



## Picture Yourself



- discovering novel bioactive compounds from microbes and other organisms
- engineering powerful and stable enzymes for biological catalysis
- producing biofuels and bioenergy from renewable feedstocks
- remediating pollution with living systems that thrive on wastes
- designing bioreactors to produce life-saving medicines or tissues for medical replacement
- developing molecular tools and sensor systems for rapid detection of biological pathogens
- creating sustainable systems for production and processing of food and other biological materials
- planning effective strategies to manage our natural resources



## Want More Information?

To learn more about Biological Engineering, visit our website:  
[www.ctabr.hawaii.edu/acad](http://www.ctabr.hawaii.edu/acad)

For other pertinent information regarding being a student at UH-Mānoa, visit the UH website: [www.hawaii.edu](http://www.hawaii.edu).

You may also contact . . .

### For admission:

Office of Admissions and Records  
University of Hawai'i at Mānoa  
2600 Campus Road, QLC 010  
Honolulu, HI 96822 USA  
Phone: 808-956-8975  
Toll Free in USA: 800-823-9771  
Fax: 808-956-4148  
E-mail: [ar-info@hawaii.edu](mailto:ar-info@hawaii.edu)  
Web: [www.hawaii.edu/admrec](http://www.hawaii.edu/admrec)

### For financial aid:

Financial Aid Services  
University of Hawai'i at Mānoa  
2600 Campus Road, QLC 112  
Honolulu, HI 96822 USA  
Phone: 808-956-7251  
Fax: 808-956-3985  
E-mail: [finaid@hawaii.edu](mailto:finaid@hawaii.edu)  
Web: [www.island.hawaii.edu/finaid](http://www.island.hawaii.edu/finaid)

### For employment opportunities:

Career Development and Student Employment Office  
University of Hawai'i at Mānoa  
2600 Campus Road, QLC 212  
Honolulu, HI 96822 USA  
Phone: 808-956-7007  
Fax: 808-956-4082  
E-mail: [cdse@hawaii.edu](mailto:cdse@hawaii.edu)  
Web: <http://cdse.hawaii.edu>

### For housing (on and off campus):

Student Housing Services  
2555 Dole Street, Frear Hall  
Honolulu, HI 96822 USA  
Phone: 808-956-8177  
Fax: 808-956-5995  
E-mail: [uhmsh@hawaii.edu](mailto:uhmsh@hawaii.edu)  
Web: [www.housing.hawaii.edu](http://www.housing.hawaii.edu)

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Be Where the Action Is in Science and Technology!  
**Join Us!**

Office of Academic and Student Affairs  
Dr. Charles Kinoshita,  
Associate Dean

Science and Technology in Action!

MAJOR

## Biological Engineering



**Do you want to make the world a better place?**

# Biological Engineering

## Do you

want to help build a more sustainable society with renewable energy, reliable food production, life-saving medicines, and healthy natural resources?

## Then Biological Engineering is for you!

Biological Engineering (BE) is a field of engineering in which the emphasis is on life and life-sustaining systems. Biological engineers study the design, production, and operation of engineered systems in which living organisms (plants, animals, aquatic species, cells, etc.) are a major component. They approach problems in the context of the whole system to balance society's demand for products from biological resources (e.g., food, fiber, and higher-value products) with environmental integrity and economic success.



- The Biological Engineering program gives students a unique opportunity to explore the fundamentals of engineering and biology and the application of engineering to biological systems. Our educational objectives are to
  - provide students with the fundamentals of engineering
  - train students to become engineers with the skills to design, manufacture, test, and operate systems in which living organisms or biological products are a significant component
  - produce graduates that have the skills to function in modern society, as is expected of a professional engineer with a baccalaureate degree.

As a BE student, your course work will focus on biology, chemistry, physics, and math, as well as fundamental and applied engineering topics. The capstone of your educational experience is a two-semester engineering design course where you will have the opportunity to use your knowledge and skills to address real design problems in biological engineering.

In the Biological Engineering program, you will benefit from small class sizes, student-centered, cutting-edge laboratory and design experiences, and one-on-one interactions with faculty. The program is accredited by the Accreditation Board for Engineering and Technology (ABET).

