

Solar System Astronomy

Instructor: Rachel Mastrapa, PhD

Course Description

In this class, students will analyze the physical principles, logic, and development of Solar System astronomy from ancient times through the present. Class content is designed for non-science majors. Credit for the 5 quarter units of Astronomy 4 is fully transferable to both the University of California and California State University systems.

Course	ASTR 4
CRN	25942, 00210
Section	63Z, 65Z
Quarter	F26
Modality	Asynchronous
Location	Online
Textbook	Openstax Astronomy ASTR 4 Remix
Office Hours	T, Th 10:00-10:50 AM

Course Details

Drop Without W	October 4
Exam 1	October 4
Exam 2	October 25
Drop With W	November 13
Exam 3	November 15
Final Exam	December 8

Important Dates

Astronomy Sources	20%
Reflections	20%
Homework	30%
Exams	20%
Final	10%

Grade Breakdown

A	90-100%
B	80-89%
C	70-79%

D	60-69%
F	0-59%
FW	De Anza Policy

Grade Ranges - No Rounding

About Me

Hello! I have been teaching ASTR 4 The Solar System at De Anza since 2019. Before that I taught astrobiology and geology at West Valley. I used to be a full-time research scientist working at [NASA Ames](#) and [SETI Institute](#), where I performed [experiments simulating ice formation](#) in the outer Solar System. I enjoy spending time with my two kids, playing video games, and reading speculative fiction.

I will inform you of any changes to the policies or procedures listed below.

Communication

Weekly Communication

I will be communicating with you on a weekly basis through [Canvas Announcements](#) and the [Astronomy News discussion](#). Please make sure that you are checking both regularly. The Canvas Announcements will have information required for the class such as reminders of important due dates, while the Astronomy News discussion will be mostly fun astronomy news. Any astronomy-related post in the Astronomy News discussion is worth 1 point of extra credit.

When I want to contact you individually, I will either e-mail or use Canvas message. If I don't hear from you, and I have important information about your grades or you may be at risk of being dropped, I will try both. Please let me know if there is a better way to get in touch with you, but I can't guarantee that I can use other methods.

My main forms of communication on assignments are comments. I may not be able to give detailed responses to every student on every assignment, so please check the rubric if you are missing points. If it is not clear how to increase your score, please contact me directly. Please remember to [check the comments on your Canvas assignments](#).

Contact Me

If you wish to contact me, please:

- Use the Canvas messaging system (my preference)
- E-mail mastraparachel@fhda.edu

Please address messages to Dr. Mastrapa. I check messages and respond between 9 AM and 6 PM and try my best to respond within 48 hours.

Office Hours

- [10 AM on Tuesdays and Thursdays on Zoom](#)

If you can't make it to office hours, I would be happy to make an appointment with you. Please send me a time and date during my availability, below, and, if I am available, I will send you a Zoom link. Please note that I count office hours as "available" since I can answer questions at that time. If you want a private meeting, please come to office hours or schedule an appointment. Keep in mind that I will have appointments and other commitments, so try to schedule far ahead of time.

Appointment Availability

- M-F: 9 AM - 6 PM
- Sat-Sun: 9 AM - 6 PM (not preferred, but I can do it)

Class Information

Objectives

- To provide the student with as comprehensive an account of the modern field of planetary astronomy as possible.
- To create an increased sense of place and scale in the universe and a sense of how our species reached its current understanding of our world's place in the larger scheme of things.
- To acquaint the student with the appearances and other physical characteristics of the major planets, especially as they have been revealed by space probes over the last generation.
- To generate a familiarity with the various modes of research, which astronomers use to investigate other planets, including (but not limited to) various types of automated spacecraft.

Student Learning Outcomes

- 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.

Textbook Remix

I have created my own version of the [textbook for this class](#). Please contact me immediately if you have trouble accessing the book.

Don't worry, this is 100% legal because the original textbook is an Open Educational Resource (OER). This means that it is published under a license that allows me to copy, distribute, edit, remix, and reorganize the original book as long as I include an attribution to the original document. In this case, I have not made many changes to the text, but I have deleted any of the sections that I will not be covering in this class.

