

ASTRONOMY



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AT HAMPSHIRE COLLEGE

The natural sciences form a set of theories, methods, and data for understanding the world in which we live. Science is not just information to learn; it is a process and way of thinking. Hampshire's School of Natural Science engages students deeply in interdisciplinary problem solving. Astronomy students at Hampshire take advantage of courses both on campus and throughout the consortium with the Five College Astronomy Department. The interlinking of Five College resources allows for a richer environment for doing astronomy research than would be possible if each operated independently. Moreover, by combining the traditional emphasis on small classes and individual attention that is found at small liberal arts colleges with the research opportunities and infrastructure of a large university, students can find a mix of fine teaching and rich opportunities for independent research.

Sample First-Year Course

Aliens: Close Encounters of a Multidisciplinary Kind

This course can be summed up as: everything you wanted to know about aliens but were afraid to ask (a scientist). The course will explore the topic of extraterrestrial intelligence from the perspective of several different fields. We will look at the history of UFO sighting claims and analyze the reliability of eye-witness testimonies, explore psychological and sociological reasons behind claims of alien abductions, and analyze the current state of the search for extraterrestrial intelligence (SETI) from the perspective of astronomy and planetary research. We will also examine how film and television have shaped our view of aliens in popular culture. We will conclude the course by looking at religions that have been inspired by UFOs and extraterrestrials.

Student Project Titles

The Air on Mars
A Community Builds a Telescope
Cosmology: Where We Are
Essentials of Research Astronomy
Galaxies of Learning
The Hampshire Astronomical Research Program
Planetary Science: Exploration of The Galaxies
A Study in Astrophysics
Water on Mars

Sample Courses

At Hampshire

Aliens: Close Encounters of a Multidisciplinary Kind
Astronomy and Public Policy
Astrophysics of Stars and Galaxies
Baby Clusters: an Investigation of Young Star Clusters in the Milkyway
Calculus in Context
Cosmology
Inventing Reality: the Human Search for Truth
The Lure of the Paranormal
Physics I: Intro to Classical Mechanics
Revolutionary Ideas in Science
Science in the Islamic World

Through the Consortium

Astronomical Orbs (UMass)
Astronomy & Physics Onstage (AC)
Cosmic Perspective (MHC)
Cosmology (AC, MHC, SC, UMass)
Cosmology and General Relativity (UMass)
Exploring the Universe (UMass)
Extragalactic Astronomy (UMass)
History of Astronomy (MHC, SC, UMass)
History of the Universe (SC)
Introduction to Astronomy (SC)
Introduction to Astrophysics (AC, SC)
Modern Astrophysics (MHC, UMass)
Planetary Science (AC, SC, UMass)
Sky I: Time (SC)
Sky II: Telescopes (SC)
The Sky (MHC)
The Solar System (UMass)
Survey of the Universe (SC)

(continued on reverse)

Faculty Profiles

Salman Hameed, assistant professor of integrated science and humanities

Salman Hameed holds a Ph.D. in astronomy from New Mexico State University at Las Cruces and a B.S. in physics and astronomy from the State University of New York at Stony Brook. He has taught astronomy classes as well as interdisciplinary courses on critical thinking, science public policy, and history of science. His current research interests include star formation in spiral galaxies, nature of small dusty galaxies in the early universe, reasons for the spread of paranormal beliefs among college students, modern Creation movements in the Islamic world, and reconciliation efforts over sacred objects and places of astronomical importance (e.g. Tomanowos/Willamette meteorite and observatories at Mauna Kea).

Facilities and Resources

The Hampshire College Observatory was established in 2004 in a joint effort by Natural Science Division III student, Sam Singer, and Five College Astronomy Fellow, Douglas Leonard. It was made possible by generous grants from the School of Natural Science at Hampshire College, the Howard Hughes Medical Institute, and the Lemelson Assistive Technology Development Center—located adjacent to the observatory. The observatory, called H.A.R.P. after the title of Sam Singer's Division III Project, The Hampshire Astronomical Research Program, serves Hampshire and Five College students as a resource for astronomical research and artistic, astrophotography projects. It is also open to local communities for public observing nights. The observatory is equipped with a 12" Meade LX-200 GPS SCT telescope, a 14.5" truss-mounted telescope, built by Singer, and an 8" Classical Dobsonian constructed by students during a January Term class in 2002. For photometry or astrophotography a SBIG STV Integrating Video CCD Camera with scientific grade UBVR filter wheel is available. Spectroscopic research is also possible with our Sivo Scientific Fiber Optics Spectrometer.

The Five College Astronomy Department has several major research programs, including: the Five College Radio Astronomy Observatory which operates a 14-m radio telescope near the Quabbin reservoir; the 2-Micron All Sky Survey, which has mapped the sky at infrared wavelengths; and the Large Millimeter Telescope, recently constructed in Mexico. Faculty supervise research programs using supercomputers, satellite observatories, and major telescopes around the world. The Five College Astronomy Club holds star parties, uses the wide variety of optical telescopes available in the valley, and offers workshops. In addition, the Amherst Area Amateur Astronomy Association is a very active local astronomy club with many public activities.

