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Hornet Racing hopes to raise profile in Nebraska

For the past two decades, dedicated groups of Sacramento State engineering students have applied their diverse skills toward creating a Formula SAE race car to compete in collegiate events. This year’s squad is gearing up for the Formula SAE collegiate competition June 20-23 in Lincoln, Neb. That’s a dramatic geographical shift from last year’s competition, which took place in Fontana.

Each year, the Hornet Racing team designs and builds a car to SAE’s exacting specifications. The dozen or so students who stay the extracurricular course spend upward of 50 hours a week on the project.

Run by the Society of Automotive Engineers, the contest features student teams from more than 250 universities worldwide that conceive, design and fabricate a Formula-style race car. Each team tests a prototype based on a series of rules, whose purpose is both ensuring on-track safety and promoting clever problem-solving. Students drive the cars.

This year’s team was involved with AWIM (A World in Motion) a program that brings science, technology, engineering and mathematics to life in the classroom. Sac State graduate Terry Kay coordinated the AWIM team. The Hornet squad mentored students at Sutter Middle School and Isador Cohen Elementary for 36 hours over the past two semesters. The community outreach was through AWIM and the campus-based Mathematics Engineering and Science Achievement (MESA) Center. The racing team assembled kits provided by AWIM.

“We followed up recently with the kids, taking our last-year car to each of those schools and showing off what engineering is all about,” Kay says. The youngsters were especially excited to hear the engine revving. For its part, the team received $2,000 from AWIM to cover the registration fee.

This experienced squad is bullish on its chances at Lincoln. Last year’s team finished middle-of-the-pack, despite testing problems, among the 75-80 teams competing at the Fontana Auto Club Speedway. “We competed well against student teams from Canada, Germany, Mexico and other California schools,” says graduate student and business manager Stephanie Palmer.
At the competition’s outset, the vehicles are checked for rule compliance. Braking ability, rollover stability and noise levels are checked before vehicles are allowed to compete in the dynamic events (Skidpad, Autocross, Acceleration and Endurance). If its car can pass muster in the dynamic events, team member Dan Ciobanu believes Sacramento State can finish in the top 15 to 20, which would raise the racing team’s profile.

Kay credits the “team’s wealth of experience for preliminary design work, (which) has pared 40 pounds from last year’s four-cylinder entry,” while Ciobanu adds that the new Honda engine “is more reliable, affordable and runs on a leaner mix of fuel.” It should be better able to handle the rigors of testing and the track.

The team’s success flows from team continuity. Palmer has three years’ experience. Ditto for Jon Oakleaf, intake manifold lead; Kay, frame and body lead; Nick Marchiano, suspension lead; and Kyle Pratt, cockpit and controls lead. Ryan Hart, driver and electrical lead, has worked seven years on professional racing teams. Ciobanu, drivetrain lead, joined the team three years ago, but he has built and raced cars since he was 15. All seven students are mechanical engineering majors and bring different skills to the team.

To listen to the team describe the race car’s components is to appreciate the passion they bring to this project. These engineers are applying what they’ve learned to the creation of a finely tuned racing machine, which is why the annual competition draws all manner of companies, including General Motors, Ford and Chrysler, looking to hire graduates whose practical experience complements their expertise.

Aki Kumagai, professor of mechanical engineering, is the team adviser. He and other faculty periodically lend a hand with specific problems, but these students definitely know what they are doing. “They are truly students in a class of their own,” Kumagai says, “presenting their work in front of professionals in the automobile industry. What they experience through this project is closest to what they will experience in the real engineering world.”

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