Openstax Astronomy

If you would like to learn more about astronomy, please visit [Openstax Astronomy](#) by Fraknoi, Morrison, and Wolff. This book is designed to be an overview of all topics in astronomy, which is a very large field. If you have trouble accessing this book, please review the [Openstax Student Guide](#).

Printed Copies (Optional)

If you prefer, you can buy a print copy of the full Openstax Astronomy textbook at the [De Anza bookstore](#) or [Amazon](#).

Class Format

Asynchronous:

For asynchronous students there are no required group class meetings. Under certain circumstances, such as missing work or low grades, I may require a private live meeting via Zoom.

The course work is divided into individual modules in Canvas. Each module contains reading assignments, videos, and homework, with due dates staggered over the week. All homework assignments are due at 11:59 PM. Note that I do not respond after 6 PM, so if you have an urgent question about an assignment, please contact me during my available hours. This class uses Canvas and Zoom. Please keep Zoom up to date. Please visit the [tech support page](#) for any problems.

Behavior

All students and instructors are expected to treat each other with respect. Everyone will be held to the expectations listed in the [Student Code of Conduct](#) and the [Academic Integrity Policy](#).

Assignments

All assignments are listed in the [Class Schedule](#).

Late Assignments

Students are responsible for completing all assignments before the due date. Assignments may be completed after the due date any time before the final. Late homework assignments will lose 2% of their grade per day late (including weekends and holidays). (Technically, it is 0.08% per hour so that you don't get hit with the whole 2% if you are two minutes late. You're welcome. (I realize that 0.08% per hour does not add up to 2%, but Canvas does not let me put in a maximum of 2 decimal places, so it is technically 1.92% per day. You're welcome, again.) There is no minimum score for completed work, so if the assignment is 50 days late, it will be worth 0. Exams and the final have a 20% penalty per day. Canvas automatically assigns a zero to missing assignments. All assignments must be completed by 11:59 PM on the day of the final.

If you know ahead of time that you will be submitting a late assignment, please do the following:

1. Contact me and let me know the circumstances that are delaying your work BEFORE the work is due. Depending on the circumstances, I will consider removing the late penalty.
2. Complete and submit the work as soon as possible.
3. If I have agreed to remove the late penalties, let me know when you have submitted the assignment.

Astronomy Sources: 20% of grade

There will be six assignments throughout the quarter involving analyzing sources of astronomy information. The assignments are divided into three categories: Popular Sources, Academic Sources, and Popular Arts and Fiction. Within each category the first assignment will involve selecting a source that matches the category, with guidance regarding finding reliable sources. Dr. Mastrapa will check to make sure that your source meets the requirements for the second assignment. Once the source is approved, the next assignment is a review of a source. The assignments will unlock two weeks before they are due. When I grade assignments, I will tell you in the comments or rubric why I have deducted points. You may resubmit the assignment for full credit, with no additional late penalty.

- Popular Sources: due October 7 and 18, 11:59 PM
- Academic Sources: due October 28 and November 8, 11:59 PM
- Popular Arts and Fiction: due November 11 and 29, 11:59 PM

Reflections: 20% of grade

Reflections are due every Friday at 11:59 PM and include a check-in to see how you are doing and an opportunity to review the material from the week. Please be brief, because there are many more of you (70 per section) than there are of me. If you have a detailed comment or question, please come to office hours or contact me via email or Canvas message. You may resubmit the assignment for full credit.

Homework: 30% of grade

Most homework assignments are in the format of Canvas multiple choice quizzes. Although they are called quizzes, they are open notes/textbook and 3 chances to complete them, retaining your highest score. There is at least one quiz on the reading assignment and one quiz for each video lecture. Some homework requires text responses. All homework assignments are due at 11:59 PM.

