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## OU students rev up for Formula One competition

By **Jeff Samoray**, *OU Web Writer*

For nearly a year, students from the Oakland University chapter of the Society of Automotive Engineers (SAE) have been gearing up for a high-octane competition with the world's elite mechanical engineering students. The OU team has designed a Formula One-style vehicle to compete against teams from colleges and universities across the United States and around the world in the **2004 Collegiate Design Series Formula SAE** competition May 19-23 at the Pontiac Silverdome.

In the competition, student teams race and test formula-style cars they've designed and built themselves. Restrictions are placed on the car frame and engine so the students' knowledge, creativity and imagination are tested. Four-cycle engines up to 610cc can be turbocharged or supercharged to add a new dimension to the challenge of engine design.

Following a stringent safety inspection, teams vie for top spots in several static events, giving presentations on sales, engineering design and cost analysis. Then they take to the road for five dynamic events: acceleration, skid-pad, autocross, fuel economy and endurance.

Last year was a breakthrough year for Oakland, finishing 13<sup>th</sup> out of more than 100 teams. This year, the team hopes to crack the top 10 with a new car. Competition vehicles must be built from scratch each year.

The OU team had an official vehicle unveiling and test run May 8 in the parking lot adjacent to the Science and Engineering Building. The car, which weighs 520 pounds, holds 1.9 gallons of fuel, has 73 horsepower and goes from 0-60 miles per hour in 3.5 seconds.

"We started working on the vehicle last June, right after the end of the 2003 competition," said Kevin Kolath, master's student in mechanical engineering and OU team leader. "The car design is similar to last year's, though we changed the suspension design and modified the frame to make it about 30 pounds lighter. We worked on the car every weekend last summer. Over the past month, we've been here almost every evening working on it. I'd say we've logged close to 1,000 hours of time preparing for this competition."

That prep time also includes many hours of fund raising and securing of sponsorships. Though the student vehicle is a smaller version of the Formula One, it still comes with a hefty \$25,000 price tag. The team's major sponsors include Stephen Sharf, the Suburban Collection and National Instruments.

"The competition is valuable on many levels," Kolath said. "You learn so much because everything is hands-on. You not only work on things like the steering geometry and other vehicle components, you also learn computer design, how to weld, how to do machine work. It's also about paperwork, meeting people for potential sponsorships and managing personnel. We have 15 team members, and we all need to work together. It's like managing a small business."

As intense as the competition gets, there's also a great deal of camaraderie between teams. OU soon will share its garage work space in the Police and Support Services building with teams from the University of Leeds (United Kingdom), Western Australia and Wollongong (Australia). Those teams also will stay in the residence halls while preparing for the competition. Other international teams among the 140 entrants are from Canada, France, Italy, Korea and Puerto Rico.

"The teams definitely learn from each other," said Associate Professor of Engineering and team adviser Brian Sangeorzan. "Our team has spoken with others about their particular area of expertise. Our car has a computer-controlled engine management system, and the students learned about working with that from the Australian students. In turn, we helped them machine some parts. There's a real collegial spirit. It's not unusual during the competition for a team to make an announcement over the PA system asking for a particular part. Some teams have been known to

loan entire engines.”

However, the stakes rise once the competition begins. According to Formula SAE rules, modification or repairs cannot be made to vehicles after the start of performance events. The most critical part of the competition is the endurance event, which is worth more than half of the dynamic events points. The event is designed to evaluate the overall performance of the car and test its reliability.

“You can’t take any tools out on the track with you,” Kolath said. “Once you’re out there, if something little happens, it’s pretty much over.”

The SAE chapter at OU is an affiliate of the national organization for students interested in automotive engineering. Members share information and exchange ideas for advancing the engineering of mobility systems and participate in hands-on engineering projects.

“I think we have a really good team, and they have a well-designed car, but racing still involves a roll of the dice,” Sangeorzan said. “The slightest thing can go wrong and knock you out. It’s part of what makes the SAE Formula competition the granddaddy of them all. I don’t think there are any competitions of its type in the world that bring together the number of teams that compete at such a high level. On the surface, it looks like just a bunch of shade tree mechanics, but there’s some real engineering going on. The competition is about a lot more than just putting a car together.”

Those interested may attend the Formula SAE competition, which runs from Wednesday, May 19, to Sunday, May 23. There is no charge to attend. For more information on the competition and an event schedule, visit the **2004 Collegiate Design Series Formula SAE** Web site.

#### **SUMMARY**

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