

Astronomy 150 – Concepts in Modern Astronomy
Department of Physics & Astronomy
Jan – April 2026

Instructor: Professor Sara Ellison

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Territory acknowledgement: We acknowledge and respect the Ləkʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Ləkʷəŋən and WSÁNEĆ Peoples whose historical relationships with the land continue to this day.

Office hours: Tuesdays 2-3pm in Elliott 208 (or by appointment, in person or on Zoom)

Lecture delivery: This is an in-person lecture course. Regular attendance is expected (and necessary for optimal learning).

Lecture schedule: Monday and Thursday 11:30am-12:50pm

Location:

Unit value: 1.5

Course description: This course is intended as survey of topics in astronomy. Topics covered will include: The night sky, coordinate systems and magnitudes, telescopes, interactions between light and matter, a brief history of classical astronomy, the properties of stars, stellar evolution, galaxies and active galaxies, cosmology, dark matter and dark energy, the solar system and extra solar planets.

Course scope: ASTR 150 is intended as both an elective for science and engineering students, as well as a requirement for astronomy students. It is an algebra-based survey course of many aspects of modern astronomy. Non-science students (or those without the pre-requisites) might prefer to take ASTR 101 or ASTR 102 which are more conceptual, non-mathematical courses.

Pre-requisites: Completed or currently enrolled in:

MATH 100 or MATH 109

and

PHYS 110 or PHYS 120

Or by permission of the department.

Assessment/evaluation:

- Quizzes – 20%: There are 7 quizzes (assignments) due throughout the semester. These are all submitted via Brightspace. It is your responsibility to check the schedule on Brightspace. Quizzes open 2 weeks before the due date and you can complete them during repeated visits (e.g. do one question today, and come back to complete the rest another time). There is no time limit. More details on the quiz set-up will be discussed in the first class. **There are no extensions, no make-ups and no marks for missed quizzes.**
- Mid-term – 20%: The mid-term is a multiple choice exam that happens in class. The date will be announced by the instructor.
- Labs – 20%: More information below.
- Final – 40%: A multiple choice exam, the date and time for which is scheduled by the University. The instructor will announce in-class and on Brightspace once the details are known.

UVic undergraduate grading system (As per the [Academic Calendar](#)):

Grade	Grade Point Value	Grade Scale	Description
A+	9	90 – 100%	Exceptional, outstanding and excellent performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter.
A	8	85 – 89%	
A-	7	80 – 84%	
B+	6	77 – 79%	Very good, good and solid performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one area balanced with satisfactory grasp in the other area.
B	5	73 – 76%	
B-	4	70 – 72%	
C+	3	65 – 69%	Satisfactory, or minimally satisfactory. These grades indicate a satisfactory performance and knowledge of the subject matter.
C	2	60 – 64%	
D	1	50 – 59%	Marginal Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.
F	0	0 – 49%	Unsatisfactory performance. Wrote final examination and completed course requirements; no supplemental.
N	0	0 – 49%	Did not write examination or complete course requirements by the end of term or session; no supplemental.

Labs: You must explicitly enroll in a lab section. Labs are run and marked by teaching assistants (TAs). Attendance at your weekly lab is compulsory and **you must pass the lab to pass the course**. Check the ASTR 150 course page on Brightspace for the lab schedule for your section. The lab manual can be purchased at the bookstore. Any questions about labs should be addressed to the senior lab instructor: Dr Erica Franzmann (astrolabs@uvic.ca).

Course materials:

Lecture slides are available on Brightspace. It is recommended that you use these as a basis for your notes (they contain many figures) complemented by your own note taking. There is insufficient text on the lecture slides for them to be considered as lecture notes, so it is important that you make your own notes in class.

Apart from purchasing the lab manual, all of the material you need for the course is covered in class – coming to class and making good notes is all you need to succeed! As such, there is no compulsory textbook for this course – it is the belief of the instructor that students should not have to buy expensive texts in order to succeed. However, if you would like to supplement your learning, the following options are available:

- Astronomy Today by Chaisson & McMillan 9th Edition is available for rental at the bookstore.
- Second-hand hard copies of Astronomy Today are easily found online (any edition will do).
- Buy a new or second-hand copy of an alternative introductory astronomy text (the material we cover is fairly universally covered)
- Openstax has a free online astronomy text (the link is in Brightspace).
- Approximately 30 copies of older edition introductory astronomy texts are on reserve at the library for your reference.