Exams: 20% of grade

Exam	Opening Date	Due Date	Closing Date
Exam 1	September 27	October 4	October 9
Exam 2	October 18	October 25	October 30
Exam 3	November 8	November 15	November 20

Exam Dates

Students may use their notes, the textbook, class videos, or reliable online resources to complete the exams. Students may not use AI to complete the exams.

There will be three open notes exams that will only unlock if all previous assignments are completed. The Opening Date is when the exam will be available for completion. The Due Date is when the exam is due. Please complete all sections by the Due Date to avoid late penalties. The Closing Date is when the exam closes permanently. There are no retakes or extensions beyond the Closing Date under any circumstances. Any exam completed after the Due Date but before the Closing Date will lose 20% per day (0.83% per hour) past the Due Date.

Students must take all three exams. The lowest exam grade of the three exams will be dropped, but only if all three are completed. If a student does not complete Exam 1 or 2, they will be dropped from the class. If a student does not complete Exam 3, the Exam will be given a zero and will be counted toward their exam grade.

Exam 1 will cover all material covered before that date. Exam 2 will only include material covered since Exam 1 and Exam 3 will include material covered after Exam 2. Each exam is divided into multiple separate assignments. Each section states which modules are covered in that section. All previous modules must be complete for the exam to unlock.

Exams will consist of multiple-choice or matching questions in Canvas, similar to the homework.

Final Exam: 10% of grade

Exam	Opening Date	Due Date	Closing Date
Final Exam	December 1	December 8	December 11

Final Exam Dates

Students may use their notes, the textbook, class videos, or reliable online resources to complete the final. Students may not use AI to complete the final.

The final will only unlock if all assignments since Exam 3 are completed. The Opening Date is when the final will be available for completion. The Due Date is when the final is due. Please complete all sections by the Due Date to avoid late penalties. The Closing Date is when the final closes permanently. There are no retakes or extensions beyond the Closing Date under any circumstances. If the final is completed after the Due Date but before the Closing Date it will lose 20% per day (0.83% per hour) past the Due Date. The final will include all material covered over the entire course. The format is the same as the exams. Each section of the final will state which modules are covered in the instructions.

AI Policy

Using AI in This Class

Please contact me if you have questions about the appropriate use of AI. I would also love to hear how you use AI to help you study and learn. In recognition that some students do not want to use AI, there are no assignments that require the use of AI.

There are many types of AI tools. This policy applies to generative AI. You can find more information at the De Anza library [Generative AI libguide](#).

AI tools can be very helpful when used thoughtfully. In this class, you are welcome to use AI in the following ways:

- To format text responses for assignments:
 - Translation of text from or to English.
 - Writing your own text response and using AI to check for grammar and spelling, suggest rewording for clarity, or to summarize a long response
- To send me a message (via Canvas, email, phone, or Zoom chat)
- To create your own study guides, chatbots, or to summarize materials.

How to Acknowledge AI Use

If you use generative AI (such as ChatGPT, Claude, Deepseek, and more) to help with your work, please include an AI citation. I have no preference what citation format you use, just please be sure it includes:

- The name of the AI program you used
- An indication of how much of the text is the product of AI
- (Optional) The prompt you entered
- (Optional) A timestamp
- (Optional) A description of how you used the AI

This helps us stay on the same page about when and how AI is being used.

I am not trying to make your life more difficult, or prevent you from using extremely useful programs. I have been learning through faculty AI professional development that companies want employees that know how to use AI. Proper labeling of AI generated material is part of good AI use, so labeling now is practice for the future. As best practices change, I will update this policy.

Where AI is Not Allowed

There are some types of questions I'd like you to answer fully on your own. Do not use AI for:

- Multiple choice, True/false, Matching questions, Fill-in-the-blank questions

- Any work on multiple choice homework quizzes

All assignments in this class are open-notes. You already have all the resources you need—your notes, videos, homework, or the textbook. I trust you to rely on those.

