Undergraduate Astronomy Courses in Semesters

**ASTR 1000 Survey of Astronomy** Credit Hours: 3.0; Content: LECTURE (3.0); Prerequisites: ; Course Description: General introduction to astronomy, with emphasis on the structure of the universe beyond our solar system. Topics include historical astronomy, the sun, stars, galaxies, interstellar matter, black holes, the “Big Bang” theory, and the evolution of the universe. No prereq, but familiarity with basic algebra and geometry is beneficial.

**ASTR 1001 Moons and Planets** The Solar System Credit Hours: 3.0; Content: LECTURE (3.0); Prerequisites: ; Course Description: General introduction to astronomy, with emphasis on our solar system and other planetary systems. Topics (chosen by instructor) may include historical astronomy, the sun, the surfaces, interiors, and atmospheres of the planets, comets, asteroids, and meteor impacts, planets around other stars, and the origin of life. Also listed as PSC 1001. No prerequisites, but familiarity with basic algebra and geometry is beneficial.

**ASTR 1400 Observational Astronomy** Laboratory Credit Hours: 1.0; Content: LABORATORY (2.0); Prerequisites: ; Course Description: Experience with telescopes and locating stars, planets, and deep sky objects in the night sky. Also covers major constellations, seasonal variations, lunar cycles, and, when appropriate, eclipses and comets.

**ASTR 3251 Fundamentals of Astrophysics** Credit Hours: 3.0; Content: LECTURE (3.0); Prerequisites: PHYS 2052 and MATH 3300. Some experience with computer programming is recommended; Course Description: Physical foundations of astronomical observation and theory. Specific topics include time and coordinate systems, orbits, celestial mechanics, radiation mechanisms, spectra, telescopes, and instrumentation. In addition, an introduction to the physical properties of stars, galaxies, and interstellar matter and an overview of cosmological distance measurements and the "hot big bang" model will be covered, along with an introduction to astronomical data analysis.

**ASTR 3940 Astronomy Laboratory** Credit Hours: 1.0 - 3.0; Content: RESEARCH (1.0); Prerequisites: (ASTR 3251) OR (instructor's permission); Course Description: Telescope observations and other laboratory studies dealing with astronomy.

**ASTR 4201 Stellar Astrophysics and Radiation** Credit Hours: 3.0; Content: LECTURE (3.0); Prerequisites: ASTR 3251 & MATH 3400; Course Description: Introduction to radiative transfer, including radiation mechanisms, and formation of spectral lines; discusses the physics of the cold interstellar medium and its relationship to star formation; and provides an overview of stellar evolution and stellar remnants, including white dwarfs, supernovae, and neutron stars.

**ASTR 4202 Interstellar Medium and Galaxies** Credit Hours: 3.0; Content: LECTURE (3.0); Prerequisites: ASTR 3251 & MATH 3400; Course Description: Analysis of the physics of the warm and hot interstellar medium, including photoionization, thermal equilibrium, and shocks; overview of the structure and dynamics of the Milky Way and other galaxies; discussion of Galaxy formation and evolution, and their relationship to galaxy clusters and large-scale structure; introduction to the physics of active galactic nuclei.

**ASTR 4271 Observational Astrophysics** Credit Hours: 3.0; Content: LECTURE (2.0), INDEPENDENT (1.0); Prerequisites: ASTR 3251; Course Description: Provides a high-level introduction to modern observational techniques and instrumentation. Topics covered include use of CCDs for optical observations; factors determining measurement signal-to-noise ratio; detection and
measurement methods for optical imaging of astronomical sources; factors determining experimental design; and special considerations for radio and space-based observations. During the course of the semester students carry out an observational project, including project conception, data acquisition and analysis, and presentation of results.

**ASTR 4930 Studies in Astronomy** Credit Hours: 1.0-6.0; Content: INDEPENDENT (1.0); Prerequisites: ASTR 3251, instructor's permission; Course Description: Special studies in Astronomy under the supervision of a faculty member.