

Courses in Astronomy

ASTR 005 - Exploring the Cosmos

Survey of ancient astronomy, planets and moons, stars and their evolution, galaxies and quasars, and Big-Bang cosmology. Includes night sky observations.

Credits: 3

ASTR 023 - Astr Lab I: Measuring the Sky

Measurements of the properties of the planets, stars, and galaxies using graphical analysis, computer simulations and photographs. Prerequisites: Concurrent enrollment or credit in ASTR 5.

Credits: 1

ASTR 024 - Astronomy Lab II: Imaging Sky

Sky observations using binoculars, optical and radio telescopes. Observations are recorded with drawings, photographic film, and digital imaging devices. Some dark room work. Prerequisites: Concurrent enrollment or credit in ASTR 5.

Credits: 1

ASTR 057 - Hist/Pract Ancient Astronomy

A cross-cultural survey of astronomical practices of ancient peoples. Sky watching, time reckoning and calendar making. Constellations, astrological practices, and planetary theories. Prerequisites: ASTR 5 or other introductory science course.

Credits: 3

ASTR 095 - Special Topics

See Schedule of Courses for specific titles.

Credits: 1 to 18

ASTR 096 - Special Topics

See Schedule of Courses for specific titles.

Credits: 1 to 18

ASTR 153 - Moons & Planets

Celestial mechanics, formation of the stars, and planetary materials. Planets, satellites, asteroids, meteors, and comets. Planetary surfaces, interiors, and atmospheres. Origins of life. Prerequisites: ASTR 005; MATH 010 or equivalent.

Credits: 3

ASTR 155 - The Big Bang

Ancient cosmologies, beginning of time, origin of matter, cosmic background radiation, antimatter and dark matter, the expanding universe and origin of structure. Prerequisites: ASTR 005; MATH 010 or equivalent.

Credits: 3

ASTR 157 - Stars & Galaxies

Instruments and observations. Stars and their evolution. Black holes and compact objects. The interstellar medium. Relativity and galactic structure and galaxy formation. Prerequisites: ASTR 005; MATH 010 or equivalent.

Credits: 3

ASTR 177 - Spacecraft Astronomy

Survey of recent astronomical satellites such as Hubble, Chandra and Fermi LAT; their design, orbital characteristics and findings. Prerequisites: ASTR 005; MATH 010 or equivalent.

Credits: 3

ASTR 195 - Intermediate Special Topics

See Schedule of Courses for specific titles.

Credits: 1 to 18

ASTR 196 - Intermediate Special Topics

See Schedule of Courses for specific titles.

Credits: 1 to 18

ASTR 257 - Modern Astrophysics

(Same as Physics 257) Prerequisite: One 100-level course in physical science or engineering.

Credits: 3

ASTR 295 - Advanced Special Topics

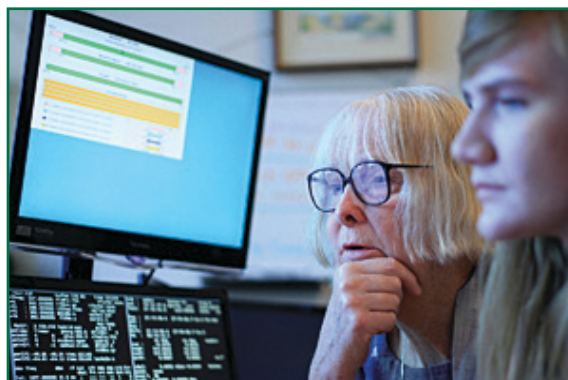
See Schedule of Courses for specific titles.

Credits: 1 to 18

ASTR 296 - Advanced Special Topics

See Schedule of Courses for specific titles.

Credits: 1 to 18



Professor Joanna Rankin



For More Information,
Contact Us:

Prof. Matthew White
mwhite25@uvm.edu

Learn more about our programs:

www.uvm.edu/astro/



Arecibo Radio Telescope.

ASTRONOMY @UVM



The University of Vermont

A Guide for Astronomy Minors

Astronomy is developing at the most rapid pace in history. Recent discoveries impact the very roots of science, from the nature of elementary particles to the prospects for intelligent life elsewhere in the universe. An understanding of these discoveries informs every field of study in your education, as well as developing analytical skills. It indicates to employers and graduate program administrators that you are curious about the cutting edge of science and grasp its significance.

The Astronomy Minor at UVM is intended for students who wish to explore the history and current developments of modern astronomy without an involvement in higher mathematics. Background physics important to the field is covered from the beginning. Emphasis is concentrated on concepts and the underlying principles more than quantitative problem solving. Those who intend to develop a professional career in astronomy should consider the Astrophysics Track within the Physics Major.

Typical subjects addressed in the Astronomy Minor include:

- *Constellations, coordinates and telescopes*
- *The evidence for dark matter and dark energy*
- *How we search for planets orbiting other stars*
- *The meaning and nature of curved space*
- *Indications of black holes in our universe*
- *Stellar modeling, birth and death*
- *The surfaces and atmospheres of our eight planets*
- *The origins of astronomy at the dawn of civilization*
- *The Big Bang and Inflationary Model cosmology*

Academic Requirements for the Astronomy Minor

- Sixteen hours in Astronomy, including:
- ASTR 005 (3 hrs)
- One of ASTR 023 or ASTR024 (lab, 1 hr)
- Nine hours selected from ASTR 153, 154, 157, 177 (3 hrs each)
- Three additional hours in Astronomy.



UVM astronomy student Mateus Teixeira (B.S. Physics '11) performing research at the Arecibo Radio Telescope in Puerto Rico.

Honors Thesis Research Projects

Each of these recent Honors Thesis research projects in Astrophysics has been published or is in the process of being published in a professional astronomy or astrophysics journal.

- Isabel Kloumann, "Dynamics, Stability and Applications of Neutron Star Radio Frequency Emission"
- Mateus Teixeira, "Geometry, Polarimetry and Stabilization Applications of Pulsar Radio Frequency Emission: An 'Anthropology' of Neutron Stars"
- Stephanie Young, "Core Emission and Nulling Phenomena in Pulsars"
- Emily Smith, "Dynamic Analyses of Radio Pulsar B1237+25's Emission and Polarization Modes"

A Guide for the Astrophysics Track of the Physics Major

The Astrophysics Track of the Physics Major or Minor is intended for students with a serious pre-professional interest in Astrophysics. A Ph.D. is needed for nearly all professional research or teaching positions, so the Astrophysics Track is designed to prepare students to gain admission to graduate school in Astrophysics.

Astrophysics Track students thus major or minor in Physics but specialize in Astrophysics by taking the Astrophysics course (PHYS 257), other related upper-level courses, and carrying out Astrophysics research toward graduating with an Honors Thesis. Students pursuing the Astrophysics Track have the opportunity to work directly with a faculty member and to use observations from a major observatory such as the Arecibo Observatory in Puerto Rico. Students and faculty at UVM regularly make such observations either remotely or by visiting and using a telescope directly.



UVM astronomy students Isaac Backus (B.S. Physics '10) and Isabel Kloumann (B.S. Physics '10) describing pulsar emission.