

# ASTR 4 Section 04

## Astronomy 4

### Solar System Astronomy

**Lectures:** Tuesdays 1:30 – 3:45 in the De Anza Planetarium, Thursdays 1:30 – 3:45 in Forum 1

#### **Instructor:**

Marek Cichanski

Office: S-15a

(408) 864-8664

[cichanskimarek@fhda.edu](mailto:cichanskimarek@fhda.edu)

Office Hours: M, Tue, and Thu, 12:00 – 1:20pm

Everything you need to know about the class – i.e. the same information as in this syllabus – can be found on the class's Canvas website. Canvas is the online "learning management system" used by De Anza College, and can be accessed through your MyPortal login. A link to this class's Canvas site was probably sent to you around the beginning of the quarter.

Make sure to check the class's Canvas site whenever you have questions!

#### **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 software.

#### **Our Goals This Quarter:**

You'll be learning a lot about what solar 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 gets you excited about science no matter what your eventual path in life!

1. Make your own judgements 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:

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, doing outside homework, and using wireless devices of any kind\* are not allowed in class, and may result in dismissal for the remainder of the class period.

\*this means you won't be able to use the calculator on your cell phone during tests and quizzes. You'll need to get a separate calculator if you want to use one on 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.

**ACADEMIC INTEGRITY AND CHEATING:** 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 which interferes with others' ability to benefit from the class (such as chronic distracting behavior) of which degrades the classroom's function or environment.

**NOTICE:** No exceptions will be made to policies stated on this course syllabus and/or on the class website, unless made by the instructor in consultation with the Dean of the Division of Physical Sciences, Mathematics, and Engineering, and/or in consultation with the College's Disability Support Programs and Services staff. If the schedule(s) of the relevant person or persons listed above does not permit such consultation during the quarter that this class takes place, then the stated policy (or policies) will stand.

Important: Dates of TESTS are fixed, but the lecture topics (shown in *italics*) are tentative. For example, we may or may not cover “Observatories...” on Feb 6<sup>th</sup>, depending on how quickly we cover the preceding material. Each test covers the material since the last test. Final Exam is comprehensive – it covers the whole quarter.

For reading assignments, go to the class’s Canvas website.

		TUESDAY	THURSDAY
Wk 1	Jan	7 Class Enrollment	9 Class website and procedures Our Cosmic Context
Wk 2	Jan	14 Apparent motions in the sky: Diurnal, Annual, and Planetary	16 Ancient Astronomy A Sun-Centered Model Laws of Planetary Motion
Wk 3	Jan	21 Newton's Laws Gravity How do orbits work?	23 <b>TEST 1</b>
Wk 4	Jan	28 <b>Review Test 1</b> What REALLY causes the seasons? Moon phases	30 Eclipses of the Moon Eclipses of the Sun
Wk 5	Feb	4 Light and the Electromagnetic Spectrum Spectroscopy	6 How Telescopes Work Observatories on Earth and in space
Wk 6	Feb	11 Overview of the solar system we live in Dating planetary surfaces and samples Earth: The planet we know best	13 <b>TEST 2</b>
Wk 7	Feb	18 <b>Review Test 2</b> Earth's Moon	20 Mercury: The (slightly) shrinking planet Venus: Our near-sibling planet
Wk 8	Feb	25 Mars and the search for life	27 The Giant Planets The Galilean moons of Jupiter
Wk 9	Mar	3 Titan, Triton, and Pluto	5 <b>TEST 3</b>
Wk 10	Mar	10 <b>Review Test 3</b> Asteroids: A failed planet “Asteroids: Doomsday or Payday?”	12 Comets Rosetta: Mission to a comet Meteors and Meteorites
Wk 11	Mar	17 Origin of the Solar System The Sun: Its structure, magnetic field, and energy generation	19 How to find planets around other stars Extrasolar planets: What we know so far
Wk 12	Mar FINALS	24 <b>FINAL EXAM</b> 1:45 – 3:45 pm	26

**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.