UC Irvine Racecar Engineering: Baja XV

Team Leads: Max Venaas and Davon Mukhar
Advisor: Dr. Michael McCarthy
http://students.sae.org/cds/bajasae/

Background
Baja SAE Series consists of various competitions that simulate real-world engineering design projects and challenges that come with. As a team, BAJA XV must design, build, test, promote and race a vehicle within the limits of the rules while generating financial support for the project.

Objective
Build a lightweight, long travel vehicle that is capable of conquering multiple off terrains such as rock climbing, hill climbing and small jumps. Successfully finish the four hour endurance race as well as the other sections.

Requirements
Vehicle must have maximum dimensions of 64 in. (width) and 108 in. (length). In order to provide driver safety, there must be a 6 in. clearance between the driver’s helmet and chassis and a 3 in. clearance between the rest of the driver’s body and chassis.

Timeline
Fall 2014
- Obtain design requirements and create chassis to meet these requirements.
- Make and test two half-scale models
- Begin and complete manufacture of full scale chassis.
- Begin modeling drivetrain parts on Solidworks
- Begin design and calculations of A-arms.

Winter 2015
- Complete and manufacture suspension geometry.
- Assemble drivetrain parts onto chassis.
- Compete in SAE competition, Oregon

Current Status
Through this project, engineering students are allowed to work as a team to design and create a vehicle by putting into practice the knowledge they have acquired all while making driver safety the top priority.

The suspension team is currently designing the A-arms and testing them by applying strengths similar to those encountered during the endurance race. Drivetrain team has begun modeling the parts on Solidworks.

Budget
SAE requires each team to submit a cost report and a prototype cost. The cost report provides background information that will help verify the vehicle’s actual cost. SAE Baja XV is aiming for a vehicle cost of $8,000. The prototype cost will provide what the building of the vehicle actually cost.