554 students featured at Fall 2016 Design Day, Friday, Dec. 9

Fall Design Day in the Michigan State University College of Engineering is Friday.

So what have the clever engineering students and computer scientists come up with this semester?

How about being a Mooch? Students in CSE 498 created a mobile app they named Mooch, making it easy for neighbors in housing complexes to share or sell their food. Students created a Mooch home screen to display the specific food items that are for sale or for sharing. Scrollable lists of food items are displayed on Mooch’s home screen. Users can scroll through the list, search for specific items, or explore preset categories.

Tapping on a food item brings up more details such as a description, posting date, quantity, price, and seller information. Items are claimed with the simple press of a button and extra food is not wasted.

It’s just one of the design, build, and inspire stories that will be told by 554 students at Fall 2016 Design Day on Friday, Dec. 9, in East Lansing.
Design Day is the culminating, end-of-year experience showcasing the innovations of the next generation of engineers and computer scientists at MSU. This fall’s event will be in the Engineering Building, 428 S. Shaw Lane, and features 140 teams.

Executive Director of Design Day and Professor of Computer Science and Engineering Wayne Dyksen said the day focuses on the innovation and creative work of students and their readiness to enter the engineering profession.

“Design Day prepares the student teams for real-world work experiences by challenging every aspect of their skill sets – from getting started with a design and budget, to building their project, and presenting it to their corporate sponsors and faculty members. What they learn along the way is always an amazing thing to watch,” he added.

Design Day includes competitions and project presentations from a variety of engineering classes, and is the culmination of the senior-level capstone courses that are required for graduation from the MSU College of Engineering. The 15-week capstone courses provide a platform for students to apply the knowledge and experiences gained throughout their engineering education at MSU. Working in teams of four or five, seniors put their best efforts into solving real-world problems for big and small companies. At the end of each semester the teams make presentations at Design Day.
Here are a few samples of the creative projects.

**Athletic Walker**

Piotr Pasik, a graduate student at MSU in kinesiology, asked students in Mechanical Engineering 481 to modify a walker for more aggressive training. Pasik, who has cerebral palsy, worked with the Design Day team to create a safe, durable and ergonomic posterior posture walker that easily moves with the user during sports activities.

The team designed a walker for use on track, turf, and basketball court surfaces. The device is intended to be used by persons with partial control over their lower limbs. The design incorporated ergonomic handgrips, a foot shield for the back wheels, and a switch to lock/unlock the front wheels. The sponsor of the project is the MSU Adaptive Sports & Recreation Club.

**MSU to Lake Lansing Trail Connector**

Five civil and environmental engineering teams will present their ideas on a proposed five-mile pathway linking the MSU campus to Lake Lansing – designs that are inspired by a project currently under development in Meridian Township, east of campus.

The first phase of the project is a river trail extension from the east limit of Michigan State’s campus (Shaw Lane at Hagadorn Road) about 1.1 miles along the north side of the Red Cedar River to Park Lake Road. The project will include a new pedestrian bridge crossing the Red Cedar River, as well as two separate boardwalk locations.

Students will present preliminary engineering designs identifying infrastructure improvements necessary for construction.

**Electric Car Noise System**

Who’d have thought that the ultra quiet of hybrid and electric vehicles would become a danger to pedestrians who aren’t aware of the approach of moving vehicles? So General Motors asked students in the Electrical and Computer
Engineering 480 class to develop a new kind of sound-emitting device that tackles the challenge. The team developed a piezoelectric speaker array that emits a frequency modulated ultrasonic tone consisting of an audio signal and a carrier signal. When the sound waves hit an object, the signals mix and deconstruct into an audio-band signal that can be heard.

**December 2016 Design Day by the numbers:**
- 140 teams
- 554 students
- 11 courses

Capstone projects represent:
- 272 students
- 49 teams
- 36 of the 49 projects (73%) from Michigan-based companies/institutions

Pre-college outreach programming includes:
- 5 schools
- 175 students from 9th-12th grades
- 15 teachers

**Design Day Awards Ceremony: 1:15 p.m., Anthony Hall Room 1281**
- 11 awards conferred to top Design Day teams
- Judges include faculty and corporate representatives

Design Day background:
- Five MSU College of Engineering undergraduate degree programs represented
- Twice yearly event on last day of each semester (before finals week)
- 23rd Year for Design Day (initiated in 1994 by Dept. of Mechanical Engineering

**Related Website:** [2016 Design Day booklet](http://www.egr.msu.edu/news/2016/12/05/fall-2016-design-day)

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