

# ASTR 4 Solar System Astronomy

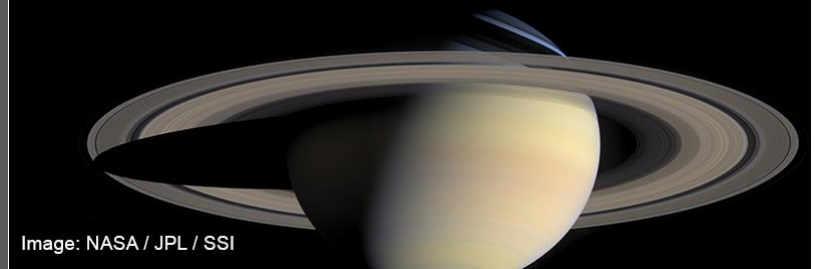


Image: NASA / JPL / SSI

Lectures: M thru F, 8:30-9:20 am  
Location: De Anza Planetarium

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Office Hours: Please inquire for times.

## In This Syllabus...

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Everything you need to know about the class – i.e. the same information as in this syllabus – can be found on the CLASS WEBSITE at:

[amcody.github.io/astro4/](https://amcody.github.io/astro4/)

Make sure to bookmark it and refer to it whenever you have questions!

Can I check  
this on the  
web?

## Our Goals This Quarter

You'll be learning a lot about what planetary systems are and how they work this quarter. You'll also learn a lot about how a large college course like this works. Here are some specific things I want to help you do; I hope that doing these things enables you to become a more scientifically aware citizen, and get you excited about science no matter what your eventual path in life!

1. Make your own judgments about how the exploration of space might be of benefit to society. Many people often question why we explore the universe and study the Earth from space. In this course, you'll learn more about how these endeavors might benefit us "on the ground".
2. Compare and contrast the planets (and other objects) in our solar system, and in other solar systems, so as to understand why they turned out the way they did. We call this *comparative planetology*, and it's one of the main goals of the astronomers who study solar systems – i.e. the planets and other objects that orbit around stars.
3. Evaluate things that you read, hear, or see in the news about astronomy. We are all exposed to many sources of information (internet, TV, etc...) and there's a method for evaluating the things these sources tell us about the world and the universe – it's called the *scientific method*.

## Textbook

### Free Online Textbook:

The textbook for this class is available for free online at:

<https://openstax.org/details/books/astronomy>

I recommend downloading the PDF version and using a PDF-reader program to read it, such as the free Adobe Reader.

# GRADING

## Step 1:

You take three (3) midterm exams and the final exam.

Test 1	200pts
Test 2	200 pts
Test 3	200 pts
FINAL EXAM	300 pts

## Step 2:

I drop the lowest midterm exam.

-200 pts = **400 pts of midterms**

There's no way I'm going to drop **this** one...

## Step 3:

I calculate the final grade.

Your final percentage =

The points you earned, after dropping lowest scores as described at left

DIVIDED BY...

700 possible points

I then round your final percentage to the nearest whole percent, and use the following grading scale:

89-100	A
79-88	B
68-78	C
57-67	D
<57	F

## Notes:

1. A percentage like 88.7% rounds to 89, so it's an A.
2. If something causes you to miss a test or quiz, that will be the one you drop.
3. I'm afraid my schedule won't allow me to give you a final at a different time in order to fit your vacation. You'll need to plan around the final – *you may want to tell family members about this before they buy non-refundable plane tickets.*

## Astronomy 4 Class Rules and Guidelines

During the first few weeks of class, I will collect state-mandated class attendance data using a sign-in sheet and/or seating chart.

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### ADDING THE CLASS:

*If you add the class, make sure that your add code has worked, and that you have been properly added to the class.* If not, it is your responsibility to check with the Admissions/Records office to find out how this can be corrected. After the end of Week 2, the College CAN NOT process a late add, and you could find yourself not enrolled and not receiving a grade for the course, if you're not registered

### DROPPING THE CLASS:

I would like to see everyone complete the course, earn a good grade, and become excited about science. However, the realities of life sometimes get in the way.

You should assess your situation realistically throughout the quarter.

If you decide to drop the class, you must do so by the final date to drop with a "w", or you risk receiving an "F" if you haven't earned enough points to pass the class.

