

ASTRONOMY (ASTR)

ASTR-COMP Senior Comprehensive Exam
(NULL credits) (Both Fall & Spring Semesters)
NULL

ASTR-1300 Sun & Solar System
(4 credits) (Fall Semester)

This course is designed primarily for students not majoring in the natural sciences or mathematics, and includes discussions of the Sun and the major constituents of the solar system (planets, comets, minor planets, meteors, etc.) as well as theories of solar system formation and the possibilities of life on other planets. Special attention will be given to the historical development of astronomical ideas and to recent developments in planetary astronomy stemming from space probe missions. Weekly laboratory experiences or telescopic observations of the Sun and planets supplement classroom work. (NW, SM)

General Education Categories: Scientific Method, Understanding the Natural World

ASTR-1400 Stars & Stellar Systems
(4 credits) (Spring Semester)

This course is designed primarily for students not majoring in the natural sciences or mathematics who are interested in the structure and evolution of individual stars, star clusters, and galaxies. Specific topics of discussion include the endpoints of stellar evolution (white dwarfs, neutron stars, and black holes), binary star systems, x-ray astronomy, and quasars and exploding radio galaxies. A detailed investigation of the various cosmological theories describing the structure of the universe will also be made. Throughout the course careful attention will be paid to the methods used to arrive at our current level of understanding of the universe. Weekly laboratory experiences or telescopic observations of stars, star clusters, and galaxies supplement classroom work. (NW, SM)

General Education Categories: Scientific Method, Understanding the Natural World

ASTR-3000 Observational Astronomy
(3 credits) (Fall Semester)

This lecture plus laboratory course covers the acquisition and analysis of astronomical data, and the derivation of scientific information from that data. This includes discussion and laboratory application of the principles and techniques required for celestial coordinate systems and timekeeping, telescope and equipment operation, CCD imaging and image analysis, stellar photometry, and astronomical spectroscopy.

Prerequisite(s): PHYS-2110.

ASTR-4100 Introduction to Astrophysics
(3 credits) (Fall Semester)

A calculus-based introduction to stellar structure and nucleosynthesis. This course will follow the evolution of a star from its "birth" by condensation from the interstellar medium to its "death" as a white dwarf, neutron star, or black hole. Discussions of the equations of hydrostatic equilibrium, the theory of radiative transfer, nuclear processes at the centers of stars, models of stellar interiors, mass loss from stars, and degenerate stellar configurations will be included. Offered fall semester of even years. (WC)

Prerequisite(s): PHYS-3200.

General Education Categories: Written Communication

ASTR-4200 Solar System Astrophysics
(3 credits) (Fall Semester)

This course covers planetary interiors, planetary atmospheres, natural satellites, the interplanetary medium, the formation and evolution of the solar system, comets, asteroids, and other aspects of our astronomical knowledge of the solar system. Offered fall semester of odd years. (OC, WC)

Prerequisite(s): PHYS-2110.

General Education Categories: Oral Communication, Written Communication

ASTR-4300 Galaxies & Cosmology
(3 credits) (Spring Semester)

This course covers our own galaxy, other galaxies, the large-scale structure of the universe, and the evolution of the universe. Important topics on galaxies are the structure and dynamics of our galaxy, the stellar populations of our galaxy and other galaxies, the interstellar medium, the existence of dark matter, and the properties of different types of galaxies. Major topics in cosmology are galaxy clustering, the Big Bang Theory and its derivatives, the structure of space-time, and the possible futures of the universe. Offered spring semester of odd years. (WC)

Prerequisite(s): PHYS-3200.

General Education Categories: Written Communication