

ASTRONOMY (AST)

AST 101. The Solar System. 3 Credit Hours.

An introduction to astronomy focusing on objects within the Solar System: structure and motion of the Earth and Moon; planetary motion; characteristics of the planets and smaller solar system bodies; planetary moons and rings; properties of the Sun; and discovery of exoplanets. Emphasis will be placed on astronomy as an observational science, including the use of quantitative analysis and the scientific method. Three lecture hours weekly.

AST 102. Stars, Galaxies, and the Universe. 3 Credit Hours.

An introduction to celestial objects and phenomena beyond the Solar System and their governing basic physical principles: galaxies, quasars, and the structure of the universe; dark matter and dark energy; the Big Bang; the Milky Way; the interstellar medium and the birth of stars; neutron stars and black holes. Emphasis will be placed on astronomy as an observational science, including the use of quantitative analysis and the scientific method. Three lecture hours weekly.

AST 103. Planetary Laboratory. 1 Credit Hour.

An optional laboratory experience to complement the material covered in AST 101. Lab activities provide a hands-on introduction to astronomy as an observational science and will focus on objects within our solar system. Topics include the motion of objects in the sky, the coordinate system used to locate astronomical objects, telescope design, and features of the planets and other objects within our solar system. If weather permits, lab sessions may be held outside where we will learn how to make astronomical observations using unaided eyes, binoculars, or a telescope. Three laboratory hours weekly. This lab course is not required to complete the Core Natural Science requirement. However, this course is required for the Astronomy Minor. Co-requisite: AST 101.

AST 104. Galactic Laboratory. 1 Credit Hour.

An optional laboratory experience to complement the material covered in AST 102. Lab activities provide a hands-on introduction to astronomy as an observational science and will focus on objects outside of our solar system, such as stars, star clusters, nebulae, and galaxies. Topics include the motion of objects in the sky, the coordinate system used to locate astronomical objects, telescope design, spectroscopy, and features of galactic and extra-galactic objects. If weather permits, lab sessions may be held outside where we will learn how to make astronomical observations using unaided eyes, binoculars, or a telescope. Three laboratory hours weekly. This lab course is not required to complete the Core Natural Science requirement. However, this course is required for the Astronomy Minor. Co-requisite: AST 102.

AST 200. Observational Astronomy. 3 Credit Hours.

A project-based introduction to the tools and techniques used to acquire and analyze astronomical data. Topics include astronomical coordinate systems; temporal reference systems; astronomical databases and catalogs; telescope design and optics; radiation and photon theory relevant to imaging; CCDs and other detectors; astronomical imaging, photometry, and spectroscopy; data analysis and astrophysical interpretation. Day and/or evening astronomical observation sessions may be required. Two hours of lecture two hours of laboratory weekly. This course is required for the Astronomy Minor. Prerequisites: AST 101, AST 102, AST 103, AST 104.

AST 350. Principles of Astrophysics. 3 Credit Hours.

An introduction to the application of physical principles such as classical mechanics, thermodynamics, E&M, and modern physics to understand the structure and evolution of stars, galaxies, and the Universe. Topics cover a large and representative fraction of the main elements of modern astrophysics, including stellar physics, stellar evolution, and stellar remnants; the interstellar medium; galactic structure; and big band cosmology. Prior completion of AST 101 or AST 102 is strongly desirable but not required. Three lecture hours weekly.

Prerequisite: PHY 203.

Corequisite: MTH 304.

Cross-listed Courses: PHY 350