# AST 101 – Introduction to Astronomy –

# Fall 2024

---

## I. General information

Instructor: Dmitry Garanin Gillet 329, E-mail: einschlag@gmail.com

Course website: http://www.lehman.edu/faculty/anchordoqui/101.html

Texts: Lecture notes are available on the course website

Lectures: Mo and We 12:00 – 13:15, Gillet 226. Lectures begin on August 28, 2024

Office Hours: Mondays and Wednesdays 13:15 -13:45

Tests: Four tests will be given during the semester. Midterm Exams: September 25, October 16, November 13, December 11

Final: There will be a comprehensive final exam; Mo Dec 16, 2024; Time: 11:30-13:30.

The final is mandatory and you are responsible for making sure that you can attend at this time.

*Requiring Cameras in Live Classes*

Faculty may require students to turn on their cameras in online and hybrid courses during class periods or for remote testing purposes.

Requiring students to use cameras may be important pedagogically to increase engagement, social connection, accountability, and collaboration. Moreover, in some testing situations, cameras are essential to ensuring the integrity of the testing environment.

There may be occasions when an otherwise in-person class is scheduled to be delivered remotely on a limited basis because of a temporary University or College pivot to remote instruction or because of faculty needs. In these circumstances, faculty may encourage but not require students to turn on their cameras for purposes other than testing unless required camera use is clearly stated on the course syllabus and covered with the students on the first day of class.

Per CUNY's *verification of* enrollment *policy*, students can meet the course engagement threshold for purposes of Title IV financial aid by participating in an online discussion about an academic matter, engaging in an online academically-related activity, or initiating contact with the instructor to ask a question about the academic subject studied in the course or course-related question. None of these criteria requires the use of a live camera.

*AI usage*

In this course, academic integrity and originality are paramount. Therefore, you are not permitted at any stage of your coursework to use. Generative AI tools, which are systems like ChatGPT that can create content such as text, images, or music based on input data. This includes activities like generating ideas, drafting, or finalizing assignments. However, tools designed to assist in grammar and spelling, such as Grammarly, are acceptable. If you have any uncertainties about the use of specific tools or need clarification on this policy, please consult the professor.

Grading policy: The overall course grade will be determined as follows:

30 % - lab group assignments (15% each)

40% - midterm exams (10% each)

30% - comprehensive final exam

Letter grades will be assigned according to the guidelines

A = 90 - 100

B = 80 - 90

C = 60 - 80

D = 50 - 60

F = below 50

The cutoffs for +'s and -'s will be decided at the end of the semester.

## II. Provisional Course Outline

# Astronomy, Astrophysics, Cosmology, and Astrobiology

(*Please note this may be revised during the course to match coverage of material during lectures)*

### 1. From Ptolemy to Newton

**1st week**: Astronomy 2500 years ago

**2nd week**: Copernican revolution and Kepler's laws of planetary motion

**3rd week**: Newtonian celestial mechanics

### 2. Stars and Galaxies

**4th week**: The Milky Way

**5th week**: Astronomically far away: Parallax and distance measurement

**6th week**: Classifying stars: The Hertzsprung-Russell diagram

**7th week**: The birth and death of stars like the Sun

**8th week**: Supernova and black holes

### 3. Lookback time

**9th week**: Hubble's law and the expanding Universe

**10th week**: The Big Bang theory

### 4. Exoplanets and Exolife

**11th week**: The habitable zone

**12th week**: Are we alone? Space colonization and the Fermi paradox

## III. Fall 2024 Calendar

- August 28: Introduction

- 1 week, Mo, Sep 2: Labor Day
- 1 week, We, Sep 4: Lecture 1 - Astronomy before the common era

- 2 week, Mo, Sep 9: Lecture 2 - Copernicus revolution, Kepler's laws of planetary motion…
- 2 week, We, Sep11: Lecture 3 - Newtonian celestial mechanics

- 3 week, Mo, Sep 16: Lecture 4 - Solar System: planets, moons, and all that...
- 3 week, We, Sep 18: Lecture 5 - Solar System: origin and exploration

- 4 week, Mo, Sep 23: Review
- **4 week, We, Sep 25: Midterm 1**

- 5 week, Mo, Sep 30: Lecture 6 - Stars and Galaxies: astronomically far away (Part 1)
- 5 week, We, Oct 2: Rosh Hashana

- 6 week, Mo, Oct 7 : Lecture 6 - Stars and Galaxies: astronomically far away (Part 2 - parallax)
- 6 week, We, Oct 9 : Lecture 7 - What are stars made of?

- 7 week, Mo, Oct 14 : Lecture 7 - What are stars made of?
- 7 week, We, Oct 16 : Lecture 8 - Classifying stars: The Hertzsprung-Russell diagram

- **8 week, Mo, Oct 21 : Midterm 2**
- 8 week, We, Oct 23: Lecture 8 - Classifying stars: The Hertzsprung-Russell diagram

- 9 week, Mo, Oct 28 : Lecture 9 - Life cycle of the Sun
- 9 week, We, Oct 30 : Lecture 10 - The stellar graveyard

## IV. How to be successful in this course

PLEASE READ CAREFULLY

- This is not a correspondence course. Attendance at lectures is highly encouraged.
- Make sure you visit the course website regularly. Check the announcements.
- TESTS: Multiple choice with questions taken from the lectures
- test problems are loosely based on those you will find in the worksheet assignments. Please check the schedule of tests for conflicts with religious observance. Please let me know ASAP if you see any conflicts; a different time will be arranged so that you can take the test. Make-up tests will be given only for valid reasons.
- Please contact me immediately if you think that a genuine mistake has occurred in the grading of tests. Clerical errors in grading will of course be rectified as soon as possible.
- Students with special requirements/learning disabilities should see me as early as possible during the semester. Note that it is the responsibility of students with special accommodations to contact the instructor as early as possible to make the appropriate arrangements for testing. Please note that I cannot allow students to take tests under conditions different from those experienced by the rest of the class (extra time, separate room, etc.) unless they have the appropriate paperwork (VISA form) from the Student Accessibility Center. The Student Accessibility Center will issue formal instructions to me about how students with disabilities are to be accommodated.