PHYS1902 for Summer 2025

From Our Star to the Cosmos

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 or 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: Monday and Wednesday, 12:30 p.m. – 1:30 p.m. or by appointment.

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

Class Location: PHYS 1902 is offered as an Asynchronous online Course.

Class Times: NA

Prerequisites: -

Preclusions: Precludes additional credit for PHYS2203

Department/Unit: Physics

Course TAs: TBA

Topics Covered and Learning Outcomes

Welcome to your first (or second) course in astronomy! I hope that you have an enjoyable summer session studying at Carleton. This course is aimed at general interest students who have had minimal exposure to science or mathematics. As such, this course will rely mostly on descriptive explanations employing diagrams and pictures to help build a heuristic understanding of the cosmos. However, studying astronomy also requires a basic understanding of the laws of physics and mathematics.

PHYS 1902 is one of two introductory courses on astronomy offered by Carleton (the other being PHYS 1901: *Planetary Astronomy*). PHYS 1902 focuses on galaxies and stellar phenomena. By the end of this course, you will understand the motions of the sky, how telescopes work, the properties of stars and how they form and evolve, how galaxies form, and the methods astronomers and scientists use to learn about the Universe on its largest scales. I hope that you will gain a deeper appreciation of science and astronomy and have fun while learning!

PHYS 1902 is offered as an **Asynchronous Course**. This course is an online course where the instructor and students share information, ideas, and learning experiences in a virtual course space. Asynchronous courses do not have required live, scheduled meetings online. However, students are expected to remain up to date with the deadlines and due dates provided by the instructor. These courses require high-speed Internet access and a computer.

As with any university-level course, it is imperative that you view all lectures if you wish to succeed. The course assessment consists of 1 assignment, 2 class activities, a midterm exam, and a final exam. In this section, I explain how each assessment component factors into your final grade.

Topics to be Covered

Date	Lecture	Topics	Textbook Sections
July 2	1	Course Introduction Our Place in Space	1.1
	2	Scientific Notation, Astronomical Measurement The Scientific Method	1.1 Appendices 1, 2, 1.2
July 7	3	The Celestial Sphere, Earth's Orbital Motion	1.2 – 1.4
	4	Motion of the Moon, The Measurement of Distance	1.4 – 1.5
July 9	5	The Copernican Revolution, Planetary Motion	1.6 2.1 – 2.4

	6	Laws of Motion Newtonian Mechanics	2.5 – 2.7
July 14	7	Light and Radiation Electromagnetic Spectrum	2.8 3.1 – 3.2
	8	Radiation Laws Spectroscopy	3.3 – 3.5 4.1
July 16	9	Spectroscopy Telescopes	4.2 – 4.5
	10	Telescopes *Course Review, Part 1	5.1 – 5.4 1 – 5
July 21	11	The Sun	16.1 – 16.7
	12	The Stars	17.1 – 17.4
July 23	13	The Stars	17.5 – 17.8
	14	The Interstellar Medium Star Formation	18.1 – 18.5 19.1 – 19.3
July 28	15	Star Formation Stellar Evolution of Low-Mass Stars	19.4 – 19.6 20.1 – 20.3
	16	Stellar Evolution of High-Mass Stars Stellar Explosions	20.4 – 20.6 21.1 – 21.3
July 30	17	Stellar Explosions Neutron Stars	21.4 – 21.5 22.1 – 22.4
	18	Relativity and Black Holes	22.5 – 22.8
August 4	19	The Milky Way Galaxy	23.1 – 23.7
	20	Galaxies	24.1 – 24.5
August 6	21	Galaxies and Dark Matter	25.1 – 25.5
	22	Cosmology	26.1 – 26.7
August 11	23	The Early Universe	27.1 – 27.6
	-	*Course Review, Part 2	18 – 27
August 14	-	Last day of Late Summer term classes	-
August 17 – 23	-	Final examinations in Late Summer term courses may be held. Examinations are normally held all seven days of the week.	-
September 19–21	-	Late Summer term deferred examinations will be held.	-

Lectures

There are three hours of lectures per week. Please see above for a detailed schedule of the delivery of the material, as well as for the content and textbook chapters covered every week. The textbook is an important tool to learn scientific material. The book identifies the learning objectives, explains the fundamental concepts and contains several review problems.

