

# Science Resources

## Center for Aerospace Education

The Center for Aerospace Education (CAE), which was piloted in 1985 and officially established in October 1986, supports Windward CC's credit and community outreach programs in aerospace science. The mission of the CAE is to inspire students to actively engage in science activities through informal experience and formal education, to explore career options in aerospace science and industry, and to become informed, contributing citizens by becoming science-literate.

The following facilities and services are offered by the CAE:

- Aerospace Exploration Lab
- Hōkūlani Imaginarium
- NASA Flight and Rocketry Lab
- Lanihuli Observatory
- Hawai'i Space Grant Consortium–Windward

The CAE also sponsors teacher workshops and offers consultation to students and teachers on aerospace education and science projects. Visit the CAE's online educational resources at <http://aerospace.wcc.hawaii.edu/HokulaniOnlineResources/Main.html>

The goals of the CAE are to:

- help students develop high-tech skills to succeed in a knowledge-based global economy;
- increase enrollment and success of K-12 students in science, mathematics and technology courses in pre-college grades;
- generate greater interest in careers in science and engineering, and help facilitate the successful transition of students from high school to post-secondary institutions;
- increase the number of underserved students entering college who choose to major in science, technology, engineering and mathematics (STEM) and have the skills necessary to successfully complete their higher education.

For more information, call 808-236-9111 or visit <http://aerospace.wcc.hawaii.edu/>.

## Aerospace Exploration Lab

The Aerospace Exploration Lab (AEL), which is managed by the College's Center for Aerospace Education, provides instructional materials and services in astronomy, astronautics (rocketry), aeronautics (aviation), and atmospheric science (weather and climate). Founded in 1989, this educational resource center acts as a "hands-on" science exploratorium, assisting K-12 students and teachers in discovering scientific principles through low-tech experiential activities.

The AEL also houses a library of aerospace books, magazines, videos, posters, curricular programs, and demonstration models. School tours of the Aerospace Exploration Lab are available on a reservation basis. Visitors can explore the world of science at the Discovery Pad—a hands-on exploratorium, as well as view numerous displays depicting air and space exploration from early flight to the future.

The Aerospace Exploration Lab is located in Hale 'Imiloa 135 (Science Building). All services are free of charge. For inquiries and reservations call 808-235-7321, or visit <http://aerospace.wcc.hawaii.edu/AEL.html>.

## Hawai'i Space Grant Consortium—Windward

Windward Community College is a participating member of the Hawai'i Space Grant Consortium (HSGC), which promotes student involvement in space science education. Each semester, a limited number of stipends are available to college students engaged in space-related projects. Students choose a topic under the guidance of a faculty mentor with whom they work throughout the semester. Past projects have included space science curriculum development, astronomical observations, remote sensing of the earth, space art, and zero-g research through the NASA Reduced Gravity Student Flight Opportunities Program on-board its KC-135A aircraft. Windward CC Space Grant students are currently engaged in the design and construction of

high-powered rockets and small payloads through Project Imua. To date, students have successfully launched four scientific payloads into outer space from NASA Wallops Flight Facility in Virginia. Other students are engaged in astronomy internships at the Lanihuli Observatory and Imaginarium. Each semester, students have the opportunity to present their work at the HSGC Fellowship Symposium. HSGC-Windward is located in Hale 'Imiloa 112 and managed by the College's Center for Aerospace Education (CAE). Call 808-236-9111 or visit <http://aerospace.wcc.hawaii.edu/HSGC.html>. For info on Project Imua, visit <http://imua.wcc.hawaii.edu/>.

## Hōkūlani Imaginarium

The Hōkūlani Imaginarium is a high-tech, multimedia planetarium and scientific visualization theater under the management of the College's Center for Aerospace Education. Opened in the summer of 2000 and officially dedicated in October 2001, the Imaginarium supports the College's astronomy and Polynesian navigation curricula and community outreach efforts. The Imaginarium consists of a fulldome, high-definition (4k) projector system with 5.1 digital surround-sound audio. Its 84 seats are equipped with interactive buttons for audience participation. This facility is available for K-12 visits as well as group and public shows. For school tours, call 808-235-7321. An admission fee is charged for shows. For public and private shows, as well as general information, call the Imaginarium manager at 808-236-7350 or visit <http://aerospace.wcc.hawaii.edu/imaginarium.html>.

A 32" bronze armillary sundial with a Polynesian theme is situated on the northeast lawn of the Imaginarium. For more information, visit <http://aerospace.wcc.hawaii.edu/Sundial/Sundial.html>.

## Lanihuli Observatory

Lanihuli Observatory is an astronomical and meteorological observatory under the management of the College's Center for Aerospace Education (CAE). Dedicated in Oct 2007, Lanihuli Observatory supports the College's astronomy labs, HSGC student projects, K-12 outreach, and the general public. This facility includes:

- NOAA weather satellite tracking station providing real-time images of the weather and ocean conditions surrounding Hawai'i as well as an on-site weather station.
- Radio telescope operated in partnership with NASA Goddard Space Flight Center's Radio Jove Project. Radio observations of Jupiter and the sun are streamed to students around the world via the Internet.
- Solar telescope (heliostat) consisting of a 6-inch refractor capable of white light projection and direct H-alpha viewing.
- 16-inch optical Schmidt-Cassegrain telescope under an automated 16-foot dome.
- A 5-inch refractor is mounted on the main telescope.
- Cosmic ray telescope operated in affiliation with Fermilab's QuarkNet project.
- Visitor's Gallery with library and earth/space science kiosks including a 24-inch Magic Planet display.

The Lanihuli Observatory is available to the general public after evening Imaginarium shows. There is no charge to visit this facility. To schedule a tour, contact 808-235-7321.

For more information, visit [http://aerospace.wcc.hawaii.edu/lanihuli\\_observatory.html](http://aerospace.wcc.hawaii.edu/lanihuli_observatory.html).

## NASA Flight and Rocketry Lab

The NASA Flight and Rocketry Lab houses flight simulators and a STEM lab for developing high-power rockets and small payloads for space flight. Located in Hale 'Imiloa 112, this facility provides support for the following CAE programs:

- Hawaii Space Grant Consortium: students funded through HSGC fellowships carry out their research projects at this STEM lab. Visit: <http://aerospace.wcc.hawaii.edu/HSGC.html>.
- Project Imua Headquarters: funded through HSGC, Project Imua is a joint faculty-student enterprise of multiple University of Hawai'i Community College campuses devoted to the development of high-power rockets and small payloads for space flight. Visit: <http://imua.wcc.hawaii.edu>.
- NASA Flight Training Aerospace Education Laboratory: established in 2002 in partnership with NASA's Glenn Research Center for students in grades six and above to explore careers in aerospace science and engineering.

- High-Power Rocketry Lab: this STEM-based lab is equipped to support student research in high-power rocketry and the design and fabrication of small payloads. The lab includes a shake table, vacuum chamber, wind tunnel, zero-G drop tower and electronics lab as well as an outdoor static rocket motor test facility.

For more information, visit: [http://aerospace.wcc.hawaii.edu/NASA\\_Flight\\_Rocketry\\_Lab.html](http://aerospace.wcc.hawaii.edu/NASA_Flight_Rocketry_Lab.html).