The Michigan State University Engineering Building will be abuzz with the innovative spirit and technical know-how of engineering students as they showcase their ingenuity at MSU’s College of Engineering Design Day on Friday, April 26.

Teams of engineering students have spent the semester designing devices, developing computer programs, engaging in technical evaluations and engineering process improvements that will benefit people and businesses in Michigan and around the globe. More than 140 student projects will be on display during Design Day on Friday, April 26, from 8:00 a.m. to noon in the Engineering Building, located at 428 S. Shaw Lane, East Lansing, Mich. Awards will follow at 1:15 p.m. in 1281 Anthony Hall (connected to the Engineering Building on the east side).

MSU students from throughout the college will be presenting design projects from a variety of courses representing majors in applied engineering sciences, biosystems engineering, chemical engineering, civil engineering, computer science, computer engineering, electrical engineering, environmental engineering, materials science, and mechanical engineering. Student teams are involved with projects that demand the integration of engineering theory and practice.

The capstone teams, comprised primarily of graduating seniors, design and build projects for corporate sponsors, government agencies, nonprofits and others. Faculty advisors provide guidance for the teams, although the students are primarily self-directed in engaging with their clients and developing solutions to problems.

“It’s their responsibility to work with the client, figure out what they want, what it should look like, how the technology should work and how it should all be put together,” said Wayne Dyksen, executive director of Design Day. Dyksen also serves as faculty advisor for a team of computer science and engineering students developing a smartphone app for teaching American Sign Language.

Other capstone projects this semester include: a device for measuring flaws in laboratory-created diamonds, design recommendations for an apartment complex with wetlands remediation, an anaerobic digesting system that uses waste products from an aquaculture facility to produce energy and fertilizer for a hydroponic farm, a low cost solution for capturing and analyzing motion that has applications in understanding motion of flexible structures of aircraft and spacecraft, and a joystick designed to help make voting machines more accessible for persons with disabilities.

“The role of industrial, government, and other partners is critical to making this capstone experience both exemplary
and transformative for our students. Knowing that your project is important and that it may touch someone's life or lead to a future product is high motivation for our students," said Leo Kempel, acting dean for the College of Engineering. "We are most grateful for the nearly one hundred sponsors who have shared their ideas, resources and, most importantly, their time with our students over the past semester."

Internationally focused projects that will also be on display include several designs for efficient human-powered water pumps for use in impoverished areas, a wood-burning stove designed to help reduce the number of deaths and illnesses caused by indoor air pollution in Guatemala, and a low cost sensor for soil moisture detection that the student team will be installing in a small farm run by a school for the Maasai in Tanzania as part of an MSU Education Abroad trip.

Also on exhibit will be projects developed in a freshman-level engineering course. Among them will be projects from student teams that worked with clients of the MSU Resource Center for Persons with Disabilities to design and build working prototypes to assist the clients with daily activities. Other teams have chosen to work with the MSU Residential Initiative on the Study of the Environment (RISE) program to design prototypes for a heating system for the RISE hoop house to increase crop production in cold weather.

In addition to exhibits and presentations, a competition will challenge teams of students from the mechanical engineering ME412 class to develop a heat transfer device to desalinate water. The students will compete to maximize the amount of water collected from their creations within 15 minutes using the power of a dozen birthday candles. These heat transfer devices will be judged on the basis of the amount of water produced, the mass of the device, and its cost.

Approximately 200 Michigan pre-college students will also visit campus during Design Day. They will get a chance to interact with MSU College of Engineering students and participate in hands-on robotic and structural support system activities that explore design principles requiring the application of creativity and ingenuity.

For the eighth consecutive semester, Auto-Owners Insurance Company of Lansing is the Executive Partner sponsor of Design Day. The Directing Partner is General Electric, and Supporting Partners include Bosch, GM, Michigan State University Federal Credit Union, RECSOLU, Spectrum Health, Union Pacific and Urban Science.

Design Day is held at the end of each fall and spring semester.

**Related Website:** [More Information About Design Day](https://www.egr.msu.edu/news/2013/04/25/design-day-showcase-student-innovations-addresses-societal-needs)
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