ASTR 4 – Solar System Astronomy

Summer 2026

Instructor: Caitlin Kepple (she/they)
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Class days/times: Asynchronous online
Office hours by appointment: Request a meeting time here!

Welcome to Solar System Astronomy! In this course, we will explore current and historical understandings of astronomy from a variety of perspectives. We will use real-world data to build knowledge and skills around Astronomy as a science, while also interrogating the traditional view of science as an "objective" pursuit. We will draw on knowledge from several disciplines and cultures to help us understand the forces that shape our view of science as individuals and broadly in the US.

Course Texts

-*Astronomy 2e*, by OpenStax (available in print for $60 or as a free PDF here)
-Selected readings available on Canvas each week

Important Campus Dates

July 3: Independence Day Holiday (no classes)
July 6: Last day to drop classes with no record, last day to add classes
July 30: Last Day to withdraw ("W") from courses

Inclusivity Statement

To give us a starting point for creating a welcoming classroom space, we will refer to the Inclusive Astronomy Recommendations, and actively work to improve on the practices they recommend. To that end, we will center the experiences of historically marginalized groups in astronomy using an intersectional lens. We will draw on different ways of knowing and learning astronomy from Indigenous identities, women of color in astronomy, the LGBTQ+ community, and the disability community. Because this is a non-exhaustive list of (historically) marginalized identities in Astronomy, we will work as a class to further identify how we are maintaining internalized biases about scientific knowledge and what perspectives are being left out of the conversation.

Course Learning Goals

Throughout this course, we will pursue the following set of skills related to studying astronomy:

- Appraise the benefits to society of planetary research and exploration
- Compare and contrast the development of planetary systems and of the major planet types, including those factors that have led to Earth's unique characteristics
- Evaluate astronomical news items or theories concerning solar system astronomy based upon the scientific method
- Describe ethical dilemmas arising out of contemporary scientific research and application from a variety of perspectives among local and/or global communities

- Critically evaluate scientific phenomena from a variety of sources and use that information to articulate the social and scientific implications of studying that phenomena
- Understand and articulate the relevance and impact of astronomy research on an individual, community, and societal level; this process includes drawing on personal experiences with science and working with others to construct a shared understanding of astronomy research

Grade Breakdown

Grades are based on a combination of discussion, reflection, homework, and culminating project. The graded assignments are constructed and distributed so that everyone can succeed in the class via a wide variety of methods to demonstrate their understanding. This course does not have a cumulative final exam. Instead, you'll complete a culminating "Special Interest Project".

The grade breakdown for the course will be

Homework (2/week, 12 total) - 50%
Discussion Posts (2/week, lowest 2 dropped) - 20%
Bi-weekly Reflections - 5%
Special Interest Project - 25%

Late work policy: I give a 24 hour buffer to accept late work without penalty. Aside from this, the penalty is small. There is a 5% deduction if more than 24hrs late and 10% if more than 7 days late. The one hard due date in this course is the final closing date of all assignments, which is the last day of Summer quarter (see the schedule below). You may complete any assignment up until this date.

Course Structure

Our course is designed so that everyone can construct their astronomy knowledge from the ground up and access the material with a variety of learning styles, starting with short discussion assignments before moving on to the homework and special interest project. For more details, rubrics, and make-up options for each item, see the Canvas page.

Discussion (20%)

- You can find the assigned reading for each week on Canvas, which will usually consist of a chapter from the OpenStax *Astronomy* text and also a separate article. I will also post one or two video recordings each week, which will add detail from the readings.
- Discussions are a chance for us to practice applying the concepts with peers in a low-stakes setting. By Tuesday and Thursday night (11:59pm) each week, I ask that you complete the discussion entry on Canvas, which is graded for completeness and timeliness.

Homework (50%)

- Homework serves as the main way for you to practice the skills you've learned in the readings, videos, and discussions. They are a large portion of the grade because this is where you should be putting the bulk of your energy for the week. We'll do two homework assignments each week to make them more concise and manageable. For any missed points, you can submit a homework corrections

assignment after receiving feedback. More details to come on how to submit these.

Reflections (5%)

- After you have completed all of the required reading and assignments for the week, this is your chance to put some of your own voice and personal perspective into what you have learned. Whereas the other required assignments are meant to go into the "nitty gritty" of the content, reflections are meant to be more introspective about how *you* have connected with the material for that week.

Special Interest Project (20%)

- During the second half of the quarter, you'll choose a topic to research and create a visual resource to share with others in the class. The topic must relate to Solar System Astronomy in some way, but is otherwise fairly open-ended. More info on this as we get started with the course.

Generative Artificial Intelligence Use and Academic Integrity

As your instructor, my priority is to give you ample space and time to grow your scientific literacy and knowledge—no matter where you are beginning from at the start of the quarter. **I specifically grade assignments assuming that you are human, and that the outcome will not be perfect from the get-go. I ask that you also allow yourself to make mistakes and take time to sit with new material.**

As an Introductory Astronomy course, I generally discourage all use of AI for students. Yes—even as a "tool for learning". There are certain points in the course I give the option for you to use AI to help you solidify your understanding of the material, specifically to help you make deeper connections between topics. Otherwise, I specifically discourage the use of AI to search for answers, write up assignments, or complete any portion of the work for you, which I would consider cheating. Plagiarism or cheating explicitly violates De Anza's Student Code of Conduct guidelines and will result in a zero on that assignment, or further action if necessary.

