The Department of Mechanical Engineering has approximately 14 faculty members, 330 undergraduate students, and 60 graduate students, with research expenditures averaging $2 million per year.

The Department’s outstanding graduates are highly sought-after and are successful in both academia and industry. Currently, the Department has one ASME fellow and one journal associate editor, as well as a number of NSF Career/PYI awardees and faculty members who possess the UH Regents’ Medal for Excellence and Presidential Citation in Teaching. In addition, one of our faculty members is the recipient of the Innovative Young Educator of the Year, awarded in 2011 by the ASEE.

Faculty members have been successful in patenting their technologies and founding start-up companies, and many have publications in highly reputable journals, such as Science and Nature Materials, and have received numerous best-paper awards in both journals and conference proceedings. In fact, one of our faculty members is cited in the 2007 Guinness Book of World Records for the creation of world’s smallest multi-functional nanobrush.

Both students and faculty members have claimed numerous awards over the years. Between 2008 and 2013, faculty members took top honors four times in the Business Plan Competition, sponsored by the UH Manoa Shidler College of Business; they also placed second twice during this same timeframe. Since 2010, students have ranked highly in the UH-wide Breakthrough Innovation Challenge, to include one first-place and two second-place finishes.

The Department has a very rigorous senior design project where real-life products are developed, and many design teams participate in national and international design competitions. Many designs are partially sponsored by The Boeing Company.

The Department offers both an MS and PhD in three areas of concentration:

**MECHANICS DESIGN/SYSTEMS/CONTROLS**: Study includes robotics, biomedical engineering, mechatronics, vibration, dynamics, control, autonomous space and ocean systems, energy harvesting, renewable energy, smart structures, rehabilitation engineering, and mechanical and biomedical design.

**THERMAL/FLUID SCIENCES**: Study includes energy conversion, alternative energy, heat and mass transfer, two-phase flow, micro-electronic cooling, water desalination, biocolloids fluids, acoustics, bioengineering, combustion, fluid dynamics, thermal environmental engineering, computational fluid dynamics, and computer modeling and simulations.

**MATERIALS/MANUFACTURING**: Study includes mechanical behavior, processing and manufacturing of advanced materials, composites, thin films, electrochemistry, corrosion, and nanotechnology.

The University of Hawai‘i at Mānoa Office of Graduate Education provides opportunities for further study, research and professional training to students who have earned a bachelor’s degree from an accredited institution of higher learning. All of the graduate programs at the University of Hawai‘i at Mānoa apply rigorous academic standards. Special emphasis is placed on the cultivation of scholarly attitudes and methods of research and creative activity. For further information, visit: manoa.hawaii.edu/graduate/

The University of Hawai‘i at Mānoa is one of only 32 institutions nationwide to hold the distinction of being a land-, sea-, and space-grant research institution. UH Mānoa recently ranked in the top 30 public universities in federal research funding for engineering and science and 49th overall by the National Science Foundation. In fiscal year 2012, UH Mānoa received $317 million in extramural awards, with research awards totaling $223 million. Five of UH Mānoa’s faculty currently are members of the National Academy of Sciences. For further information, please visit: manoa.hawaii.edu/
MS Program
This program requires 30 credits, culminating in a written and/or oral exam. Students choose to complete either a thesis or non-thesis option, those who do not possess a BS in mechanical engineering must first fulfill a set of further requirements, in terms of course work.

PhD Program
Applicants to the PhD program must have completed the requirements for the MS in mechanical engineering at UH Mānoa or an equivalent degree from a reputable institution. Students must satisfactorily complete a minimum of 50 credits in course work beyond the BS. Students entering the PhD program may be granted an equivalence of up to 30 credits, earned as part of the student’s MS program, that may include up to eight credits for previous MS thesis work. Students also are required to take one course outside their major area of study within the following three areas of concentration: 1) mechanics design/systems/controls, 2) materials/manufacturing, or 3) thermal/fluid sciences.

In addition, the Department is in the process of establishing a Direct PhD Program, where the minimum entrance requirement is a bachelor’s degree in mechanical engineering or related fields. Direct PhD students also must satisfactorily complete a minimum of 50 credits in course work beyond the BS.

Every PhD student must pass an oral comprehensive examination after completing the course work to demonstrate the student’s comprehension of the chosen areas of study relevant to the dissertation proposal and basic knowledge of courses taken. Students attain the status of doctoral candidate and ABD (all but dissertation) after passing the comprehensive exam.

Students are required to complete a satisfactory doctoral dissertation and to pass an oral final examination primarily based upon the dissertation, the findings of which should be publishable in refereed journals and other scientific and engineering forums.

Funding Support
The Department offers teaching assistantships and individual department faculty offer research assistantships. Once they have applied to the graduate program, students are encouraged to discuss the availability of financial support with the graduate program chair. Prospective students also are encouraged to consult with individual faculty. Please refer to the faculty research guide, available at: www.eng.hawaii.edu/news-publications/publications/

How to Apply
Visit the University of Hawai‘i at Mānoa Office of Graduate Education website, or go directly to: manoa.hawaii.edu/graduate/content/how-apply

The College of Engineering and the University of Hawai‘i at Mānoa
The College of Engineering is a multifaceted institute comprised of approximately 35 faculty members, 950 undergraduate students, and 180 graduate students, with external funding of $8.5 million per year. The Department of Mechanical Engineering plays a significant role in the broader research interests of the College:

- SUSTAINABILITY: The College takes inspiration from traditional Native Hawaiian land management systems, once able to sustain large populations, in order to create programs that address the challenges now faced by the islands. Such examples include building and maintaining renewable energy resources, providing clean drinking water, mitigating the effects of sea-level rise associated with global warming, becoming resourceful recyclers and re-manufacturers, minimizing the need for imported goods and sustaining a pristine environment.
- INFRASTRUCTURE IN SUPPORT OF THE ENVIRONMENT: Graduates of our College are employed throughout the state to manage all aspects of its environment, from its buildings and roadways, to its harbors, sea defenses and water and waste systems, thus making it imperative that we retain capacity in order to continually service Hawai‘i’s future growth.
- IT AND CYBER SYSTEMS: The College is well known for its contributions to “clean” technologies such as information technology (IT) and communications infrastructure, which will be central to the future of Hawai‘i’s industry.
- RESEARCH CLUSTERS: The College also has identified eight cross-cutting research clusters that all departments and centers in the College contribute toward:
  - Autonomous Systems and Robotics
  - Biomedical Engineering
  - Computer and Computational Engineering
  - Sustainable Materials and Manufacturing Technology
  - Renewable Energy and Island Sustainability
  - Water, Waste and Environmental Engineering
- Research Clusters: Areas have been chosen to reflect faculty interest and expertise, as well as the evolving needs of Hawai‘i. They also represent some of the main interests of the College’s collaborators in their research efforts inside the University, within the local community and further afield. The College is especially interested in extending these relationships to local and mainland companies, U.S. mainland and Asian universities, as well as other potential partners.

Anthony Sylvester pilots the Deep Discoverer ROV while working on the R/V Okeanos Explorer. Photo courtesy of Okeanos Explorer.

The future of Hawai‘i’s industry.

Contribution to “clean” technologies such as information technology (IT) and communications infrastructure, which will be central to the future of Hawai‘i’s industry.

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