

ASTR 10 – Stellar Astronomy

Fall 2023

Class days and time: M/W, 1:30-3:45 pm

Class Locations: Mondays in PLT, Wednesdays in ADM 119

Instructor: Caitlin Kepple (she/they)

Instructor email: kepplecaitlinmarie@fhda.edu

Office hours: Tu 10:30am-12pm in PSME Village Space, S55

Wed 3:45-5:15pm in ADM 119

Th 10-11am on [Zoom](#)

Ever heard the phrase “*We are star stuff*”? In this class, we’ll explore exactly what Carl Sagan meant when he made this statement many decades ago. Stellar Astronomy is about the stars—and everything in between them. During our exploration of star science, we will also investigate the current and historical understandings of stellar astronomy from a variety of perspectives. We’ll use real-world data to build knowledge and skills around astronomy as a science, while also interrogating the traditional view of science as an “objective” pursuit. We will also draw on knowledge from several disciplines and cultures to help us understand the forces that shape our view of science as individuals and broadly in the US.

Course Learning Goals

Throughout this course, we will pursue the following set of skills related to studying astronomy:

- Appraise the benefits to society of astronomical research concerning stars and stellar systems.
- Evaluate the impact on Earth's characteristics of the evolution of stars and stellar systems.
- Evaluate astronomical news items or theories about stellar astronomy based upon the scientific method.
- Describe ethical dilemmas arising out of contemporary scientific research and application from a variety of perspectives among local and/or global communities
- Understand and articulate the relevance and impact of astronomy research on an individual, community, and societal level
- Draw on and integrate lived experiences related to science to construct a shared understanding of astronomical knowledge and research

Inclusivity Statement

As a starting point for creating a welcoming learning environment, we will refer to the [Inclusive Astronomy Recommendations](#) and actively work to improve on the practices they recommend. Materials in this course will strive to center the experiences of historically marginalized groups in astronomy using an intersectional lens. We will draw on different ways of knowing and learning astronomy, both historically and today. Additionally, we will work as a class to further identify how we are maintaining internalized biases about scientific knowledge and what perspectives are being left out of the conversation.

Course Texts

- Astronomy*, by OpenStax (available in print for \$60 or as a free [PDF here](#))
- Selected readings available on Canvas each week

Important Dates

Jan 15: MLK Holiday (no classes)

Jan 21: Last day to add classes

Jan 22: Last day to drop classes with no record

Feb 16-19: Presidents' Holiday (no classes)

March 1: Last Day to withdraw ("W") from courses

March 25-29: Final Exams

Grade Breakdown

Grades are based on a combination of note-taking, in-class assignments, a larger project, and final exam grades—each of which is described more below. Each assignment type is constructed so that success in the class is possible via a wide variety of methods (not just one make-or-break assignment).

The grade breakdown for the course:

Pre-Class Assignments (lowest 2 dropped) - 15%

Notes Recap Presentation - 5%

In-class Work (lowest 2 dropped) - 20%

Wrap-up Quizzes - 25%

Special Interest Project - 20%

Final Exam - 15%

Late work policy: There is a 24-hour buffer period for all assignments with no penalty. If it is between 1-10 days late, there is a 5% penalty. For more than 10 days late there is a 10% penalty. You can submit any assignment up until Friday of Week 11 at 11:59pm.

This is a hard cutoff date at the end of the quarter.

Course Structure

Our course is designed so that everyone can construct their astronomy knowledge from the ground up and access the material with a variety of learning styles, starting with short in-class assignments before moving on to the quizzes and special interest project. For more details, rubrics and make-up options for each item, see the Canvas page.



