y *of* New Haven

as design constraints, environmental impact analysis, project management, and economic analysis. The coordination also allowed students from different programs to be assigned to interdisciplinary projects.

In a project for the Timex Group, for example, students created an innovative user interface/user experience watch design that uses graphic displays and sensors as alternatives to buttons. Both system engineering and computer engineering students worked on the project.

Said Frank Ramirez, Senior System Software Engineer at Timex, "This type of collaboration was not only an exciting and interesting opportunity for the students, but their ingenuity also provided the Timex team with some exciting concepts for future wearable technology devices. We hope to see some applications of these concepts in the near future as we refine their application and feasibility."

So, at the end of the day, who knocked it out of the park and went home with the awards?

**The winners in the poster competition were:**

**First Place:**

**Project:** "Structural Design of Andrick Stadium"
**Team:** Andrew Saunders and Patrick Daniele (Civil Engineering)
**Faculty Advisor:** Ms. Marie Bartels
**Technical Advisor:**

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# ALUMNI NEWS

Pratt & Whitney as an aerosace engineer working on burner combustion heat transfer in jet engine development, he moved to Tucson, Arizona. One day he found himself in a huge commercial laundry plant and, sensing an opportunity, asing an op18(y p-0.0175(uc)]w )]Tw9.8(y h1 T.8(orking 19.8(tunity)89happenj-0.00.01hod to )49.dias)Tj0.0y wat

# What Makes a Concrete Canoe Stay Afloat?

## Some Carbon Fiber, a Light Aggregate — and Unsinkable Spirit.

**If you've ever lifted** (or dropped) a concrete block, you might wonder what concrete could possibly have to do with canoes. But every year, civil engineering students prove the two have plenty in common. The 2013 New England Regional ASCE Concrete Canoe Competition held April 26 and 27 — in which the UNH civil engineering team took part — was just one of 18 regional competitions in which students glide across the water in canoes made of material you would never want to drop on your foot.

## UNH Chem-E-Car Competition Team

# Prepping for the Nationals

### After capturing second place

**The UNH Supermileage Vehicle** hit more than just a few speed bumps at the 2013 Annual SAE Supermileage Competition. But, it just went to show that the UNH team is in flawless working order, can rise to a challenge like seasoned pros, and even pull a rabbit or two out of a hat.

Hopes were high as the team headed out to the Eaton Vehicle Proving Grounds in Marshall Michigan on June 4th, vehicle in tow. The UNH Supermileage vehicle is a snazzy, lightweight, aerodynamic, three-wheeled car with a "tadpole" design and custom carbon-fiber composite shell donated by Vespoli USA in New Haven. The team, comprising students, faculty, and staff from the Tagliatela College of Engineering, as well as student members of the American Society of Mechanical Engineers, was about to compete against universities from around the world.

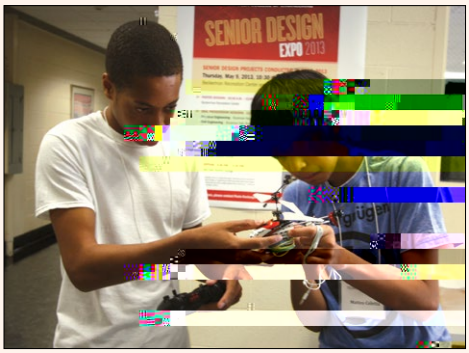
In the competition, which is sponsored primarily by the Society of Automotive Engineers, each vehicle strives for as high a mpg rating as possible. This was UNH's second trip to the competition. Long-time participants routinely reach ratings in excess of 1000 mpg, so the pressure was on.

Race Day dawned. The UNH team, led by 2013 graduates Joseph Olenick and Daniel Bennett, was one of the first in the pits. The vehicle had passed inspection and earned high marks for safety. Among the inspection criteria: vehicle stability, fire suppression, driver restraint, stop time, and the ability of the crew to extract the driver quickly from the tight confines of the vehicle in case of accident — a critical feature as these highly tuned engines burn extremely flammable Iso-Octane racing gasoline.

