

**NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
NAS 130 - ELEMENTS OF ASTRONOMY (4 CR.)**

Course Description

Covers the history of astronomy and its recent developments. Stresses the use of astronomical instruments and measuring techniques and includes the study and observation of the solar system, stars, and galaxies. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

General Course Purpose

This course serves as a one-semester laboratory science course for non-science majors and as a science elective for science majors. Students are exposed to the sciences of chemistry, physics, and geology and the philosophy of science as they relate to the study of the universe and the cosmos. Students will gain a perspective of humankind's presence on a small blue planet that orbits a non-descript star that is one of billions in an ordinary galaxy.

This course in conjunction with NAS 125 - Meteorology may fulfill the requirement as a one-year lab science course for non-science majors.

Course Prerequisites/Co-requisites

Prerequisite is placement into ENG 111 or division approval.

Course Objectives

Upon completion of this course, the student will be able to:

- describe the vastness of the cosmos in terms of time, mass, and space.
- explain the scientific method, the philosophy of science, and the difference between science, pseudoscience, and religion as related to the study of astronomy.
- list and describe the physical laws that govern the interaction of matter, energy, time, and space in the cosmos.
- state how astronomers utilize electromagnetic radiation to gain the knowledge of the mechanics of the birth, life, and death of stars from the distant past.
- appreciate the multitude of the scientific problem of the search for extraterrestrial life in the universe.

Major Topics to be Included

- The history of early astronomy
- The solar and planetary system
- The physics of light, gravity, matter, energy, magnetism, radioactivity, nuclear energy, and relativity
- The geology of volcanism, plate tectonics, and erosion as applied to the planets
- The birth and death of stars and galaxies
- The H-R diagram for stars...the main sequence, red giants and white dwarfs
- The "Big Bang" theory of universal creation, pulsars, neutron stars, and black holes
- Stellar and galactic evolution
- Normal and active galaxies
- Cosmology and life in the universe
- Laboratory work dealing with measuring instruments of the astronomer, and drawing conclusions from astronomical data

Extra Topics (Optional)

As available, the course may be supplemented with field trips to planetariums and observations, sky gazing sessions, guest speakers and discussions of new discoveries.