Creating a better world, through engineering.

College of Engineering
University of Missouri

2023-2024 Annual Report

Scan to learn more!

It is an incredible honor to have joined Mizzou Engineering as dean this year. In the short time I've been here, I've been inspired by the creativity, drive and ingenuity of our students and faculty.

This annual report shares some of the exciting achievements from the past year, showcasing the real-world impact of our work and research. It also features some of our amazing students and the hands-on learning experiences they engage in as Mizzou Engineers.

The future holds endless possibilities, and we are committed to exploring new innovations that will shape the world in meaningful ways. Whether you are already part of our community or just getting to know us, I invite you to explore how we are engineering a better world.

Thank you for your interest and support. If you'd like more information about our research or want to discuss project partnerships, I encourage you to reach out.

MIZ!

Marisa Chrysochoou
Dean
Ketcham Professor

SCAN HERE TO TAKE A TOUR!

Step inside Mizzou Engineering with our 360° virtual tour of our classrooms, labs and student spaces. Learn about our degrees, extracurricular opportunities and support resources from the comfort of your home.

Show Me THE NUMBERS

RESEARCH EXPENDITURES & PROPOSALS

Expenditures

↑15%

FY24 **$33,175,688**

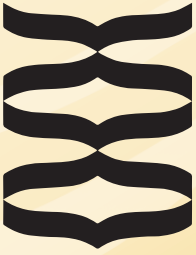
FY23 **$28,923,881**

Proposals Submitted and Led by Engineering

Number of Proposals Submitted in FY24 **254**

Number of Proposals Submitted in FY23 **238** **↑7%**

Only public
RESEACH 1
university in Missouri



Member of the
Association of American Universities

1 of 7

Public universities with engineering, veterinary medicine, medicine and law on a single campus

RESEARCH FUNDED BY

National Science Foundation
National Institutes of Health
Environmental Protection Agency
Department of the Interior
Department of Energy
Department of Defense
Department of Education
and more!

Research
AT MIZZOU

At Mizzou Engineering, we are constantly exploring new ways to amplify the regional and global impact of our research. Our commitment to innovation is driven by several key areas of focus, where our expertise gives us a distinct advantage in delivering real-world solutions. This strength is supported by acclaimed research centers, which continue to elevate our academic and research excellence, including:

- ***Center for Geospatial Intelligence (CGI)***
- ***Cyber Education and Research Initiative (CERI)***
- ***Missouri Center for Transportation Innovation (MCTI)***
- ***Missouri Water Center (MWC)***
- ***MU Materials Science and Engineering Institute (MUMSEI)***

Building
THE FUTURE

We are excited to announce plans for the creation of the ***Center for Energy Innovation (CEI)***, a bold new initiative dedicated to advancing energy research and solutions. CEI will serve as a central hub, integrating the expertise of Mizzou Engineering, the College of Arts and Science and the College of Agriculture, Food and Natural Resources to foster research, student education and industry collaboration. By leveraging Mizzou's strengths in nuclear materials, biofuels, cybersecurity, artificial intelligence and more, the center aims to position Mizzou as a leader in energy innovation, driving both local and national impact.

Research HIGHLIGHTS

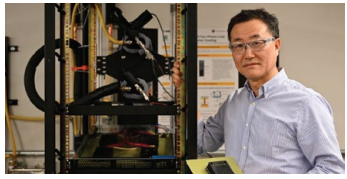
Faculty at the University of Missouri College of Engineering continue to conduct groundbreaking research in a plethora of areas including AI, health, energy and sustainability.

Kannappan Palaniappan is developing software using smart algorithms powered by AI to allow drones to pilot themselves using visual landmarks. The research is supported by a $3.3 million grant from the U.S. Army Engineer Research and Development Center (ERDC).

Zheng Yan and a team of researchers added wireless charging through a magnetic connection to the team's existing on-skin wearable bioelectronic device. The device provides the foundation for gathering precise vital sign measurements like blood pressure and electrical heart activity.

Zhiqiang Hu and collaborators have funding from the Department of Energy's Industrial Efficiency and Decarbonization Office to improve wastewater treatment processes. They hope to cut greenhouse gas emissions by half without increasing costs to plants.

Jung Hyup Kim is exploring how metacognition directly relates to performance and workload as part of his ongoing investigation into best practices using augmented reality for engineering education. His work has funding from the National Science Foundation.



Chanwoo Park is devising a system to cooldown data centers more efficiently using a hybrid-two-phase loop. He is leading a $1.6 million project funded by the U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) in collaboration with the National Renewable Energy Lab as part of an endeavor called COOLERCHIPS.

Mizzou Engineering used a nearly $1 million grant from the U.S. Army Engineer Research and Development Center to purchase a Nanoscribe Quantum X Shape 3D printer, the fastest and most accurate 3D printer for high-end microfabrication tasks on the market. Mizzou is one of just a few U.S. organizations to have the printer and one of fewer than 100 around the world.

WELCOMING NEW FACULTY TO MIZZOU ENGINEERING

Brendan Alvey EECS; Assistant Research Professor

Sazia Eliza EECS, Assistant Teaching Professor

Susie Dai ChBME, Professor

Mohammed Haider EECS, Associate Professor

J. Alex Hurt EECS, Assistant Research Professor

Taesic Kim EECS, Associate Professor

Jaewon Lee MAE, Assistant Professor

Rebecca Lim ChBME, Assistant Teaching Professor

Jordan Malof EECS, Assistant Professor

Yizhi Xiang ChBME, Associate Professor

Xiangqun Zeng ChBME, Professor

Students
LEADING THE WAY

Through the use of the Missouri Method and hands-on learning experiences, Mizzou Engineers are constantly making an impact on the world and leading the way in their fields.