Course calendar:

UVic Important Dates: uvic.ca/calendar/dates/

Last day to add courses: Jan 21 2026

Last day to drop a course without penalty of failure: Feb 28 2026

Final Exam Period: April 7-22 2026

Week	Lecture Dates	Lecture Material (Approximate)
1	Jan 5, 8	The night sky and how we observe it
2	Jan 12, 15	The night sky and how we observe it
3	Jan 19, 22	The history of modern astronomy
4	Jan 26, 29	The properties of stars
5	Feb 2, 5	The properties of stars/stellar evolution
6	Feb 9, 12	Guest lecture (Feb 9) and mid-term (Feb 12)
7	Feb 16-20	Reading break – no classes
8	Feb 23, 26	Stellar evolution
9	March 2, 5	Galaxies
10	March 9, 12	Galaxies, cosmology

11	March 16, 19	Cosmology, the solar system
12	March 23, 26	The solar system/exoplanets
13	March 30, April 2	Guest lecture (March 30), buffer lecture if needed (April 2)

Learning outcomes: By the end of the course students should have an understanding of the fundamentals of modern astronomy and its techniques, be aware of contemporary observational facilities and some current areas of active research. Students will also be able to apply basic physics equations in an astronomical context. Additionally, students will have become familiar with astronomy in the laboratory setting and know the basics of using a small telescope. Having passed ASTR 150, students will be prepared for undertaking ASTR 250.

Course feedback. I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous **Course Evaluation Survey (CES)** regarding your learning experience. The survey is important for providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. The survey is accessed online and can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time, but please be thinking about this important activity during the course.

Course policies:

Academic integrity and tri-faculty code of conduct: The instructors (lecture and lab) take conduct and academic integrity extremely seriously. UVic’s Policy on Academic Integrity is found at uvic.ca/calendar/future/undergrad/index.php#/home. It is every student’s responsibility to be aware of this policy, including policies on cheating, plagiarism, unauthorized use of an editor, multiple submission, and aiding others to cheat. If you have any questions or doubts, please talk to me. For more information, see uvic.ca/learningandteaching/cac.

Use of AI: Please be advised that in this course you are not authorized to use any form of generative AI. In order to successfully complete course activities, generative AI is not required nor welcomed. Students should not make any use of generative AI tools such as ChatGPT, Grammarly, among others that use AI for content generation and editing. As the University of Victoria states on its Academic Integrity Policy “Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility.” Therefore, I expect you to comply with the course syllabus and I encourage you to enhance your academic experience in this course by refraining from use of generative AI.

Collaboration: The points below summarize expectations based on the academic integrity policy:

- For the final exam, you must complete all work on your own without help from another person or from outside sources.
- For the midterm, you must complete all work on your own without help from another person or from outside sources.

- For the labs, you must submit your own original work. You may seek help or advice from an instructor or another student. You may not copy or paraphrase from another student. You may not permit your work to be copied or paraphrased by another student.
- For the quizzes, you must undertake the work yourself. You may seek advice or help from an instructor, other students, a tutor, or other person, but you are responsible for understanding and undertaking the work you submitted.

Note that it is an academic integrity violation and a violation of UVic policies about information technology to post material from this class to any online “homework help” site.

APPENDICES AND RESOURCES

DEPARTMENT OF PHYSICS AND ASTRONOMY INFORMATION

- **Department Website:** uvic.ca/science/physics/index.php
- **Department General Office:** physgen@uvic.ca
- **Department Undergraduate Advisor:** phast_advising@uvic.ca
- **Department Graduate Advisor:** pkovtun@uvic.ca
- **Department Graduate Program Assistant:** physgrad@uvic.ca

UNIVERSITY STATEMENTS & POLICIES

- Academic Calendar: [Information for All Students](#)
- [Creating a respectful, inclusive, and productive learning environment](#)
- [Accommodation of Religious Observance](#)
- [Accommodation and Access for Students with Disabilities](#)
- [Student Conduct](#)
- [Non-academic Student Misconduct](#)
- [Accessibility](#)
- [Diversity / EDI](#)
- [Equity Statement](#)
- [Sexualized Violence Prevention and Response](#)
- [Discrimination and Harassment Policy](#)

STUDENT RESOURCES

POSITIVITY AND SAFETY

The University of Victoria is committed to promoting, providing, and protecting a positive and safe learning and working environment for all its members.

