2023 Year in review

WILFRED J. HOLMES HALL COLLEGE OF ENGINEERING

COLLEGE OF ENGINEERING

UNIVERSITY of HAWAI'I[®] at MĀNOA

MESSAGE FROM The Dean

Aloha kākou,

Innovations in healthcare and entrepreneurship, an autonomous electric shuttle pilot, and student programming to enhance recruitment & retention were just some of the bright spots for the College in 2023. In this Year in Review, we also highlight a few of our amazing alumni and their commitment to providing opportunities for the next generation of engineering students. Read on for some of the year's top moments, and here's to another great one to come.



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Mahalo,

Brennon Morioka, PhD, PE Dean, College of Engineering



College of Engineering

UNIVERSITY of HAWAI'I^{*} at MĀNOA

22% increase in research expenditures

\$9.9M in expenditures

162 scholarships for \$298,150 for the academic year

10 new faculty

starting in AY '23 - 24 100% growth from previous year

All programs ranked

in US News & World Report

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3D-PRINTED SWEAT SENSOR ONE OF WORLD'S TOP Healthcare innovations in 2023

A 3D-printed wearable sweat sensor, developed at the University of Hawai'i at Mānoa, has garnered recognition as one of the world's most promising healthcare innovations in 2023. The sensor, designed by Assistant Professor **Tyler Ray** from the College of Engineering, can detect various health conditions in real time. By analyzing data on over 8,500 innovations, UH Mānoa's sweat sensor secured the 5th position based on introduction requests, positive feedback, and article reads. This groundbreaking technology collects and analyzes sweat to provide vital health insights and diagnose serious conditions like cystic fibrosis. Utilizing 3D-printing technology, it paves the way for accessible, convenient, and insightful personal health monitoring. The university's commitment to supporting entrepreneurship is evident through programs like Patents2Products and Faculty Fellows, which aim to foster an innovation ecosystem. These initiatives provide training to translate cutting-edge research into commercial technologies, promoting UH Mānoa as a hub for world-changing innovation and technology transfer.



NEW PROGRAM CREATES A SENSE OF COMMUNITY FOR Female Engineering Students

The Wāhine Connect program, initiated by the University of Hawai'i at Mānoa College of Engineering, aims to address the underrepresentation of women in engineering. With only 23% female students in the college, this program seeks to create a more inclusive environment. Initially known as the Wāhine Mentorship Program, it evolved into Wāhine Connect. This student-led initiative offers a safe space for female engineering students to network, learn, and relax. Monthly events include online game nights, craft sessions, and panel discussions. The program has now expanded to include male allies as well. Additionally, Wāhine Connect integrates a service component, where engineering ambassadors engage with high school students, discussing STEM careers and opportunities within the engineering field.



HOLMESCOMING RETURNS!

After a three year hiatus due to the COVID pandemic, The Engineering Alumni Association of UH held its annual Holmescoming event at the University of Hawai'i at Mānoa on Oct. 6. About 900 supporters, alumni, students and faculty of the UH College of Engineering turned out in force at the Les Murakami Stadium for this "friendraiser" that provides students and alumni the perfect environment to network.

Most local engineers are graduates of "The College." Many principals of local engineering firms recognize this fact and recognize that engaging with the College is vital to producing and maintaining a workforce that is equal to the task and able to support the growth of their industry.

Students say they appreciate the opportunities the College of Engineering provides for hands-on learning and undergraduate research. Some feel that student diversity makes the College an exciting place to be. Thanks in part to the Hawai'i Clean Energy Initiative, demand for engineers has never been greater.



ENGINEERING ALUM'S GIFT COMMEMORATES Lasting memories of hawai'i

Bharath Kadaba, an engineering alumnus, cherishes the memories of his time at the University of Hawai'i at Mānoa College of Engineering. His doctoral studies in Hawai'i marked his first experience living outside his home in Bangalore, India. The vibrant campus, diverse community, and multicultural atmosphere left a lasting impression on him. To honor this significant period, Kadaba generously donated to the EngineeringHI program. This initiative connects O'ahu public high school students with Mānoa engineering undergraduates. Highschoolers receive academic support and personal mentoring, while undergrads develop leadership and communication skills. Kadaba's contribution provides materials for enrichment activities, including STEM learning kits and engineering camp supplies. His support aims to expand the program's reach and inspire future engineers in Hawai'i.