Campbell Sweet received a 2024 National Science Foundation Graduate Research Fellowship for her research on increasing the supply of clean energy.

Wayne Carter was one of 10 students nationally named among the American Society of Civil Engineers 2024 class of New Faces of Civil Engineering – College Edition.

Shivika Prasanna received the Academic Achievement Award from Upsilon Pi Epsilon (UPE), the International Honor Society for Computing and Information Disciplines.

Ray Wood placed third in the IISE Global Undergraduate Student Technical Paper Competition and the IISE Operations Research Undergraduate Research Competition.

Mizzou's chapter of the ***National Society of Black Engineers*** (NSBE) was recognized as the Most Outstanding MO Zone Chapter.

The Mizzou Steel Bridge Team qualified for the National Student Steel Bridge Competition after their performance at the American Society of Civil Engineers Mid-America Student Symposium.

Mizzou AIChE was selected as an Outstanding Student Chapter at the 2023 Annual Student Conference.

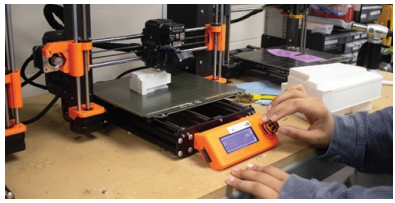
Mizzou Racing developed its first electric formula car and completed a full autocross course at the 2023 Texas Autocross Weekend.

A Mizzou Engineering group, part of the ***CIVA Lab***, placed first in the BONBID-HIE Lesion Segmentation Challenge.

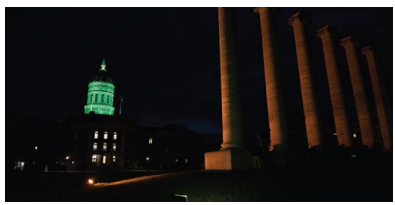
The ***Mizzou TIG-REX Team*** finished second in the National Geo-Spatial Intelligence Agency's Geo-Hack for Humanity.

Student INVOLVEMENT

Mechanical engineering students collaborated with the Mizzou football team to enhance player comfort through innovative equipment designs as part of their senior capstone projects. One group focused on developing a new cleat with high thermal resistance and an active cooling loop to keep feet cooler in summer by dispersing heat. Another group worked on improving helmet padding. They used a phase-change material to retain and distribute thermal energy, keeping padding warm and flexible during colder months.



The MU 3D Printing Club partnered with MU Health Care to 3D print 50 models of the new Children's Hospital and Birthing Center for a community event. The student group figured out how to both create the miniaturized model and optimize production.



Mizzou Engineers' Week was recognized as the Best Engineers' Week at the 2024 NAESC Engineering Leadership Summit in April. The award highlighted how the students who planned E-Week embraced tradition but also made the event their own. This past year's celebration was the 121st E-Week at Mizzou.

DEGREE PROGRAMS

13	9	7
Undergraduate	Master's	Doctoral

Nearly **50** **Student Organizations**

94% successful career outcomes post-graduation

ENROLLMENT (2023-2024)

↑11% *New student increase from fall 2023*

Faculty **ACCOLADES**

Prasad Calyam, an internationally recognized expert in AI and cloud computing, was named a ***Curators' Distinguished Professor.***

Baolin Deng, a pioneer in understanding environmental processes that impact health and ecosystems, was named a ***Curators' Distinguished Professor.***

Jianlin "Jack" Cheng was named a ***2023 Fellow*** by the American Association for the Advancement of Science (AAAS) for contributions to the field of bioinformatics and computational biology.

Kiruba Krishnaswamy recieved an ***Early Career Development (CAREER) award*** from the National Science Foundation in support of her FEAST framework to address hidden hunger.

Mushuang Liu was awarded a ***2024 Young Faculty Award*** from the Defense Advanced Research Projects Agency (DARPA), becoming the first Mizzou faculty member to receive the recognition.

Xiaohua Liu was elected to the ***2024 College of Fellows of AIMBE*** for his leading contributions to address challenges in dental biomaterials and craniofacial tissue regeneration.

Henry Wan was named to the ***2024 College of Fellows of AIMBE*** for pioneering machine learning in influenza vaccine strain selection and his contributions to influenza evolution and transmission research.

Hani Salim was named ***chair of the Department of Engineering and Information Technology*** at Mizzou Engineering.

Alumni **SPOTLIGHTS**

Alumni ***William "Bill" Baker*** (BS CiE '75, ScD '17) and ***Dale Klein*** (BS ME '70, MS ME '71, PhD ME '77) received 2024 Jefferson Club Golden Quill Alumni Excellence awards for demonstrating outstanding achievement in their chosen fields and reflecting the University's core values of respect, responsibility, discovery and excellence.

Alumnus ***William S. Thompson Jr.*** (BS CiE '68, LHD '05) was inducted into the Mizzou Hall of Fame in Fall 2024. Thompson is the Chairman Emeritus of PIMCO and the Founder of the Thompson Center for Autism & Neurodevelopment at Mizzou.