

Astronomy

Overview

Courses only.

Dean

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Astronomy (ASTR) Courses

ASTR 310 The Solar System

Units:	3
Hours:	54 hours LEC
Prerequisite:	None.
Advisory:	Pre-Algebra or equivalent
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; IGETC Area 5A
Catalog Date:	January 1, 2024

This is a descriptive course covering the nature and evolution of the Solar System including exoplanets of stars beyond the Sun. Topics include the origins and characteristics of different types of planets, satellites, ring systems, asteroids, comets, and other debris. The Sun's role within the Solar System is discussed. Emphasis will be placed on how astronomers obtain and refine their knowledge of planets, and students will interpret the latest planetary discoveries in that context. Students enrolled in this course will have the opportunity to attend astronomy activities, such as the Open Observatory and dark sky events.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- assess the scientific process as it pertains to the astronomy of the Solar System and planets in general.
- confirm astronomers' understanding of the processes that originated the Solar System.
- rank recent discoveries about planets into a broad context amid the background of Solar System planets.
- construct the processes that led to the present state of the Solar System.
- integrate new knowledge from exoplanet discoveries with known planet qualities.
- incorporate knowledge about other worlds into understanding the functionality of Earth.

ASTR 320 Stars, Galaxies, and Cosmology

Units:	3
Hours:	54 hours LEC
Prerequisite:	None.
Advisory:	Pre-Algebra or equivalent
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; IGETC Area 5A
Catalog Date:	January 1, 2024

This is a descriptive course treating the nature and evolution of stars, galaxies, and the astronomical theories of the origin and evolution of the Universe. Emphasis will be placed on how astronomers gain and refine their knowledge of the universe, and students will interpret the latest results of related astronomy research. Students enrolled in this course will have the opportunity to attend astronomy related activities, such as the Open Observatory or dark sky events.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- assess the process of science with regard to astronomy and cosmology.
- deduce the outcome of the life cycles of stars based on their stellar type or mass.

- identify humanity's location in the Universe (or possibly Multiverse).
- discover the origin of the Universe and everything in it.

ASTR 330 Introduction to Astrobiology

Units:	3
Hours:	54 hours LEC
Prerequisite:	None.
Advisory:	MATH 34 with a grade of "C" or better.
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; IGETC Area 5A
Catalog Date:	January 1, 2024

Students in this course will investigate the scientific search for life beyond Earth. Students will discover the connections between stars, planets, and life on Earth - or elsewhere, the nature of habitability, and quantifying the likelihood of life existing elsewhere in the Galaxy. Students will also study past, present, and future attempts to discover possible alien civilizations in our Galaxy.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- analyze the origin and evolution of life on Earth.
- evaluate the possibilities of microbial life in the Solar System, especially Mars and Europa.
- critique popular claims of alien presence on Earth.
- quantify the probabilities of alien technical civilizations in our Galaxy using the Drake Equation or related ideas.
- appraise likely environments in terms of habitability.
- differentiate the geologic, atmospheric, and cosmic forces that have shaped planets over history, especially Earth.
- judge possible results of contact with an advanced alien civilization.
- rate the prospects for interstellar travel.

ASTR 400 Astronomy Laboratory

Units:	1
Hours:	54 hours LAB
Prerequisite:	None.
Corequisite:	ASTR 310 or ASTR 320
Advisory:	MATH 34 with a grade of "C" or better
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B3; IGETC Area 5A
Catalog Date:	January 1, 2024

This course covers astronomical observation with the eye, telescopes, and spectrometers. The analysis and interpretation of astronomical data is emphasized, usually with student-collected data. Students enrolled in this class will have the opportunity to attend astronomy related activities, such as the Open Observatory and dark sky events.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- generate, assemble, and analyze astronomical data.
- evaluate the quality and relevance of data taken.
- differentiate star and planets in a sky with a light polluted environment.
- manipulate a telescope in a functional manner.
- use a telescope to find objects in the sky.
- use a computer to assist in collecting and interpreting data.
- contrast, critique, and validate data.

ASTR 435 Astronomy Frontiers

Units:	3
Hours:	54 hours LEC
Prerequisite:	ASTR 310 or 320 with a grade of "C" or better
Advisory:	MATH 34 with a grade of "C" or better
Transferable:	CSU; UC
Catalog Date:	January 1, 2024

This is a continuation course for students of ASTR 310 and/or ASTR 320 who want to explore the cutting edge of astronomical research. The topics covered will be based on the latest astronomical discoveries and will include such things as media coverage of science, possible missing planets in our Solar System, exoplanets, habitable zones and their connection to life, the lives of stars including black holes, groupings of stars such as open clusters and co-moving groups, exotic matter, dark energy, the nature of galaxies, cosmology and its connection to the String Model, the search for extraterrestrial life and possible extinction

threats to humanity such as meteoroid impacts, climate change, and futures less dark. Emphasis will be placed on how astronomers use science to understand the Universe as well as the provisional nature of science.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- critique errors in media coverage of recent discoveries in astronomy.
- evaluate the provisional nature of science.
- integrate their previous knowledge of astronomy with the latest discoveries.
- estimate possible places for habitable worlds around other stars.
- support a position on a recent astronomical research topic.
- rank recent discoveries in astronomy by level of importance for our future understanding.

ASTR 494 Topics in Astronomy

Units:	0.5 - 4
Hours:	9 - 72 hours LEC
Prerequisite:	None.
Transferable:	CSU
Catalog Date:	January 1, 2024

This course is designed for any student wanting to learn about recent developments in astronomy. Selected topics are subject to change and must be topics not already a part of current course offerings.

UC transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted towards the minimum 60 units required for admissions.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- contrast astronomical research methods versus how pseudosciences (such as astrology) are investigated.
- validate astronomical research methodology.
- assess and critique astronomical research papers.
- discover areas in astronomy where current knowledge is deficient.
- appraise existing knowledge about a specific topic in astronomy.

ASTR 495 Independent Studies in Astronomy

Units:	1 - 3
Hours:	54 - 162 hours LAB
Prerequisite:	None.
Transferable:	CSU
Catalog Date:	January 1, 2024

This is an Independent Studies course that involves an individual student or small group of students in study, research, or activities beyond the scope of regular offered courses, pursuant to an agreement between the college, faculty member, and student(s). UC transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted towards the minimum 60 units required for UC admission.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- analyze possible projects for future astronomical research. Evaluate possible future student research projects.
- contrast astronomical research methods versus how pseudosciences such as astrology are investigated.
- create and execute an astronomy research project.
- synthesize theoretical and observational methods of astronomical research.
- utilize astronomical tools to obtain data.
- assess and critique recent astronomical research papers.

ASTR 499 Experimental Offering in Astronomy

Units:	0.5 - 4
Prerequisite:	None.
Transferable:	CSU
Catalog Date:	January 1, 2024

Faculty

Check Out Degree Planner

If you're interested in a transfer degree (AA-T or AS-T), then check out Degree Planner, a tool that helps you complete your degree efficiently by mapping out what courses to take and when to take them.

Degree Planner ([HTTPS://SCC.LOSRITOS.EDU/ACADEMICS/PROGRAMS-AND-MAJORS/DEGREE-PLANNER](https://scclosrios.edu/academics/programs-and-majors/degree-planner))