Learning Objectives

The Solar System (ASTR 1304)

Upon completion of this course, students will be able to:

- (C) Describe Earth’s location in the universe
- (C) Demonstrate a familiarity with prominent stars and constellations appearing in the night sky
- (CT, C) Use the orbital motion of the moon to explain the phases of the moon, lunar and solar eclipses, and tides
- (CT, C) Compare the geocentric and heliocentric models of the universe, applying the scientific method
- (CT, C) Explain how we know the Earth moves
- (C) Give a history of the development of modern astronomy including the major contributions by Ptolemy, Copernicus, Galileo, Brahe, Kepler, Newton, and Einstein
- Describe the major components of the solar system and their orbital properties
- (CT, C) Explain how Newton’s laws of motion and gravity explain the orbital motions of planets and satellites
- (C) Describe the stages of solar system formation explaining how its current properties came to be
- (C) Compare the surfaces and interiors of rocky or icy solid-surface planets and moons
- (CT, C) Compare the atmospheres of Venus, Earth, and Mars giving explaining how they came about and giving reasons for their differences
- (C) Describe the major similarities and differences between the terrestrial and Jovian planets
- (CT, C) Explain the causes and potential results of impacts between bodies in the solar system
- (CT, C) Compare the atmospheres and interiors of the Jovian planets
Laboratory for Solar System Astronomy (ASTR 1104)

Upon completion of this course, students will be able to:

- (CT) Develop a hypothesis to explain data/observations related to the solar system and apply the scientific method to test it and compare with currently accepted explanations
- (C, CT) Perform a relative dating analysis of a planet’s surface to determine the chronological sequence of appearance of its surface features
- (C) Write laboratory reports to effectively communicate results of experiments/projects performed, including experimental/project design, reporting data and calculations in tabular or graphical form, and discussion of results
- (EQ) Use experimental/observational data and perform calculations to determine other properties of astronomical objects and interpret results
- (T) Work effectively with one or more students, considering different points of view, to reach conclusions about the interpretation of astronomical data, observations, or events

**Major Assignments/Exams**

(Please remove blue text and insert all major course assignments and their weight in the final class grade for any assignments worth 10% or more)

**Required Reading**

(Please remove blue text and list the Title, Author, and Year of all required readings for the course)

**Recommended Reading**

(Please remove blue text and list the Title, Author, and Year of all recommended readings for the course)

**List of discussion/lecture topics**

(Please remove blue text and include here all main lecture topics for the semester - dates optional)