

Stars, Galaxies, and the Cosmos

ASTRON 0089, Summer 2024

Instructor:	Dr. David Nero
Office Hours:	Monday–Thursday by appointment.
Office Phone:	(412) 624-7394
Email:	djn23@pitt.edu
Meeting Times:	Monday and Wednesday, 9:30am–12:10pm in 104 Thaw Hall Recitation is 12:15–12:50pm in 11 Thaw Hall.
Class Website:	Canvas (canvas.pitt.edu)
Textbook:	<i>Understanding Our Universe 4th edition</i> (Inclusive Access)

Course Description

This is a self-contained course for students not majoring in the physical sciences. The Universe in which we live is an unimaginably vast and rich place that is understandable through the same physical laws that govern our existence here on Earth. By exploring topics ranging from our nearest neighboring stars and their alien worlds to the farthest galaxies newly formed after the Big Bang, this course will engage your mind to better understand our Universe and your everyday world. Through active and engaged participatory lectures, we will observe the cosmos and learn about the birth, life, and death of stars and their mysterious remnants: pulsars and black holes. From studying stars and our own Milky Way Galaxy, we will expand our vision to cosmology and investigate the origin and ultimate fate of the Universe.

Course Learning Objectives

- Describe the relative sizes of planets, stars, galaxies, and the observable universe
- Relate the motions of the earth, moon, and sun to seasons, moon phases, eclipses, and the apparent motion of the stars
- Summarize how the laws of physics and light allow us to understand the workings of the cosmos
- Characterize the properties of the sun and our solar system
- Describe the techniques used to study distant stars and compare them to the sun
- Explain how stars are born and how they die, in some cases creating black holes
- Describe our galaxy, the Milky Way, and how it has shaped our own solar system
- Characterize the different types of galaxy and how they can change throughout time
- Explore the mysteries of dark matter and the expansion of the universe
- Investigate how the universe began and how it may end

Requirements

1. **Phones and all other electronic devices must be silenced.** Laptops, tablets, phones, etc. are welcome to be used for note taking or other academic purposes. Watching videos, playing games, and/or browsing the Internet is not appropriate during lecture.
2. **Be courteous to your neighbors.** Carrying on a conversation, habitually coming in late or leaving early, or misusing technology (as detailed above), are all disruptive to the class. Students who fail to show common courtesy will be asked to leave the classroom.

Policies

Attendance: You will get the most out of this class if you actively participate. To that end, there will be graded assignments that require you to be present in class. I realize that some absences are unavoidable, so I will drop your lowest day's worth of each assignment, no questions asked. If there are reasonable circumstances causing you to miss more assignments than I drop, accommodations will be made on a case-by-case basis.

Electronic Communication: Students are expected to regularly check their pitt.edu email and to regularly sign on to Canvas. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of communications.

Statement on Classroom Recording: Lectures will be recorded for students to view later. Students may not distribute these recordings to anyone outside of the class, nor may they create their own recordings of the lectures, discussion, and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

Academic Integrity: Students in this course will be expected to comply with the [University of Pittsburgh's Policy on Academic Integrity](#). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

To learn more about Academic Integrity, visit the [Academic Integrity Guide](#) for an overview of the topic. For hands-on practice, complete the [Academic Integrity Modules](#).

Disability Services: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and [Disability Resources and Services \(DRS\)](#), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Title IX: As your professor, I am required to report any incidents of sexual misconduct that are directly reported to me. You can also report directly to Office of Civil Rights and Title IX: 412-648-7860 (8:30am–5pm M–F) or via the Pitt Concern Connection at: [Make A Report](#)

If you wish to make a confidential report, Pitt encourages you to reach out to these resources:

- The University Counseling Center: 412-648-7930 (8:30am to 5pm M–F) and 412-648-7856 (after business hours)
- Pittsburgh Action Against Rape: 1-866-363-7273 (24/7)

If you have an immediate safety concern, please contact the University of Pittsburgh Police: 412-624-2121

Grade Scale

If you achieve the following final grade percentages in the course, you will receive at least:

Percentage	Minimum Grade
90%	A-
80%	B-
70%	C-
60%	D-

I do not anticipate the need to curve grades, but if I do, it would only be in your favor. You are not competing with one another, and it is possible for everyone to get an A.

Grading

Assignment	%	Notes
Quizzes	20%	lowest dropped
Homework/Recitation	80%	lowest dropped

Quizzes

During each class, there will be a short quiz using the online platform *Smartwork* (included with the textbook). Please bring a laptop or tablet to each class to access the quiz (phones will also work, but may be awkward to use). These quizzes are open book/notes and you are encouraged to discuss your answers with your neighbors.

Homework/Recitation

Homework pairs directly with recitation, and together makes up the bulk of your grade. The homework portion (80%) of the assignment will require you to lookup some information and/or complete some kind of activity. The recitation portion (20%) is earned by participating a follow-up discussion.

To earn top marks, you must use these assignments to demonstrate that you understand the course material well enough to make connections between the different topics we cover. A student of astronomy should be able to answer open-ended questions by combining multiple ideas supported with evidence.