

Physics 1007A S2021: Course Outline v3

This is the first part of a two-term physics course with an emphasis on essentials for scientists in other disciplines. This first part of the course covers the basic laws of physics, such as Motion, Force, Newton's Laws of Motion, Energy, Rotational Motion, Collisions, Fluids and Heat Transfer. Applications to other scientific disciplines and real-world examples will be used whenever possible.

Due to the COVID-19 quarantine conditions, this course is online only for this summer. The lectures will be recorded and will be available at any time for asynchronous learning. The virtual laboratories will concentrate on data analysis techniques, using online simulations of real experiments.

The main course elements, lecture material, scope of the topics covered, online tests and written assignments remain unchanged from the normal summer course offerings. The virtual laboratories will concentrate on data analysis techniques.

This is the third time that we have given this course in online format, and we have been continuously improving our lecture material, and pedagogical techniques.

Lecturer: Dr. Andrew Robinson, Room HP3368, ext. 8922

e-mail: andrew.robinson@carleton.ca

Office Hours: Dr Robinson will provide office hours/tutorial sessions every day for 1 hour, using the Big Blue Button video conferencing system, which is built into CuLearn. The times will be set by mutual convenience for the class and instructor.

Laboratory Co-ordinator: Dr. Benjamin Freestone

e-mail: Benjamin.freestone@carleton.ca

The course outline will be posted on the course website on Brightspace. We reserve the right to amend the course outline on the website and will inform you if that version changes. In the event of any discrepancy between this document, and the version currently posted on the website, then the website version will be taken as the definitive version.

General Policies for Physics Courses

Please see <http://www.physics.carleton.ca/current-undergraduate-students/academic-policies> for all Physics Department's course policies. All the course information, as well as lab assignments, list of marks, etc. will be displayed on the class website in Brightspace.

Email

Every student must use their Carleton e-mail account in any communication to University academic staff. Emails from external e-mail accounts will not be answered. An email to the Carleton staff should be treated as a formal communication with the university. Please compose your messages as such, and always include your course number and student number in the email.

Online Lectures

The lectures have been recorded to video and will be available online. These can be viewed either as streaming video, or downloaded from Brightspace to your local computer.

The course will be divided into 12 modules, which roughly cover a three-hour traditional lecture. The module has been divided into a number of individual units, so that individual units are typically 10-15 minutes long. Each module will contain short online “Test your understanding quizzes”, to allow the student to check on their understanding of the material in the module. Doing these quizzes will count as a participation grade in the final course grade.

Student Hours

I have formally scheduled hours where I will be available on Zoom for consultations. These are “drop in” sessions, where you can ask me questions. They are not formal lectures. I can go over material, and answer questions.

The scheduled hours are **1.00 pm – 2.00 pm on Tuesdays and Thursdays.**

I will probably also hold additional hours on other days of the week, but I will conduct a survey of the class to determine these – it will depend on your schedules and which time zones you are in.

Required Materials

1. Textbook: ‘Physics’, Fifth Edition, Giambattista, Richardson and Richardson, McGraw Hill. (Any of the 3rd, 4th or 5th edition will do – try and find a second-hand copy, if at all possible. The same textbook is used for Physics 1008).

Note that a second-hand copy of the textbook will be sufficient for this course. We will not be using the Publisher’s website, so no access code is required.

Prerequisites

- (i) Grade 12 Advanced Functions or Grade 12 Geometry and Discrete Mathematics or equivalent, or MATH 0107 (may be taken concurrently) or
- (ii) Grade 12 Calculus and Vectors or Grade 12 Advanced Functions and Introductory Calculus or equivalent, or MATH 0007 (may be taken concurrently) or
- (iii) Permission of the Physics Department. Note that if you already registered, you have approval from the department.

Online Assessments

There will be a summative online assessment for each week of the course. The best six out of seven scores will be used to calculate the final grade.

Written Assignments

There will be six take-home written assignments during the course. These are to give you practice in answering questions and will provide feedback on how to answer physics questions effectively. The level of difficulty will be similar to questions on the final examination. These questions are set to test your ability to think logically, solve a problem, and set your work out in a satisfactory manner. We will be able to provide formative feedback on your answers through written comments. These will be submitted electronically in PDF form through Brightspace.

You are reminded that plagiarism is a serious academic offence, and if detected will result in a report being set to the Dean's Office for investigation. Both the person copying AND the person providing the work to be copied will be reported.

The final grade will be calculated using the following formula:

Written Assignments (best 5 scores out of 6) 25%

Checkpoint quizzes (participate in 80% of assigned quizzes) 5%

Weekly Online Quizzes (Lowest grade dropped) 25%

Final Exam 15%

Virtual Laboratory 30% (All 5 lab grades count)

Laboratory

Further information about the labs can be found on the LAB Brightspace page.

