



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: Please 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

Faculty of Science B.Sc. students may only take this course as a free elective, while students in Computer Science (BCS) may take it as either a breadth or free elective.

The last day for academic withdrawal from the course to avoid an F grade or low mark is Nov. 15

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 link below: 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

OVERVIEW

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

This course is only available online via Brightspace.

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 PHYS1905 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 phenomena 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 in keeping 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 a 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 choose 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 of the underlying science. If we cannot predict the weather over more than a week, how can we hope to predict climate change over 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 consumption of a household? What are the precautions for electrical safety?

5. Green Energy

From the 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

MODULE COMPLETION DATES AND PHYSICS TOPICS COVERED

Fall Break: No classes will take place. Students cannot be required to attend class or submit coursework from Sunday, October 25 to Sunday, November 1.

Thematic Modules	Expected completion dates of lecture videos	Physics topics covered
1. Transportation	Sep 17	Linear motion, Speed, velocity, acceleration, Force, Newton's laws, circular motion, friction, collision, energy and momentum
2. Sports	Oct 1	Force, energy, projectile motion, rotation, moment of inertia, angular momentum
3. Weather and climate	Oct 15	Energy, heat and temperature, the first law thermodynamics, heat transfer, black body radiation
4. Home Electricity	Nov 5	Electrostatics, electric potential, current, and resistance, ohm's law, electric power, refrigeration, electric safety
5. Green Energy	Nov 19	Electricity as energy, Electromagnetic Induction, thermal power generation, heat engine, nuclear power, solar power, wind power, biofuels

EVALUATION

1. (30%) Module quizzes

At the end of each thematic module, there will be an online quiz of 15 questions. **Quizzes will always open on Thursday and must be completed before Monday at midnight (11:59 pm).** Each quiz accounts for 6% of the final mark.

You must complete all the interactive lecture videos of a module with a mark of 75% on each lecture to gain access to the quiz of that module.

Thematic Module	Module quiz due date
1. Transportation	Sept. 21, 11:59 pm
2. Sports	Oct. 5, 11:59 pm
3. Weather and climate	Oct. 19, 11:59 pm
4. Home Electricity	Nov. 9, 11:59 pm
5. Green Energy	Nov. 23, 11:59 pm

2. (40%) Two home lab projects

Each thematic module has an associated lab. You can perform the lab with materials that you can find at home. You are required to do two home labs of your choice, following the following requirements.

The due dates are listed in this table:

	Thematic Modules	Lab report due dates
1 st Lab Pick one of the two labs	1. Transportation	The first Lab report is due on Tuesday, Oct 20, 11:59 pm
	2. Sports	
2 nd Lab Pick one of the three labs	3. Weather and climate	The 2 nd Lab report is due on Friday, Dec 4th, 11:59 pm
	4. Home Electricity	
	5. Green Energy	

For the lab report, a write-up template will be provided. The lab reports should be written using word processing software, for example, M.S. Word or Google Docs. The reports must be submitted as a **PDF file**. The lab reports should be uploaded via Brightspace. **Each lab report accounts for 20% of the final mark.**

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 form below 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. (30%) Final in-person exam

Please note that the **final exam will be conducted in person**. Attendance at the in-person final exam is a **mandatory course requirement**, and you **MUST** attend in order to successfully complete the course. The final exam will consist of multiple-choice questions covering all course content. Assessments and any approved make-up exams will be scheduled on campus outside of regular class hours and may take place on Friday evenings, Saturdays, or Sundays.

Please be advised that there is no distance or remote exam option available for this 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.

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](#)).

Generative Artificial Intelligence (GenAI)

For this course, Generative AI (GenAI) tools (e.g., ChatGPT, Copilot, Gemini) may be used to support learning activities such as brainstorming ideas, clarifying concepts, improving grammar and writing, and assisting with problem-solving where appropriate. Students remain responsible for the accuracy, originality, and academic integrity of all submitted work and must acknowledge any substantive use of GenAI in their assignments. The purpose of this policy is to encourage the responsible and ethical use of emerging technologies while ensuring that students demonstrate their own knowledge and skills. Unless explicitly authorized by the instructor, students may not submit AI-generated content as their own work, use GenAI on assessments where independent work is required, or rely on AI-generated sources, data, or citations without verification. **As our understanding of the uses of GenAI and its relationship to student work and academic integrity continues to evolve, students are required to discuss their use of GenAI 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 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 for 2026-27

Please note the following important dates. Consult the [Calendar website](#) for a full list of important dates and the most up-to-date information.

Date	Notes
September 2	Deadline for course outlines to be made available to students for Early Fall, Full Fall and Fall/Winter courses
September 18-20	Deferred Exam Period: Full Summer and late Summer term deferred final examinations.
October 26	Deadline for course outlines to be made available to students for Late Fall courses.
October 26-30	Fall Break: No classes will take place. Students cannot be required to attend class or submit coursework from Sunday, October 25 to Sunday, November 1. The following exceptions may apply:
October 31- November 1 and November 7-8	Final examinations in early fall undergraduate courses will be held.
November 11	Remembrance Day is on Wednesday, November 11. As much as possible, course instructors are asked to allow for a moment of silence for personal reflection at 11 a.m. in accordance with Senate policy .
November 20-22	Early fall undergraduate deferred final examinations will be held.
November 27	Last day for summative tests or examinations, or formative tests or examinations totalling more than 15% of the final grade, in late fall term undergraduate courses, before the official final examination period.

December 12-23	Final examinations in Full Fall and Late Fall courses and mid-term examinations in Fall/Winter courses will be held. Examinations are normally held all seven days of the week.
December 23	All final take-home examinations are due on this day, 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.
December 30	Deadline for course outlines to be made available to students for Early Winter and Full Winter courses.
January 22-24; January 29-31	Full fall and late fall term deferred final examinations will be held.
February 15-19	Winter Break: No classes will take place. Students cannot be required to attend class or submit coursework from Sunday, February 14 to Sunday, February 21. The following exceptions may apply.
February 18	Deadline for course outlines to be made available to students registered for Late Winter courses.
February 27-28, March 6-7	Final exams for Early Winter undergraduate courses will be held.
March 19-21	Early Winter term undergraduate deferred final examinations will be held.
March 25	Last day for summative tests or examinations, or formative tests or examinations totalling more than 15% of the final grade, in full winter term or fall/winter undergraduate courses, before the official April final examination period.
April 11-23	Final examinations in Full Winter, Late Winter, and Fall/Winter courses will be held. Examinations are normally held all seven days of the week.
April 23	All final take-home examinations are due on this day, 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.