DRIVING the FUTURE

THE UW-MADISON STUDENT VEHICLE TEAMS

Hands-on experience, a great education and communication skills set engineers apart in the workplace. Students can foster these and other positive attributes while participating in the University of Wisconsin-Madison College of Engineering automotive programs. The Baja SAE, Formula SAE, Formula Hybrid, SAE Clean Snowmobile and Hybrid teams offer UW-Madison students the ability to build a foundation of knowledge and experience.

Students in the automotive programs engineer and create prototype vehicles while they develop teamwork skills, sportsmanship behavior and the ability to set goals. They also prepare themselves for careers as they gain the real-world experience and technical skill that makes them attractive to prospective employers.

Unique partnerships between the university, private sponsors and industrial leaders make these programs possible. The overall goal is to engineer reliable and well-designed vehicles while educating the next generation of outstanding engineers.

Join the winning teams! Since 1998, four different Wisconsin automotive teams have won 16 different international automotive competitions. In all, Wisconsin has amassed 32 top–five finishes!

BAJA SAE

Baja SAE offers students the opportunity to engineer, build and race a single-passenger, off-road vehicle powered by a 10-horsepower Briggs and Stratton engine. More than 25 students take part in this program and compete with more than 100 universities in international competitions organized by the Society of Automotive Engineers.

The competitions include static events, dynamic events and a four-hour endurance race. During the static events, students present reports detailing the cost and design of their vehicle. Judges assign rank based on these reports and other categories such as originality and mass production feasibility. The competitions rotate between venues, and typical dynamic events are acceleration, maneuverability, traction and suspension, sled pull, hill climb and mud bog.

The main attraction for each event is a four-hour endurance race. Mud, hills, rocks and jumps test the strength and durability of the cars as they race for a first-place finish.

SAE CLEAN SNOWMOBILE CHALLENGE

When snowmobiles were banned from Yellowstone National Park around the start of the new millennium, SAE initiated a competition that challenged students to modify an existing snowmobile to improve fuel economy, reduce emissions and lower ambient noise. More than 20 Wisconsin students design, modify and test a flex-fuel piston-powered snowmobile and an al-electric snowmobile.

The SAE Clean Snowmobile Challenge is an annual event hosted in Houghton, Michigan each March. In addition to writing a technical paper and preparing an oral presentation, the students test their sleds in acceleration, maneuverability, fuel economy, emissions, ride quality and cold start events during this week-long event.

HYBRID VEHICLE TEAM

The Hybrid vehicle team has been competing in international competitions sponsored by the U.S. Department of Energy since 1993. Since 2000, the competitions have focused on hybridizing sport-utility vehicles. A team of more than 50 students compete in an annual competition at an automotive manufacturer's testing facility. Students are judged on written papers, oral presentations, vehicle fuel efficiency, acceleration, maneuverability, trailer towing capability and ride quality.

In addition to the competition, the hybrid team has refurbished a General Motors EV1 and will be spearheading the conversion of the Bucky Wagon into an electric vehicle.

FORMULA SAE

Formula SAE challenges students to design, build and test a third-scale formula-style racecar for the non-professional "weekend" racer. A team of more than 50 students participate in building the racecar for an annual competition near Detroit, Michigan.

The competition is designed to challenge the knowledge, creativity and skills of engineering students in a real-world environment. The team must pass tests of design, forward acceleration, lateral acceleration, rigorous technical inspection and a 22-kilometer endurance event. Furthermore, each team gives a formal presentation discussing the design, manufacturing and financial aspects of the racecar.

FORMULA HYBRID

Formula Hybrid challenges students to design, build, test and race high-performance hybrid vehicles. Building on the Formula SAE's third-scale formula car, Formula Hybrid teams down-size their engines to 250 cc while adding a secondary energy source. Formula Hybrid engages students with backgrounds in electrical, mechanical, and computer engineering—encouraging interdisciplinary teamwork and innovation.

Teams compete annually at the New Hampshire Motor Speedway, Loudon, New Hampshire. The competition is endorsed by the Society of Automotive Engineers Inc. (SAE) and the Institute of Electrical and Electronics Engineers Inc. (IEEE). In addition to static judging, the teams compete in several dynamic events including electric acceleration, hybrid acceleration, autocross and a 22-kilometer endurance event.

To donate to UW-Madison's **Undergraduate Student Automotive Excellence Fund** visit **www.vehicles.wisc.edu.**

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University of Wisconsin-Madison

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Bryce Richter/University of Wisconsin-Madison

*Restore the **BUCKY WAGON** and endow the vehicle teams!*

The Bucky Wagon is an iconic UW-Madison symbol that carries Badger spirit across campus and throughout Madison on football Saturdays and at each year's Homecoming festivities and parade.

The current Bucky Wagon, which is the third vehicle known by the name, is a restored 1932 La France fire engine donated by alumni to the Wisconsin Alumni Association (WAA) in 1971. Time has taken its toll on the Bucky Wagon, and it's nearly impossible to find parts to repair and maintain the vehicle. The WAA has paired with the College of Engineering to help the Bucky Wagon transition to the 21st Century as a safe, electric-powered vehicle with power hydraulic brakes and power steering, while preserving the vehicle's exterior, wheels and hubcaps in order to maintain the iconic appearance of the wagon.

Engineering students, under the guidance of Mechanical Engineering Faculty Associate Glenn Bower, will complete the renovation. The project is happening as the students and Bower work to raise funds for a vehicle-team endowment, which will ensure the teams, both present and future, can continue to work on campus projects and excel in vehicle competitions. Follow the renovation and learn how to get involved with the endowment at **www.vehicles.wisc.edu**.

Photo courtesy of UW-Madison University Archives

UW-Madison cheerleaders onboard the Bucky Wagon enter Camp Randall Stadium in 1984. Beginning Oct. 2009 and lasting for nearly a year, students from UW-Madison's College of Engineering will renovate the Bucky Wagon into an electric-powered vehicle with a hydraulic braking system, as well as power brakes and steering for safety.

The Undergraduate Student Automotive Excellence Fund

In addition to the time and talents of faculty, staff and student team members, maintaining the excellence of the six automotive vehicle programs requires support for competition and travel expenses, as well as support to purchase and maintain equipment, including computers, endmills, lathes, grinders, drill presses and many other tools that allow students to turn their designs into working vehicles.

To ensure the continued success of UW-Madison's automotive vehicle programs, we're raising funds for a vehicle team endowment. Vehicle team members raised $10,000 in start-up funds during summer 2009, and now seek support to reach the $10 million endowment goal. The endowment will take UW-Madison vehicle teams to the next level and ensure UW engineering remains a source of innovative, well-trained engineers to the automotive industry for generations to come.

Donate to the **Undergraduate Student Automotive Excellence Fund**, please visit **www.vehicles.wisc.edu/donate.html**.