

University of Victoria  
Department of Physics and Astronomy

# Astronomy 101 - Exploring the Night Sky

## Fall 2022 Syllabus SUMMARY

**Instructor:** Travis Martin

**Email:** travismartin@uvic.ca

**Lecture Schedule:** Tuesday, Wednesday and Friday from 11:30am-12:20pm

**Office Hours:** Thursdays at 3:00pm on Zoom (see Course Tools > Zoom for link)

If you can't attend office hours due to a scheduling conflict, alternative office hours may be available if requested.

### Course Materials:

- (Required) Astro 101 Lab Manual
- (Recommended) **The Solar System** by Seeds and Backman.

### Special Notes:

It is a Faculty of Science policy that you must pass the lab portion of the course to be eligible to pass this course, regardless of your other marks.

### Grading Scheme:

- Assignments 15% - There are 6 assignments total that require you to create your own multiple-choice exam question. The topic of your question must be related to the stated course topics. Details about assignments are covered in the full syllabus below. There is also an optional bonus assignment which students may wish to attempt.
- Quizzes 30% - There are 5 quizzes (instead of midterms) on BrightSpace. Quizzes are open book, asynchronous, but must be done on your own - you may not consult with other people, peers or otherwise. You will be graded based on best 4 of 5.
- Labs 20% - There are 5 labs, but you will be graded based on best 4 of 5.
- Final Exam 35% - Final exam will be synchronous and take place during final exam period.

Students who get an A-range grade in this course typically achieve over 70% in the quizzes and final exam, and have 85% or higher in labs and assignments. Lower exam performance is compensated by higher assignment/lab work, which can be accomplished with effort rather than study.

### Pandemic-Era Accommodations:

In order to manage the increasing number of illnesses and accommodation requests, I have adjusted the grading scheme to automatically discount a reasonable number of missed assessments. Requests for extensions or different submission dates will not be entertained unless connected to an academic accommodation.

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## General Information

**Instructor:** Travis Martin

**Email:** [travismartin@uvic.ca](mailto:travismartin@uvic.ca)

**Office:** Not Applicable

**Office Hours:** Thursdays at 3:00pm on Zoom (see Course Tools > Zoom for link)

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

**Lecture Schedule:** Tuesday, Wednesday and Friday from 11:30am-12:20pm

**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.

## Course Materials:

- (Required) Astro 101 Lab Manual
- (Recommended) **The Solar System** by Seeds and Backman.  
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.

Some notes regarding minimum participation in order to pass this course:

- **You must achieve a minimum 50% grade in the lab component of the course in order to pass the course.** Students who miss a lab for a valid reason (doctor confirmed illness or family emergency) will be offered the opportunity to write a makeup lab at the end of the semester. For all such cases, contact the course instructor, Travis Martin, immediately. Missing a lab without this approval will result in a 0 for that lab exercise.

A failure in any of these conditions will result in a grade of **F** for the course, regardless of your overall performance in the course.

## Pandemic Notice

While classes have returned to campus, the pandemic is not yet over. Widespread infection rates and variant transmissions mean that the pandemic should still be taken very seriously. Students and faculty may express a wide range of differing opinions and emotions towards how to best navigate the risks and challenges of the pandemic. As a class, we need to manage these opinions in a productive way.

To help facilitate this, I have the following expectations for how students will behave in my class:

1. Students are required to follow all relevant provincial, university and faculty instructions regarding distancing, handwashing, masks and other similar issues.
2. Students are not permitted to attend any in-person course component (lecture/lab) if ill; students exhibiting any cold or flu-like symptoms will be asked and required to leave and go home. Accommodations for missed material due to illness can be discussed via email. All lectures have been video recorded, so all material can be reviewed without the need to attend lectures.
3. Masks can significantly reduce the risk of transmission of COVID-19 from those who are asymptomatic.
4. Students are requested to get vaccinated in a timely manner if not already vaccinated.

Please also take note of the following:

- As the instructor, students will not be permitted to enter my personal space before, during or after the lecture. If you have questions, you may ask respectfully from a distance.
- Office hours will be held on Zoom rather than in-person. Students will not be permitted to attend my office for any reason at any point in time during the semester.
- Students who miss more than 40% of any component of the course (illness lasting longer than 1 month) will be encouraged to complete a Request For Academic Concession to drop the course. Accommodations can only cover short term ailments. It is in your best interest to withdraw from a course if you miss that much material.
- If I am sick for any reason, I will inform the class and I will not be attending the lectures for the duration of my illness. In such cases, students will be expected to watch the video recorded lectures. Class will not stop simply because the instructor is sick.
- All quizzes will be held on BrightSpace in an asynchronous format. The final exam will be the only exam that may be held in-person on campus. For students concerned about the pandemic, this means that only your labs and the final exam will require you to be on campus - all other components of this course can be participated in remotely.