Please do not use AI for research or looking up answers for questions - including using the AI summaries in your search engine. When looking for scientific information, you should always know where your information is coming from. The exception to this rule is if you ask AI to give you links to sources. You then need to assess whether the site is a reliable source of information for this class ([Reliable Sources](#)). Note that using AI this way uses significantly more water and energy than [using a regular web search without AI](#).

Agentic AI, or software that is used to perform tasks for the user, is prohibited for use in Canvas or ADAPT.

There are no dependable ways to check if AI is in use, so I am trusting you to abide by these guidelines.

Grey Areas

There are some uses of AI, that may be allowed but may expose the user to future litigation. For example, there is no consensus on the copyright law that is applicable to AI products. Claiming AI products as your own work may someday violate copyright law, especially software that generates images that was trained on images under copyright. Basically, I am encouraging you to be very careful with your use of AI.

Ethical Exemptions

I acknowledge that many of you have ethical objections to the use of AI. You will never be required to use AI for this course. Here is an incomplete list of current ethical considerations related to AI:

- Academic honesty
- Privacy
- Intellectual Property
- Environmental Impact
- Harsh Labor Conditions

I encourage you to become involved in the ethical discussion about AI.

Modelling AI Use

Whenever I use AI to create materials for this class, I'll cite it the same way I ask you to. I will never use AI on your work without your permission.

For some assignments, I may give you the option of allowing AI to assist in grading so that you can receive feedback more quickly—but the choice will always be yours.

AI Citation (my personal citation format)

- Program: ChatGPT
- Scope: The entire AI Policy section is the product of AI
- Prompt: Please make the following AI Policy warmer in tone.
- Timestamp: October 10, 2025 5:10 PM
- Description: I wrote an AI policy, then ran it through ChatGPT with the above prompt. Notice how it sounds much nicer than the rest of the syllabus. I made some changes and edits after using AI.
- Note: This is a super detailed AI label, only the information in the first two bullets are required for this class. You may format your label however you prefer, including official citation formats as long as they have the required information.

Attendance

The [De Anza catalog](#) states that "Instructors may drop students from a class for excessive absences" and defines excessive absences as a week's worth of classes. This class can only function well if all students are active and participating.

I will never drop a student without warning, so please check your Canvas messages and email. Remember that all homework, reflection, and astronomy sources assignments can be completed late with a penalty of 2% per day.

If you miss 1 week's worth of assignments (1 reflection, 4 homework) or any exam, you may be dropped from the class.

Please check for missing assignments on a regular basis.

First Two Weeks

Remember that if you want to drop without a W, you should drop yourself, not wait for me to drop you.

If you have **any** missing homework or reflection assignments, I will drop you from the class, following these steps:

4. On Friday of Week 1, I will contact you by Canvas message and email if you are missing any assignments.
5. Please complete any missing assignments, or contact me if you have special circumstances and still want to stay in the class.
6. You may get a Canvas message for each missing assignment.
7. If you have missing assignments by Wednesday of Week 2, I will send a second reminder.
8. At 5pm on Sunday of Week 2.
9. I will drop students that have missing assignments.

10. This will be before the Drop Without a W date, so any dropped students will not have a W in the class.

Before Drop With a W Date

After the first two weeks, if a student is missing work and does not respond to me or has not logged into Canvas for 1 week, I will contact them via Canvas message and email.

De Anza College offers a broad range of services for students, but finding the right one can be a challenge. De Anza Connect provides an easy way to help students find the services they need. A referral to De Anza Connect is not a punishment but a way to make sure a student gets help.

If a student misses any exam, I will drop them after the exam close date. I will first send a message the Monday after the exam with a reminder that the exam closes on Friday. If you miss Exam 1 or 2, you will be dropped from the class. If you miss Exam 3, the exam will be graded as zero and will count toward your exam grade.

For the rest of the quarter, I will be regularly checking on student progress, including completion of assignments and last login to Canvas. However, I will not drop any student until right before the drop with a W date. If any student is missing assignments, I will reach out to them with reminders. I may require a live, private meeting through Zoom so that we can create a plan for success.

