

Overview of Formula SAE for Interested Students

UV Doron, March 2015

Formula SAE - The Formula SAE (FSAE) competition provides challenging design and project management experiences. FSAE is a student design competition endorsed by SAE International (formerly the Society of Automotive Engineers) and supported by the major auto manufacturers and other companies. The objective is for student teams to design, construct, test/develop, and compete with small, open wheel racecars. The winner is determined based on three "static" events (design, cost, and business case presentation) and four "dynamic" events (acceleration, skid pad, autocross, and endurance/economy). For more information, see <http://students.sae.org/>

Students Needed - Students with knowledge and/or experience in the following technologies or who are interested in learning about these technologies are needed for this project - vehicle dynamics (suspension & handling), engines (MEEN 410 plus fluid dynamics & heat transfer), structures, composites, and manufacturing. Project success also requires project management, fund raising, and teamwork. Students in ME and MMET are targeted. Other majors are also welcome. The Texas A&M FSAE car will be designed during the fall semester as the project for ENGR 401 - Interdisciplinary Design and built and developed during the spring semester in ENGR 402 - Interdisciplinary Design II.

Benefits From The TAMU FSAE Project - This project provides an opportunity to participate in as close to a real industrial design project as you will get in academia. You have a real budget and a schedule with an inflexible delivery date - the competition will not be delayed if Texas A&M has not completed their car. You have to deal with all of the dollars/schedule/people problems that you will encounter for the rest of your professional career. You must build your design and make it work in the spring; your teammates are depending on you. This is a great learning experience. The project advisors interview and "hire" (no pay) a project manager, he/she picks his/her staff, and the students run the project. If man-hours are charged at competitive engineering rates this is well over a \$1,000,000 project and companies are impressed to see that on your resume. The Texas A&M FSAE and Formula Hybrid program has been very successful with five overall wins, two seconds, two fifths, and one Rookie of the Year award in 14 years competing against up to 140 university teams each year from all over the world. The budget for the TAMU FSAE competition is typically about \$40K cash and \$25K in free and discounted products from sponsors. One of the personal rewards of this project, other than the experience, is that most engineers find it very satisfying to see that the product that they designed and built performs as predicted and designed.

Commitment Required - The cost to you for this experience is that you will put in at least three times as much work as the typical student in the capstone design course; this project is equivalent to a design class plus a major volunteer extra-curricular activity. A two-semester commitment is required. Team members develop a very strong sense of responsibility to the team and do whatever is required to be sure that their part of the design/car works. Students are expected to minimize their Christmas break, in addition to working on the project during Spring Break. Be certain that you are willing to make this commitment before joining the FSAE team. Many former FSAE and FH team members have stated that their design project was the most rewarding experience of their academic career. As with anything else, what you get out of it is proportional to what you put into it. A portion of your senior design grade is based on performance.

How to Get Involved - If you have the prerequisites to take the capstone design course in your department, register for the section of ENGR 401 that has a Tuesday afternoon design studio in the fall. Most engineering departments will allow students to substitute ENGR 401 & 402 for two capstone design courses or one capstone design course and a tech elective depending on degree requirements. For MEEN students ENGR 401 & 402 will be substituted for MEEN 401 & 402. For other majors see your advisor for substitutions. Students who are not registering for ENGR 401 or 402 are encouraged to audit or participate in other aspects of the project as volunteers.

All students who would like to participate in the FSAE design class must fill out the application form providing some info about themselves. Forms are available on the team's website (texasaggieracing.com). Email completed applications to recruitment@texasaggieracing.com and projectmanager@texasaggieracing.com. If the course is over subscribed or for some reason you do not have the prerequisites to be in this course/section your department advisors will register you for the appropriate course in your department that is compatible with your schedule.

I hope that you decide to participate.