The car's first run with driver Brittany Albera, a sophomore mechanical engineering major, was amazingly consistent in time per lap. But the mileage was disappointing and upon checking the engine oil, the team discovered a significant amount of metal filings, pointing to serious engine problems. Blown crankshaft bearings then reared their ugly heads. The engine sar31 9T shdp. Bun exn time" sanot agw.349.8( )]TJ.0021 Tc3 0.862417.141 Td[Wr lttble more than twohours( lftl,)49.8( the team reu r)-19.8rpecred e strpped-dovwn-2.0( )]TJT*[s pahe trst en thby scrednon time disusisingitl,bButbroikeupt ixo s:s one totrecove and strip the amaged engine, ao thr xo andap tirdg to oiftgly oape pars( and ooles from on)20( )]TJT*[ crep to theo thr.349.8. ohours( uator)39.8(,)49.8( the v)19.8(ehicle was affwwitha(roar.349.8.))49.8( )49.8(The first r)-19.8(un was )]TJ0 -1.351 TD[ respecmabll,basnicaglymatiching the pef(or)-19 Soimebr(ainsour)-19.7mhingensuedt, and thedecission was

# When Summer Camp is the Start of a Career

**There's a window —** often open for just a short time — when a student can become so excited by the applied sciences that he or she determines to follow that passion and make a career of it. For some students, that window opens and shuts in high school. The Team-based Engineering And Manufacturing (TEAM) Camp, however, can keep that window open.




Designed for high-school students in grades 9 through 12, the TEAM Camp's goal is to get students interested in the STEM fields — science, technology, engineering, and mathematics — earlier in their school years. This year's camp was partially funded by Sikorsky — who also provided scholarships for half of the campers — and developed by Professor Daniel Schrage of Georgia Tech. The camp took place at three locations simultaneously — UNH, Georgia Tech, and the University of Detroit — Mercy from July 8th to the 19th.

The operative word is "simultaneously." Teams comprising students from all three campuses used the "Co-Create, Design, Build, and Operate (CDBO)" methodology in which they worked on the same project at the same time, designing, building, and checking workability as they progressed.

"Engineers often work with others off site," said Amy Thompson, one of the camp's co-directors and an assistant professor at UNH. "Using this methodology gave the students a taste of the collaboration that real engineers experience every day."

Students at the UNH location were part of teams that tackled either:

1. Redesigning the wheels of a Lego® robot so that it could handle different terrains — including simulations of the variety of terrains found in outer space, or
2. Redesigning the blades for a remote-controlled helicopter so that they could lift more load than the manufacturer's version can.

At the UNH site, 20 students participated, and five local high-school teachers attended, with Georgia Tech sending two instructors and a teaching assistant.

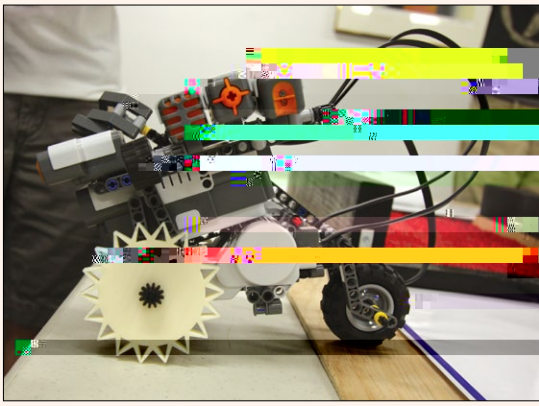
One of the things that really excited the students was the state-of-the-art technology at their disposal — the same type used at Sikorsky, Boeing, and Ford as well as other cutting-edge engineering and manufacturing companies.

The teams used CATIA® v6 computer software to design the parts in 3D, which enabled them to turn the image around and see all aspects of it. They then made their models through Rapid Prototyping — using a printer that prints in 3D by laying down successive layers of materials in various shapes.

It was trial and error, of course. "Our first set of wings [blades] was too light," said one 16-year-old student from the Engineering, Science, and University Magnet School. "Then we put tape on them so they were heavier and didn't break." When that didn't do the trick, the team refabricated them.

During their two weeks at the camp, the students enjoyed a high level of interaction with faculty, researchers, graduate and undergraduate students, and Sikorsky engineers. They even received an invitation to tour the Sikorsky plant where they saw, up close and personal, that what they were doing at camp was simply a miniaturized version of what takes place at firms like Sikorsky.

On "Commencement Day," July 19th, the teams proudly presented their work to parents, the local news outlets having gotten a sneak preview the day before on Media Day. The presentations included the team members from all three universities, made possible by webcams and the Internet.



When confronted with the idea of totally new projects at next year's camp, the students were united in nixing that idea right out of the box: "No, we want to switch and do the other project next year!" Meanwhile, the parents were thrilled that their children had learned and gotten excited about it. "When the parents asked about next year's camp, it was a sure sign of success," said UNH Assistant Professor Maria-Isabel Carnasciali, another co-director of the camp.

Carnasciali went on to sum up the two weeks this way: "The camp gave a little glimpse of how complicated things are in the real world. Things don't always work as expected. You have to re-design. You have to adapt."

That's a reality check that will serve these happy campers in more ways than one.

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