On the drop with a W date, I will drop any student that is missing 1 reflection assignment or 4 homework assignments, and refer the student to De Anza Connect.

After the Drop with a W Date

From the [De Anza Grade Policies](#): The FW grade indicates that a student has stopped participating in a course after the last day to officially withdraw, without achieving a final passing grade, and the student has not received college authorization to withdraw under extenuating circumstances.

This means that if a student does not complete any of the assignments after the drop with a W day, they will be given an FW. Please continue to participate in the class throughout the quarter, and complete all homework and the final.

Resources

Tech Support

If you have any trouble accessing the online course materials, please contact me immediately. I will try to help as best as I can, but I am limited in what I can do. Below are some tech resources:

- If you are having trouble with Zoom, Canvas, or MyPortal, please check the [tech support page](#).
- If you are registered for 6 units you can [apply for a refurbished computer](#).

- All students can [borrow computers and Wi-Fi Hotspots from the library](#).
- [CollegeBuys](#) offers discounts on prepaid or monthly internet service (Wi-Fi Hotspot). (And Adobe software, but you don't need that for this class)

Tutoring

Please visit the [Student Success Center](#) for tutoring, workshops, and other resources. Free, drop-in tutoring is available in the Math, Science, & Tech Resource Center in S43.

De Anza Connect

Navigating college bureaucracy is a complicated task, even without other responsibilities such as work and family. De Anza provides a broad range of services to support you be successful. I encourage you to reach out to [De Anza Connect](#). They can help you find the campus resources and services that work best for you.

DSPS

Students who have been found to be eligible for accommodations by [Disability Support Services](#) (DSS), please follow up to ensure that your accommodations have been authorized for the current quarter. If you are not registered with DSS and need accommodations, please go to the DSS office in the Registration & Student Services Building (RSS) – Room 141 for information on eligibility and how to receive support services.

Resources for Basic Needs

Living, working, and studying in Silicon Valley is expensive. De Anza offers many [resources for basic needs](#), including food, toiletries, and clothing that you can find at [the Hub](#).

Complaints and Concerns

From the De Anza College [site for complaints and concerns](#): "We want every student to have a **positive experience** at De Anza College. **If you are a student** with a complaint or concern about a situation you've encountered, here are some different ways that you can request a **closer review** and a **fair resolution**." This covers anything from complex paperwork to safety concerns. I hope that you never need this.

Class Policy

Statement on Inclusion

I am dedicated to making this class an open and welcoming environment where everyone can succeed. This includes differences in ability, age, appearance, athletics and student organization involvement, ethnicity, family/marital status, gender, gender expression, immigration status, language, military/veteran status, nationality, political ideology, race, religion/spirituality, sex, sexuality, socio-economic status, and other personal identities and experiences. Please contact me immediately if you encounter any barriers to your success.

I am committed to creating a course that is inclusive in its design. If you encounter barriers, please contact me so that we can work together to create a fair and reasonable design adjustment.

Title IX: Confidentiality and Responsible Employee Statement

I am committed to creating a safe and open learning environment for all students. If you (or someone you know) have experienced any form of sexual misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available. The college strongly encourages all members of the community to take action, seek support, and report incidents of sexual misconduct to the Title IX Office.

Please be aware that under Title IX of the Education Amendments of 1972, I am required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Mental Health and Wellness Center 408.864.8868 (RSS Building, Room 258, Second Floor) or Student Health Services 408.864.8732 (Health Services Office, Hinson Campus Center, Lower Level).

AI Citation

- Program: Claude Code
- Scope: The text for this syllabus in html form.
- Prompt: Update-syllabus skill.
- Timestamp: September 10, 2026 11:53 AM
- Description: Dr. Mastrapa wrote a skill for updating dates in the syllabus and checking for spelling and grammar errors. Claude Code ran the skill on the syllabus file and Dr. Mastrapa checked and approved changes.

Note: I made other edits, including making this label, after running this skill and didn't do another AI grammar or spelling check, so there may be new ones.

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:

10:00 AM - 11:00 AM

Zoom T,TH