ASTRONOMY

Mission Statement

The UH Hilo academic astronomy program takes as its mission the utilization of the astronomy infrastructure of Mauna Kea and University Park in providing students with high levels of knowledge of astronomy, and of training in modern methods of observational astronomy. The B.S. degree program provides the training needed for students seeking careers in astronomy, both as professional research astronomers and as observatory technical staff members. The astronomy program also provides the astronomy components of the Natural Sciences degree and General Education programs, for the enrichment of students in a field of major importance to the State of Hawai`i.

Goals & Objectives

I. I. Acquisition of basic knowledge of all major fields of modern astronomy, and of understanding of the relations between astronomy and other areas of science and knowledge.

   a. Development of a broad understanding of the Universe and its components, through lower-division survey courses.
   b. Development of a deep understanding of the central areas and issues of modern astronomy, through upper-division topical astrophysics courses.
   c. Development of understanding of the connections between modern astronomy and of other areas of human knowledge, through general education courses accessible to non-science students and appropriate components in courses provided for astronomy majors.

II. II. Acquisition of advanced training in all aspects of modern observational astronomy and related research methods.

   a. Training in methods of modern observational astronomy at both the lower and upper division levels, the latter incorporating the expertise of Mauna Kea observatories staff members.
   b. Experience in research methods in astronomy through cooperative research programs with both UH Hilo faculty and observatory scientific staff members, utilizing the observatories and instruments of Mauna Kea.
   c. Advanced training in observatory operations through internships in Mauna Kea observatories.

III. III. Acquisition of a deep understanding of the physical principles underlying modern astronomy.

   a. Training in the basics of mechanics, optics, electromagnetism, atomic structure, and modern physics; through lower and upper division physics coursework.
   b. Acquisition of skills in experimental science through lower and upper division physics/astronomy laboratory courses.
c. Adequate preparation of students to compete for entry into post-graduate programs in astronomy and physics.

IV. Development of basic skills in computational and data analysis techniques of current importance in research astronomy and observatory operations.
   a. Knowledge of numerical computational techniques applicable in astronomy, through lower division courses in computational physics and computer science.
   b. Programming and computer operations skills commonly used in theoretical and observational astronomy/observatory operations, acquired through upper division courses in computer workstation applications.
   c. Training in computerized data analysis techniques in modern observational astronomy, through lower and upper division coursework and research projects mentored by faculty.

V. Acquisition of basic scientific reasoning, critical thinking, and communications skills.
   a. Development of scientific reasoning and critical thinking skills by exposure to numerous examples and open-ended assignments, and by exposure to original research problems through faculty mentored projects and senior theses.
   b. Development of communications skills appropriate to scientists through writing assignments in astronomy & physics classes, formal training in technical writing via the English department, composition of a senior thesis, and participation in senior seminar.