

Overview of the Universe

ASTR 2 – Summer 2022

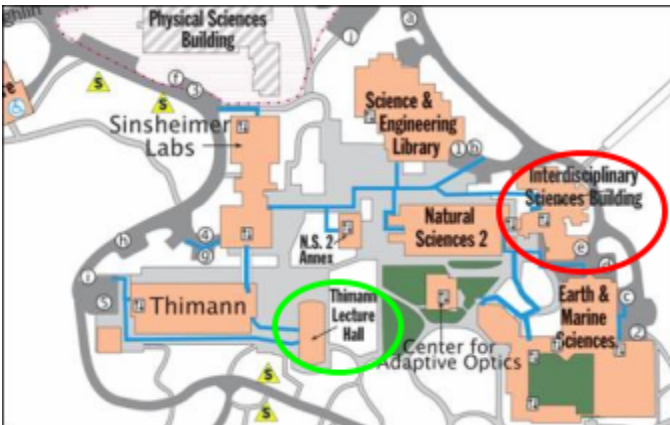


Instructor: Brian DiGiorgio (he/him) (call me Brian)

Class Times: T/Th 6:00 - 9:30pm

Location: Thimann Lecture 001

Office hours: M 3-4pm, W 12:30-1:30pm, ISB 356
or by appointment (in person or [Zoom](#))



TA: Yuk Shing Lam (he/him) (call me Yuk)

TA Office hours: T 12-1pm, Th 4:30-5:30, ISB 356
or by appointment (in person or [Zoom](#))

Contact: Canvas messages (Inbox tab on the side)
Please include both Brian and Yuk on your message
We will respond within one weekday

Course Website: canvas.ucsc.edu

Textbook: *Astronomy*, First Edition (Openstax),
<https://openstax.org/details/books/astronomy>

(Updated 8/19/22)

Course Summary

This course is a broad overview of astronomy and astrophysics, with an emphasis on information that you are likely to encounter in your daily life in the future. By “encounter,” I don’t mean that you’re going to run into a black hole on the sidewalk; I mean that these are the **topics that you may see in news articles, sci-fi media, or the night sky**. I know that most of you will likely not take another astronomy class ever, so this class is not geared towards turning you into a PhD astronomer like me. The goal is to give you the tools you need to **interact with astronomy in your daily life**.

Course Goals

We will be covering a lot of astronomy content in this class that I will expect you to be familiar with for assignments and assessments, but I have three broad goals that transcend the specifics of the material:

- 1. Students will find some way of interacting with astronomy that interests them personally.** You may not want to become an astronomer, but you registered for this class, which means that at some level, you probably think space is cool. My goal is for you to still think that space is cool at the end of the class, and to find some way of experiencing that feeling in your life going forward.
- 2. Students will be able to understand and contextualize popular astronomy news stories they come across using information they learned from class.** After this class, I won’t be around to teach you more about astronomy, so I want to give you the tools to understand astronomy information you come across in the future.
- 3. Students will be able to point out something interesting in the night sky to friends/family and give relevant and accurate background on it based on content from the class:** You’ll be able to look at the night sky for the rest of your life, so I want you to be able to bring the knowledge from this class to other people in your life.

Class Structure

Grades

We will grade and return assignments **within a week of the stated due date**. Late assignments may not follow this schedule.

The final grade for the class will be calculated as follows:

- **30%: Homeworks** (4 x 7.5%)
- **15%: Final Homework**
- **15%: Worksheets** (10 x 1.5%)
- **10%: Observing Logs** (5 x 2%)
- **30%: Projects** (2 x 15%)

Daily Schedule

Due to the schedule of the summer session, each of our meetings will be ridiculously (almost inhumanely) long.

To help us all stay sane, **I will be breaking each class into three separate and independent mini-classes.**

These classes will be 45 minutes to 1 hour long and have 10-15 minute breaks in between. The first two mini-classes will focus on theoretical/academic astronomy, with time to work on the daily worksheet at the end of the second mini-class. We'll break things up in the last mini-class by switching to observational astronomy, where we will talk about more practical content and sometimes go outside

Going Outside

I intentionally scheduled this class to be in the night timeslot so we can go outside and actually look at the stars. **We will go outside several times during the course for up to 45 minutes** to look at stars and walk around. Unfortunately, my ability to notify you is limited because we will only go outside if it is clear and fog is very unpredictable, so be prepared to go outside on any class day.

No In-Person Class on August 11th

I will be missing class on August 11th in order to be in a friend's wedding. Instead of normal class, **I will pre-record lectures for you to watch on your own.** Yuk may hold an in-person screening of the lectures if there is interest.

Course Expectations

Attendance

Attendance is not mandatory for this class. I will not be taking attendance ever, and there are no graded assignments that will absolutely require you to be in class. **You do not have to notify me in any way if you will be missing class.** I understand that things come up, and I trust you to make the decision that is best for you.

However, **I strongly recommend that you attend every class.** Due to the summer session schedule, each class we have is very long and will cover a huge amount of content, so **missing one class is equal to missing a full week of classes in a typical 10 week quarter.**

I will do my best to help students who must miss a class by posting my notes from class on Canvas and offering help during office hours and over email, but a week of content is a lot to cover.