Pre-synchronous work – Videos, Reading, and Assignment (15%)

- You can find the assigned videos and reading for each class session on Canvas (the schedule below is only tentative). As you complete the videos and readings, you should take notes and complete a brief assignment *before* coming to class. **Treat this as you would a homework assignment!**



Notes Recap Presentation (5%)

- Early in the quarter, your working group will sign up for a date to “share” your reading/video notes with the rest of the class. For this presentation assignment, you’ll complete the notes as a group before that class session, and then go over them with everyone at the beginning of class. Sign-ups will be during the first week of class.



In-class Activities (20%)

- We will have in-class activities every class day (thus attendance is important!). These will mostly be submitted in group format, though sometimes individually on Canvas. They are graded on completeness (70%), correctness (20%), and

timeliness (10%). If you are absent, you can still complete these, albeit without the aid of the instructor or your peers to help you.



Bi-weekly Wrap-up “Quizzes” (25%)

- Wrap-up Quizzes serve two purposes. 1: A low-stakes way to help you gauge your own progress with the material 2: They are your *best* reference in preparing for the final. Every two weeks, you’ll complete a short quiz and have a peer grade it for you afterward. Then, you will note any corrections to questions you missed and complete the rest of the assignment on Canvas. **Note that the first portion is completed while in class, and then a second portion submitted on Canvas.**



Special Interest Project (20%)

- During the second half of the quarter, you’ll choose a topic to research and present about in the last two weeks of class. This may be done solo or in a pair. The topic must relate to Stellar Astronomy in some way, but otherwise is fairly open-ended.



Final Exam (15%)

- We will have one cumulative final exam at the end of the quarter during finals week. The format will be the same as quizzes, with multiple choice/fill in the blank/short-answer style questions. You will need a calculator, which can be borrowed from the Campus [Library](#).

A note on technology

As you can see from the above descriptions, this course relies on Canvas quite a bit, which is much easier to use on a laptop or tablet. In case you weren’t already aware, the [Library](#) offers single day or quarter-length lending options for laptops, tablets, and calculators.

Academic Integrity

It is essential that everyone construct their own unique narrative of what they have taken away from the course materials. Please do not plagiarize or copy from anyone else’s work, in this course or elsewhere. Any materials that I find have been plagiarized will be marked with a zero for that assignment and further action may be taken. For reference, De Anza College has clear guidelines for students in maintaining academic integrity, which can be found in the [Student Code of Conduct](#).

There are several *free* resources at De Anza to provide extra support, to prevent cheating and plagiarism (listed below). Additionally, please do not hesitate to email me if there is another way I can support your learning that has not already been made available.

Math, Science & Technology Resource Center

De Anza’s Math, Science & Technology Resource Center has *free* peer tutoring and workshops, found [here](#). Additionally, the Student Success Center can provide help with general skills, writing, Canvas, and much more [here](#). They have drop-in tutoring via Zoom, or Weekly Individual tutoring (see updates on this for Fall 2022 on their website).

Disability Access and Support

If you have registered with the [Disability Support Services](#) (DSS; located in RSS 141; dss@deanza.edu) or need alternate support for creating an accessible learning experience, please do not hesitate to communicate with me about this. DSS staff can meet with students, review the documentation of their disabilities, and discuss services that De Anza offers and any ADA accommodations for specific courses. Additionally, I will do whatever I can to ensure these

needs are met during your time in my class. Please see [this page](#) for information about the Computer Accessibility Lab (CAL) at De Anza.

Student disclosures of sexual violence

De Anza College strives to foster a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. Please note, if you disclose a personal experience as a De Anza student, the course instructor is required to notify the Title IX Coordinator (Lauren Balducci).

To disclose any such violence confidentially, contact the Title IX coordinator using the following forms or by phone at 408-864-8945

- [Reporting Sexual Misconduct or Concern](#)
- [Contacts Page](#)

Counseling Services

The De Anza Psychological Services office provides a wide variety of counseling services for students or groups **free for students**. Please see [their website](#) for their current schedule and list of contacts. They can be contacted at 408-864-8868 or by emailing dapsychservice@deanza.edu.