All the sessions will be held via a BigBlueButton (BBB) session available on the lab Brightspace page. The lab timetable is shown on the next page (all timeslots are in the Eastern Time zone).

Information on using BBB can be found at:

<https://carleton.ca/culearnsupport/students/bigbluebutton/>

Lab section	Time slot
A1	Tuesdays 14:35 – 17:25
A2	Thursdays 14:35 – 17:25
A4	Wednesdays 08:35 – 11:25

It is imperative that all students attend the first lab in the week of **May 10th, 2021**. All changes (exemptions, etc.) must be arranged with the Lab Supervisor, Dr. Benjamin Freestone, at the start of term.

The grade for every lab will be based on a **quiz (20%)** and a **report (80%)**. All lab work (reports and quizzes) count towards your total lab grade for the course. **No grade will be dropped.**

All lab work must be completed *by* the appointed time:

- **24 hours** after the lab session for the quizzes. Quizzes open 24 hours before the start of the lab class.
- **1 week** after the lab session for reports (due at the start of the next lab).

The penalties for late submission of the lab report is **30% of the grade.**

If you miss a lab, contact Dr. Freestone immediately.

Laboratory Exemptions

Due to quarantine conditions, the laboratory will be conducted remotely. If you have taken Physics 1007 before, then you may be entitled to a lab exemption. Please contact the Lab Co-ordinator and inform them in which year and session you took Physics 1007 previously, so that they can determine your laboratory grade and your eligibility for the exemption. If you have taken a University level course elsewhere with a similar laboratory component to ours, then you may also be eligible for a lab exemption, at the Lab Co-ordinator's discretion. You are not automatically given a lab exemption - you must apply for it no later than **May 17th, 2021**. Lab exemptions will be considered on a case-by-case basis.

Laboratory Schedule

Lab #	Date (Week of)	Title	Weight (%)
1	May 10 th	Reaction Time	10
2	May 17 th	Density	25
3	May 24 th	Spring Constant	25
4	May 31 st	Simple Pulley System	25
5	June 7 th	Simple Pendulum	15

Absence from Tests or Laboratory

If a deadline for an assigned piece of work is missed, please contact Dr Robinson (online tests and written assignments) or Dr. Freestone (for laboratory assignments). We will be taking a flexible approach to accommodations and will grant appropriate extensions to deadlines. All assigned work must be completed by the last day of classes.

Passing Conditions

To pass the course with a grade greater than D-, students must pass both the lab course and the lecture course separately. A student will be awarded a D- if the lab is failed, no matter how good the marks from the lecture course are, or how high the total average is. Students will be given all information in the first lab session on the requirements for obtaining a passing grade in the laboratory course. Students may apply for a deferred exam only if their work in online and written test averages over 25% for the whole term. To pass the lecture course, submission at the final exam is mandatory.

Academic Honesty Policy

Students should read and be familiar with the university's policies on academic integrity, given in Section E.12 of the Academic Regulations of the University:

<http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/academicintegrity/>

In this course, these rules are relevant mainly for lab reports (do not copy someone else's), tutorial tests and the final exam (do not attempt to use unauthorized materials or collaborate with other students). A report will be sent automatically to the Dean of your Faculty, for possible further disciplinary action.

Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

a. Pregnancy Accommodations: write any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www.carleton.ca/equity/>

b. Religious Accommodations: write any requests for academic accommodation due to religious obligations during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website (as above).

c. The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your **Letter of Accommodation** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). **Requests made within two weeks will be reviewed on a case-by-case basis.** After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (*if applicable*).

General Information about the PMC is here:

<http://www1.carleton.ca/pmc/>

Dates and Deadlines for Registered Students

<https://carleton.ca/pmc/students-registered-with-pmc/important-dates-and-deadlines/>

If you have an academic accommodation, PLEASE talk to me, so we can discuss the situation, and how we can accommodate course work, tutorial tests, and other course related activity. I can work with you to solve any issues you may have with the course, provided I know about the issues.

This also applies if something unexpected occurs during the course, such as a family crisis, or illness. Please let me know immediately, so that I can arrange appropriate accommodations.

Intellectual property

All teaching and learning activities, including lectures, discussions, presentations by both instructors and students are copyright protected and remain the intellectual property of their respective author(s). All course materials, including PowerPoint presentations, video presentations, pdf's, outlines, and other materials, are also protected by copyright and remain the intellectual property of their respective author(s).

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s).

Final Exam

The final exam will be online. The final examination date is scheduled by the central University scheduling service and will not be announced until part of the way through term. The exams will be held between 19th – 25th June. Please do not make any travel arrangements until the examination date has been confirmed.