Participation in class is also highly encouraged but not required. Actively engaging with the material through questions and group work will greatly facilitate your learning.

In-Class Behavior

These classes are very long, and I understand that you are a living, breathing human being, so **you are allowed to eat, drink, and take bathroom breaks whenever you need** (you don't need to ask me). I would prefer if you could do these things during our regular breaks, but I understand that that's not how the body works. Please be courteous to your classmates by not bringing in anything too distracting for your classmates, and wait until a break if your neighbors find you to be disruptive.

Discussion Guidelines

During this class, we will have regular discussions in small groups and as a class. During these discussions, I ask you to use the following guidelines:

1. **Respect the knowledge and experiences of your peers.** Don't interrupt or accost your classmates. Don't invalidate other people's lives, including identity and pronouns.
2. **Be an equitable group member.** Don't dominate the conversation. If someone is quiet, make sure they can say what they want to say. Make sure everyone understands before moving on.

Assignments

Due Dates

Every due date in this class is a recommended due date, meaning that **if you need to turn something in late, there will be no penalty.** I recognize that things may come up in your life that may prevent you from completing an assignment on time, and there is no need to notify me ahead of time.

However, **I strongly recommend you stick to the recommended due dates as closely as possible.** The due dates are spread out in such a way to make the workload manageable and the learning experience productive, so if you put off a bunch of assignments, you will only be hurting yourself by worsening your learning and making the end of the quarter a ton of work. **Every assignment will have a final deadline of 11:59pm August 30, and there will be no exceptions.**

Turning In Assignments

The preferred modes for turning in assignments are either in class at the front of the room or through the corresponding assignment listing on Canvas. If for some reason neither of these options work for you, you can also reach out to discuss other methods.

Readings

For each class day, you will be assigned readings in our textbook. I highly encourage you to do the reading because educational research shows that learners retain information better when they see it multiple times, and the book also contains details that I will gloss over in class. However, there will be no formal verification of whether you have done the reading and **you will only be responsible for material that I talk about in class.**

Daily Worksheets

In most classes, we will break off into small groups to work on a worksheet synthesizing the day's information using mostly conceptual questions. These worksheets will be turned in by Tuesday the week after they are assigned. You are encouraged to work on these worksheets in groups, both inside and outside of class, and I will be available during office hours to help as well.

You will receive feedback on these worksheets after you turn them in to help you learn, but **the worksheets will only be graded for completion.**

Weekly Homework

An important part of understanding how the Universe works is to actually work through problems. Each week, you will be assigned a set of problems to be turned in the following Tuesday. **Your homework will be graded for correctness, but significant partial credit will be given for showing your work.** If you don't know how to answer a question, write everything you know anyways and we'll probably find something to give you points for.

You will receive grades and feedback on your answers and **you will be able to resubmit your homeworks** with the mistakes corrected to earn back full points. I highly encourage all students to do this because learning from your mistakes is key to cementing your understanding of a topic.

You are encouraged to work on these problems in groups, but **you must understand everything you write down and turn in.** Don't copy work from someone else verbatim. I will be able to tell and you will receive a 0 on the whole homework.

Final Homework

We don't have time for a real final exam, so at the end of the quarter, you will have one larger homework that incorporates information from the whole class. Think about it like an open-note, take-home, collaborative final exam. All of the same rules from the normal weekly homeworks still apply. The final homework will be due at **11:59pm August 30, no exceptions.** If you would like to have a chance to correct your mistakes, please turn it in by Friday August 26th.

Observing Logs

Each week, you will spend at least 15 minutes outside looking at the stars. You will write up this experience in a weekly observing log that is due each Sunday. For more information, see the Observing Logs page on Canvas.

Projects

You will be required to complete two projects over the course of the class that will help you engage with astronomy in a non-academic context. For more information, see the Projects page on Canvas.

Accessibility

Accessibility During Class

I like to teach with an active learning style, meaning I will often ask for physical participation from students in some way. Below are the tasks I will be incorporating into my lessons. **If any of these tasks will cause difficulties for you, please let me know as soon as possible** so we can work out a way for you to participate equitably in class.

- Walking about ½ mile / 1 km over the course of about half an hour
- Seeing in moderate darkness
- Looking at stars
- Seeing and interpreting colors

Accessibility for Assignments

When it comes to learning in this class, I will assume that **difference is the norm**. I have attempted to design the assignments in this class to be as flexible as possible in the timing, content, and method for completion, but if you encounter some aspect of the course that is not accessible for you, **please bring it to my attention so we can work out something that will help you learn**. I also honor any accommodation letters from the Disability Resource Center (DRC) that you would like to confidentially bring to my attention.

I encourage all students to utilize any and all of the accommodations available to you. You can see resources available to you at <https://drc.ucsc.edu/services-and-accommodations/sa-overview/index.html> and <https://library.ucsc.edu/services/patrons-with-disabilities>. You can also set up a meeting with the DRC staff by emailing drc@ucsc.edu or calling 831-459-2089.

