not have them.

Course organization

Asynchronous lectures & 2 hours of synchronous online practical every week.

Course Evaluation

Course policy quiz:	1%
Problem Solving Video:	5%
Practicals:	24%
Problem Sets (Mastering Physics):	10%
Term Test 1:	14%
Term Test 2:	14%
Final Exam:	32%

"I forgot" is not a legitimate reason for an extension for any work in this course.

Requests for re-grading of any coursework must be submitted to the instructor and/or TA within one week of being returned. Such requests should include an explanation about why the student thinks something specific deserves a different grade.

Note: the instructor has caught students for academic integrity violations every year. Don't do it. The consequences can be significant. If you are struggling, please make use of the course supports available and UTSC student advising services.

Lectures

The course lectures are delivered asynchronously. Lecture recordings will be posted on a weekly basis. Lecture slides and other resources will be posted to Quercus as well.

Tentative lecture schedule:

This schedule may change during the term.

Week	**Topic**	**Textbook chapter(s)**
Week 1	Course Intro & 1D Kinematics	Chapter 1 & 2
Week 2	Kinematics in 2D	Chapter 3 & 4
Week 3	Forces I	Chapter 5 & 6
Week 4	Forces II	Chapter 7 & 8
Week 5	Energy & Work	Chapter 9 & 10
	Reading Week	
Week 6	Momentum	Chapter 11
Week 7	Rotation	Chapter 12
Week 8	Fluids (if time)	Chapter 14
Week 9	Oscillations	Chapter 15
Week 10 & 11	Waves	Chapter 16
Week 12	Superposition of waves	Chapter 17

Questions & Email Policy

Use the discussion board on Quercus to ask questions about the course. Often, you will not be the only student with the 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 the instructor will. By posting questions there, you will help yourself & classmates.

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 PHYA11 in the email subject and provide your full name and student number in the text of your message.

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

Course Components

Practicals (24%)

Practical sessions are held every week, starting in week two. They will be held online using Zoom. There will be Zoom meetings created for each practical section. Links will be posted the course Quercus page. Weekly practical sessions will involve a mix of problem solving and activities. You must attend your assigned practical session throughout the term.

Practical sessions will not be recorded.

Students are required to enroll in a practical section. Failure to do so forfeits the grade associated with practicals (i.e., anything a TA grades).

TAs will be a valuable source of guidance and help – students' success in the course will greatly benefit from regular practical attendance.

There will be six labs. They will be worth 3% of the course grade each.
There will also be four activities. These will be worth 1.5% of the course grade each.

Labs will involve greater data analysis, time, and effort. Submitted work should include your name and student number, course code, and PRA section.

More details will be posted to Quercus, outlining expectations, documents and data for each lab, and deadlines for report submissions.

Lab reports and activities will be done and submitted by each student individually. This work should be submitted using Quercus Assignments. Students should budget enough time for the upload to complete before the deadline to avoid a late penalty, which is assigned by the system automatically.

The penalty for late practical work will be 15% per day.

Problem Sets (10%)

This course uses the Mastering Physics (MP) platform to help students build problem solving skills. This online component of the textbook can be accessed through the course Quercus page. Students can purchase access to MP in a package with the textbook. MP will involve ten problem sets, worth 1% each. These problem sets are designed to take approximately one hour each.

Students 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 the instructor 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.

Term tests (14% 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.

Exam (32%)

The final exam will be online.

The exam will be scheduled during the exam period: **December 9 – 21**. 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.

Collaboration between students is a serious academic integrity offense. The use of websites to acquire solutions is a serious academic integrity offense. These offenses are pursued and carry serious penalties.

Problem Solving Video (5%)

You will create a video in which you guide the viewer through the solution to a physics problem you create. The video should be five to ten minutes long.

There are three components: the question, the video, and a copy of your written solution.

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 and/or instructor will view the video to evaluate it, but you should design the content with other students as the audience.

More details will be provided by a document posted to Quercus.

Absences

There are no make-up options for practicals, formal reports, or the term tests. In the event of legitimate medical absences, accommodations will be provided. Students must submit an ACORN self-declaration of illness (information).

If the absence affects practical work, notify your TA, and include any documentation and/or let them know you have submitted the illness declaration.

In the case of term tests, students may be asked to also provide the instructor with official documentation from UTSC Health Services or a medical professional. This form can be accessed here.

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.

Use and distribution of course materials

Course materials prepared by the instructor are considered by the University to be an instructor's intellectual property covered by the *Copyright Act*, RSC 1985, c C-42. These materials are made available to you for your own study purposes and cannot be shared outside of the class or "published" in any way. Lectures, whether in person or online, cannot be recorded without the instructor's permission.

Posting course materials or any recordings you may make to other websites without the express permission of the instructor will constitute copyright infringement.

Resources

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

Facilitated Study Group

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 (FSGs) are weekly collaborative learning sessions for students who want to improve their understanding of challenging content in selected courses at UTSC."

Physics Study Centre

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.

Writing skills *are* important for science students! Formal lab reports will be a significant part of your science degree and career. There are high expectations for writing quality. I encourage you to make use of this resource.

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.

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

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 Access*Ability* Services as soon as possible.

Access*Ability* 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.