

2011-13 Cal Poly Catalog

Physics Department

ASTR–ASTRONOMY AND ASTROPHYSICS

ASTR 101 Introduction to the Solar System (4) **GE B3**
Descriptive astronomical properties of the Earth, Moon, other planets and their satellites. Comets, asteroids and other members of the Solar System. Theories of the formation of the Solar System. Opportunities for telescope observations of the Moon and planets. Not open to students who have completed or are taking ASTR 301, ASTR 302, or PHYS 132. 4 lectures. Fulfills GE B3.

ASTR 102 Introduction to the Stars and Galaxies (4) **GE B3**
Descriptive astronomical properties of the Sun, stars, galaxies and interstellar material. Expanding universe and cosmological models. Opportunities for telescope observations of the stars and constellation identification. Not open to students who have completed or are taking ASTR 112, ASTR 301, ASTR 302, or PHYS 132. ASTR 101 is not a prerequisite. 4 lectures. Fulfills GE B3.

ASTR 112 Introduction to the Stars and Galaxies (4) **GE B3 & B4**
Descriptive astronomical properties of the Sun, stars, galaxies and interstellar material. Exploration of cosmological models of an expanding universe. Laboratory activities include real and virtual astronomical viewing and experiments. Not open to students who have completed or are taking ASTR 102, ASTR 301, ASTR 302, or PHYS 132. ASTR 101 is not a prerequisite. 3 lectures, 1 activity. Fulfills GE B3 & B4.

ASTR 200 Special Problems for Undergraduates (1-2)
Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter. Prerequisite: Consent of department chair.

ASTR 270 Selected Topics (1–4)
Directed group study of selected topics. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1 to 4 lectures. Prerequisite: Consent of instructor.

ASTR 301 The Solar System (3)
Quantitative and descriptive properties of the Solar System including the physics of the planets, their satellites, comets and interplanetary media. Possible origins of the Solar System. 3 lectures. Prerequisite: PHYS 132 or PHYS 122 and MATH 141 or MATH 161.

ASTR 302 Stars and Galaxies (3)
Quantitative and descriptive properties of the stars, galaxies and interstellar media; including stellar structure and evolution, structure and make-up of galaxies and cosmological models. 3 lectures. Prerequisite: PHYS 132 or PHYS 122 and MATH 141 or MATH 161. ASTR 301 is not a prerequisite.

ASTR 324 Time, Longitude and Navigation (4) **GE Area F**
The state of navigation prior to 1800 and the world wide problem of determining longitude at sea. Emphasis on historical and modern-day scientific solutions to the longitude problem and navigation technology, time and timekeeping, celestial navigation, and awareness of technological solutions to societal problems. 4 lectures. Prerequisite: Junior standing and completion of GE Area B, MATH 119 or equivalent. Fulfills GE Area F.

ASTR 326 Relativity and Cosmology (3)
Introduction to the basic ideas of Einstein's theories of relativity and cosmology. The structure and evolution of the universe. The principle of relativity, the speed of light, gravity and the equivalence principle. Curved spacetime, black holes, the expanding universe, the Big Bang, and nucleosynthesis. 3 lectures. Prerequisite: PHYS 132 or PHYS 122 and MATH 141 or MATH 161. ASTR 302 is not a prerequisite.

ASTR 400 Special Problems for Advanced Undergraduates (1-2)
Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter. Prerequisite: Consent of department chair.

ASTR 444 Observational Astronomy (4)
Introduction to observational astronomy. Coordinate systems, telescopes and observational instruments (CCDs, filters, spectrographs), observational methods and techniques, data reduction and analysis. Laboratory activities include use of a telescope, CCD camera for data acquisition, data reduction and analysis, and presentation of results. 3 lectures, 1 laboratory. Prerequisite: ASTR 302.

ASTR 470 Selected Advanced Topics (1-4)

Directed group study of selected topics for advanced students. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1 to 4 lectures. Prerequisite: Consent of instructor.

ASTR 471 Selected Advanced Laboratory (1-2)

Directed group laboratory study of selected topics for advanced students. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1 to 2 laboratories. Prerequisite: Consent of instructor.