

# ASTRONOMY (ASTR)

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## **ASTR 0002. Introduction to Planetary Systems**

*Units: 3*

Advisory: Completion of ENGL N with grade of "C" or better

Hours: 54 lecture

General principles and fundamental facts of astronomy associated with planetary systems. Includes historical developments of planetary astronomy, basic principles of planetary system observations and analysis, and general concepts for interpreting the night sky with charts and almanacs. Particular detail given to the formation, evolution, and current condition of the Sun and Solar System, as well as current knowledge of other planetary systems. (CSU, UC)

## **ASTR 0005. Introduction to Stars, Galaxies, and the Universe**

*Units: 3*

Advisory: Completion of ENGL N with grade of "C" or better

Hours: 54 lecture

General principles and fundamental facts of astronomy emphasizing stars, galaxies, and the universe. Includes historical developments of astronomy, basic principles of astronomical observations and analysis, and general concepts for interpreting the night sky with charts. Particular detail given to structure and evolution of stars, general characteristics of deep sky objects (star clusters, nebulae, and galaxies), large-scale structure of the Universe, and cosmology. (CSU, UC)

## **ASTR 0007. Life in the Universe**

*Units: 3*

Formerly known as INT 11

Hours: 54 lecture

Study of the emerging discipline of astrobiology. Designed for science and non-science majors. Relevant principles of biology, astronomy, and earth science used in searching for life in the universe. Includes cultural and philosophical implications of life existing elsewhere in the universe. (CSU, UC)

## **ASTR 0010. Elementary Astronomy**

*Units: 3*

Advisory: Completion of ENGL N with grade of "C" or better

Hours: 54 lecture

General principles and the fundamental facts of astronomy. Includes historical developments of astronomy, the formation, evolution and current condition of sun and solar system, stellar structure and evolution, deep sky objects (star clusters, nebulae, galaxies), structure of universe, and cosmology. Not open to students who have successfully completed both ASTR 2 and ASTR 5. (CSU, UC)

## **ASTR 0011. Observational Astronomy**

*Unit: 1*

Prerequisite: Completion with grade of "C" or better or concurrent enrollment in ASTR 2, 5, or 10

Advisory: Completion of ENGL N with grade of "C" or better

Hours: 54 laboratory

Basic interpretation of astronomical observations through telescopes, binoculars, computers, cameras, and other simple measuring equipment. Use of planetarium to facilitate recognition of constellations, stars, planetary motions, and study coordinate systems and celestial motions. Development of observational skills to study outdoor sky and outcomes of indoor laboratory experiments. Emphasis on quantitative and qualitative analysis of variety of astronomical data. (CSU, UC)

## **ASTR 0014. Astrophotography and Imaging**

*Unit: 1*

Prerequisite: Completion with grade of "C" or better or concurrent enrollment in ASTR 2, 5, or 10

Advisory: Completion of ENGL N with grade of "C" or better

Hours: 54 laboratory

Basic principles and practices of astrophotography and image processing. Astronomical observations and data collection associated with the use of telescopes, binoculars, computers, cameras, and other related equipment. Development of observational techniques and data analysis procedures for the study of the outdoor sky with related indoor experiments and studies. Particular emphasis placed on quantitative and qualitative analysis of a variety of astronomical data collected with cameras. NOTE: About 5 nights of activities will be required. (CSU, UC)

## **ASTR 0025. Frontiers in Astronomy**

*Units: 3*

Prerequisite: Completion of ASTR 5 or 10 with grade of "C" or better

Hours: 54 lecture

Topics at the forefront of astronomical research including an in-depth look beyond introductory astronomy. Emphasis on theoretical principles and supporting observational data. Includes relativity and warped spacetime, black holes, dark matter, quasars, gravitational waves, grand unified and super symmetry theories, and other recent developments in cosmology. (CSU, UC)

## **ASTR 0028. Independent Study**

*Units: 1-3*

Designed for students interested in furthering their knowledge at an independent study level in an area where no specific curriculum offering is currently available. Independent study might include, but is not limited to, research papers, special subject area projects, and research projects. See Independent Study page in catalog. (CSU, UC-with unit limitation)