

ASTR 4 – Solar System Astronomy

Spring 2023

Instructor: Caitlin Kepple (she/they)

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Office hours: Tu 10:30a-12p, Wed 2-3:30pm, Th 3:45-4:45pm

Office Location: S46-A (S4 Building)

Class days/times: T/R, 1:30-3:45 pm

Class locations: Tuesdays in Planetarium (PLT); Thursdays in S-56 (S5 Building)

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*, by OpenStax (available in print for \$60 or as a free [PDF here](#))

-Selected readings available on Canvas each week

Important Dates

April 22: Last day to add classes

April 23: Last day to drop classes with no record

May 27-29: Memorial Day Weekend (no classes)

June 2: Last Day to withdraw (“W”) from classes

June 19: Juneteenth Holiday (no classes)

June 26-30: Final Exams

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, the LGBTQ+ community, and women of color in astronomy. Because this is a non-exhaustive list of (historically) marginalized identities in science, 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 participation, homework assignments, in-class activities, and lab assignments that are described more below. The graded assignments are constructed and distributed so that folks can succeed in the class via a wide variety of methods to display their understanding.

The grade breakdown for the course will be:

Reading Notes - 10%

APOD Presentation - 5%

In-class activities/Attendance (2 absences allowed) - 15%

Homework (8 total) - 40%

Quizzes and Final Exam - 30%

Late work policy: If you foresee a need to extend a due date for any assignment, *please email me as soon as you know you will need an extension* and we will come up with a timeline that is workable for the both of us. I do accept late work, though homework and reading notes will be reduced 5% for more than a day late and 10% if more than 10 days late (given you haven't reached out to me beforehand about an extension).

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 in-class assignments before moving on to the synthesis projects.



Pre-synchronous work – Reading and Notes

- You can find the assigned reading for each week on Canvas (note that the schedule below is tentative and could change).
- As you complete the readings from the textbook, you will also need to complete a set of reading notes each week. Reading notes should be done by class time at the beginning of the week. You can find instructions for these on the Canvas page.



APOD Presentations

- Early in the quarter, you'll sign up to do a short presentation of an Astronomy Picture of the Day or "APOD" image of your choosing. Each class day (starting in Week 2), a couple of people will present their chosen picture and what they found

interesting about it. Sign-ups will be during the first week of class (more details to come).



Attendance and In-class Activities

- We will have in-class activities mostly every class day, usually group tutorials and/or short written responses to questions (thus attendance is important!). Activities are designed to help us learn collaboratively and you gauge your own level of understanding of the material. Grading for these will vary week-to-week but will largely be based on completion *and quality* of the work. If you are sick or plan to be absent, there are two (un)excused absences allowed throughout the quarter. If you'd like to see the activity we did in class the day you were gone, feel free to email me and I'm happy to send it to you.



Homework

- Homework in this class serves two purposes. 1: It will go into more depth on the concepts and skills than we will likely be able to get to in class. 2: They are your *best* reference in studying for exams. Homeworks appear as a “quiz” on Canvas, but you can treat them as you would any regular HW assignment (i.e. you can work collaboratively, use the textbook, etc.). I DO NOT recommend you use AI software to complete homeworks, as you will have unlimited opportunities to do corrections on homework as you need.



Quizzes and Final Exam

- We will have three quizzes and one comprehensive final exam. These are closed notes and you can bring a calculator if you would like, but it is not necessary. If you miss a quiz due to sickness, you can do a makeup on the Quiz Makeup Day (one makeup maximum). Quizzes have the option for half credit back on corrections.

A note on technology

As you can see from the above descriptions, this course relies on Canvas quite a bit, which is much easier to use on a laptop or tablet. The [Library](#) offers equipment checkout on a first-come, first-served basis. Please reach out to me if you are having issues accessing technology, as we want to get the issue resolved as soon as possible.

