

University of Victoria
Department of Physics and Astronomy
ASTR101 - Exploring the Night Sky
Fall 2024 Syllabus

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

Course Information

Course: ASTR101 - Exploring the Night Sky

Sections: Lecture: A01, A02. Lab: B01 through B16

Unit Value: 1.5 Units

Lecture Schedule: (All sections) Tuesday, Wednesday and Friday from 11:30am-12:20pm

Lab Schedule:

Labs 2-5 at regularly scheduled times

B01: Sep 23, Oct 7, Oct 21, Nov 4 9:30am-12:20pm, Sep 9 8:30pm until finished.

B02: Sep 23, Oct 7, Oct 21, Nov 4 12:30pm-3:20pm, Sep 9 8:30pm until finished.

B03: Sep 23, Oct 7, Oct 21, Nov 4 3:30pm-6:20pm, Sep 9 8:30pm until finished.

B06: Sep 24, Oct 8, Oct 22, Nov 5 12:30pm-3:20pm, Sep 10 8:30pm until finished.

B07: Sep 24, Oct 8, Oct 22, Nov 5 3:30pm-6:20pm, Sep 10 8:30pm until finished.

B08: Sep 24, Oct 8, Oct 22, Nov 5 6:30pm-9:20pm, Sep 10 8:30pm until finished.

B12: Sep 25, Oct 9, Oct 23, Nov 6 6:30pm-9:20pm, Sep 10 8:30pm until finished.

B14: Sep 26, Oct 10, Oct 24, Nov 7 12:30pm-3:20pm, Sep 12 8:30pm until finished.

B15: Sep 26, Oct 10, Oct 24, Nov 7 12:30pm-3:20pm, Sep 12 8:30pm until finished.

B16: Sep 26, Oct 10, Oct 24, Nov 7 6:30pm-9:20pm, Sep 12 8:30pm until finished.

Prerequisites: There are no prerequisites for this course. The material covered in this course will be taught with a minimum expectation of mathematics. Students comfortable with mathematics and physics may wish to consider taking ASTR150 and/or 250.

Instructor Information

Instructor: Travis Martin

Email: travismartin@uvic.ca

Students are expected to include “ASTR101” in the Subject line of their email, and include their name and student ID in the body of the email. Please allow up to 48h to respond to emails. If you do not receive a response within 48h, it is possible that your email was missed.

Office Hours: TBD on Zoom (see Brightspace > Course Tools > Zoom for link)

In-Term Feedback: Student comments may be sent via email, however it is not possible for all feedback to be considered within the term.

Lab Coordinator: Erica Franzmann

Email: astrolabs@uvic.ca

Modality Information

This course consists of synchronous lectures and synchronous labs for all lecture and lab sections.

Students in Lec A02 and Lab B16 are expected to have a computer with internet access. It is the students' responsibility to ensure that they are able to connect.

Technology Information

Course Webpage: <http://bright.uvic.ca>

Other Technologies: This course uses Zoom for office hours and A02/B16 section meetings. Lectures are recorded using Echo 360 and will be available on Brightspace for students eligible to access them. Students who opt to participate in the bonus assignments may be required to use other technologies, such as Wolfram Player.

Digital Tools Policy: Students may not use LLM Artificial Intelligence (such as ChatGPT) or Generative AI (such as Midjourney or DALL-E) for any portion of this course. Use of these tools will result in charges of academic dishonesty.

Course Structure Information

Lectures: Section A01 will meet in-person, while Section A02 will connect via Zoom. The lecture is simultaneous for both sections. Students who miss the live lecture due to illness or other reasons may request access to the video recordings of the lecture. Video recordings are not available by default. It is possible that some lectures or parts of lectures may not be recorded due to technological issues with the equipment available in the lecture hall. Videos are for the use by the student(s) who request them, but remain the intellectual property of the instructor and may not be uploaded to any other site.

Labs: For labs, sections B01 through B15, students will meet in the lab room as the designated time for in-person labs. These labs consist of a short introductory discussion with the lab instructor, followed by a guided activity to collect data. Following this, students will have an opportunity to complete their lab writeup at home. Students are not free to attend another lab sections without permission of the lab coordinator or course instructor.

For lab sections B16, students will meet with their lab instructor on Zoom at the appropriate time. Section B16 labs consist of a separate lab activity from the in-person labs, but follows similar topics. Students will be guided through an activity to develop data, and then will have an opportunity to complete their lab writeup on their own time.

Course Schedule

Below is an approximate outline of the order and dates in which material will be covered. Depending on the depth of in-class discussion, the material may take more or less time than anticipated. In the scenario that material takes longer than expected, some slides may be skipped in the lectures. Students are responsible for ALL of the material in the slides, including those that are skipped, since the full set of slides are available to students via CourseSpaces.

Lecture Number	Topic	Text Chapter(s)
Lec 1	Introduction	
Lec 2-4	Topic 1 - Science and Astronomy	1
Lec 5-7	Topic 2 - The Night Sky	2 & 3
Lec 8-11	Topic 3 - History of Astronomy	4 & 5
Lec 12-13	Topic 4 - Light and Matter	7
Lec 14-16	Topic 5 - Telescopes	6
Lec 17-19	Topic 6 - The Sun	8
Lec 20-23	Topic 7 - The Earth	11 & 12
Lec 24-27	Topic 8 - Terrestrial Planets	12 & 13
Lec 28-30	Topic 9 - Jovian Planets	14 & 15
Lec 31	Topic 10 - Asteroids, Comets, and other objects	16
Lec 32-34	Topic 11 - Origin Theories	9
Lec 35-36	Topic 12 - Exoplanets and Exobiology	10 & 17

Note: See BrightSpace for a more accurate schedule.

Course Outcomes

Summary: Students in this course will explore the nature of the solar system, and explore the scientific method and process of astronomy. Students will be tested on understanding of material learned through timed assessments involving multiple choice questions and on hands-on laboratory activities.

Essential Course Components:

- Students must participate in and complete at least three of the five standard labs in this course to be eligible to pass this course.
- Students must achieve an overall 50% grade in the lab component of this course in order to be eligible to pass this course and to write the final exam. This is a University of Victoria policy for all courses that have a laboratory component.
- Students must complete the final exam and achieve a minimum 30% grade on the final exam to be eligible to pass this course.

Students who complete these components of the course but who have an overall average less than 50% will receive a letter grade of F. Students who do not write the final exam will receive a letter grade of N, regardless of their overall average in the course.

Intended Learning Outcomes: By the end of this course, successful students should be able to...

- critically assess concepts of hypotheses and theories using an understanding of the scientific method.
- evaluate the outcomes of scientific experiments for the purpose of disproving hypotheses.
- analyze motion in the solar system as a moving observer, and understand how this affects human perceptions of space.
- explain measurements of angles and distance in space.

- explain the progression of human models of the structure of the universe via major achievements in astronomy.
- explain the origin of different patterns of astronomical light in terms of the nature of light and matter.
- explain how a telescope produces the data that is observed, and how that data is used to generate the current understanding of the universe.
- describe the nature and mechanisms behind the Sun, and the pivotal experiments/data that support this understanding.
- describe the structure and interactions of the Earth and Moon.
- compare and contrast the properties of the terrestrial planets.
- compare and contrast the properties of the Jovian planets and their major moons.
- explain the differences between and properties of asteroids, comets and dwarf planets.
- explain the major origin theories for our solar system and universe, and the critical scientific data that supports them.
- describe the methods for searching for exoplanets, and the major categories of exoplanets.
- describe the challenges in searching for life in the universe.

