Over the summer, twenty rising 10th grade girls from public schools in the Providence/Pawtucket area were treated to a private tour of the new shop at Tockwotton as well as an exciting hands-on learning experience. With two Brown FSAE members, they explored the engine, tires, and brakes systems and learned the basics of steering and suspension. Each of the students had a chance to sit in the car and practice egress—Tori strapped each girl into the six-point safety harness and timed their escape! A handful made it out within the five-second limit set at competition. Meanwhile, a couple girls enjoyed trying on the full fireproof driving suit from the helmet to the gloves! We hope to see these girls involved in FSAE in the future.

SPIRA Engineering Camp Girls Visit the Shop!

Evan Lester (*13) and Tori Lee (*15) give an extensive lesson on cars to these high school campers, explaining the various physics and engineering concepts behind racecar design.

Ben Freudberg (*12), chassis/suspension lead, redesigned the bellcranks to have rising rate suspension. This allows the car to glide over bumps in the course while still maintaining stiff cornering characteristics. The shifting controller was switched to a USB-based microcontroller system by Warren Jin (*12), which reduced board complexity and significantly simplified programming and debugging.

Finally, Colden Eldridge (*14) redesigned the steering system this year with a focus on finding a natural position of the wheel, as well as reducing the force required to steer. To improve the system’s resilience, last year’s steering wheel needle bearing was replaced with a pair of tapered roller bearings to better handle applied torques.

“FSAE was not only a great opportunity in gaining engineering skills not taught in a classroom, but also a way to make amazing friends who share my interests.” — Horacio

“The car was designed with the goal of promoting compatibility across systems and enabling amateur drivers to take full advantage of the car’s potential.”

Ben Freudberg (*12) testing and tuning the car.

“FSAE was not only a great opportunity in gaining engineering skills not taught in a classroom, but also a way to make amazing friends who share my interests.” — Horacio

THE CAR

The team was excited for the changes made between 2011 and 2012. This year’s car was designed to be more reliable and more drivable than in years past by adding additional data collection in order to improve tuning. The car was designed with the goal of promoting compatibility across systems and enabling amateur drivers to take full advantage of the car’s potential.

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The pedal box rails were changed to have angled sliders, a design that Jeanette Miranda (*14) worked on. These allowed for smoother movement of the pedal box, because the mechanism by which the sliders connected to the rails was improved.

Jeanette also worked on the dually actuated clutch that provided the driver with the precise control and feedback of a manual pull-cable clutch, while still allowing the electronics of the shifting system to clutch during downshifts and for stall prevention.

“The team, immediately after successfully completing the endurance event.

One team. One year. One car.

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THE COMPETITION

Competition this May was extremely eventful. The team lead, Max Gottesman ('13), and faculty advisor, Chris Bull ('79), set off with the entire shop packed into the truck and ensured that the car made it safely to Detroit with no hiccups. The rest of the team members followed in two rental cars, but just an hour away from the hotel, one of the rentals broke down. After some quick thinking, everybody arrived at the hotel safe and sound, excited and ready to go for the next day.

The five drivers for competition this year were Ben Freudberg ('12), Max Gottesman ('13), Golden Eldridge ('14), Jeanette Miranda ('13), and Stephen Weinreich ('14). The drivers passed egregiously, and the car passed technical inspection smoothly. The car's braking system had been leaking prior to competition, but one last touchup did the trick.

THE TEAM

Congratulations to the team's seniors, who graduated this past May and have successfully settled into at their respective workplaces! Ben Freudberg is now at Aurora Flight Sciences in Cambridge, MA, designing mechanical assemblies and components for both the plane-side and ground-side of an unmanned aerial vehicle systems. He also works with component calibration and testing as a mechanical design engineer. Warren Jin is with Trip Advisor in Boston, working as a software engineer in the division for businesses. While the team will miss their expertise and charismatic personalities, everyone wishes them the best!

The team welcomed a multitude of enthusiastic new members this year. Elisabeth Berger, Sam Breslow, Phil Denny, Dana Douardville, Horacio Fernandez, Sam Friedman, Pawel Golyksy, Victoria Lee, Evan Lester, Kyle Presser, and Max Gottesman ('13), and Morgan Walti ('13) along with their impressive combined welding skills!

THE FUTURE

This upcoming year brings many new and exciting opportunities for the team. Having comfortably settled into the new shop (windows, ventilation system, and all), the team has jumped right into making new members to weld and machine.

This year, the team has switched over to an entirely new schedule for the design and build process. The car will be designed in the spring and built the following fall. This year's car utilizes the designs from last spring, and as soon as the car is assembled, sub-systems will be added and plan ahead for the next year.

One of the major goals for 2012-2013 involves increasing the allotted time to tune the car. Tuning is a significant factor in bringing the car to its full potential, and in the past, this has been a shortcoming in the face of the fast-approaching competition. With the new time schedule, the team will have the entire spring semester to bring the car to its peak performance. Additionally, new members will receive a better learning experience, exploring the design behind the car after having carefully machined and assembled each part.

This change also means that drivers will have all of spring semester to practice racing the car, which will yield better results in the dynamic events this year. Over the summer, members working around Providence took the car driving on multiple occasions. They focused on improving their times with each lap while enjoying the thrill of the driving experience.

THANK YOU!

The team would like to extend their most heartfelt appreciation to all of the sponsors who made this year possible. The diversity of Brown's team, with concentrations ranging from biology to every field of engineering to music cognition, adds a wonderful dynamic to the fabrication and design of the car each year. The valuable skills gained from being on the Car Team are not merely confined to engineering, but extend to industrial design, collaboration, software applications, budgeting, and time management. The team is grateful to all of the sponsors for their resources, knowledge, and perpetual support.

CONTACT US!

As always, please feel free to email the team anytime at fsae@brown.edu!