## Grading

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://web.uvic.ca/calendar2014/FACS/UnIn/UARe/Grad.html>), 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 6 assignments total that require you to create your own multiple-choice exam question that relates to the material stated in the assignment. Your question must be answerable using material covered in either the course notes or the textbook. The assignment is graded out of 2 marks - one for completing the assignment, and the second for the effort put into the question. Questions that do not follow the format, do not pertain to course material covered, or are unanswerable may be assigned a grade of 0. **Questions that are of sufficiently good quality will be incorporated into either a quiz or the final exam, and the students responsible for the question will be assigned a bonus of 1% towards their overall course grade, with a maximum of 2% possible for the term.**

For your submission, you will need to come up with the question wording, and the answer+distractors (the (a), (b), (c), (d), and (e) options). You should indicate which of the answers you believe is correct. The general structure of a multiple choice question are: one real answer, one or two highly plausible distractors, one or two possible distractors, and one or two unlikely distractors (a funny distractor can be included if you wish). The goal of this is to encourage you to think like an instructor and consider what material is truly important, and what material is untestable.

**BONUS ASSIGNMENT:** There is an optional individual bonus assignment/project that you may complete for extra marks. The bonus assignment will be worth a maximum of 3% of your overall course grade (enough to go from a B to a B+ or a B+ to an A-). 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.

Option 1 – Examining Heliocentric and Geocentric Coordinates. This project has students exploring the geocentric and Copernican heliocentric models using apps I have made for the Wolfram Player app (free download). You will be tasked with using the app to determine distances and angles between objects in our solar system at different times.

Option 2 – Brief research discussion on space exploration. You may submit a 1-2 page discussion on a topic of your choice on space exploration within our solar system. For example, you could choose the Voyager missions, missions to Mars, missions to Venus, or even discuss future plans (Moon base, Mars base, Europa). The topic, format and style of this submission is very open ended to allow for creativity, however you must get approval for your topic before you start working by emailing/discussing your choice with me. Sources used must be cited. You may choose the citation style format from whichever format your field commonly uses (e.g. APA, ACE, CSE). As this is a discussion, I am interested in your views and ideas of the research, not on regurgitation of information from the sources.

Option 3 – Creative work. You may write and perform a song, poem, short play or other creative work related to material covered in this course. Your submission will be in the form of a video that you record of you performing the work. The video will only be viewed by me for the purpose

of grading and will not be shared with anyone else (unless you give permission, as you retain the copyright for the work). Note: This is a very open ended option, and creative work can be time consuming to produce even short work. You will not be graded on the quality of your performance but rather on the astronomy-related content of your submitted work.

The bonus assignment will be graded on a scale of 0-3, where a 3 will be assigned for good/excellent work, 2 for satisfactory work, 1 for unsatisfactory (minimal effort) work, and 0 for work that does not meet the requirements of the assignment.

**Quizzes: 30%**

There are a total of five quizzes spaced throughout the semester, administered via BrightSpace on Friday through Sunday of the week assigned. Your quiz grade average will be based on the best 4 of 5 quizzes, allowing for one missed quiz for any reason. A second missed quiz may be accommodated only in cases where both quizzes are excused absences (e.g. illness, injury).

The quizzes are open book, but students may NOT collaborate with other people or seek outside help. 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.

These quizzes will be comprised of a combination of multiple choice questions, true/false questions and possibly short-answer style questions. These questions will focus on the material covered in the lecture slides, but may require you to investigate the material further in order to fully understand the concepts.

**Laboratory Activities: 20%**

**You must attend your scheduled lab tutorial section.** You are **not** free to attend other lab tutorial sections without approval of the course instructor and lab supervisor.

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.

The lowest lab grade will be excluded when determining the lab average to allow for students who are ill to miss a lab worry-free, and help ensure students do not attend labs while contagious. This will automatically be applied to all students, regardless of the reason for missing the lab. Students who miss more than one lab during the semester will be offered a makeup lab only if both labs missed are due to illness.

Due to the challenges of coordinating labs and lectures, it is not possible to synchronize the material from the labs with the material from the course. Some labs exercises may precede the discussion of the material in the lectures, however steps are taken to minimize this as much as possible.

