

# Course Outline: Physics 1003A Introductory Physics and Thermodynamics Fall 2021

We recognize the Algonquin peoples as the traditional custodians of the land in which the campus is located, and where the class is taught. We give respect to the host nation, the *Kitchissippi Omàmiwinini Anishinabeg* (Algonquin peoples of the big river, in the Algonquin language).

## Introduction

Physics 1003 is an overview of mechanics and discusses topics in mechanics, oscillations, waves, and thermodynamics, with an emphasis on applications of physics in various engineering and computing applications. The course is calculus-based. This year the course will be delivered online with asynchronous recorded lecture material, and synchronous lab and tutorial components delivered by video links. We will be doing a review of some material, as many of you will have had a less than ideal educational experience for the last two years.

## Instructor

Dr. Andrew Robinson ([andrew.robinson@carleton.ca](mailto:andrew.robinson@carleton.ca))

## Laboratory Supervisor

Dr. Benjamin Freestone ([benjamin.freestone@carleton.ca](mailto:benjamin.freestone@carleton.ca))

## Covid-19 Statement

We recognize that this is not a normal semester. We have prepared an online course using best educational practices, and with experience gathered during the previous online teaching sessions. We can promise you an engaging and fulfilling educational experience. We recognize that teaching by remote, with many of you not even on campus, is different from the usual experience, and we want to assure you that you have our full support, and you should contact us to discuss any issues you may be having.

If you experience any technical difficulties (such as internet outages) at any time during the course, and this affects your ability to study, or submit work, please let us know. You are being assessed on your knowledge of physics, not the reliability of your technology, or local internet infrastructure.

We intend to take a flexible approach to deadlines, and if you need an extension on handing in a piece of work or assignment, you should ask. You do not need to give us a reason. You will not be asked to provide any medical documentation. If you want to talk to someone, please do approach us. Even if we cannot help directly, we will be able to direct you to someone who can help. If you have any kind of physical or mental health issue during the semester, and require assistance from us, please ask.

If you have an academic accommodation from the Paul Menton Centre (PMC), we will get an email telling us what the accommodation is. If you wish to discuss this with us, please get in touch. We may be able to offer additional assistance with course materials, scheduling, or delivery.

## Lecture Units

The course website contains all of the information regarding the course and should be checked regularly. We have organized the course website into tiles, each of which contains the work for one week of the semester. The traditional lectures have been broken up into short (10-15 minute) video units. You are expected to review these units yourself at your own time, and at your own pace. This is known as asynchronous delivery. Each week has a quiz so that you can demonstrate mastery of the topics. The quizzes are randomized, and you get two attempts. The best score is carried forward when calculating your overall grade.

The lecture units are available by streaming video from the Carleton media server, or from narrated PowerPoint files, which can be downloaded. If you have poor internet connections, you should find it easier to download the PowerPoint presentations and replay them on your home computer system.

## Synchronous Student Hours

The times which are formally scheduled by the university for “lectures” will be used as my “Student Hours”. We will do video conferencing at these times using Zoom. A Zoom link is in the “Course information” tile. These sessions are intended to be a question-and-answer sessions. I will not be preparing formal lecture material, but of course, I will discuss any material from the modules. They are intended to replace the traditional “Student Hours”, where you could drop into my office to discuss things. These sessions will be open to all. If you need to discuss anything confidential, please email me for an individual appointment.

**Scheduled times: Wednesday and Friday 11:35 - 12:55**

<https://carleton-ca.zoom.us/j/5825714407>

**Meeting ID: 582 571 4407**

**Passcode: 212909**

## Tutorials and Laboratory Sessions

These sessions are held at the same time every week, and alternate between laboratory experiments and tutorial sessions. The tutorial sessions have a written test as part of the session. Please refer to the class schedule and the laboratory schedules for more details. There is a separate Brightspace site for the Laboratory/Tutorial sessions.

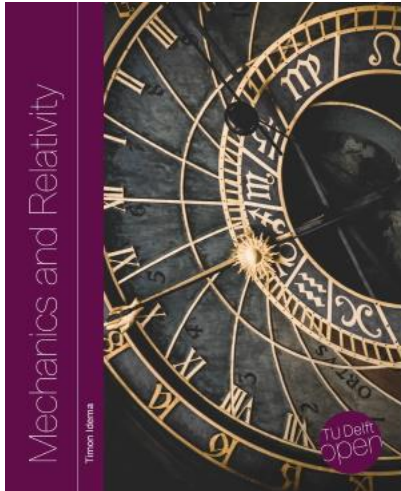
## Textbooks

For this course, I am recommending two textbooks. The first is a free online textbook from the Technical University of Delft, in the Netherlands. We will use this for the first half of the course, as I believe it gives a more rigorous and interesting introduction to forces and motion than any introductory textbook on the North American market. And it's free.

The book is *Mechanics and Relativity*, by Timon Idema. Don't worry by the advanced mathematics in some parts of the textbook. By the time you have finished your degree you will have covered it all!

The book can be downloaded from this site, as a PDF file:

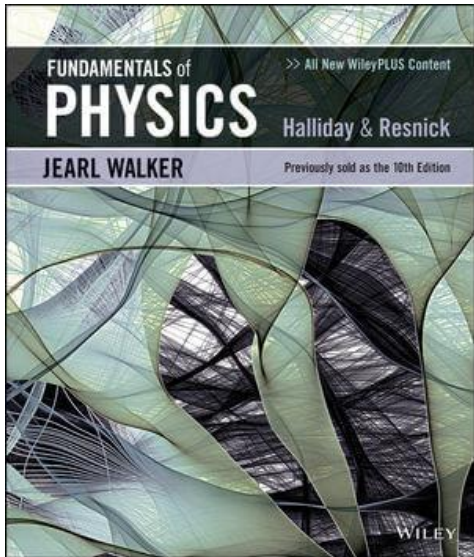
<https://open.umn.edu/opentextbooks/textbooks/mechanics-and-relativity>



Did I mention that it's free?

The other textbook for Physics 1003A is *Fundamentals of Physics*, 11th edition by Halliday, Resnick and Walker. Unfortunately, this one is not free! It is also used for Physics 1004 in the Winter term. If you have already taken Physics 1004, then you may have this, although the version specially printed for Physics 1004 (only) has several missing chapters. If you can find a second-hand copy, of either the 9th, 10th or 11th editions, then this will do for this course.

Version 1



This textbook is available at the University Bookstore

Textbook Title: Fundamentals of Physics

Textbook Edition: 11th (Loose leaf version)

Textbook Author: Halliday, Resnick and Walker

Textbook Publisher: Wiley

The ISBN number: 9781119459170

**An electronic version of the textbook is also available for download, is much cheaper than the print copy, and is perfectly acceptable.**

We use the same textbook for Physics 1004 in the winter term. You will not need the access code to the online material for Physics 1003, but you **will** need it for Physics 1004.

## Weekly Quizzes

Each week of lectures has a final quiz. You get two attempts at this. The best 10 scores out of 12 weekly quizzes are used to calculate the overall grade. The quiz question bank has been translated from the old CuLearn system and has not been tested under “live” conditions before. If you encounter any issues with any quiz question, please email Dr. Robinson immediately, telling him which question, in which quiz, and include a screenshot, if possible. You grade will not be affected by any issues with technology!

## Final Exam

Will be online and will have multiple questions. Some solutions will be uploaded for grading, others will be graded by the Brightspace quiz system.

## Grade Breakdown

Weekly Quizzes (best 10 out of 12)	20%
Tutorial Tests (Best 4 of 5)	20%
Laboratory (All 5 Labs)	35%
Final Exam	25%

## Class Schedule

Week	Beginning	Comment	Column1	Lab	Tutorial Test
1	Sept 6th	Start Wed no labs	Basic Skills		
2	Sept 13th		Kinematics	Reaction Time	
3	Sept 20th		Forces		1
4	Sept 27th		Energy	Motion on Inclined Plane	
5	Oct 4th		Planar Motion/Collisions Intro		2
6	Oct 11th	Mon holiday - no labs	Collisions		
7	Oct 18th		Rotational Motion	Collisions	
8	Oct 25th	Mid term break			
9	Nov 1st		Oscillations		3
10	Nov 8th		Fluids	Spring Constant	
11	Nov 15th		Thermo		4
12	Nov 22nd		Waves	Ideal gas	
13	Nov 29th		Special Relativity		
14	Dec 6th	Wed lecture only	Revision Sessions		

## University Policies

These are standard policies which apply to all courses at Carlton.

### Grade Definition:

In accordance with the Carleton University Undergraduate Calendar Regulations, the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A- = 80-84	B- = 70-72	C- = 60-62	D- = 50-52
F = <50			

WDN = Withdrawn from the course

ABS = Student absent from final exam

DEF = Deferred

FND = (Failed, no Deferred) = student could not pass even with 100% on final exam

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

### Academic Regulations and Accommodations

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

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

### Academic Integrity

The University Senate defines plagiarism as "presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own." This can include:

- reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source

- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else
- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment
- using another's data or research findings
- failing to acknowledge sources through the use of proper citations when using another's works and/or failing to use quotation marks
- handing in "substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs."

Plagiarism is a serious offence that cannot be resolved directly by the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course.

## Course Copyright

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

## Academic Accommodations

Text from <https://students.carleton.ca/course-outline/>

Carleton University is committed to providing access to the educational experience in order to promote academic accessibility for all individuals.

Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference. The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University.

### Pregnancy Obligation:

Please contact your instructor with 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

<https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>

### Religious Obligation:

Please contact your instructor with 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

<https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>

### Academic Accommodations for Students with Disabilities:

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at **613-520-6608** or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the Paul Menton Centre website <https://carleton.ca/pmc>

- The deadlines for contacting the Paul Menton Centre regarding accommodation for final exams for the Fall exam period is **at least two weeks before the scheduled exam.**

### Survivors of Sexual Violence:

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: <https://carleton.ca/sexual-violence-support>



### Accommodation for Student Activities:

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with 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, see the policy:

<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

### Assistance for Students:

Career Services: <https://carleton.ca/career/>

Academic Advising: <https://carleton.ca/academicadvising/>

Co-operative Education: <https://carleton.ca/co-op/>

Centre for Student Academic Support: <https://carleton.ca/csas/>

Writing Services: <https://www.carleton.ca/csas/writing-services/>

Peer Assisted Study Sessions (PASS): <https://carleton.ca/csas/group-support/pass/>

Math Tutorial Centre: <https://carleton.ca/math/math-tutorial-centre/>

Science Student Success Centre: <https://sssc.carleton.ca/>

### Freedom of Information and Protection of Privacy:

Carleton University is committed to protecting the privacy of those who study or work here (currently and formerly). To that end, Carleton's Privacy Office seeks to encourage the implementation of the privacy provisions of Ontario's *Freedom of Information and Protection of Privacy Act* (FIPPA) within the university.

In accordance with FIPPA, please ensure all email communication with staff/faculty is via your Carleton email account. To get your Carleton email you will need to activate your MyCarletonOne account through Carleton Central. Once you have activated your MyCarletonOne account, log into the MyCarleton Portal.

### Important Dates:

<https://calendar.carleton.ca/academicyear/>

<https://carleton.ca/registrar/registration/dates-and-deadlines/>