Resources for Basic Needs

If you or someone you know are in need of housing assistance, food assistance, baby supplies and resources (along with many other services), the [Resources for Basic Needs page](#) has a wide range of support for De Anza students and family members.

Academic Advising

For more general advice on setting up a study schedule, choosing a major/classes, and navigating other logistics of your degree, you can visit the General Counseling Division [here](#). There are several other resources related to academics and other resources for De Anza students [here](#).

*Schedule subject to change as we progress through the quarter
 **OpenStax Astronomy (OS)

Schedule* of topics

Week	Topics	Reading	Important Dates
Week 1	Day 1: Form working groups; Community agreements; Intro to astronomy	Syllabus	
	Day 2: Practice notes, Units and the Night Sky; Notes Share-out Signups;	**OS Ch 1 (all sections) & Sec 2.1	
Week 2	Day 1: MLK Holiday - No Classes		
	Day 2: Analyzing Starlight – Colors and Spectra; Intro to Light Radiation and Spectra	OS 5.1, 17.1, 17.2 & OS 5.2, 5.3	Weeks 1-2 Wrap-up Quiz
Week 3	Day 1: Light as a Particle; Stellar Classification	OS 5.4-5.5, 17.3	
	Day 2: Stellar Classification, Doppler Shifts	OS 5.6, 17.4 & Canvas Reading	
Week 4	Day 1: Telescopes	OS 6.1-6.3	
	Day 2: The Sun’s Structure and Composition	OS 15.1-15.2 & Canvas Reading	Weeks 3-4 Wrap-up Quiz
Week 5	Day 1: Solar Activity and Space Weather; Powering the Sun	OS 15.3-15.4 & 16.1-16.2	Project Idea due Friday
	Day 2: The Solar Interior; Article discussion	OS 16.3 & Canvas Reading	
Week 6	Day 1: Celestial Census – Masses and Diameters of Stars	OS 18.1-18.3	
	Day 2: The H-R Diagram	OS 18.4 & Canvas Reading	Weeks 5-6 Wrap-up Quiz
Week 7	Day 1: President’s Day Holiday – No Classes		
	Day 2: Celestial Distances; Surveying the Stars; The H-R Diagram and Distances; Article Discussion	OS 19.1-19.3 & OS 19.4	Project Draft due Friday
Week 8	Day 1: Between the Stars: Gas and Dust	OS 20.1-20.4	
	Day 2: Life Cycle of Cosmic Material; Article discussion; Week 7-8 Wrap-up quiz	OS 20.5-20.6 Canvas Reading	Weeks 7-8 Wrap-up due Friday
Week 9	Day 1: Birth and Life of Stars; Stellar beginnings	OS 21.1-21.2 & 22.1	
	Day 2: Stellar Evolutions; Article discussion	OS 22.2-22.5	Project Presentations Day 1/3
Week 10	Day 1: Stellar Death and Supernovae	OS 23.1-23.3	
	Day 2: Black Holes; Weeks 9-10 Wrap-up quiz	OS 23.4 & 24.5 & Canvas Reading	Project Presentations 2/3 Weeks 9-10 Wrap-up Quiz
Week 11	Day 1: The Milky Way Galaxy	OS 25.1-25.4	
	Day 2: Structure of the Universe; Final Exam Practice Quiz	OS 28.3	Project Presentations Day 3/3
Finals Week	Final Exam in ADM 119 3/25, 1:45-3:45pm		

Student Learning Outcome(s):

- Appraise the benefits to society of astronomical research concerning stars and stellar systems.
- Evaluate the impact on Earth's characteristics of the evolution of stars and stellar systems.
- Evaluate astronomical news items or theories about stellar astronomy based upon the scientific method.

Office Hours:

T	10:30 AM	12:00 PM	In-Person	S55
TH	10:00 AM	11:00 AM	Zoom	
W	03:45 PM	05:15 PM	In-Person	ADM 119