Formula SAE is a Society of Automotive Engineering (SAE) sponsored competition where engineering students conceive, design, fabricate, and compete with small formula-style racing cars. The restrictions on the car frame and engine are limited so that the knowledge, creativity, and imagination of the students are challenged. The cars are built with a team effort over a period of approximately one year and are taken to a competition that is held in mid-May in Pontiac, Michigan. The competition is currently limited to 140 entrants with competitors from different universities primarily from the United States and Canada. However, last year’s competition also included cars from Mexico, Korea, Japan, Australia, Great Britain, Germany, and Finland. The end result is an real-life learning experience for engineering students in a difficult engineering project as well as an opportunity to work in a larger team effort.

For the purpose of the competition, the students are to assume that a manufacturing firm has engaged them to produce a prototype car for evaluation as a production item. The intended sales market is the nonprofessional weekend autocross racer. Therefore, the car must have high very high performance in terms of its acceleration, braking, and handling qualities. The car must be low in cost, easy to maintain, and reliable. In addition, the car’s marketability is enhanced by other factors such as aesthetics, comfort, and the use of common parts. The manufacturing firm is planning to produce 1000 cars per year at a cost below $20,000. The challenge to the design team is to design and fabricate a prototype car that best meets these goals and intents. Each design will be compared and judged with other competing design to determine the best overall car.

The cars are judged in three different categories: static inspection and engineering design, solo performance trials, and high performance track endurance. These events are scored to determine how well the car performs. For the 2003 University of Utah car, the students designed and fabricated the carbon fiber chassis, the rack and pinion steering, the front and rear suspension components, the brakes, the wheel centers, the final drive gearbox including the gears, the fuel injection system and intake manifold, and the exhaust system. The base engine is a Honda Motorcycle engine which develops approximately 80 horsepower. The overall weight of the car without the driver is just over 500 lbs. For 2004, an entirely new car is being designed and fabricated with an emphasis on building a smaller and lighter car. The University of Utah has participated in this event for the past 9 years.