

BUCKEYE ENGINEERING

Their mission?
Establish a
science park
in space



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

INSIDE / HACKING FOR GOOD
CLEAN ENERGY MILESTONE
SUCCESS METRICS RISE

The next generation of space stations

The Ohio State University is the lead university partner of a multimillion dollar NASA-funded effort to develop a new generation of commercially based, human-occupied space stations. Ohio State research and innovation will support the Starlab commercial space station, led by Nanoracks. The company was awarded a \$160 million Space Act Agreement by NASA to design and deploy Starlab.

Starlab will host the space-based George Washington Carver Science Park as part of NASA's Commercial Low-Earth Orbit Destinations program. The station will focus on a range of research areas, including biology, plant and agricultural science, physical science and materials research. Researchers will have an opportunity to advance in-space and terrestrial agriculture; materials and manufacturing for spaceflight; artificial intelligence; and space-based remote sensing.

"Spaceflight is simply one of the most compelling contexts in which to pursue a wide range of cutting-edge research activities, from AI and robotics to materials and microbiology," said Ayanna Howard, dean of the College of Engineering.

As the lead university partner, Ohio State will support the development and



coordination of all university research, host and operate the ground-based "control lab" for agricultural and other experiments, and serve as a research gateway and catalyst for potential users. The College of Engineering will play a key role in these efforts.

"This collaboration will help the state of Ohio build further upon our long heritage of advancing the future of spaceflight, continuing in the tradition of John Glenn and Neil Armstrong," said Senior Associate Dean John M. Horack (pictured above left), Neil Armstrong Chair in Aerospace Policy and lead researcher for the Starlab collaboration. He is working with project investigators across the university, including Food, Agricultural and Biological Engineering Chair Scott Shearer (on right).

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Students, companies win at annual hackathon

When mechanical engineering major Baker Poling participated in his first hackathon last November, his only goal was to have fun and learn something new. So it was a surprise when Poling and computer science and engineering majors Noah Charlton, Craig Fouts and Noah LaPolt earned first place at HackOHI/O with their webcam-based mouse software that makes 3D-modeling programs easier and more accessible to control with just your hand.

“We were all in a state of shock,” said Poling. “We felt very fortunate that the judges liked our project so much because everyone there did incredible work.”

More than 500 students participated in Ohio State’s HackOHI/O 2021, submitting 50 projects to compete for \$15,000 in prizes. The annual student-led event welcomes participants from all majors and universities to work in teams to build something meaningful or solve an industry-sponsored challenge in just one day.

“This is an easier way for students to try experiential learning, they can just come for a weekend and try it out,” said OHI/O Director Julia Armstrong ’14.

Industry-sponsored challenges enable students to work on the types of problems they will tackle after graduation and are an effective recruiting tool for companies.



Eric Bauer ’16, ’19 has been involved with OHI/O since he helped plan the program’s first two spin-off makeathon events and continues to serve as a mentor, judge and sponsor representative.

“The classes and formal training at Ohio State are fantastic. But the informal learning gives students two opportunities, one is to showcase their passion. It also shows us they have the ability to work on more unbounded questions,” said Bauer, a data scientist for Honda. “That’s an important skill in industry so we love to see that and promote it.”

Alumni are invited to see that skill in action at the 10th annual HackOHI/O on October 8-9, 2022, and celebrate a decade of hacking, making and student success.

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Clean energy tech reaches milestone



“This is my life’s work,” Distinguished University Professor Liang-Shih Fan has said about the groundbreaking clean energy technology he’s spent the past 30 years developing.

Fan’s work reached an important milestone recently when Akron-based Babcock & Wilcox licensed a chemical looping process and oxygen carrier

particle used for decarbonization and the production of hydrogen, steam and/or syngas. The technology chemically harnesses the energy in feedstocks such as natural gas, biogas from biomass, or coal among other carbonaceous feedstocks and efficiently isolates the carbon dioxide produced before it can be released into the atmosphere.

The key to the technology is the use of tiny metal oxide beads as the oxygen carrier for the fuel to spur the chemical reaction. It can capture at least 95% of the CO₂ emitted from coal combustion power plants if it is fully implemented and serve as a solution to provide clean electricity until renewable energies become widely available and affordable.

“Renewables are the future,” Fan said. “We need a bridge that allows us to create clean energy until we get there—something affordable we can use for the next 30 years or more, until wind, biomass, solar, green hydrogen and other renewable energy become the prevailing technologies.”

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College enrollment, diversity and success metrics rise

Autumn semester brought growth in the College of Engineering’s enrollment, diversity, retention and graduation metrics. In 2021, the college’s undergraduate enrollment on the Columbus campus increased to 8,355. Undergraduate enrollment on the Lima, Mansfield, Marion and Newark campuses rose 165%, from 171 to a record 453. Female undergraduate enrollment grew 2.9%, while female graduate student enrollment rose 6.2%. In addition, total graduate enrollment increased by almost 2%.

Total minority College of Engineering undergraduate and graduate enrollment also increased in 2021, with African American enrollment up 34% since 2020. Hispanic and Latino enrollment increased 2.6%.

Student success metrics also reached record highs. The first-year retention rate—the percentage of incoming freshmen that enroll in the engineering college for the fall semester of their second year—was a record 85.8%. The six-year graduation rate also rose to a record high of 68.4%. For comparison, a 2019 American Society for Engineering Education report indicated a first-year retention rate of 78.7% and six-year graduation rate of 53.7% among all self-reporting engineering schools.

