

Baja Student Automotive Engineers (SAE)

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Auburn Baja Student Automotive Engineers (SAE) is a student-led organization that designs and constructs an off-road racing car each year in pursuit of a perfect balance of speed, strength, and endurance. Students design, build, fund, and race the car themselves with some help from corporate partners and private citizens. Auburn Baja was founded in 1977, and in the second year of the competition, won first place overall. The team has had many top ten finishes since, including another first place overall win in 2007. The current team consists of a mix of class levels. The majority of members are majoring in engineering, although a minority are studying other majors.

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Each year, the team begins with a blank piece of paper. The team must design the car from scratch with the design limited only by a series of safety rules, including a mandated roll cage and a specified engine. Design goals are to minimize weight, maximize efficiency, and create the most effective suspension. All goals aim to make the best car within the challenging rule limitations. While each car design stands on its own, the experience of previous years informs the next year's design, as we can build off a design that works, modify one that does not work, or design something different altogether.

Design does not end until the completion of a full car model in the Solidworks computer program. A complete model precedes any construction and requires the integration of a team of three to seven designers. The teamwork required here is evident, as all the pieces of the design must fit perfectly. Each senior designer has an understudy, who learns the general skills of design and the specific skills of that system. After a year, these understudies become designers who work alone and replace graduated members. The passing of knowledge to less experienced members not only prepares team members for competition but also for education and career applications.

Baja SAE prepares members to use real-world applications of engineering principles. Team members are practically trained for collaborative designing, critical thinking, and independent decision-making. Baja team members regularly pursue graduate degrees, careers in the automotive field, and jobs in other high-profile fields.

Our final product of SAE Baja is a four wheeled off-road vehicle capable of handling most obstacles. The drivetrain design gears for acceleration without sacrificing top speed; the suspension aims for the tightest maneuverability at high speeds; and the frame needs minimum weight with maximum safety. When the car enters a race, it is accompanied by a detailed cost report, professional design report, and market-researched sales presentation. These requirements highlight the need for versatility and require a team with a diverse set of skills.



Photo: Members of the Auburn University Baja SAE stand with their off-road racing car.



Photo: An Auburn University student driving the off-road racing car designed and built by Auburn Baja SAE.