Online - Astronomy 10

Spring 2024

Lecture Content in the Modules on Canvas

Course Overview

Hello, and welcome to Astronomy 10. This course will be asynchronous, you will not have to log on at a particular time. The laboratory activities, homework, lectures, and discussions can all be done in a time frame that best suits your needs. Be prepared to spend around 8 – 12 hours per week on this course, but you will be able to do this work at times most convenient. We have worked hard to make this possible. Please set aside the necessary time to complete the assignments in this Class.

Astronomy 10 can be an intimidating class for students. I strive to make myself as available as possible to help answer questions that you may have. While we have one scheduled office hour section, I am happy to set up other appointments as needed. I encourage my students to contact me when they are struggling with any of the material or if they are finding other aspects of the course a barrier to their understanding. I have strived to minimize the mathematical complexity of this course. You will be responsible for performing some basic calculations; however, this is not a math class. If you are finding mathematics challenging, there are resources I can provide that will assist you in making the most of this course. Please contact me when you find yourself struggling with the Class.

Contact Information:

- Instructor Name: Harrison Mausolff
- Email: harrison.mausolff@maderacollege.edu (or just message me through canvas)

Office Hours:

Wednesdays at noon. You can also dm me if you want to schedule a separate meeting and we can figure something out.

Required Course Materials:

- TEXTBOOK: OpenStax Astronomy Textbook https://openstax.org/details/books/astronomy
- Links to an external site. This is a free textbook you can download or view from your phone or computer. It is accessible everywhere you have the internet.
- A scientific non-graphing calculator

- A computer you have easy access to

Course Description:

This course covers Astronomical concepts with a minimum of math while fulfilling the science with a lab general education requirement for the CSU and UC systems. The topics covered in this course are The planets, solar system mechanics, stellar evolution, galaxies, and basic cosmology.

Course Content:

- Naked eye astronomy: the motion of the Sun, Moon, and stars as seen from the Earth; seasonal changes; phases of the Moon and eclipses.
- Scientific method and history of astronomy: geocentric and heliocentric models, Copernican Revolution, and Kepler's laws.
- Physics: gravity, temperature, pressure, energy, and conservation laws.
- Light: the nature of light, the electromagnetic spectrum, the atom and spectroscopy, telescopes on Earth and in space, and the Doppler effect.
- Formation and evolution of the solar system.
- The role plate tectonics, volcanism, and magnetic fields play in shaping the surfaces, habitability, and other properties of different planetary bodies.
- Earth: internal structure, surface and atmosphere, magnetosphere, and ability to support life.
- Terrestrial planets: characteristics of the Moon, Mercury, Venus, and Mars, in comparison to Earth.
- Jovian planets: characteristics and properties of Jupiter, Saturn, Uranus, and Neptune.
- Comets, asteroids, and meteorites.
- Sun: internal structure, nuclear fusion, solar activity, heliosphere, and the limits of the solar system.
- Stars: classification of stars, Hertzsprung-Russell (HR) diagrams, main sequence, luminosity, and apparent and absolute brightness.
- Cosmology: large-scale structure, Cosmic Background Microwave Radiation (CMBR), cosmic evolution, the expanding Universe, the geometry of the Universe, and the fate of the Universe.

Student Learning Outcomes:

- Apply reasoning skills regarding the science of the Universe to solve mathematical and nonmathematical problems in astronomy
- Read college-level publications written on introductory astronomy topics
- Solve simple algebraic problems that apply to astronomy topics.

Textbook:

Great news: your textbook for this Class is available for **free** online!
Astronomy from OpenStax

Links to an external site., ISBN 1-947172-01-8

You have several options to obtain this book:

- View online

Links to an external site. (Links to an external site.) (Links to an external site.)
Download a PDF
Links to an external site. (Links to an external site.) (Links to an external site.)
Order a print copy
Links to an external site. Links to an external site.(Links to an external site.) (Links to an external site.)
Download on iBooks

- Links to an external site. (Links to an external site.) (Links to an external site.)