BLENDING HAWAIIAN CULTURE WITH A STEM Education

Abigail Macalintal, a mechanical engineering major at UH Mānoa College of Engineering, hails from Kailua. She is a recipient of scholarships from the John Y. C. Chang Endowment, the UH System's Student Success Fund, and the Walter and Jeane Lum Scholarship Fund.

Abigail actively participates in the Native Hawaiian Science and Engineering Mentorship Program (NHSEMP). Through this program, she engages with mentees like Anela, a junior high school student from Lāna'i High & Elementary School. Together, they focus on Anela's STEM Capstone project, "Garden Pest Management," tailored to Lāna'i's community. Despite being on separate islands, O'ahu and Lāna'i, they brainstorm, implement, and analyze Anela's project.

Abigail's involvement in NHSEMP aligns with her passion for integrating Hawaiian culture, language, and tradition into her mechanical engineering studies.



PILOT PROJECT: AUTONOMOUS ELECTRIC BUS TO Provide shuttle service at uh mānoa

The University of Hawai'i at Mānoa, in collaboration with the Hawai'i Department of Transportation (HDOT), launched the State of Hawai'i's first autonomous electric "Min-E Bus" on the Mānoa campus last June. This pilot project, conducted under Hawai'i's Autonomous Vehicle Testing law, aims to achieve the state's goal of 100% clean energy by 2045 as HDOT transitions to electric vehicles. UH Mānoa's College of Engineering will collect and analyze data for HDOT as they integrate autonomous and electric vehicles into their fleet. The 14-passenger AV Star All-Electric Autonomous Min-E Bus features Perrone Robotics TONY (To Navigate to You) autonomous technology, meets safety standards, and can serve passengers in wheelchairs. Human drivers will be present as a precaution.

The route with 11 stops goes through student housing, down East West Road and Maile Way, to the Queen Lili'uokalani Center for Student Services (QLC), and back to the Kamakakūokalani Center.



NEW FACULTY FELLOWS PROGRAM TO GROW UH Innovation and Entrepreneurship

The University of Hawai'i has introduced the Faculty Fellows program, an experiential certificate training initiative aimed at enhancing the university's innovation and entrepreneurship capacity. Six faculty members from the College of Engineering at UH Mānoa have been selected for the inaugural cohort. These faculty fellows, including **Oceana Puananilei Francis**, **Aaron Ohta**, **Tyler Ray**, **Lin Shen**, **Zac Trimble**, and **Jeff Weldon**, are known for their impactful teaching practices. The program will equip them with instructional strategies to engage students in inclusive STEM innovation and entrepreneurship. Through interactive workshops and discussions, they will explore customer discovery processes, experiential teaching using the Business Model Canvas, and principles of Lean Startup methodology.



CUBESATS, ROBOTICS, 3D PRINTING: HANDS-ON Stem experience for HS students

The Junior Engineers Summer STEM Experience (JESSE) program, hosted by the University of Hawai'i at Mānoa College of Engineering, provided 16 high school students from O'ahu with a hands-on learning opportunity in the field of engineering. These students engaged in projects related to space exploration using robotics and 3D printed wearable devices. The six-week rigorous curriculum allowed participants to work alongside college undergraduates, researchers, and professors in state-of-the-art facilities. Additionally, cultural programming, professional development workshops, and site visits to engineering employers were part of the program. The students collaborated on projects such as the Artemis CubeSat, a spaceflight-ready, educational 1U cube satellite. The JESSE program aims to inspire future engineers and help high school students explore their interests in engineering.



ROY ABE PASSIONATE ABOUT EDUCATING NEXT Generation of UH Engineers

Roy Abe, a civil engineer, has had a profound impact on the University of Hawai'i at Mānoa College of Engineering. His journey began as a student, and over the years, he has become a mentor, lecturer, and donor. Abe's education at UH laid the foundation for his engineering career. He graduated in 1979 and later earned a master's degree from the University of California, Berkeley. His consulting career specialized in sanitary engineering. Despite retiring from HDR Inc., Abe continues to work part-time because of his unwavering commitment to training the next generation of engineers. He actively supports the college by creating the Roy and Amy Abe Endowed Fund for Civil Engineering Labs, ensuring the department's future viability. Abe's dedication to excellence and his passion for educating Hawai'i's future engineers have left a lasting legacy.



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HAU'OLIMAKAHIKI HOU!

(HAPPY NEW YEAR!)