

PHYA11H3 Syllabus – Fall 2022

Physics I for the Life Sciences

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Office Hours: TBA,
& by appointment

Required Textbook: Physics for Scientists and Engineers, 5th Edition, by Randall D. 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 or MATA32H3

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

Lectures & practical sessions every week, delivered in person.

COVID

Due to the ongoing COVID pandemic, the use of medical masks continues to be strongly encouraged at U of T Scarborough in indoor settings.

Students are strongly encouraged to wear a medical mask while in lecture and practical (and surrounding hallways) to support the health and safety of our community, e.g., staff, TAs, students, and people with health risks.

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.

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

You must include the course code, 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. Plan accordingly.

Course Evaluation

| | |
|--------------------------------------|-----|
| Course policy quiz: | 1% |
| Practicals: | 25% |
| Problem Sets (Mastering Physics): | 10% |
| Term Test 1: | 16% |
| Term Test 2: | 16% |
| Final Exam:* | 32% |

* The weight of one term test will be automatically transferred to the final exam iff this results in a higher final grade. i.e., one term test can be “dropped” and the exam weighted at 48%.

“I forgot” is not an accepted reason for an extension for any work in this course.

Requests for re-grading of any coursework must be submitted to the TA and/or instructor within one week of being returned. It must include a written explanation about why the student thinks a specific aspect deserves a different grade. Any aspect of the work may be re-evaluated. The revised grade may be greater than, equal to, or less than the original grade.

Note: the instructor has caught students for academic integrity violations most years. 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. There are better paths to success.

Lectures

There will be two lectures each week in AA112:

Wednesdays 3 PM – 5 PM

Fridays 2 PM – 3 PM

Lecture slides and supplementary videos will be posted to Quercus.

Out of respect for other students in the class, please avoid distracting others and ensure phones are turned to silent. I will remove disruptive students at my discretion.

Tentative lecture schedule:

| Week | Topic | Textbook chapter(s) |
|--------|------------------------------|---------------------|
| Week 1 | Course Intro & 1D Kinematics | Chapter 1 & 2 |

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| | | |
|--------------|------------------------|----------------|
| 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 & 7 | Momentum | Chapter 11 |
| Week 8 | Rotation | Chapter 12 |
| Week 9 | Oscillations | Chapter 15 |
| Week 10 & 11 | Waves | Chapter 16 |
| Week 12 | Superposition of waves | Chapter 17 |

Practicals (25%)

Practical sessions are held every week, starting in week two. They will involve a mix of problem solving and lab activities.

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). Students must attend the practical session they are enrolled in throughout the term.

TAs are a valuable source of guidance and help. Success in the course will greatly benefit from regular practical attendance.

There will be five labs. They will be worth 3% of the course grade each.

There will be five activities. These will be worth 2% of the course grade each.

Labs will involve greater data analysis, time, and effort than the Activities.

Submitted work should include all of the following information: students' names and student numbers, the course code, and PRA section.

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

Practical work will be done in groups of two or three (typically three) and submitted as a group.

Late arrival: students who arrive late to a practical receive a grade of zero for any activity or lab that has already begun. Late students are welcome to remain and participate in the remainder of the session for their own learning benefit.

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.

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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.

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Term 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.

Tests are scheduled outside of class time by the university. The instructor does not control the date/time of the tests and will announce it as soon as they are given this information.

Exam (32%)

The exam will be scheduled during the exam period: December 08 – 20. It will be 3 hours long. The format will include multiple choice and problem solving 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 with roughly equal weight.

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.

Absences

There are no make-up options for practicals, formal reports, or the term tests.

In the event of legitimate medical absences, students must submit an ACORN self-declaration of illness ([information](#)) AND submit the DPES Student Absence Form ([here](#)).

If the absence affects practical work, notify your TA and let them know you have submitted the illness declarations.

In the case of term tests or repeated absences, students will 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.

Technical problems

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

If there are technical issues with Mastering Physics, please first contact Pearson directly: <https://support.pearson.com/getsupport/s/students>

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

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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 Mastering Physics, the following resources are available:

Facilitated Study Group

FSGs are organized by the Centre for Teaching and Learning. They are not a formal part of the course and the instructor is not directly involved with them.

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.

<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>

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.