AST 1002 – INTRODUCTION TO ASTRONOMY (3 credits)
STUDY ABROAD ITALY

Course dates: Monday March 17 - May 9, 2025
Travel dates: Friday May 16 - Sunday May 25, 2025

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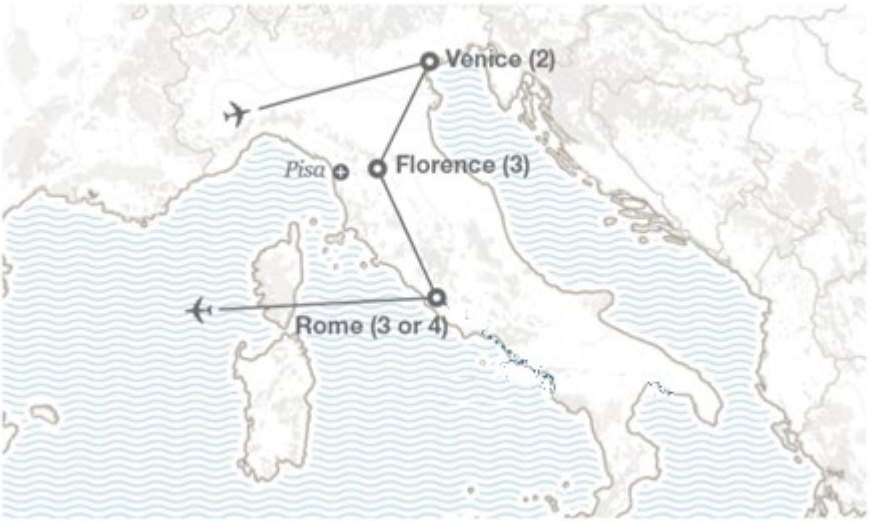
Our itinerary



SPC 2022-23 Catalog Course Description

AST 1002 Introduction to Astronomy (3.00 Credits)
This course is a survey of astronomy that includes an introduction to the characteristics, origin and evolution of the solar system, our Sun and other stars, the Milky Way galaxy, other galaxies, and the universe. It will include a historical perspective from the time of ancient astronomers to current astronomical theories.

Italy

Although this course explores all aspects of astronomy, the study abroad portion will specifically focus on contributions from Italian historical figures as well as how the study of astronomy influenced Italian culture. The distinctive history of Italy affords students the opportunity to appreciate several scientific advances that shaped our world, while experiencing the impact astronomy has had on a different culture than our own.

Students can look forward to visiting multiple historical sites that advanced our understanding of science and astronomy. In Venice, students will visit St. Mark's Square, where the first telescope was presented and see a 323-foot bell tower with lunar phases and other astronomical features. Students will learn about Galileo in Florence with a side trip to Pisa where he conducted experiments on gravity from the famous leaning tower. Rome offers the opportunity to see the Pantheon with its oculus in the great ceiling that serves as a sundial. Students may also be able to visit the Rome Observatory on Monte Mario with its spectacular views of the city.

Required Course Materials

Astronomy eBook - FREE online open access resource textbook
ISBN: ISBN-13: 978-1-947172-24-1
Publisher: OpenStax
Publication Date: 2022
https://openstax.org/details/books/astronomy

Class assignments [*SUBJECT TO CHANGE PRIOR TO COURSE START*]

1. **Module quizzes** (*400 points*): 8 module quizzes, worth 50 points each, will be completed and based on readings, videos, and other online resources. The quizzes are available online in MyCourses (D2L).

2. **Class activities** (*200 points):* Students are expected to attend weekly classes on campus regularly and actively participate in class activities.

3. **Student behavior** (*200 points*): students will behave professionally and respectfully towards other cultures. While students are expected to enjoy this journey, they must follow all rules and procedures to ensure a safe and meaningful experience for all. This includes proper preparation for the trip and active engagement in all learning opportunities during the trip.

4. **Post-trip critical reflection** (*200 points*): after returning from the trip, students are expected to reflect on their experience. Further details will be provided in class. Students will share their experiences and interact with other students during our debriefing session back home.

Grading Scale

A: 90-100% **B:** 80-89.99% **C:** 70-79.99% **D:** 60-69.99% **F:** 0- 59.99%
W: self-withdrawals **before** the withdrawal deadline on the 1st or 2nd attempt at the class
WF: self-withdrawals **after** the withdrawal deadline or for inactivity
https://www.spcollege.edu/financial-aid/keeping-your-financial-aid/withdrawals

Attendance Policy

For this class, attendance is defined as **attending campus classes on time for the full class period AND completing all assignments on or before the day they are due.**

Week 1 and 2: Students absent Weeks 1 and 2 will be dropped from the class roll. Students must be considered in **attendance (see above) during Weeks 1 and 2** to remain enrolled.

