ASTR 10 – Stellar Astronomy
Spring 2025

Class days and time: Tu/Th, 1:30-3:45 pm
Class Locations: Tuesdays ADM119, Thursdays PLT

Instructor: Caitlin Kepple (she/they)
Instructor email: kepplecaitlinmarie@fhda.edu

Open office hours: Tu/Th 3:45-4:15pm in ADM 119/PLT
Th 10:00am-12pm in S55 PST Village Space
Zoom open office hours: Th 9:30-10:30am (link on Canvas)

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 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 missing from the mainstream 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

Apr 20: Last day to add classes
Apr 20: Last day to drop classes with no record
May 24-26 Memorial Day Weekend (no classes)
May 30: Last Day to withdraw ("W") from courses
June 19: Juneteenth Holiday (no classes)
June 23-27: 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%)

- Each class day we'll begin with a short presentation, hearing from different groups about the main points of the assigned reading for that day. More details to come early in the quarter.

In-class Activities (20%)

- We will have in-class activities every class day (thus attendance is important!). These will mostly be submitted on Canvas in group format, though sometimes individually. *If you are absent, you can still complete these, albeit without the aid of your peers or the instructor to help you in real time.*

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, we'll complete a short in-class practice quiz. Then, you'll note any corrections and use the practice quiz to complete very similar questions 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.

Technology in class

This course relies on Canvas and other online sources quite a bit while in class. Therefore, i`t is ideal if you have the ability to bring a laptop or tablet to class, but it is not required. If you are in need of a laptop for college, the De Anza Library offers single day or quarter-length lending options for laptops, tablets, and calculators.

Generative Artificial Intelligence Use and Academic Integrity

I encourage every person reading this text to think about the implications of using generative artificial intelligence (AI) from multiple standpoints. **While it can be used as a tool for learning, there are both ethical and educational considerations we should all take into account each time we use AI.** For example, the exponential increase in AI usage has resulted in massive strain on energy and water resources around the world. You can read this article on the environmental impacts of using AI so heavily for more information.

There are certain points in the course I leave the option for you to experiment with using AI as a tool to help you solidify your understanding of the material. Otherwise, I specifically discourage the use of AI to search for answers, write up assignments, or complete any portion of the work for you. **I specifically grade assignments assuming that you are human, and that the outcome will not be perfect from the get-go. I ask that you also allow yourself to make mistakes and take time to sit with new material.**

As your instructor, my priority is to give you ample space and time to grow your scientific literacy and knowledge—no matter where you are beginning from at the start of the quarter. Plagiarism or cheating explicitly violates De Anza's Student Code of Conduct guidelines and will result in a zero on that assignment, or further action if necessary.

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 reach out to me if there is another way I can support your learning that has not already been made available.

Resources for this Class and Beyond

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. You can find more information about the Computer Accessibility Lab (CAL) at De Anza by following the link to their webpage.

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 (Laureen 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

Pride Center

The De Anza Pride Center provides a safe, supportive and welcoming space for students across the gender and sexuality spectrum to build community, find resources and connect with the support needed to thrive in their college experience. You can visit the Pride Center at LIB 138 and see additional details about hours and points of contact on the Pride website here.

Counseling Services

The De Anza Psychological Services office provides a wide variety of counseling services for students or groups **free for students**. Please see the MHWC 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. There are also several other resources related to academics and other resources for De Anza students.

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

Course Schedule*

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 Recap Signups;	**OS 1.3, 1.4, 1.6, 1.9, 2.1 (others optional)	
Week 2	Day 1: Analyzing Starlight – Colors and Spectra; Intro to Light	OS 5.1, 17.1, Canvas Reading	
	Day 2: Radiation and Spectra	OS 5.2, 5.3, 17.2	
Week 3	Day 1: Light as a Particle; Stellar Classification, Doppler Shifts	OS (5.4 optional), 5.5, 5.6, Canvas Reading	Weeks 1-2 Wrap-up
	Day 2: Stellar Classification	17.3, 17.4	
Week 4	Day 1: Telescopes Intro	OS 6.1-6.3	
	Day 2: Ethics of Building Telescopes	OS 6.4, 6.5, Canvas Reading	
Week 5	Day 1: Intro to the Sun, Solar Activity and Space Weather	OS 15.1-15.3	Weeks 3-4 Wrap-up
	Day 2: Powering the Sun, The Solar Interior; Article discussion	OS 16.1, 16.3, Canvas Reading	Project Idea due Friday
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 & 19.2 Canvas Readings	
Week 7	Day 1: The Interstellar Medium, Cosmic Distances	OS 20.1-20.3, Selected Sections	Weeks 5-6 Wrap-up
	Day 2: Stellar Beginnings and Planetesimals	OS 21.1-21.3	
Week 8	Day 1: Stellar Evolution and Clusters	OS 22.1-22.4	
	Day 2: Stellar Death and Supernovae	OS 23.1-23.3	Project Draft due Friday
Week 9	Day 1: Evolution of Binary Star Systems; Black Holes	OS 23.4, 23.5, Canvas Reading	Weeks 7-8 Wrap-up
	Day 2: Black Holes Cont'd, Gravitational Waves	OS 24.5, 24.6, Canvas Reading	
Week 10	Day 1: The Milky Way, Galaxy Types and Properties	OS 25.1-25.4	
	Day 2: Structure of the Universe	OS 26.2-26.5	
Week 11	Day 1: Project Presentations, Final Exam Practice	OS 28.3, 28.4, ***29***.5	Project Presentations Weeks 9-10 Wrap-up
	Day 2: Juneteenth Holiday, No Classes		ALL LATE WORK DUE FRIDAY
Finals Week	**Final Exam Tuesday 6/24, 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	3:45 PM - 4:15 PM	ADM 119
TH	10:00 AM - 12:00 PM	PST Village Space S55
TH	9:30 AM - 10:30 AM	Zoom,Email
TH	3:45 PM - 4:15 PM	PLT