Assessments

This course has four grading components. The weighted average from these four components will be used to guide the grade assessment. If the application of this scheme would result in grades that are judged by the instructor to be inconsistent with the University's grading descriptions (<https://www.uvic.ca/calendar/undergrad/index.php#/policy/S1AAgoGuV>), then the instructor will assign percentages consistent with them. The instructor will review all lab marks prior to assigning a final grade.

Assignments: 15%

There are a total of 6 assignments that are due at the dates listed on Brightspace. There is a small grace period for submissions to ensure that technological challenges do not prevent submission of assignments. Any assignments not submitted by the end date will receive a grade of zero. Extensions on assignments will not be granted for any reason, though alternative concessions will be considered in case of unavoidable circumstance. Submission of assignments via any method other than upload on Brightspace will not be graded.

Supplementary Assignments: There is an optional individual bonus assignment/project that you may complete for extra marks. The bonus assignment will be worth a maximum of 2% of your overall course grade. There are multiple options for you to choose from for the bonus assignment, but you will only be assigned a grade based on ONE of the options. No other supplementary work is available.

Laboratory Activities: 20%

There are a total of five labs throughout this course. These are experiential sessions to provide students with a hands-on understanding of the material. More information about the labs is provided in the lab manual that students must purchase for the course. Due dates for the lab reports depend on the date of the lab activity, and are stipulated in the appropriate submission portal on Brightspace. While it is expected that there will be some collaboration between students for the purposes of collecting data during the lab itself, your lab report must be your own, original, individual work written in your own words.

Students have a responsibility to inform their TA and/or their Course Instructor promptly when a situation arises that prevents them from attending their scheduled lab section. Students may not use data collected by another individual for the completion of their lab work. Students who miss attending a lab period for reason of illness or unavoidable circumstance may contact the lab coordinator to apply to attend another lab section or write a makeup lab at the end of the term. Only students who obtain prior permission will be permitted to attend another lab section or write the makeup lab.

Students are expected to submit the work that they have completed by the due date, even if that work is unfinished. Students who miss a submission deadline due to unavoidable circumstance, as covered in the UVic policy on academic concessions, may be eligible for a concession. For missed submission deadlines up to 24h, contact the lab TA to discuss. For circumstances affecting the ability to submit work for more than 24h but less than one week, contact the lab coordinator. Extension requests for unavoidable circumstances longer than one week, contact the course instructor to discuss. Alternative means of concession than extensions may be considered for longer concession requests.

Concessions for missed lab deadlines for the five standard labs will not be provided after the last day of classes in the term under any circumstances. Concessions will not be provided for more than two labs during a term under any circumstances. Students who have illnesses or unavoidable circumstances affecting their ability to submit more than two labs should apply for a request for academic concession withdrawal from the course.

Quizzes: 30%

There are a total of five asynchronous quizzes spaced throughout the semester, administered via BrightSpace on Friday through Sunday of the week assigned. Students are expected to complete these quizzes on any appropriate internet connected device, and are responsible for ensuring that their internet connection is stable for the duration of the quiz. All students receive only one attempt, regardless of unexpected circumstances that might occur during the quiz attempt.

The quizzes are open book, but students may NOT collaborate with other people or seek outside help (including the use of LLM artificial intelligence). I will be using software to monitor the quizzes and students found collaborating may be reported to the university administration for an academic integrity violation.

The weight of any quiz with a grade lower than that of the final exam will be transferred to the final exam.

Final Exam: 35%

The final exam will be synchronous but online and open book. The exam will be invigilated via Zoom to ensure that students are working alone. Students must participate in the Zoom invigilation

with their cameras turned on and facing themselves and their work environment for the duration of the exam. Students will be required to authenticate their identity by logging in via their UVic Zoom account. Students who fail to meet this requirement will be assigned a grade of zero for the exam.

The material of the final exam will be comprehensive of the material covered in the course, and the questions will be similar in style and scope to those in the quizzes. However, there may be additional styles of questions, such as image identification. Thus, it is important that students be able to identify images presented throughout the lectures.