Course Schedule

Week	Week Beginning	Topics Covered	Lab Work	Online Assignment	Written Assignment (to be uploaded)
1	6 th May	Module 1 Introduction			
2	10 th May	Module 2 Skills Module 3 One-Dimensional Motion	Lab 1: Reaction Time	OA 1	WA 1
3	17 th May	Module 4 Two-dimensional Motion Module 5 (part) Force	Lab 1 report due Lab 2: Density	OA 2	WA 2
4	24 th May	Module 5 (continued) Force Module 6 Work and Energy	Lab 2 report due Lab 3: Spring Constant	OA 3	WA 3
5	31 st May	Module 7 Rotational Motion Module 8 Collisions	Lab 3 report due Lab 4: Simple Pulley System	OA 4	WA 4
6	7 th June	Module 9 Fluids Module 10 Oscillations	Lab 4 report due Lab 5: Simple Pendulum	OA 5	WA 5
7	14 th June	Module 11 Waves and Sound Module 12 Heat	Lab 5 report due	OA 6	WA 6
8	21 st June	Exams			

University Dates and Deadlines

The full academic year schedule is here: [The Academic Year \(Graduate and Undergraduate Studies\)](#)

Date	Activity
SUMMER TERM 2021	
March 1, 2021	Last day for receipt of applications for admission to an undergraduate degree program for the summer term.
April 29, 2021	Deadline for course outlines to be made available to students registered in early- and full-summer courses.
May 1, 2021	Last day for receipt of applications for undergraduate degree program transfers for the summer term.
May 6, 2021	Early summer and full summer classes begin.
May 13, 2021	Last day for registration and course changes (including auditing) for early summer courses.
May 14, 2021	Graduate students who have not electronically submitted their final thesis copy to the Faculty of Graduate and Postdoctoral Affairs will not be eligible to graduate in spring 2021 and must register for the summer 2021 term.
May 20, 2021	Last day for registration and course changes (including auditing) for full summer courses.
May 21, 2021	Last day to withdraw from early summer and full summer courses with a full fee adjustment. Withdrawals after this date will result in a permanent notation of WDN on the official transcript.

Date	Activity
May 14-26, 2021	Fall/winter and winter term deferred final examinations will be held.
May 24, 2021	Statutory holiday. University closed.
May 28, 2021	Last day to request Formal Examination Accommodation Forms for June examinations to the Paul Menton Centre for Students with Disabilities. Note that it may not be possible to fulfil accommodation requests received after the specified deadlines.
June 11, 2021	Last day for summative tests or examinations - or for formative and/or practical tests or examinations totaling more than 15% of the final grade - for early summer courses before the official examination period (see Examination Regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar).
June 18, 2021	Last day of early summer classes. (NOTE: full summer classes resume July 2.)
	Last day for take-home examinations to be assigned, with the exception of those conforming to the Examinations regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar.
	Classes will follow a Monday schedule.
	Last day for academic withdrawal from early summer courses.
	Last day for handing in term assignments, subject to any earlier course deadline.
June 19-20, 2021	No classes or examinations take place.

Date	Activity
June 21-27, 2021	Final examinations in early summer courses and mid-term examinations in full summer courses may be held. Examinations are normally held all seven days of the week.
June 25, 2021	Deadline for course outlines to be made available to students registered in late-summer courses.
June 27, 2021	All take-home examinations are due on this day, with the exception of those conforming to the Examinations regulations in the Academic Regulations University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar.
July 1, 2021	Statutory holiday. University closed.
July 2, 2021	Late summer classes begin. Full summer classes resume.
July 9, 2021	Last day for registration and course changes (including auditing) for late summer courses.
July 16-18, 2021	Early summer term deferred final examinations to be held.
July 23, 2021	Last day to withdraw from late summer courses with a full fee adjustment.
	Last day for graduate students to submit their supervisor-approved thesis in examinable form to the department.
July 30, 2021	Last day to request Formal Examination Accommodation Forms for August examinations to the Paul Menton Centre for Students with Disabilities. Note that it may not be possible to fulfil accommodation requests received after the specified deadlines.
August 2, 2021	Statutory holiday. University closed.

Date	Activity
August 9, 2021	Last day for summative tests or examinations - or for formative and/or practical tests or examinations totaling more than 15% of the final grade - before the official examination period (see Examination Regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar).
August 16, 2021	Last day of late summer and full summer classes.
	Last day for take-home examinations to be assigned, with the exception of those conforming to the Examination Regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar.
	Last day for academic withdrawal from late summer and full summer courses.
	Last day for handing in term assignments, subject to any earlier course deadline.
August 17-18, 2021	No classes or examinations take place.
August 19-25, 2021	Final examinations in late summer and full summer courses may be held. Examinations are normally held all seven days of the week.
August 25, 2021	All take-home examinations are due on this day, with the exception of those conforming to the Examinations regulations in the Academic Regulations of the University section of the Undergraduate Calendar/General Regulations of the Graduate Calendar.
September 17-19, 2021	Full and late summer term deferred final examinations to be held.