

Blowing the Doors Off

FSAE team captures an eighth world championship with 926 out of 1000 possible points.

Cornell's Formula SAE race car team won its eighth FSAE World Championship May 23 in Pontiac, Mich., prevailing over some 130 universities from 13 countries. The team of Cornell engineering students scored 926 points of a possible 1,000 in a series of events that ranged from design evaluation to competitive driving.

The competition, sponsored by the Society of Automotive Engineers and the Sports Car Club of America, challenges students to design and build a race car and drive it in a series of events. The final score is determined by adding points for driving, design, and presentation.

The climax is a 22-kilometer endurance race over a one-kilometer road course, at speeds of up to 60 mph. Other driving events were an acceleration test, skid pad (cornering in tight circles), and autocross (maneuverability and handling). Meanwhile, teams are judged on their designs, a "business presentation," in which they pitch their designs as they would to potential investors, and on what the car would cost if put into production. Cornell placed either first or second in all the dynamic events and came in second in design, fourth in cost, and seventh in business presentation.

For winning first overall, the Cornell team received the SAE Foundation Cup. In addition, the team took home the Spirit of Excellence Award, the SAE Motorsports Award, the Bosch Engine Management Award, the PACE Best Engineering Design Award (second place), the Henkel Technologies



The Cornell FSAE team's car is taken through its paces during world championship competition in Pontiac, Mich., May 23.

Structural Foam Award (second place), the Goodyear Best Performance Award, the Hoosier Tire Autocross Award (second place), and the Solidworks Skidpad Award (second place). The various awards add up to \$4,950, plus 18 tires and some software.

Cornell first entered the competition in 1987 and has won the title in 1988, 1992, 1993, 1997, 1998, 2001, 2002, and this year. "We win often because we take a systems approach," said Al George, the J.F. Carr Professor of Mechanical Engineering and principal adviser to the team. He summed up the systems approach as, "I'm designing this part, and it has to fit in with those other parts." He added, "We also have an unfair advantage, you might say, because we have an outstanding engineering school. Our students really do understand everything they're doing."

Brad Anton, Cornell associate professor of chemical and biomolecular engineering, is co-adviser for the team. Principal sponsors of Cornell's team include General Motors, Heller

Industries, and Hunter Industries. Some 50 other firms contribute parts and other support.

—Bill Steele
Cornell News Service

SECONDS AWAY FROM FIRST

Cornell came in second in NASA's 11th annual "Great Moonbuggy Race" in Huntsville, Ala., April 3, losing to North Dakota State University by only a few seconds.

The competition, inspired by the compact vehicle used by astronauts in the 1960s Moon landings, challenges students to design and build a light, compact, human-powered vehicle and race it over a simulated Lunar landscape. The vehicle must collapse to fit in a cube, 4 feet on a side. Racers must carry the collapsed vehicle 20 feet and then set it up, racing against the clock, before actually driving over the course. Scoring is based on both setup and race time. North Dakota ran the course in 3:31 and Cornell in 3:33, but the Cornell

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Students Marc Emond, M.Eng., and Simmie Bernan '06 drive the Cornell Moonbuggy team's entry in NASA's "Great Moonbuggy Race" April 3 in Huntsville, Ala. The race requires a team of one man and one woman to drive a human-powered vehicle over a simulated moonscape peppered with bumps and other obstacles.

team faltered on setup, so the total time was North Dakota 3:46 against Cornell's 4:23.

"I don't know how they did it," said Andy Ruina, professor of theoretical and applied mechanics and the team adviser, of the Cornell team's effort. "Last time I saw their moonbuggy, it was all in pieces." The team was still working on the vehicle the night before they left for Alabama, he explained.

"We basically had a rough time putting the buggy together at the last minute. We ... worked on it all night till the last day," said Daniel Hormaza '04, one of the team leaders. "Lots of people doubted us, and we encountered lots of difficulties and problems, but we came through with really hard work and getting second place."

NASA had 27 college-level entries in the competition from 13 states and Puerto Rico, with several schools entering two vehicles. There was a separate high school division. This is the third time Cornell teams have entered the competition. The first attempt, in 2002, was a "learning experience," as the team had grossly underestimated the difficulty of the course and found their vehicle wouldn't hold together. Last year, two Cornell teams entered, one with a new vehicle

and another with a redesigned version of the 2002 model, and took first and second place, respectively.

In addition to Hormaza, the 2004 team consisted of Robyn Harmon '06, who was co-team leader, and Roman Akhmechet '06, Liz Connelly '04, Nick Gerasimowicz '04, Diego Jimenez '04, with "a little help" from Roberto Malvaez '04, Brett Spicer '04, Adam Maher '06, Pete Moran '06, and Ellie Weyer '06. Marc Emond, M.Eng., and Simmie Bernan '06 drove the vehicle. Sponsors are Borg Warner, Emerson Power Transmission, the Bartels family, David H. Liu Foundation, and Learning Initiatives for Future Engineers (in the College of Engineering).

—Bill Steele
Cornell News Service

BIOMEDICAL APPROVAL

At the May 28 meeting, the Cornell University Board of Trustees approved the proposal of the College of Engineering to create a Department of Biomedical Engineering.

A cross-college "Biomedical Engineering Program" (BMEP) was established in 2001. It is expected that the department structure will accelerate Cornell's national leadership in biomedical engineering while simultaneously enhancing existing departments that integrate the life sciences with engineering disciplines.

Michael L. Shuler, professor of chemical and biomolecular engineering and James and Marsha McCormick Director of the BME Program, will serve as the founding chair of the new department.

BAD NEWS, GOOD NEWS

The rocket launch that will carry Cornell's ICE CUBE satellite, originally scheduled for October, has been pushed back to February 2005.

Although the delay is disappointing for the Cornell team, "The good news is that this gives us a couple more months to complete our tests," says Mark Campbell, an assistant professor of mechanical and aerospace engineering and faculty adviser for the project.

Campbell explains that ISC Kosmotras, the Kazakhstan-based firm providing the Dnepr rocket in which ICE CUBE is hitching a ride, was asked to delay the countdown by the customer providing the primary payload and footing most of the bill.

ICE CUBE is Cornell's version of the CubeSat program run by Stanford University and California Polytechnic State University designed to engage students in



Here Comes the Sundial

Cornell President Emeritus Dale Corson, left, and Richard Phelan, professor emeritus of mechanical and aerospace engineering, shake hands at the reinstallation of the Joseph N. Pew Sundial on the Engineering Quad, May 17. The sundial, an icon of the quad for more than two decades, had been stored in Upson Hall during the Duffield Hall construction project. Designed by Corson, a professor emeritus of physics, it is accurate to within 30 seconds. Phelan was responsible for the manufacture of the internal mechanism that adjusts the sundial for the current date.