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Engineered for collaboration

The new \$59 million Mars G. Fontana Laboratories is amplifying biomaterials education, research and interdisciplinary collaboration, especially between engineering and medicine. The completely renovated 124,000-square-foot laboratories on West 19th Avenue is home to the Departments of Biomedical Engineering and Materials Science and Engineering.

“What excites me most about the facility is that it’s built upon the premise that interpersonal interactions lead to new ideas and new directions in research and learning, and the new Fontana Labs allows that to occur,” said Materials Science and Engineering Chair Mike Mills.

Thanks to generous *Time & Change: The Ohio State Campaign* donors and state investment, a two-year renovation transformed aging buildings into modern, efficient spaces for 21st century teaching and research. It also enabled the college to move the biomedical engineering academic program to main campus, and allowed both departments to significantly increase their student capacity.

Faculty and students are proud of the new Fontana Labs and touched by the generosity of the donors who helped make it possible.



“It really does make the people inside feel special and like they’re doing something that someone appreciates,” said Materials Science and Engineering Assistant Professor Jen Locke.

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The first five engineering students to receive the Honda Dreams Scholarships are Isayah Hamilton, Bethany Massenburg-Jackson, Belquis Mbayu, Elijah Thomas and Regina Akrong-Lamptey.

Supporting diversity in both the college and field of engineering, the \$5,000 Honda Dreams Scholarships are awarded to students majoring in electrical and computer engineering, industrial and systems engineering, or mechanical engineering who are active in the National Society of Black Engineers, the Society of Hispanic Professional Engineers or organizations with similar missions. The scholarships are renewable for up to three years, provided students maintain a minimum 2.5 GPA.

Honda Dreams Scholars announced

A \$100,000 gift to Ohio State from Honda will fund as many as 20 new scholarships over three years to help students achieve their dreams of becoming Buckeye engineers.

This new scholarship builds on the long-standing Honda – Ohio State Partnership, which provides scholarships for up to 120 undergraduates annually. Honda Dreams Scholarship recipients also will have the opportunity to develop relationships with Honda staff, apply for internships and co-ops, and get involved with collaborative projects at Honda and Ohio State.

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ALUMNI AWARDS

An elite engineer instrumental in transforming the Olay brand into a \$2.5 billion powerhouse, an educator dedicated to providing access and opportunity to Buckeyes, and a pioneer in the development of DNA nanomachines are among the 16 recipients honored with 2021 Excellence in Engineering and Architecture Alumni Awards.



Nancy Coultrip Dawes



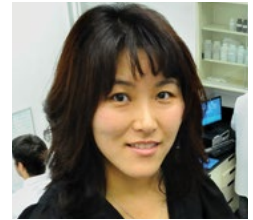
Minnie M. McGee



Carlos Castro



Santosh Kumar



Ah-Hyung (Alissa) Park



Nadine Sarter



Aisha Barry



Jacqueline H. Chen



William (Bill) L. Clippard III



Donald R. Graber



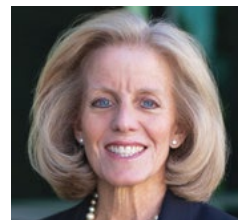
Timothy Hawk



Shivkumar (Shiv) Kalyanaraman



Ed Smariga



Janet Braun



Rakesh Gupta



Michael Snyder

Read more about
the 2021 recipients'
impressive achievements:
go.osu.edu/be36g





STUDENTS ACCELERATE ON ROAD TO SUCCESS

A new eight-week summer bridge program supported by General Motors provides rising second-year engineering students with academic and professional experiences to help them thrive as future leaders.



For the full scoop, visit
go.osu.edu/be36n



TWO FACULTY ELECTED TO NATIONAL ACADEMY OF INVENTORS

Dean Ayanna Howard and Distinguished Professor Stuart Cooper were elected to the National Academy of Inventors in December. They are the 13th and 14th Ohio State inventors to be chosen as NAI fellows.

ALUMNI GROUPS HONORED FOR EXCELLENCE

The Knowlton School Alumni Society was named Society of the Year by the Ohio State Alumni Association, while the Electrical and Computer Engineering Alumni Society earned an Innovative Program of the Year award.



ENGINEUITY PODCAST DEBUTS

Hosted by Dean Ayanna Howard, Enginuity explores stories of innovation within the College of Engineering. Meet faculty and students who are pushing boundaries and developing game-changing technologies.



THE OHIO STATE UNIVERSITY

COLLEGE OF ENGINEERING

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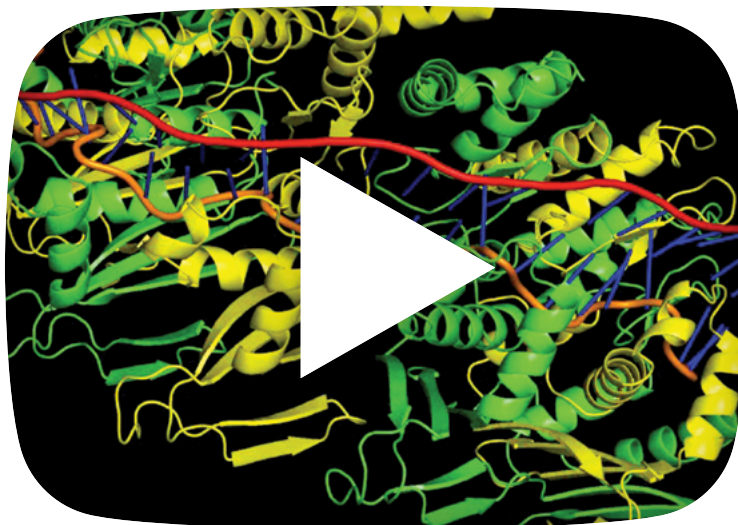
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