Astronomy (ASTR)

ASTR 1000. Introduction to the Universe. 3 Hours.
A survey of the universe, examining the historical origins of astronomy; the motions and physical properties of the Sun, Moon, and planets; the formation, evolution, and death of stars; and the structure of galaxies and the expansion of the Universe.

ASTR 1010K. Astronomy of the Solar System. 4 Hours.
Astronomy from early ideas of the cosmos to modern observational techniques. The solar system planets, satellites, and minor bodies. The origin and evolution of the solar system. Three lectures and one night laboratory session per week.

ASTR 1020K. Stellar and Galactic Astronomy. 4 Hours.
The study of the Sun and stars, their physical properties and evolution, interstellar matter, star clusters, our Galaxy and other galaxies, the origin and evolution of the Universe. Three lectures and one night laboratory session per week.

ASTR 2010. Tools of Astronomy. 1 Hour.
An introduction to observational techniques for the beginning astronomy major. Completion of this course will enable the student to use the campus observatory without direct supervision. The student will be given instruction in the use of the observatory and its associated equipment. Includes laboratory safety, research methods, exploration of resources (library and Internet), and an outline of the discipline.

ASTR 2020. The Planetarium. 1 Hour.
Prerequisites: ASTR 1000, ASTR 1010K, ASTR 1020K, or permission of instructor. Instruction in the operation of the campus planetarium and delivery of planetarium programs. Completion of this course will qualify the student to prepare and give planetarium programs to visiting groups.

ASTR 2950. Directed Study. 3 Hours.
Prerequisite: Consent of the instructor required. Supervised research on a specific astronomy project or topic as agreed upon by the instructor. A maximum of 6 credit hours may be taken, and they can only be applied toward the general elective requirements for the astronomy major.

ASTR 3220. Cosmology. 3 Hours.
Prerequisites: ASTR 1020K. A scientific and philosophical study of our perception of the universe, including the world views of Ptolemy, Copernicus, and Einstein.

ASTR 3400. Planetary Geology. 3 Hours.
Also offered as GEOL 3400. Prerequisites: ASTR 1010 or GEOL 1121 or GEOG 1113. Prerequisite or corequisite: PHSC 1100 or PHYS 1111 or PHYS 2211. A study of the geology of the terrestrial planets and solid-surface moons, asteroids, comets, and meteorites. The course will focus on comparative planetary geology, with emphasis on geologic processes on the surface, planetary interiors, and data collection methods such as remote sensing and image analysis.

ASTR 3800. Astrobiology. 3 Hours.
Prerequisites: Any one of the following: ASTR 1000, ASTR 1010K, ASTR 1020K, BIOL 1010, BIOL 1030, BIOL 2010, CHEM 1151K, CHEM 1211, PHYS 1111K, PHYS 2211K; and either MATH 1113 or MATH 2261. A multidisciplinary science course examining the possibility of extraterrestrial life in the solar system and the universe. Emphasis is on the definition of life from the perspectives of biology, chemistry, and physics, and the requirements for lifeforms. Extreme habitats where lifeforms might evolve will be explored in context with NASA's on-going exploration of the solar system and the search for intelligent life in the galaxy.

ASTR 4101. Observational Techniques I. 4 Hours.
Prerequisites: PHYS 2212K, ASTR 1010K, ASTR 1020K. Aspects of observational astronomy. Topics include spectroscopy, photometry, imaging, astrometry, and operation of the observatory.

ASTR 4102. Observational Techniques II. 3 Hours.
Prerequisite: ASTR 4101. Aspects of observational astronomy. Topics include radio astronomy, ultraviolet and x-ray astronomy, and data reduction techniques.

ASTR 4400. Physics of the Solar System. 3 Hours.
Celestial mechanics; physical features of the sun, planets, moons, and other material in the solar system.

ASTR 4410. Astrophysics. 3 Hours.
Prerequisite or corequisite: PHYS 4411. Radiative transfer in the stellar atmosphere, the interior structure of stars, stellar evolution, physical processes in gaseous nebulae and cosmology.

ASTR 4800. Internship in Astronomy. 3-6 Hours.
Active participation in research in astronomy, or in some field of science closely allied with astronomy, or work with a planetarium or museum which involves planetarium operations and programs. A daily log of activities, a report on the work done, and a research paper relating the work done to the field of astronomy are required.

ASTR 4900. Special Topics in Astronomy. 1-6 Hours.
Prerequisite: Consent of advisor and instructor. Topics to be assigned by instructor; may be taken more than once if topics are different; up to a total of 6 credit hours.

ASTR 4950. Directed Study in Astronomy. 1-6 Hours.
Prerequisites: Consent of advisor, instructor, and Department Head. Study in area or subject not normally found in established courses offered by the department; may also allow students to explore in more detail and/or depth an area or subject covered by the department in astronomy; up to a maximum of 6 credit hours.