While I understand AI can used as a tool for learning and productivity, there are both ethical and educational considerations to take into account each time we use AI. For example, AI's environmental costs extend well beyond a simple calculation of how much electricity is used. Every kilowatt-hour used by AI carries carbon, water, and land implications, and these footprints do not always move in the same direction: low-carbon electricity is not automatically low-water or low-land.

There are several *free* resources at De Anza to provide extra support, to prevent cheating and plagiarism (listed below). Additionally, please do not hesitate to reach out to me if there is another way I can support your learning that has not already been made available.

Resources for this Class and Beyond

Math, Science & Technology Resource Center

De Anza's Math, Science & Technology Resource Center has *free* peer tutoring and workshops, found here. Additionally, the Student Success Center can provide help with general skills, writing, Canvas, and much more here. They have drop-in tutoring via Zoom, or Weekly Individual tutoring (see updates on this quarters on their website).

Disability Access and Support

If you have registered with the **Disability Support Services** (DSS; located in RSS 141; dss@deanza.edu) or need alternate support for creating an accessible learning experience, please do not hesitate to communicate with me about this. DSS staff can meet with students, review the documentation of their disabilities, and discuss services that De Anza offers and any ADA accommodations for specific courses. Additionally, I will do whatever I can to ensure these needs are met during your time in my class. You can find more information about the Computer Accessibility Lab (CAL) at De Anza by following the link to their webpage.

Student disclosures of sexual violence

De Anza College strives to foster a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. Please note, if you disclose a personal experience as a De Anza student, the course instructor is required to notify the Title IX Coordinator (Laureen Balducci).

To disclose any such violence confidentially, contact the Title IX coordinator using the following forms or by phone at 408-864-8945

- Reporting Sexual Misconduct or Concern
- Contacts Page

Pride Center

The De Anza Pride Center provides a safe, supportive and welcoming space for students across the gender and sexuality spectrum to build community, find resources and connect with the support needed to thrive in their college experience. You can visit the Pride Center at LIB 138 and see additional details about hours and points of contact on the Pride website here.

Counseling Services

The De Anza Psychological Services office provides a wide variety of counseling services for students or groups **free for students**. Please see the MHWC website for their current schedule and list of contacts. They can be contacted at 408-864-8868 or by emailing dapsychservice@deanza.edu.

Resources for Basic Needs

If you or someone you know are in need of housing assistance, food assistance, baby supplies and resources (along with many other services), the Resources for Basic Needs page has a wide range of support for De Anza students and family members.

Academic Advising

For more general advice on setting up a study schedule, choosing a major/classes, and navigating other logistics of your degree, you can visit the General Counseling Division. There are also several other resources related to academics and other resources for De Anza students.

A note on the fast-paced schedule of this course

In the schedule below, you will see that this course has multiple due dates each week for different assignments. This being the case, it is **essential that you communicate with me** if you have any questions or concerns about keeping up with the schedule. The due dates are there as a failsafe to make sure the material doesn't become overwhelming and so that you can have meaningful interactions with your peers. However, I realize that life happens and that a few extra days can make a huge difference for anyone. Therefore, **the best approach is always to**

message me with any questions about the schedule and we can work out the best solution.

Schedule* of topics

Date	Topics	Reading	Weekly Due Date Progression
Week 1	Intro to Astronomy; Units and Math skills; Motion, Intro to the Solar System	Syllabus, OS** Ch. 1, 2, 7	**Tu/Th:** Discussions Due **Wed/Fri:** Homework Due **Every other Monday:** Reflection or Project due date
Week 2	Planetary motion and Gravity, Yearly motion, Seasons and Calendars	OS Ch. 2, 3 & 4, Canvas Reading	
Week 3	Lunar Phases, Light and the Electromagnetic Spectrum, Doppler Shifts	OS Ch. 4 & 5, Canvas readings	
Week 4	Telescopes; Solar System Formation	OS Ch. 6 & 7, Canvas Readings	
Week 5	Rocky Planets and the Moon	OS Ch. 8 & 9 Canvas Readings	
Week 6	Outer Planets, Exoplanets, and Life on Other worlds	OS Ch. 10, 14 & 21	
Finals	**All assignments will close on Friday August 7**		

* Schedule subject to change at the discretion of the instructor

** OpenStax Astronomy (OS)

Student Learning Outcome(s):

• Appraise the benefits to society of planetary research and exploration.
• Compare and contrast the development of planetary systems and of the major panet types, including those factors that have led to Earth's unique characteristics.
• Evaluate astronomical news items or theories concerning solar system astronomy based upon the scientific method.

Office Hours: