ABSTRACT

TITLE:	Development of an Off-Road Vehicle for the Sae Baja Competition
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ABSTRACT: Baja SAE is an intercollegiate engineering design competition for undergraduate and graduate engineering students. The object of the competition is to simulate real-world engineering design projects and their related challenges. Each team is competing to have its design accepted for manufacture by a fictitious firm. The students must function as a team to design, engineer, build, test, promote and compete with a vehicle within the limits of the rules. They must also generate financial support for their project and manage their educational priorities. Each team's goal is to design and build a single-seat, all-terrain, sporting vehicle whose structure contains the driver. The vehicle is to be a prototype for a reliable, maintainable, ergonomic, and economic production vehicle which serves a recreational user market, sized at approximately 4000 units per year. The vehicle should aspire to market-leading performance in terms of speed, handling, ride, and ruggedness over rough terrain and off-road conditions. Performance will be measured by success in the dynamic events which include rock crawl, acceleration, hill climb, and endurance events. Along with the dynamic events, the success of the vehicle will be determined by static events including the design report and presentation. Using the expertise provided by the Fort Lewis Engineering department, the 2015 Baja SAE team was able to design the entire vehicle from scratch. The design has been inspired by universities which have competed in the event for many years, yet the originality of the vehicle has been the overriding motivation behind the design. The team's focus was directed towards ensuring that the vehicle would do well in each dynamic event rather than designing around a specific event. It was essential that each member of the team worked closely with one another in order to overcome the difficulty of an integrated project.