Additional Learning Resources

Successful students often use a wide variety of resources when learning. To supplement our readings and in-class content, please consider the following options for further learning:

- **Before or after class or during breaks:** I encourage you to approach me at the front of the room to ask any questions
- **Brian's or Yuk's office hours:** We are happy to discuss any ideas you feel uncomfortable with or help you with any assignments you are confused about. I am also happy to set up a separate

meeting or Zoom if you cannot attend office hours.

- **Your classmates:** Reach out to your classmates to ask for their help

Additional Support Resources

Slug Support Program: College is a stressful time for everyone, and summers can be more difficult due to the disruption of normal routines and support networks. [Slug Support](#) can help with basic needs like housing, food, financial insecurity, and getting the technology you need. To learn more about Slug Support, contact the Dean of Students Office at 831-459-4446 or you send an email at deanofstudents@ucsc.edu.

Counseling and Psychological Services: Many students at UCSC face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation. Visit the [Counseling and Psychological Services](#) for more information.

Academic Honesty

What is Plagiarism?

This class is built on a foundation of collaboration and group work, so the barrier between “working together” and “plagiarizing” can sometimes become blurred. Here is how I define it:

Plagiarism is turning in work that you could not reproduce on your own if asked.

You are encouraged to work with fellow classmates when solving problems for worksheets or homework, but **you must understand everything you write down**. Here are some examples of practices I consider to be plagiarism:

- Copying a friend’s homework without understanding what they did
- Writing out a solution from the internet without any modification
- Turning in anything you did not write with your own hand

You are allowed to consult sources other than your class notes and the textbook (in fact, I encourage it). This includes sources like other books, Youtube videos, and whatever else you find on Google. However, **you cannot simply copy what these sources say word for word**.

Don’t rely too much on things like Wolfram Alpha or a calculator. I encourage you to use them in order to make difficult calculations and conversions easier, but **you must still show your work** or I may take points off.

How to Avoid Plagiarism

Graders like me and Yuk are good at spotting plagiarism. If your work looks too similar to the work of another student, we will notice and compare your assignments in detail. Let me tell you **how to keep us from catching you**:

- Change the formatting of your work
- Change the wording you use if you’re answering a written question
- Write different steps when solving equations

If you do these things, we will probably give you the benefit of the doubt and let it pass.

Why am I telling you how to skirt around our plagiarism checks? Because **changing your writeup so it’s not plagiarism requires you to understand the material!** You have to know what you’re doing to modify an answer so that it’s different but still correct.

Plagiarism Consequences

If we find that you have plagiarized on any part of an assignment, you will receive a 0 on that whole assignment.

In the event a student is found in violation of the UCSC plagiarism policy, they may face both academic sanctions and disciplinary sanctions imposed either by the provost of his or her college or the Academic Tribunal convened to hear the case. Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student’s transcript.

Course Schedule

Below is a timeline of what we will be covering in class as well as various due dates and deadlines. All of this is subject to change, especially the order of material in the third mini-class that will depend on weather. If there is no fog, we will move up the "Outside" days to take advantage of the clear sky view.

Week	Tuesday	Thursday	Rest of the Week
1 (7/26 to 8/1)	Rockets, Orbits, The Celestial Sphere Due: Pre-course survey Reading: 3.1-3.3, 3.5, 2.1, 4.1	Solar System, Earth's Axis Due: – Reading: 3.4, 4.2, skim 7 & 9-13 Course Add Deadline	Sunday: Due: Observing log Monday: Course Drop Deadline
2 (8/2 to 8/8)	Fusion, Stellar Structure, Constellations Due: Week 1 homework, worksheets Reading: 16, 15, 2.1, 2.3	Light, Stars, Outside 1 Due: Project 1 decision Reading: 5.1-5.5, 17.1-17.3	Sunday: Due: Observing log
3 (8/9 to 8/15)	Star Formation & Evolution, the Moon Due: Week 2 homework, worksheets Reading: 21.1-21.2, 22, 23.1, 7.4, 4.5	Supernovas, Distance, History Due: Project 1 progress, Project 2 decision Reading: 23.2-23.5, 19, 2 No Class, Watch Recording	Sunday: Due: Observing log Request W Grade Deadline
4 (8/16 to 8/22)	Exoplanets & Aliens, Tides & Eclipses Due: Week 3 homework, worksheets Reading: 5.6, 21.3-21.6, 30, 4.6-4.7	Galaxies, Black Holes, Planets Due: Project 2 progress Reading: 24.5-24.6, 25	Friday: Due: Project 1 Sunday: Due: Observing log Change Grade Option Deadline
5 (8/23 to 8/29)	Galaxies, Clusters, Telescopes Due: Week 4 homework, worksheets Reading: 25.6, 26.1-26.3, 28.3-28.5, 6.1-6.2, 6.5-6.6	Universe Expansion & Evolution, Outside 2 Due: – Reading: 26.4-26.5, 29	Friday: Due: Project 2 Deadline for work to be returned for revision Sunday: Due: Observing log
6 (8/30)	No Class Due: Final homework, week 5 worksheets FINAL DEADLINE FOR ALL WORK		