**Final Exam: 35%**

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 types of questions, such as image identification. Thus, it is important that students be able to identify images presented throughout the lectures.

## Course Schedule

The lecture slides for this course generally follow the material in the recommended textbook. However, the material has been arranged in a non-linear fashion, and some extra material (not in the textbook) has been included to round out the discussion.

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

Note: See BrightSpace for a more accurate schedule.

## Success and Performance

Students often ask at the end of the semester, “Is there anything I can do to improve my grade?” Unfortunately, by the end of the semester, it is too late. This course does not offer supplementary graded material to improve grades. Here are some tips to help achieve the best possible grade.

**Attend Lectures** - Might seem like a no-brainer, but it is critical. Many students justify to themselves “I will just read the slides and catch up”, but context is critical and the things said in-class explain what is on the slides. Exam questions are often taken from the material covered in the class discussion, not directly from slides.

**Ask Questions** - The lectures are open to dialogue. If something doesn't make sense, or you would like more clarification, or you have any type of question, please raise your hand and ask in the class. If you don't feel comfortable asking in front of the other students, or questions occur to you outside of class, come see me either after class or during office hours.

**Study BEFORE the Quizzes** - The quizzes are open book, but they have challenging questions that are not directly answered in the slides, or require reading and considering the information on multiple slides to fully understand. Studying before starting the quizzes will help you perform better, plus it will help your studying for the final exam go much smoother.

**Read the textbook and use the textbook online resources** - The MindTap system that comes with the electronic access for the textbook has a number of quizzes that have practice questions and other bits of information that can help your understanding. Also, Astronomy is a highly visual subject, so reviewing the illustrations and the accompanying text for the illustrations is very helpful.

The following table illustrates the typical marks achieved in each component of the course for the associated final course grade:

Final Grade	Quiz Marks	Packback Marks	Lab Marks	Final Exam
A-range	75-100	90-100	85-100	70-100
B-range	65-85	80-100	75-95	60-85
C-range	55-75	70-90	65-85	45-70
D-range	40-70	40-70	50-75	35-55

For example, a student receiving 70% on the final exam could still get an A-range grade, depending on how well they do in the other components of the course. While the Assignment grades are only worth 15% of your grade, performing well in them can help compensate for a low mark on quizzes or the exam.

The typical grade distribution is A-range: 30%, B-range: 35%, C-range: 20%, D-range: 10%, F: 5%. Students who fail typically do so by consistently not engaging in course material, skipping lectures, skipping labs, and failing to participate in the quizzes.

## University Regulations on Academic Integrity

These regulations are reproduced from <http://web.uvic.ca/calendar2011/FACS/UnIn/UARe/PoAcI.html>. For full information, including procedures for dealing with academic integrity infringement, see the webpage linked above.

Several types of academic integrity violations are covered in brief below.

### Plagiarism

A student commits plagiarism when he or she:

- submits the work of another person as original work
- gives inadequate attribution to an author or creator whose work is incorporated into the student's work, including failing to indicate clearly the inclusion of another individual's work
- paraphrases material from a source without sufficient acknowledgement as described above

Students who are in doubt as to what constitutes plagiarism in a particular instance should consult their course instructor.

### Falsifying Material Subject to Academic Evaluation

Falsifying materials subject to academic evaluation includes, but is not limited to:

- fraudulently manipulating laboratory processes, electronic data or research data in order to achieve desired results
- using work prepared by someone else (e.g., commercially prepared essays) and submitting it as one's own
- citing a source from which material was not obtained
- using a quoted reference from a non-original source while implying reference to the original source
- submitting false records, information or data, in writing or orally

### Cheating on Assignments, Tests/Quizzes and Examinations

Cheating includes, but is not limited to:

- copying the answers or other work of another person
- sharing information or answers when doing take-home assignments, tests and examinations except where the instructor has authorized collaborative work
- having in an examination or test any materials or equipment other than those authorized by the examiners impersonating a candidate on an examination or test, or being assigned the results of such impersonation
- *assisting others to engage in conduct that is considered cheating*

**I will be using software to analyze student responses on class work to ensure that student responses are sufficiently unique.**

The most common form of violation in this course is in the labs. Lab reports will be monitored for copying and information sharing beyond what is allowed in the lab period. Any copying, either of another student's work or from the internet/lab manual/textbook will result in a zero on the offending work and a formal review for an academic integrity violation.