You can use whichever formats you want. However, web View is recommended -- the responsive design works seamlessly on any device.

Canvas

We will use Canvas as our Learning Management System (LMS) for the Fall 2022 semester. Canvas is a powerful tool allowing us to incorporate our free textbook, host video lectures, hold discussions, host exams, submit homework, and many other tasks. Becoming familiar with Canvas should be a priority for students taking an online course. For more information, please see the "Canvas Help for Students" page in the Course Information module. If you are having difficulties navigating through Canvas, please contact me at jerry.rude@maderacollege.edu, or you can call a student helpline at 559-499-6070.

Exams:

There will be one midterm exam and one final exam. The exams have conceptual questions that are multiple-choice in format. There will also be some straightforward algebra problems that are appropriate for astronomy. Don't worry; you'll have lots of support for the math part. The exams contribute **50%** of your semester grade, which is essential to prepare for.

Makeup exams will be given with preapproval only. Exams will be delivered through Canvas, so you will need to have access to a computer to complete your exam.

Homework:

Doing your homework assists you in two ways: 1) it helps you learn the material, and 2) it lifts your grade.

Your homework is **20%** of your semester grade. Homework is completed online through Canvas. The homework assignments will be posted and may require you to watch a video (Crash Course Astronomy or some other resource) and then will involve you in answering some multiple-choice questions on the material. These questions will be the foundation of what I use for the exams.

There will also be reading guides and homework questions based on the required reading for each module. This reading will usually consist of sections from the textbook; however other sources may be used. These reading homework questions will usually be in a multiple-choice format; however, some of these will require one or two-sentence answers.

Late homework will be marked down 10% per day. Therefore, you need to be prepared. Start working on the homework as soon as it is posted.

Laboratory:

The labs make up 20% of your grade. The lab activity will typically involve a lab assignment or lab activity. They will involve the use of online simulations and other resources. You may be asked to scan documents you work on by hand. I will provide instructions on how to scan documents using the camera on your phone. Questions about the lab will be addressed during the online meeting on Wednesday evenings, and other questions can be discussed during our office hours.

Online Discussions:

There are online class discussions that are graded. These discussions cover several topics and can be varied in type. The discussion accounts for **10%** of your grade. The objective of the discussions is twofold: 1) assist in creating an important sense of community in the Class and 2) help you clarify your understanding of the discussion topics. You will need to make your post for the weekly discussion on Thursday evening and respond to two other posters by Sunday evening for full credit. Use complete sentences and cite sources when applicable. Your responses must be more substantive than "Yah, I agree" or "Not me." Use complete sentences and make sure you are contributing to the discussion. This form of communication will be important for your future education at a four-year university.

Your discussion posts will count as your weekly attendance. If you miss more than one discussion assignment before the first exam, you will be dropped from the Class. No late Discussion Posts will be accepted. If you are not submitting your initial post by Thursday

evening, you will not be giving your classmates the opportunity to respond by Sunday evening. Please manage your time wisely.

Grading Policy:

% Grade for the Class	Letter Grade for the Class
90% -100%	A
80%-89%	B
65%-79%	C
55%-64%	D
0%-54%	F

Category of Classwork	% of Class Grade
Exams	50%
Homework	20%
Lab Reports	20%
Online Discussion	10%

Important Notes:

- **All first-week assignments need to be completed and submitted by the due date to avoid possibly being dropped from the Class.**
- Any student needing accommodations should inform the instructor. Students with disabilities who may need accommodations for this Class are encouraged to notify the instructor and contact DSPS early in the semester so that reasonable accommodations may be implemented as soon as possible. All information will remain confidential.
- Academic dishonesty and plagiarism will result in a failing grade on the assignment. In addition, using someone else's ideas or phrasing and representing those ideas or phrasing as our own, either on purpose or through carelessness, is a serious offense known as plagiarism. "Ideas or phrasing" includes written or spoken material, from whole papers and paragraphs to sentences and, indeed, phrases, but it also includes statistics, lab results, artwork, etc.