Students who miss the final exam may apply for an exam deferral via the Request for Academic Concession process. Students with approved exam deferrals will be provided the opportunity to write their exam with the other students in the subsequent semester.

Academic Integrity

Students are expected to adhere to the academic integrity policy of the University of Victoria. Details on this policy can be found here: https://www.uvic.ca/calendar/undergrad/index.php#/policy/Sk_0xsM_V.

Course Materials:

- (Required) Astro 101 Lab Manual (approximate cost \$10 at the UVic Bookstore)
- (Recommended) **The Solar System** by Seeds and Backman (approximate cost \$170 physical copy, \$100 digital copy at the UVic Bookstore)

Note: The textbook is recommended but not required. This means that no part of your grade will be assessed based on material that can only be found by purchasing the textbook. However, the textbook does provide a number of deeper insights and added tutorials/activities that will help you understand the material better.

Resources for Students

UVic Learn Anywhere - <https://onlineacademiccommunity.uvic.ca/LearnAnywhere/>

Many high schools do not adequately prepare students for how to succeed in university, in large part due to the large differences in expected workload. The UVic Learn Anywhere site can help students use their time more effectively and have better outcomes.

UVic Centre for Academic Communication - <https://www.uvic.ca/learningandteaching/cac/>
Struggling with homework that involves writing? English not your first language? The Centre for Academic Communication has supports available to help you.

UVic Math and Stats Centre - <https://www.uvic.ca/science/math-statistics/current-students/undergraduate/msac/index.php>

Struggle with math? No matter the course, the Math and Stats Centre can provide assistance. As long as the assistance is with the mathematics of the problem, there are people available to help.

Academic Accommodations - <https://www.uvic.ca/students/academics/academic-concessions-accommodations/index.php>

Have a disability that might be affecting your studies? The Centre for Accessible Learning can review your diagnosis and provide you with academic accommodations that help reduce the effects of the barriers to education you are experiencing as a result of interactions between course design and your disability.

Student Code of Conduct - <https://www.uvic.ca/services/studentlife/student-conduct/index.php>

Students are expected to behave with respect towards their environment and their community. When there are allegations of student misconduct, this is governed by the Office of Student Life.

Sexualized Violence - <https://www.uvic.ca/sexualizedviolence/>

If you have been the victim of sexualized violence, this link will help you know how to take the next steps for resolution.

UVic Policies & Statements

General Information for all Students - <https://www.uvic.ca/calendar/archives/202301/undergrad/index.php#/content/62daf5e98b7d47001d0fc38b>

This is a list of links to information that may be useful to you.

Academic Concession Policy - <https://www.uvic.ca/calendar/undergrad/index.php#/policy/HJjAxiG04>

This policy governs your rights and responsibilities in the case that you experience an unexpected and unavoidable circumstance (e.g. illness, injury, bereavement, etc), or have conflicting responsibilities (e.g. varsity sports event).

Policy on Respectful and Productive Environment - <https://www.uvic.ca/calendar/archives/202301/undergrad/index.php#/policy/HkQ0pzdAN>

This is a statement and policy about UVic's dedication to a respectful and productive learning environment. This includes human rights, equity and fairness, as well as discrimination and harassment policies.

Policy on Religious Observances - <https://www.uvic.ca/calendar/archives/202301/undergrad/index.php#/policy/r1q0gofdN>

This policy governs students' rights towards religious observances and how to manage your observances with your course responsibilities.

Policy on Non-Academic Misconduct - <https://www.uvic.ca/services/studentlife/student-conduct/non-academic-misconduct/index.php>

This policy governs students' rights and responsibilities with regard to non-academic behaviour. Students are expected to treat each other and staff/faculty with respect.

Statement on Equity, Diversity and Inclusion - <https://www.uvic.ca/vpacademic/about-contacts/equity-diversity-inclusion/index.php>

This is UVic's official statement on equity, diversity, inclusion and anti-racism.