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Solar Vehicle Team and Hands-on Learning Projects Need New Space ^[1]

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In June, a group of engineering undergraduate students will drive from Tulsa to Chicago in a vehicle they designed, constructed, and tested. Running out of gas is one thing they won't worry about.

The hands-on project, built under the guidance of Dr. Gary Hallock, professor of electrical engineering, offers students valuable real-world engineering experience. "Traditionally, undergraduates do classroom studies," Hallock said. "Even when they do hands-on lab work, it tends to be quite controlled." Most electrical engineering students enter the professional world after a bachelor's degree, and this kind of complex project helps prepare them for that world.

Currently, space and functionality constraints mean most of the work on the solar car and other hands-on projects is done at the Pickle Research Center, which is about 12 miles from UT campus. Hallock sees the new Engineering Education and Research Center taking the solar vehicle project to a new level. Getting to the Pickle Research Center is inconvenient for undergraduates with a full load of classes. "Going there and back on the shuttle bus takes one-and-a-half hours, which cuts down on time these students can put into the project," Hallock said. "Most of the work happens on weekends. But if we could do it here on the main UT campus, students could fit it into their day to day work. The team does build pieces of the vehicle in labs here, things like electrical circuit boards and mechanical parts, and having everything together under one roof will offer an enormous advantage. It will also make it easier to recruit students from other colleges to participate in the project."

The University of Texas Solar Vehicles Team ^[2] pulls students from across engineering — mechanical engineering to work on the chassis and suspension; electrical engineering for batteries, electronics, and motors; and aerospace engineering for body design — as well as disciplines such as business and art. Students learn team work, experience deadlines, and deal with real-world engineering constraints such as safety (since the vehicle travels regular highways), weight, and aerodynamics. "They gain practice in applying concepts and skills they can't get sitting in a class listening to a lecture," Hallock said.

Many students choose engineering because they love taking things apart and figuring out how they work, and Hallock doesn't think that has changed over the years. What has changed, he said, is the sophistication of what engineers work with now.

When I was growing up, you could take apart an electronic device and pretty much understand how it worked. Today, even the simplest device has a microprocessor in it and is hard to figure out. Students come in with more system skills than component skills. That's one thing we deal with as we train engineers, and a complex project like the solar car helps. A student who follows through the whole process, from design to development and selection of components, construction, and testing, learns a lot.

The [American Solar Challenge 2010](#) [3] in June pits the team against top universities from around the country. The Solorean participated in the Formula Sun Grand Prix, a track-based competition, in 2009. Since then, the students have fine-tuned the vehicle to deliver better performance, and tweaked design to improve safety. Their trip from Tulsa to Chicago will deliver real-world feedback on how well they've done.

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