Academic Integrity

It is essential that everyone construct their own unique narrative of what they have taken away from the course materials. Unless I specifically prompt you to do so (which I will at times), you should assume that using AI software to complete *any* of the assignments is cheating. This also goes for directly copying from anyone else's work in the class for any assignment. Materials that I find have been plagiarized will be marked with a zero for that assignment and further action may be taken. For reference, De Anza College has clear guidelines for students in maintaining academic integrity, which can be found in the [Student Code of Conduct](#).

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 email me if there is another way I can support your learning that has not already been made available.

Disability access and support

If you have registered with the [Disability Access Services](#) (DSS; located in Registration and Student Services Bldg, 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 the

services that De Anza offers and any appropriate ADA accommodations for specific courses. Additionally, I will do whatever I can to ensure these needs are met during your time in my class. See [this page](#) for information about the computer accessibility lab (CAL) at De Anza.

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 (Lauren 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](#)

Counseling Services

The De Anza Psychological Services office provides a wide variety of counseling services for students or groups **free for students**. Please see [their 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.

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 for Fall 2022 on their website).

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 [here](#). There are several other resources related to academics and other resources for De Anza students [here](#).

Schedule subject to change as we progress through the quarter
 **OpenStax Astronomy (OS)

Schedule of topics

| Week | Notes | Reading | Important Dates |
|-------------|---|----------------|--|
| Week 1 | Day 1: Syllabus; Community agreements; APOD signups; Intro to astronomy | Syllabus | |
| | Day 2: Intro & Units and the Night Sky | **OS Ch. 1 | HW 1 Due Friday by 11:59pm |
| Week 2 | Day 1: Revisit community agreements; Cultural and Historical astronomy | OS Ch. 2 | |
| | Day 2: Article discussion | Canvas Reading | HW 2 Due Friday by 11:59pm |
| Week 3 | Day 1: Planetary motion, gravity; Quiz prep | OS Ch. 3 | |
| | Day 2: Article discussion | Canvas Reading | Quiz 1 |
| Week 4 | Day 1: Seasons and Calendars | OS Ch. 4 | |
| | Day 2: The Moon & Article discussion | | HW 3 Due Friday by 11:59pm |
| Week 5 | Day 1: Radiation and Spectra | OS Ch. 5 | |
| | Day 2: Article discussion | Canvas Reading | HW 4 Due Friday by 11:59pm |
| Week 6 | Day 1: Telescopes; Quiz prep | OS Ch. 6 | |
| | Day 2: Science ethics discussion | | Quiz 2 |
| Week 7 | Day 1: Intro to the solar system | OS Ch. 7 | |
| | Day 2: Article Discussion | Canvas Reading | HW 5 Due Friday by 11:59pm |
| Week 8 | Day 1: Earth as a Planet | OS Ch. 8 | |
| | Day 2: The Lunar Surface & Article discussion | OS Ch. 9 | HW 6 Due Friday by 11:59pm |
| Week 9 | Day 1: Nearest Planets; Quiz prep | OS Ch. 10 | |
| | Day 2: Article discussion | Canvas Reading | Quiz 3 |
| Week 10 | Day 1: Giant (Gas & Ice) Planets | OS Ch. 11 | |
| | Day 2: Exoplanet Intro & Article Discussion | Canvas Reading | *Quiz Makeup Day* HW 7 Due Friday by 11:59pm |
| Week 11 | Day 1: Exploring Other Worlds | OS Ch. 14/21 | |
| | Day 2: Life in the Universe | | HW 8 Due Friday by 11:59pm |
| Finals Week | Final Exam Tuesday 6/27, 1:45-3:45pm | | |

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 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.

Office Hours:

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|----|----------|----------|-----------|--------------------|
| T | 10:30 AM | 12:00 PM | In-Person | PSME Village Space |
| TH | 03:45 PM | 04:45 PM | In-Person | S46-A |
| W | 02:00 PM | 03:30 PM | In-Person | S46-A |