



PHYS 1905

PHYSICS BEHIND EVERYDAY LIFE



An on-line course based on the
Open Physics Education Module

We, the people of the Faculty of Science at Carleton University, acknowledge that our campus is located on the traditional, unceded territories of the Algonquin Anishinabeg people. Miigwetch for your hospitality and stewardship of this territory and the teachings that come from it. We are grateful for this land, the air that we breathe, and the water that sustains us all as well as for the animals, plants and other living beings: these enable us to research, teach, mentor, support, study, and learn. We recognize our responsibility to our natural environment and to reconciliation with Indigenous peoples.

Course Instructor: Razieh Enjilela

How to address me: Razieh

Gender Pronouns: (she/her/hers)

Email: razieh.enjilela@Carleton.ca

Note: If you have a question or would like to talk with me, you can send an email, visit me during student hours (see below), or approach me after lecture.

Best Ways to be in Touch: via email, or during student office hours

Student Hours: See D2L

Office Hours: Office hours will take place using the Zoom link which is built into Brightspace.

Class Location: PHYS 1905 is offered as an Asynchronous online Course.

Class Times: NA

Prerequisites: -

Preclusions: Precludes additional credit for PHYS2203

Department/Unit: Physics

Course TAs: TBA

OVERVIEW

This course is intended for students with little or no background in Science. It introduces physics through a set of modules that closely connected to our everyday life and future.

This course is only available on-line via Brightspace.

Please note that Faculty of Science students may only take this course as a free elective.

EQUITY DIVERSITY AND INCLUSION STATEMENT

We are committed to creating a community that is as inclusive and diverse as the people that our professions serve. All students in the PHYS1902 class need to have a fundamental understanding of anti-racism, decolonization, Indigenization, and EDI. EDI plays a significant role in what we do in our class and in our day-to-day lives. An environment where we understand, and respect EDI is essential for each individual to fulfill their potential.

COURSE LEVEL LEARNING OUTCOMES

By the end of the course, students should be able to:

1. Explain physics related phenomenon using basic physics principles and terminology
2. Perform basic calculation/estimations to solve simple physics related problems
3. Make correct judgement/decisions on physics related issues in their daily life based on basic physics principles

CONTENT

The following thematic modules will be covered in this course. Each module will help you answer a series of questions listed below.

1. Transportation

If you drive a car and take a bus to get from point A to B. How to estimate your travel time and average speed? Have you wondered what forces are involved to keep the cars moving? What is the physics behind the safety rules on the road, especially in winter? Can physics help you pick a car that is safer during collision? What are the physical factors that determine the fuel economy of a car?

2. Sports

Physics is at the very heart of every sport. A good understanding of physics will help athletes maximize their potential. What forces are involved in cycling? Can a cyclist outrun a car? How strong a rope should you chose for rock climbing? How do figure skaters control their spins? What is the best projection angle for shot put?

3. Weather and climate

Global warming is almost too well-known to require discussion, but most people have a very limited understanding on the underlying science. If we cannot predict the weather over more than a week, how can we hope to predict climate change of a century? If there are equations that describe the weather, why can't we predict where hurricanes will go? Why is carbon dioxide so important?

4. Home Electricity

Our civilization is very dependent on electrical power. But what is electricity? How is electricity generated and transferred? How do light bulbs work? How efficient are some of the common appliances? How to estimate the electricity consumptions of a household? What are the preclusions for electrical safety?

5. Green Energy

From human body, to cars, to factories, to the whole human society, nothing will function without energy. As our demand increases, what are the GREEN energy sources? How is the energy generated from these sources? How efficient are they? What are the environment impacts of different energy sources?

MODULE COMPLETION DATES AND PHYSICS TOPICS COVERED

Thematic Modules	Expected completion dates of lecture videos	Physics topics Covered
1. Transportation	May 11	Linear motion, Speed, velocity, acceleration, Force, Newton's laws, circular motion, friction, collision, energy and momentum
2. Sports	May 18	Force, energy, projectile motion, rotation, moment of inertia, angular momentum
3. Weather and climate	May 25	Energy, heat and temperature, the first law thermodynamics, heat transfer, black body radiation
4. Home Electricity	June 1	Electrostatics, electric potential, current, and resistance, ohm's law, electric power, refrigeration, electric safety
5. Green Energy	June 8	Electricity as energy, Electromagnetic Induction, thermal power generation, heat engine, nuclear power, solar power, wind power, biofuels

EVALUATION

1. (40%) Module quizzes

At the end of each thematic modules, there will be an online quiz of 15 multi-choice questions. Each quiz account for 8% of the final mark.

Thematic Module	Module quiz due date
1. Transportation	May 18, 11:59 pm
2. Sports	May 25, 11:59 pm
3. Weather and climate	June 1, 11:59 pm
4. Home Electricity	June 8, 11:59 pm
5. Green Energy	June 15, 11:59 pm

2. (40%) Two writing projects

Each thematic module has suggested essay topics and/or a lab you can perform using materials or devices that are available in your home. You are required to write **two** essays or lab reports on two of the five topics of your choice. The first (essay or lab) must be chosen from the first two thematic Modules (Transportation and Sport). The second (essay or lab) must be chosen from the last three modules (Weather and climate, Home Electricity, and Green Energy). **At one of the two writing project has to be essay, i.e. you can chose (one essay + one lab), or two essays. Late submissions will be graded with a 10% per day penalty up to a maximum of 50%.**

The due dates at listed in this table:

	Thematic Modules	Module essay or lab report due dates
1 st Essay/Short video or Lab Must pick one of the two topics	1. Transportation	The 1 st Essay or Lab report due on June 1, 11:59 pm
	2. Sports	
2 nd Essay/Short video or Lab Must pick one of the three topics	3. Weather and climate	The 2 nd Essay or Lab report due on, June 15, 11:59 pm
	4. Home Electricity	
	5. Green Energy	

For the lab report, a write up template will be provided. Please include all of your calculations. The essay has to be **800-1000 words**. Both the essay and lab reports must be written using word processing software. **Hand written essays will NOT be accepted and will be given zero mark.** Essays or lab reports should be uploaded via Brightspace.

Late and Missed Work Policies

Late Work

Students are expected to complete all assignments and class activities within the time frames and by the dates indicated in this outline. Exemption or deferral of assignments and activities is only permitted for a medical or personal emergency or due to religious observance (request must be received within the first two weeks of the course). I (course instructor) must be notified by e-mail prior to the due date or as soon as possible after the date, and the appropriate documentation must be submitted. **Late submissions will be graded with a 10% per day penalty up to a maximum of 50%.**

Missed Work

Short-term (5 days or less): If you missed work, please fill out the below form and contact me. Please note that you can only use this form once during the semester.

[Academic Consideration for Coursework Form - Registrar's Office](#)

Long-term (> 5 days): Kindly reach out to me regarding any long-term missed work. Please refer to the link provided below for additional information.

[Long Term Academic Consideration Form - Registrar](#)

3. (20%) Final online quiz

During the final exam period, there will be an online quiz of multi-choice questions that covers all the content of the course.

COPYING, PLAGIARISM AND OTHER FORMS OF CHEATING

The attention of all students is drawn to section E.12 of the Academic Regulations of the University: <https://carleton.ca/registrar/academic-integrity/>

Such offences will normally result in a mark of zero on the cheated work. In addition, a report will be sent to the Dean of the student's Faculty, for possible further disciplinary action.

Learning Material(s) and Other Course/Lab-Related Resources

Ancillary fees associated with this course, e.g., textbooks, course packs, lab manuals, field work, online resources or links required for the course along with their associated cost . Estimated costs can be acquired based on current bookstore offerings, Amazon, etc.

Learning Material	Options for Purchasing (e.g. Bookstore, Used, etc.)	Approximate Cost
Physics Beyond the Comfort Zone by Peter Watson.	This textbook has a number of relevant sections relating to material for this course, but does not cover some areas. The lectures and supplementary materials are intended to cover the course with this textbook as a useful but optional additional aid. Please see the below link: https://itunes.apple.com/us/book/physics-beyond-comfort-zone/id902018641?mt=13&uo=4%22%20target=%22itunes_store%22%3EPhysics%20Beyond%20the%20Comfort%20Zone%20-%20Watson,%20Peter%3C/a%3E	\$9.99

Academic Accommodations and Regulations:

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes are outlined on the Academic Accommodations website [Course Outline -Current Students: Current Students](#)).

Statement on Chat GPT/Generative AI usage (See the Sample Syllabus Statements for AI use in Courses [document for examples](#))

As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

Statement on Academic Integrity

Students are expected to uphold the values of academic integrity, which include fairness, honesty, trust, and responsibility. Examples of actions that compromise these values include but are not limited to plagiarism, accessing unauthorized sites for assignments or tests, unauthorized collaboration on assignments or exams, and using artificial intelligence tools such as ChatGPT when your assessment instructions say it is not permitted.

Misconduct in scholarly activity will not be tolerated and will result in consequences as outlined in [Carleton University's Academic Integrity Policy](#). A list of standard sanctions in the Faculty of Science can be found [here](#).

Additional details about this process can be found on [the Faculty of Science Academic Integrity website](#).

Students are expected to familiarize themselves with and abide by [Carleton University's Academic Integrity Policy](#).

Student Rights & Responsibilities

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See [the 7 Rights and Responsibilities Policy](#) for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student Concerns

If a concern arises regarding this course, your first point of contact is me: Email or drop in during student hours and I will do my best to address your concern. If I am unable to address your concern, the next points of contact are (in this order):

Note: You can also bring your concerns to [Ombuds services](#).



Important Dates

SUMMER 2026

May 6	Summer term classes begin.
May 12	Last day for registration and course changes in early summer courses.
May 15-27	Winter term deferred examinations will be written.
May 18	Statutory Holiday. University closed.
May 20	Last day for registration and course changes (including auditing) in full summer courses. Last day to withdraw from early summer courses with a full fee adjustment.
June 1	Last day for academic withdrawal from early summer courses. Last day to request formal exam accommodations 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 10	Last day for summative tests or examinations - or for formative and/or practical tests or examinations totalling 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).

June 18	Last day of early summer term classes. Last day for handing in term work and the last day that can be specified by a course instructor as a due date for term work for fall/winter and winter term courses.
June 19-20	No classes or examinations take place.
June 21-27	Final Examinations. Exams are normally held all seven days of the week.
July 1	Statutory holiday. University Closed.
June 2	Late summer classes begin and full summer classes resume.