Note that the first 10 lectures of PHYS 1901 and PHYS 1902 cover the same material. This is so that any student taking either of these courses can learn the basic laws of physics and astronomy. For students who choose to take both courses, PHYS 1901 and PHYS 1902 cover different topics starting with lecture 11.

Assessments

Grade Breakdown

COMPONENT	GRADE VALUE	DATE
ASSIGNMENT 1	20 %	July 7 - July 20
CLASS ACTIVITY 1	20 %	July 21 - August 5
CLASS ACTIVITY 2	15 %	August 5 - August 13
MIDTERM	20 %	July 21, 2025, 6-7:30 pm
FINAL EXAM	25 %	TBA
COURSE TOTAL	100 %	

In order to pass the course, your overall grade must be at least 50 %. In addition, **you MUST submit at least 2 course requirements (out of 1 assignment and 2 class activities) to pass the course. Please note that if you decide not to submit one of the requirements, its grade will not be counted in the other assignments. You will lose the missed assignment.**

Please see the detailed explanations below:

Assignment Submission Policy

- You must submit your assignments electronically in Brightspace by uploading a file in PDF or Microsoft Word format. **Do not email your assignment to me or the TA.**
- Assignments must be submitted no later than 11:59 p.m. Eastern Time on the above due dates.

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

Midterm Exam

The midterm exam will be held on **Monday, July 21, 2025 at 6:00 p.m. – 7:30 p.m**. **Eastern Time**, and will take place **online** through Brightspace. The exam will be open-book and consist of multiple-choice questions. If you have a legitimate reason for missing the midterm exam, a deferred midterm exam may be scheduled for you. More details about the midterm exam will be announced at a later date.

Final Exam

The final examination will be held during the Fall exam period, August 17 – 23, 2025, and will take place online through Brightspace. The date and time of the exam are scheduled by the central University scheduling service and will be announced part of the way through the term. The final exam will be cumulative, open-book, and consist of multiple-choice questions. More details about the exam will be announced at a later date.

Deferred Exams

If you miss the Final Exam for a valid reason, such as illness, you may apply for a Deferred Exam through the registrar's office. A Deferred Exam replaces only the Final Exam portion of your grade. Deferred Exams for late summer 2025 are scheduled for September 19– 21, 2025.

Students with significant incomplete term work, such that a failing grade would be awarded regardless of the final exam score, will not be permitted to write a deferred exam.

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
Astronomy Today, 9th Edition by Eric Chaisson and Steve McMillan, Publisher: Pearson	This eTextbook is simple to use on computers or iOS and Android mobile devices (even offline). You can take notes and highlights within the eText; they are added to your virtual notebook, where you can organize them for the way you study. To simplify the process, students can go directly to the Pearson learner store to purchase the etext. Here is the link: https://www.pearson.com/store/p/astronomy-today/P100002456903/9780134873787	$77.99 (12 months access)

Second handbook, 8th or 9th edition are all acceptable. Please note that students are not required to purchase textbooks or other learning materials for this course.

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 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.

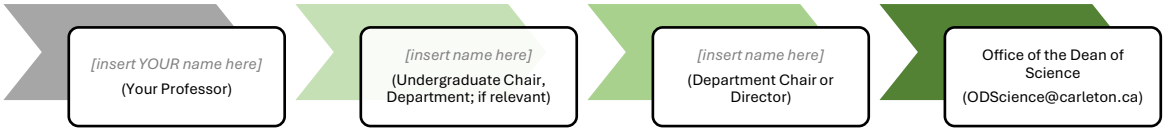
Student Rights & Responsibilities

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 2025

Jully 2	Summer term classes begin.
July 8	Last day for registration and course changes in in early summer courses.
July 18-20	Early summer term deferred examinations will be written.
July 15	Last day for withdrawal from early summer term and early summer portion of summer courses with full fee adjustment. Withdrawals after this date will result in a permanent notation of WDN on the official transcript.
August 1	Last day for academic withdrawal from full and late summer courses.
August 1	Last day to request formal exam accommodations for April 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 4	Statutory Holiday. The university closed.

August 7	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 14	Last day of late summer term classes.
	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.
	Last day for academic withdrawal from early summer term courses.
	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.
August 15-16	No classes or examinations take place.
August 17-23	Final Examinations. Exams are normally held all seven days of the week.
September 19–21	Late summer and full summer term deferred final examinations to be held.