## Work with Top Professors

Learn with an internationally recognized faculty that includes licensed professional engineers with broad-ranging expertise such as bioenergy production, molecular and protein engineering, bioprocess control systems, biochemical engineering, aquacultural engineering, wastewater engineering, engineering economics, and biosensor design.

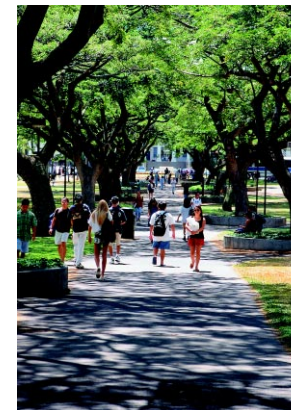


## Use Cutting-Edge Technology

Design your ideas using modern facilities for computer-aided design and simulation.

Build your designs using a variety of engineering tools including traditional shop machines, laser engravers, hydraulic systems, motors and other actuators, circuit board layout and printing, and digital controllers.

Test the performance of your design with state-of-the-art instrumented bioreactors, computer data acquisition systems, biosensors, and biochemical separation and analysis systems.



## Team up with Award-Winning Students

Our students are routinely recognized with awards locally, nationally, and internationally for their scholarly activity and are regularly published in peer-reviewed literature.

Our alumni have distinguished themselves in a variety of engineering and biology-related careers, and many continue their studies at prestigious universities such as Stanford, MIT, and Cornell.

## Open Doors to New Careers and Opportunities

Obtaining a BS in Biological Engineering will prepare you for a wide variety of careers. Our graduates design process equipment and systems for biological production and treatment, implement site preparation for construction or bioremediation of environmental contamination, develop processes to derive renewable energy from biological materials, and investigate methods for improving the value of natural products for food and therapeutic applications. Increasing numbers of our graduates are meeting demands from growing biotech industries; for example, for the production of systems for culturing human tissues for medical replacement and for screening, extracting, and producing antibiotics and other pharmaceutical compounds from Hawai'i's unique natural biota.

A degree in Biological Engineering also prepares students for graduate school, not only in BE but in medicine, law, and business, which all value the versatility and analytical rigor of the field. Graduates also fill vital research and regulatory positions in state and federal agencies to preserve and enhance the value of our natural resources.

## For Fun and Friends

Join your fellow students in the Biological Engineering Student Association, an affiliate of the American Society of Agricultural and Biological Engineers. The campus at the University of Hawai'i at Mānoa offers a wide range of student activities for education and entertainment and is set in one of the most remote and pristine natural environments in the world.



## Are You Prepared?

To succeed in biological engineering, you should have a strong interest and preparation in mathematics and the biological and physical sciences, as well as in written communication.

Students newly admitted to the University of Hawai'i at Mānoa can enroll directly into the Biological Engineering program, and transfer students from other programs who are in good academic standing can also enroll in the program.



## We're Here to Help

- *Contact the Department of Molecular Biosciences and Bioengineering*  
Undergraduate Advisor, Biological Engineering  
College of Tropical Agriculture and Human Resources  
University of Hawai'i at Mānoa  
Agricultural Sciences 218  
1955 East-West Road  
Honolulu, HI 96822 USA  
Phone: (808) 956-8384  
Fax: (808) 956-3542  
E-mail: [ugabe@hawaii.edu](mailto:ugabe@hawaii.edu)  
Web: [www.ctahr.hawaii.edu/be/welcome.html](http://www.ctahr.hawaii.edu/be/welcome.html)
- or
- Office of Academic and Student Affairs  
College of Tropical Agriculture and Human Resources  
University of Hawai'i at Mānoa  
3050 Maile Way, Gilmore Hall 210  
Honolulu, HI 96822 USA  
Phone: 808-956-8183, 808-956-6997  
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E-mail: [acadaff@ctahr.hawaii.edu](mailto:acadaff@ctahr.hawaii.edu)  
Web: [www.ctahr.hawaii.edu/acad](http://www.ctahr.hawaii.edu/acad)