PHYSICS (ASTROPHYSICS) 2009-10

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

The Physics (Astrophysics) Major

The physics (astrophysics) major, administered by the Physics Department, combines a core physics major with advanced electives in astrophysics, an astrophysics laboratory course, and senior thesis work on a topic in astrophysics. It is a rigorous program designed to prepare students for a broad range of technical careers or for entry into graduate or professional programs. Curriculum sheets are available from the Physical and Biological Sciences Undergraduate Affairs web site at ***undergrad.pbsci.ucsc.edu*** to clarify physics (astrophysics) program requirements.

Study and Research Opportunities

- B.S. and undergraduate minor (minor is administered by the Astronomy and Astrophysics Department)
- Qualified undergraduate physics (astrophysics) majors have the opportunity to work individually with a faculty member on the senior thesis.

High School Preparation

High school students wanting to major in physics (astrophysics) should come to UC Santa Cruz prepared to take calculus in their first quarter in order to concurrently take the Physics 5 series, calculus-based physics for physics majors.

Transfer Preparation

Transfer students can best prepare by taking courses equivalent to the lower-division requirements for the physics (astrophysics) major. Due to the prerequisite structure for upper-division courses, it is necessary for prospective transfer students to have completed all, or as many of the lower-division requirements for the major as possible to complete the degree within a reasonable time. In addition, transfer students must complete courses equivalent to the Physics 5 series, calculus-based physics for physics majors, with a GPA of 2.7 or higher before they will be permitted to enter a physics major, effective with Catalog year 2009-10. This will not necessarily affect physics transfer students entering fall 2009, since they can elect Catalog rights up to three years previous to their enrollment.

The Intersegmental General Education Transfer Curriculum (IGETC) will not provide transfer students with enough mathematics and science courses to allow them to complete the program at UC Santa Cruz in two years. Prospective transfer students should visit the Physical and Biological Sciences Undergraduate Affairs web site at ***undergrad.pbsci.ucsc.edu*** for further information (see the *For More Information* section). In addition, please see the *Lower-Division Requirements* section.

Lower-Division Requirements

The required lower-division courses for the physics (astrophysics) major are normally completed during the first two years at UC Santa Cruz:

- Physics 5A/L, *Introduction to Physics I with Laboratory*
- Physics 5B/M, *Introduction to Physics II with Laboratory*
- Physics 5C/N, *Introduction to Physics III with Laboratory*
- Physics 5D, *Heat, Thermodynamics, and Kinetics*
- Mathematics 19A-B, *Calculus for Science, Engineering, and Mathematics* (two quarters), or Mathematics 20A-B, *Honors Calculus* (two quarters)
- Mathematics 23A-B, *Multivariable Calculus* (two quarters)

Recognition

In 2003, the Institute for Scientific Information ranked UC Santa Cruz first in the nation for research impact in the space sciences.

Sandra Faber, University Professor of astronomy and astrophysics, received the 2009 Bower Award and Prize for Achievement in Science from the Franklin Institute for "extraordinary advances in our knowledge of the properties of distant galaxies, dark matter, large scale structure of the Universe, and black holes in galactic nuclei; and for innovative leadership in the development of astronomical facilities."

Professor of astronomy and astrophysics Steven Vogt and his partners on the California and Carnegie Planet Search Team were chosen by the American Astronautical Society and the Planetary Society to receive the 2002 Carl Sagan Memorial Award.

In 2006, professor of astronomy and astrophysics Stanford E. Woosley was elected to the National Academy of Arts and Sciences.

In 2008, professor of astronomy and astrophysics Claire Max was elected to the National Academy of Sciences in recognition of her distinguished achievements in original research. Professor Max directs the Center for Adaptive Optics, a Science and Technology Center funded by the National Science Foundation and headquartered at UCSC.

Careers

Administration
Astronomy
Biophysics
Chemistry
Computer science
Engineering
Geophysics
Law
Mathematics
Medicine
Research and development
Teaching
Technical writing

These are only samples of the field's many possibilities.

Alum Focus

The undergraduate major in physics (astrophysics) was established in fall 2001. However, through its other programs, UC Santa Cruz has a long history of producing top-level astronomers and astrophysicists. Below are a few of our well-known alumni in the field:

Dr. Alan Dressler (Ph.D., astronomy, '76) is an astronomer with the Observatories of the Carnegie Institution of Washington. For his leadership in space astronomy, he received NASA's Public Service Medal.

Dr. Steven A. Hawley (Ph.D., astronomy and astrophysics, '77) has been a NASA astronaut since 1978. He is former associate director of NASA's Ames Research Center and served as director of astromaterials research and exploration science at NASA's Johnson Space Center until his retirement in May 2008.

Dr. Geoffrey W. Marcy (Ph.D., astronomy, '82) is part of a team recognized worldwide for its success in finding planets around stars in other solar systems.

Dr. Kathryn D. Sullivan (B.S., Earth sciences, '73) is a former NASA astronaut who was the first American woman to walk in space. Recognizing her lifelong work in science education, the National Science Board awarded her its Public Service Medal in 2003. Soon after, she was appointed to that board by the President of the United States, and now serves as vice chairman. She currently serves as the founding director of the Battelle Center for Mathematics & Science Education Policy in the John Glenn School of Public Affairs at Ohio State University.

Academic Advising

Academic advising is available from Physical and Biological Sciences Undergraduate Affairs. Undergraduate Affairs publishes the web site ***undergrad.pbsci.ucsc.edu,*** which contains detailed information about the degree programs, sample schedules, transferring credit, placement exams, faculty research, and opportunities in the Physical and Biological Sciences majors.

For More Information

For further information about the physics (astrophysics) major, see:

reg.ucsc.edu/catalog/html/programs_courses/physPS.html

Information about the physics (astrophysics) major can be found at: ***undergrad.pbsci.ucsc.edu/programs/physics*** or by e-mailing physicsadvising@ucsc.edu.

For specific information regarding Physics Department faculty and research, please visit the department web site at: ***physics.ucsc.edu.***

If you have other questions, contact:
Undergraduate Affairs
Physical and Biological Sciences
387 Thimann Laboratories
University of California, Santa Cruz
1156 High Street
Santa Cruz, California 95064
(831) 459-4143
undergrad.pbsci.ucsc.edu