Overall Attendance: Inactive students who have more than 1 absence AND have not completed the first 4 graded quizzes by their respective due dates will be assigned a WF grade for inactivity.
Students can withdraw with a W grade through MySPC before the 60% point in the semester (1st or 2nd attempt) or with a WF grade after the deadline.

Students must follow all attendance policies to be eligible to go on the trip.

Course objectives and Major Learning Outcomes

1. The student will describe the sky and celestial motions as seen from Earth by:
    a. defining key aspects of the celestial sphere, including celestial coordinates, constellations and asterisms, star naming conventions, and stellar magnitudes.
    b. summarizing basic diurnal motions and how these motions change with latitude on Earth's surface.
    c. tracing the apparent annual motion of the Sun and seasonal changes of the Sun's position in the sky.
    d. observing the motion and phases of the Moon and relating the circumstances that result in eclipses.
    e. tracking the motions of the planets and explaining their changing visibility in the sky.

2. The student will summarize the historical development of astronomy by:
    a. discussing the factors that motivated early people to observe and record celestial events.
    b. citing examples of how early cultures worldwide contributed to astronomy.
    c. explaining how ancient Greek astronomers determined the size and shape of the Earth.
    d. recounting the Greek worldview and its influence on the subsequent development of astronomy.
    e. discussing how the work of astronomers such as Copernicus, Kepler, and Galileo led to a change in worldview from geocentric to heliocentric.

3. The student will apply basic physical laws and principles to astronomical situations by:
    a. stating Newton's three laws of mechanics and recounting several examples of each.
    b. describing the law of universal gravitation and its historical significance.
    c. using the laws of mechanics and gravitation to describe orbital motion.
    d. describing the physical nature and characteristics of light using both the wave and particle models.

e. explaining how spectral analysis can be used to determine the physical characteristics of celestial objects.
f. describing the different types of telescopes, both optical and non-optical, and their limitations.
g. selecting the appropriate telescope and/or instrumentation to study different parts of the electromagnetic spectrum.

4. The student will summarize the contents and characteristics of the solar system by:
   a. describing the dynamic similarities among the major planets and their satellites.
   b. describing the physical characteristics that distinguish Terrestrial planets from Jovian planets.
   c. identifying the similarities and differences between Earth and the other Terrestrial planets.
   d. describing the nature and properties of the Jovian planets and their satellites.
   e. discussing the nature and properties of asteroids, comets, and meteoroids.
   f. identifying potentially habitable environments in the solar system.

5. The student will summarize the properties, structure, and evolution of stars by:
   a. explaining how astronomers measure vital stellar characteristics such as distances, temperatures, luminosities, and masses.
   b. discussing the interrelationships and trends among stellar properties such as temperature, mass, radius, and luminosity.
   c. describing the organization of stellar characteristics on the H-R (Hertzsprung-Russell) diagram.
   d. explaining the mechanism of energy production and nucleosynthesis in stars.
   e. describing the life cycles of stars of different initial masses, including episodes of mass loss.
   f. describing the origins and characteristics of white dwarfs, neutron stars and black holes.

6. The student will summarize the Milky Way and other galaxies by:
   a. explaining how astronomers determined the size, shape, and structure of the Milky Way galaxy.
   b. describing the different stellar populations that make up the Milky Way.
   c. discussing the work of Edwin Hubble and the true nature of the "spiral nebulae."
   d. identifying the different types of normal galaxies and their characteristics.
   e. describing the nature, characteristics, and energy source of active galactic nuclei.
   f. discussing the observational evidence for dark matter, and possible dark matter candidates.

7. The student will explore the large-scale structure, origin, and evolution of the universe by:
   a. describing how galaxies are distributed throughout the universe in clusters and superclusters.
   b. discussing the work of Edwin Hubble and his discovery of the redshift-distance relationship.
   c. discussing the meaning and implications of the Hubble law and cosmological redshifts.
   d. stating the cosmological principle and how it applies to the study of cosmology.
   e. describing the standard model of Big Bang cosmology, and the observational evidence that supports it.
   f. discussing the evidence for dark energy, and its implications for the possible fate of the universe.

SPC Syllabus Addendum Link: http://www.spcollege.edu/addendum/
Important dates: https://spcollege.edu/academic-calendar