

ASTR 101: Introduction to the Sun and its Planets

Case Western Reserve University
Tu Th 10:00 – 11:15 AM

Spring 2025
Sears 548

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Textbook: “The Cosmic Perspective: The Solar System” by Bennett et al.

Course Overview

This course introduces students to astronomy and the study of our solar system. Course modules include:

- Cosmic Basics: the Night Sky and a Sense of Scale
- The Scientific Revolution: Geocentric and Heliocentric Cosmologies
- Essential Physics: Gravity, Light, and Matter
- Contents and Formation of the Solar System
- Terrestrial Planets: Geology and Atmospheres
- Outer Planets Giant and Dwarf, Moons, Comets, and Asteroids
- The Sun and beyond to Exoplanets

Course Work & Grades

Grades will be based on in-class quizzes and the final. There will be seven quizzes, one every second Thursday: **Jan. 23, Feb. 6 & 20, Mar. 6 & 27, Apr. 10 & 24**. The final is on **May 8** and will count as two quizzes. There will be no make-ups, but we will drop your two lowest quiz scores to allow for absences. If you complete all seven in-class quizzes and are satisfied with your performance, you may skip the final.

Grading scale

- A. 90 – 100%
- B. 80 – 89%
- C. 70 – 79%
- D. 55 – 69%
- F. 0 – 54%

There will be no homework nor will there be extra credit on request, so do not ask. On rare occasions, there *may* be in-class extra credit assignments.

Additional Resources

Slides will be posted after the corresponding lecture. These are meant as an aid and not a replacement for attending class: the slides by themselves are not helpful without the context of the lecture. Experience shows that final grades correlate strongly with attendance.

Links to ancillary resources will also be provided as appropriate, e.g., the planetarium freeware at stellarium.org. Lectures will follow the same general flow as the book, but may differ in detail. Some of the quiz questions may be adopted from the text's practice quizzes.

Technical help with Canvas and computer issues in general is provided by the CWRU help desk: help@case.edu and 368-4357. Students with documented disabilities should contact Disability Resources (368-5230) for appropriate accommodations.

Academic Integrity

Integrity is simple: don't cheat. Penalties for violations of academic integrity will be severe and capricious, and decided arbitrarily. The only tool you will need for the quizzes is a pen or pencil. Questions on the quizzes will mostly be multiple choice, but there will also be short answer questions that require at most a few sentences, a simple sketch, or a bit of basic arithmetic. The use of outside resources is forbidden. No notes, no books, no calculators, no internet-connected devices, no copying from others, no Chegg, no AI, etc. The use of AI in any capacity is discouraged as using it impairs the development of your ability to reason and think critically. In general, the current generation of AI tools cannot be trusted to give correct responses.

Learning Outcomes

After taking this course, students should be able to

- Describe Earth's motion in space and how it affects the sky we see
- Explain the reasons for seasons, lunar phases, and eclipses
- Outline the Ptolemaic and Copernican cosmologies
- Explain the basic physical laws that govern the motion of the planets
- Describe the interaction of light and matter
- Describe the general properties of the solar system and its formation
- Describe the interiors, atmospheres, and surfaces of terrestrial planets
- Describe the structure of the outer planets and their rings and moons
- Explain the difference between comets and asteroids
- Discuss techniques to detect exoplanets