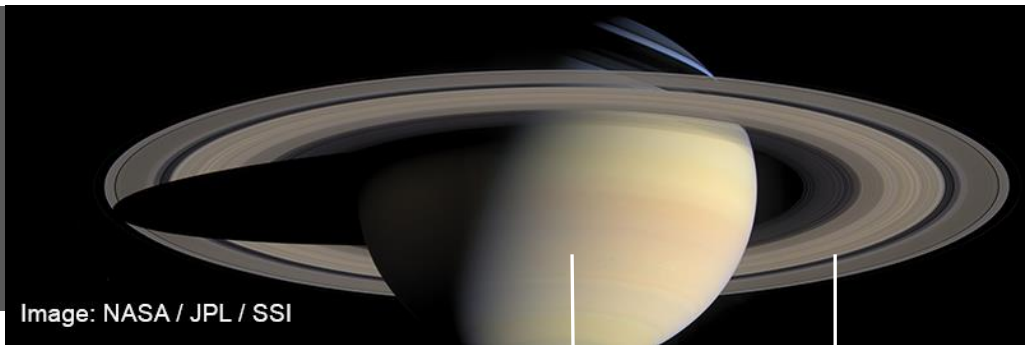


ASTR 4

Solar System Astronomy



Professor

The teacher for this class is Dr. Ann Marie Cody.

Email: codyannmarie@fhda.edu

Office hours: Wednesdays, 10-11am online or in the math/science tutoring center if open.

Lectures

This class is normally taught Monday through Friday 8:30-9:20am in the De Anza Planetarium. However, for spring 2020 only, it has moved online. You must log in to De Anza's Canvas system to access the course material. E-mail the professor for further details on how to do this.

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.

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*.

GRADING

Step 1:

Participate fully in the class (e.g. answer questions in assigned discussions) to obtain 50 pts.

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

Test 1 200 pts

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...

750 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 by assessing participation in our online system.

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 CANNOT 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 missed 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.

TESTS:

- You will be given a fixed amount of time to answer a series of questions online.
- No collaboration with classmates is allowed.
- You may, however, use your notes and book on exams.

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.

Reading assignments will be noted in the class's Canvas calendar system.

| | | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SAT. |
|-------|----------------|---------------------------------------------|-------------------------------------------------------|------------------------------------------------------------|------------------------------------------------|-------------------------------------|-----------------------|
| Wk 1 | Apr | 13 Course overview | 14 Scientific method and distances in the Universe | 15 Orienting ourselves on the night sky | 16 Stars and their motions on the night sky | 17 Apparent star motion, part II | 18 |
| Wk 2 | Apr | 20 Annual motion of the stars and Sun | 21 Ancient and cultural astronomy | 22 Copernicus, Tycho, and Galileo: A Sun-centered model | 23 Kepler's and Newton's laws | 24 Gravity: A Universal Force | 25 Last day to add |
| Wk 3 | Apr / May | 27 Orbits | 28 TEST 1 | 29 Tides | 30 What REALLY causes the seasons? | 1 Review Test 1 | 2 |
| Wk 4 | May | 4 The phases of the moon | 5 Eclipses of the Moon | 6 Eclipses of the Sun & introduction to light | 7 Light and the EM Spectrum | 8 Spectroscopy and atoms | 9 |
| Wk 5 | May | 11 The Doppler effect and telescopes | 12 Observatories on Earth and in space | 13 TEST 2 | 14 Overview of the solar system we live in | 15 Review Test 2 | 16 |
| Wk 6 | May | 18 HOLIDAY | 19 Origin of the solar system | 20 Earth: The planet we know best | 21 The greenhouse effect on Earth | 22 Venus and Mercury | 23 |
| Wk 7 | May | 25 Earth's moon: history and exploration | 26 Mars: the Red Planet | 27 Missions to Mars | 28 Jupiter and Saturn | 29 Uranus and Neptune | 30 |
| Wk 8 | May/ June | 1 Moons of the solar system | 2 Titan, Triton, and Pluto | 3 TEST 3 | 4 Planetary rings: Not just Saturn! | 5 Review Test 3 Last Drop Day | 6 |
| Wk 9 | June | 8 Exoplanets: detection | 9 Exoplanets: discoveries | 10 Exoplanets: habitability | 11 Comets | 12 Asteroids- failed planets | 13 |
| Wk 10 | June | 15 Asteroids: planetary defense | 16 Meteors and Meteorites | 17 Our Sun: its structure and magnetic field | 18 The Sun: How does it generate energy? | 19 Final exam review | 20 |
| Wk 11 | June FINALS | 22 | 23 | 24 FINAL EXAM DUE | 25 | 26 | 27 |

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.