Also – and this is very important – ASKING FOR AN INCOMPLETE GRADE WILL NOT WORK AS A WAY AROUND THE FINAL DROP DATE! I can only assign an Incomplete in a few, very specific situations. For example, if you miss the Geology 10 field trip, you will get an "I" grade, and that grade will get cleared up after you go on the field trip the following quarter. But if it's after Week 8, and you realize you should have dropped, and someone in Counseling or Admissions and Records tells you to ask me for an Incomplete, it is VERY UNLIKELY that the situation will actually warrant one! "I" grades cannot be given for missing a large fraction of the work in the course.

### CLASS ENVIRONMENT:

Remember that we have all chosen to be in this class. We should thus have an environment that fits this choice.

Talking to your neighbor(s) while I'm lecturing, reading non-course material in class, and doing outside homework are not allowed in class, and may result in dismissal for the remainder of the class period.

Note also that you won't be able to use a calculator on your cell phone during tests and quizzes.

### TESTS:

- After you start working on a test, you must hand it in before leaving the room.
- If you arrive late for a test or quiz, you won't be given extra time to finish it.
- On tests and quizzes, once the first person has turned it in and left the room, no further latecomers will be given tests.

NOTICE: Cheating on any exam or project is grounds for a failing grade in the class and a permanent note to a student's file. "Cheating" is defined (in this course) to be an effort by a student to obtain a grade by any means other than demonstration of that student's individual achievement in mastering the class material and/or fulfilling terms of a project.

Further grounds for expulsion from the class include any activity that interferes with others' ability to benefit from the class (such as chronic distracting behavior) or which degrades the classroom's function or environment.

**ASTRONOMY 4 Lecture Schedule, Winter 2020 8:30am Class (= Section 1)**

Important: Dates of TESTS are fixed, but the lecture topics (shown in *italics*) are tentative.  
 Each test covers the material since the last test. Final Exam is comprehensive – it covers the whole quarter.

For reading assignments, go to: [anmariecody.com/astro4/calendar.html](http://anmariecody.com/astro4/calendar.html)

		MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT.
Wk 1	Jan	6 Class Enrollment	7 Overview of the Universe	8 Diurnal apparent motions in the sky	9 Annual apparent motions in the sky	10 Apparent motions of the planets	11
Wk 2	Jan	13 The Origins of Astronomy	14 Copernicus and Galileo: A Sun-centered model	15 Tycho and Kepler: Laws of planetary motion	16 Newton's Laws: How does motion REALLY work?	17 Gravity: A Universal Force	18 Last day to add
Wk 3	Jan	20 <b>HOLIDAY</b>	21 How do orbits work?	22 <b>TEST 1</b>	23 Orbits of multiple bodies; Discovery of Neptune	24 Review Test 1	25
Wk 4	Jan / Feb	27 What REALLY causes the seasons?	28 Moon phases: What we see in the sky	29 Moon phases: What's really going on	30 Eclipses of the Moon	31 Eclipses of the Sun	1
Wk 5	Feb	3 Light and the EM Spectrum	4 Spectroscopy	5 How telescopes work	6 Observatories on Earth and in space	7 Overview of the solar system we live in	8
Wk 6	Feb	10 Dating planetary surfaces, rocks	11 Earth: The planet we know best	12 <b>TEST 2</b>	13 Earth's Moon: What formed all those craters?	14 <b>HOLIDAY</b>	15
Wk 7	Feb	17 <b>HOLIDAY</b>	18 Review Test 2	19 Earth's Moon: Its history and exploration	20 Mercury: The (slightly) shrinking planet	21 Venus: How similar to the Earth is it?	22
Wk 8	Feb / Mar	24 Venus and the greenhouse effect	25 Mars: Early observations and theories	26 Mars: Modern observations and theories	27 "Five Years on Mars"	28 The giant planets <b>Last Drop Day</b>	29
Wk 9	Mar	2 The Galilean moons of Jupiter	3 Titan, Triton, and Pluto	4 <b>TEST 3</b>	5 Planetary rings: Not just Saturn!	6 Review Test 3	7
Wk 10	Mar	9 Asteroids: A failed planet	10 "Asteroids: Doomsday or Payday?"	11 Comets	12 Rosetta: Mission to a comet	13 Meteors and Meteorites	14
Wk 11	Mar	16 Origin of the Solar System	17 The Sun: Its structure and magnetic field	18 The Sun: How does it generate energy?	19 How to find planets around other stars	20 Extrasolar planets: What we know so far	21
Wk 12	Mar FINALS	23	24	25 <b>FINAL EXAM</b> 7:00 – 9:00 am	28	29	30

**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.