[Student Groups & Resources](#)

ACADEMIC RESOURCES

[UVic Library](#) - *UVic Library offers many services and resources for undergraduate and graduate students.*
uvic.ca/students/academics/library-services

Learning Resources - *UVic Learn Anywhere is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.*

onlineacademiccommunity.uvic.ca/uviclearn/

Centre for Academic Communication - *Offers online and in-person one-on-one tutorials, workshops, and more.*

uvic.ca/learningandteaching/cac

Physics Aid Service – *Addresses problems with conceptual understanding, difficulties encountered with homework assignments, preparation for mid-term and final exams, and occasionally even preparation for external exams such as the MCAT. Instruction may be one-to-one or in small groups, with emphasis placed on engaged interaction between the students and the instructor.*

<https://www.uvic.ca/science/physics/current/undergraduate/pas/index.php>

MENTAL HEALTH & WELLNESS

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep, and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

Student Wellness Centre - *Our team of practitioners offers a variety of services to support students' mental, physical, and spiritual health.*

uvic.ca/student-wellness

Counselling Services - *Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students.*

uvic.ca/student-wellness

Health Services - *University Health Services (UHS) provides a full-service primary health clinic for students and coordinates healthy student and campus initiatives.*

uvic.ca/student-wellness

ACCESSIBILITY

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability or health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL) as soon as possible.

Centre for Accessible Learning - *The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.*

uvic.ca/accessible-learning

ADVISING

For academic advising-related questions, students in the Department of Physics & Astronomy are also encouraged to meet with the Undergraduate Advisor (phast_advising@uvic.ca) as well as an academic advisor in the Academic Advising Centre early in their studies to help map out a plan to declare a major and complete university program requirements.

Academic Advising Centre - *Academic advice and support is currently available by phone, email and virtual or in-person appointments.* uvic.ca/services/advising

Ombudsperson - *The ombuds office is an independent, impartial, and confidential resource for undergraduate and graduate students and other members of the University of Victoria community. The ombudsperson helps resolve student problems or disputes fairly.* uvicombudsperson.ca

ACADEMIC CONCESSION

You can request an academic concession if your course requirements are affected by unexpected and unavoidable circumstances, or conflicting responsibilities. Concession requests can be for an in-course extension, deferral, withdrawal under extenuating circumstances, or an aegrotat. Please speak to an advisor at the Academic Advising Centre if you have questions on how requesting a concession will affect your academic program.

Undergraduate Academic Concessions - uvic.ca/students/academics/academic-concessions-accommodations

EQUITY AND HUMAN RIGHTS AT UVIC

EQHR is a resource for students, staff, and faculty who have experienced sexualized violence, discrimination, and/or harassment and are looking for informal and/or formal resolution options as well as advice, coaching, and/or education. We are available for confidential consultations so that you can ask questions and learn your options.

EQHR – By email at eqhr01@uvic.ca or in-person (Sedgewick C115). uvic.ca/equity

Sexualized Violence Resource Office – *If you have been directly or indirectly impacted by sexualized violence, reach out to the SVRO for information, advice, and resolution options (restorative and disciplinary) as well as support options and referrals. The SVRO is both survivor-centred and trauma-informed in their approach. You can reach us by phone at 250-721-8021 or by email at eqhr01@uvic.ca to book either an in-person (Sedgewick C119) or online appointment. uvic.ca/sexualizedviolence*

RESOURCES FOR INTERNATIONAL STUDENTS

International Centre for Students - *The primary office supporting international students on campus at the university-wide level. uvic.ca/international-experiences*

UVic Global Community Initiative - *Provides various supportive programming, including a Mentorship Program and Conversation Partner Program. uvic.ca/international-experiences/get-involved/uvic-global-community*

RESOURCES FOR INDIGENOUS STUDENTS

Indigenous Student Support - *UVic offers holistic services to Indigenous students throughout their academic journey. uvic.ca/students/info-for/indigenous-students*

Elders in Residence - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty, and administration in Indigenous ways of knowing and being. uvic.ca/iace/*