PHYS1901 Section T (Fall 2025)
Planetary Astronomy

Course Instructor: Prof. Manuella Vincter

Email: vincter@physics.carleton.ca

Office Location: Room 2458, Herzberg Building

Note: If you have a question or would like to talk with me, you can send me an email or chat on Zoom during my Student Hours. **All email communications must be done from your Carleton University account.**

Student Hours: see Brightspace for details

Class Location: The course is designed for web delivery. There is no on-campus classroom component.

Class Times: Lectures are prerecorded and available through Brightspace. 2.5 hours per week.

Prerequisites: none

Preclusions: Precludes additional credit for PHYS 2203. Faculty of Science B.Sc. students may only take this course as a free elective, while students in Computer Science (BCS) may only take as a breadth elective.

Department/Unit: Physics

Calendar description

Description of the known stellar, galactic and extra-galactic systems together with the instruments used to study them. Modern ideas concerning the structure, origin and evolution of our own planet. Formation of the Moon - Earth system. Study of the planets in our solar system.

The prof reserves the right to make changes to this course outline. Any changes will be announced in Brightspace.

Welcome to PHYS1901! I am delighted to be your prof this semester. I will continually strive to create inclusive learning environments and would therefore appreciate your support and feedback. Please feel free to contact me via email or in person to let me know about any experiences you have had related to this class that have made you feel uncomfortable.

Land Acknowledgement: 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.

Learning Material

Learning Material	Options for Purchasing	Approximate Cost
Astronomy Today, 9e, Eric Chaisson, Steve McMillan. Pearson ISBN-13: 9780134873787	Online textbook from www.pearson.com or Carleton Bookstore	Carleton Bookstore offers online access for 6 months for $75.00

Late and Missed Work Policies

Please see the assessments section below for the policies on late or missing work.

Topics Covered and Learning Outcomes

Topics to be Covered (Timing as given is my aspiration. Subject to change.)

Lecture #	Date	Some highlights of topics/content	Readings/Prep for Class
1	W Sep 3	Course Introduction. Charting the Heavens	1.1, 1.2,
2	M Sep 8	Scientific Notation. Astronomical Measurement Charting the Heavens	Appendix 1&2, 1.3-1.4
3	W Sep 10	Charting the heavens. The Copernican Revolution	1.5-1.6, 2.1-2.3
4	M Sep 15	The Copernican Revolution	2.4-2.8
5	W Sep 17	Radiation	3.1-3.5
6	M Sep 22	Spectroscopy	4.1-4.5
7	W Sep 24	Telescopes	5.1-5.4
8	M Sep 29	Telescopes	5.5-5.8
9	W Oct 1	Course review, part 1	Ch 1-5
10	M Oct 6	The Solar System	6.1-6.6
11	W Oct 8	The Solar System. Earth	6.6-6.7, 7.1-7.2
12	W Oct 15	Earth	7.2-7.4
13	M Oct 27	Earth. The Moon and Mercury	7.5-7.6, 8.1-8.3
14	W Oct 29	The Moon and Mercury. Venus	8.4-8.9, 9.1
15	M Nov 3	Venus. Mars	9.2-9.6, 10.1-10.3
	M Nov 3	Midterm Exam, 6:00 p.m. – 7:30 p.m.	
16	W Nov5	Mars	10.4-10.8
17	M Nov 10	Course review, part 2	Ch 6-10
18	W Nov 12	Jupiter	11.1-11.6
19	M Nov 17	Saturn	12.1-12.4
20	W Nov 19	Saturn. Uranus and Neptune	12.5, 13.1-13.3
21	M Nov 24	Uranus and Neptune. Solar System Debris	13.3-13.6, 14.1
22	W Nov 26	Solar System Debris	14.2-14.4
23	M Dec 1	Exoplanets	15.1-15.5
24	W Dec 3	The Sun	16.1-16.7
25	F Dec 5	Course review, part 3	Ch 11-16

Important dates and deadlines can be found here, including class suspension for fall, winter breaks, and statutory holidays.

Course level learning outcomes:

This course is aimed at general-interest students who have had minimal exposure to physics or advanced mathematics. As such, this course will rely mostly on descriptive explanations employing diagrammes and pictures to help build a heuristic understanding of our solar system. However, studying astronomy also requires a basic understanding of the laws of physics, which requires some use of high school level mathematics. PHYS 1901 is one of two introductory courses on astronomy offered by Carleton (the other being PHYS 1902: From Our Stars to the Cosmos). PHYS 1901 focuses on the solar system and planetary phenomena. By the end of this course, you will understand the motions of the objects in our night sky, how telescopes work, the characteristics of the planets, how the solar system formed, and the methods scientists use to learn about our neighbourhood in the Universe. I hope that you will gain a deeper appreciation of science and astronomy and have fun learning! For sure, I will have fun teaching it. 😊

PHYS 1901 is an Asynchronous Course. This course is delivered as an online-only 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.

Assessments

Assignments: There will be four written assignments to be completed outside of class. Collaboration with your colleagues on the assignments is welcome, but collaboration does not mean copying! Please familiarise yourself with Carleton University's policies regarding plagiarism and academic honesty. The assignment schedule will be announced in Brightspace, but will be approximately one assignment every two weeks.

- 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 due dates.
- Students are expected to complete all assignments within the time frames and by the dates indicated in Brightspace. 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 (the 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%. After 5 days, the assignment will no longer be accepted and will be assigned a grade of zero.**

Mid-term exam: The midterm exam will be held on Monday, November 3, 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, December 8 – 20, 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.

Grade Breakdown for PHYS1901:

COMPONENT	GRADE VALUE
ASSIGNMENTS (4, EACH WORTH 15%)	60 %
MIDTERM EXAM	15 %
FINAL EXAM	25 %
TOTAL	100 %

Passing conditions:

- An overall grade of greater than 50% is needed to pass the course.
- You must submit at least 3 of the 4 assignments.
- The final exam must be attempted, even if you manage to achieve 50% overall without it.

As with any university-level course, it is important that you view all lectures if you wish to succeed.

Deferred Exams: Deferred Exams for Fall 2025 are scheduled for January 23-25 and January 30-February 1, 2026. Deferred Exams are generally only granted to students who cannot take the regularly scheduled exam due to serious illness or death of a family member. Information on the deferral process is provided at https://carleton.ca/registrar/special-requests/deferral/ The Deferred Exam replaces only the Final Exam portion of the marks and students must be eligible to pass the course by having completed satisfactory term work (at least 40% of the total grade excluding the final exam).

Academic Accommodations and Regulations

Carleton is committed to providing academic accessibility for all. You may need special arrangements to meet your academic obligations during the term. Accommodation request processes are outlined on the Academic Accommodations website https://students.carleton.ca/course-outline/

Statement on Chat GPT/Generative AI usage

Students may use AI tools for basic word processing and text formatting. It is not necessary to document the use of AI for these purposes. **AI tools should not be used to find solutions to the assignments nor exams.** You can use the web as a useful reference tool for your assignments. If you have question, please ask me. 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 me 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

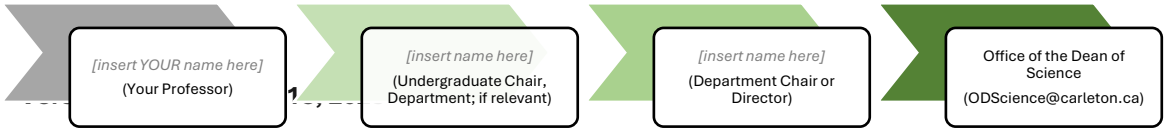
Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the Rights and Responsibilities Policy for details regarding the expectations of non-academic behaviour of students. Those who participate with another student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

Intellectual Property

All course materials are 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).

Student Concerns

If a concern arises regarding this course, **your first point of contact is me**: Email or chat 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):



University Policies

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
DEF = Deferred

Assistance for Students

Career Services: https://carleton.ca/career/
Centre for Student Academic Support: https://carleton.ca/csas/
Math Tutorial Centre: https://carleton.ca/math/math-tutorial-centre/
Science Student Success Centre: https://sssc.carleton.ca/

Online Community Expectations for Social Platforms

With the growing use of social platforms (e.g., Discord) on campuses, it is important to keep in mind that university codes of conduct still apply to the behaviours of students online. Please be considerate and respectful while engaging with peers and remember that we are all humans, and that your words matter. If any student witnesses or experiences harassment, I encourage you to reach out to me. Alternatively, you can contact Ombuds Services or Carleton Equity and Inclusive Communities.

Online communities can be highly beneficial to students and can help to facilitate learning within the course. I encourage people to ask questions, learn from one another, and have open discussions about class material. That said, any acts of academic misconduct (i.e., cheating) will not be tolerated and will result in serious consequences ranging from a grade reduction to expulsion (see academic integrity violations).

- Examples of appropriate peer-to-peer sharing/learning vary from course to course. In this course appropriate peer-to-peer sharing includes: identifying the proper formula to use, identifying an incorrect or missing step in a person's work, brainstorming potential reasons behind a concept, suggesting helpful sites and videos for learning a concept, posting your own work showing only a specific step or process for illustrative purposes (note: this is very different from posting your work and solution for others to simply copy)
- Examples of unacceptable peer-to-peer sharing: Posting or sharing the answers, indicating which answers are correct on assignments, sharing links to solutions, posting your own complete work for a question/solution

If you are concerned, confused, or conflicted over something, please reach out to me through email for help. Let's do our best to support one another in this class and keep the online experience a safe, inclusive, and positive experience for everyone.