THE UNIVERSITY OF TENNESSEE AT MARTIN 2011-2012
SAE BAJA COMPETITION

PROJECT GOAL:
The main goal of the 2011-2012 UTM SAE Baja team was to develop a first place vehicle. The team
modified the 2010/2011 Baja to develop a superior car capable of outperforming the competitor's vehicles.

PROJECT OVERVIEW:
The Society of Automotive Engineers (SAE) Baja competition is held annually to help collegiate SAE members gain experience in tasks involving: engineering, designing, and manufacturing a new product which will be introduced to a consumer market. Each individual team must design and fabricate a one person mini-baja vehicle to compete in a series of competitions held to assess the performance of the vehicle. Some of the competitions test: maneuverability, endurance, acceleration, pulling, braking, and top speed. Each vehicle will be judged on all of these characteristics along with the design, cost, and safety of the vehicle. The final scoring will be calculated at the end of the three day competition to determine the winning vehicle.

DRIVE TRAIN:
A continuously variable transmission (CVT) converts the torque from the motor to the transmission input shaft. The transmission used in this year’s design was a double reduction two-speed chain drive. A new manual shifting mechanism was implemented to take the place of the old pneumatic system.

FRAME:
The main objectives for designing the frame included: minimizing weight, making sure all rules are satisfied, and providing attachment points for suspension, engine, and other components.

FRONT SUSPENSION & STEERING:
The objectives of this project was to engineer, fabricate, and construct a front suspension and steering assembly to facilitate a maneuverable vehicle.

FUEL AND BRAKE SYSTEMS:
The objective was to engineer a safe and efficient fuel cell along with a braking system that would meet the rules and regulations of the SAE rulebook.

REAR SUSPENSION:
The objective of the rear suspension was to use a hybrid modified trailing arm assembly with a reinforced truss design between the a-arms to allow the shock absorbers to be attached to the a-arm assembly itself allowing for a greater range of motion.

COMPETITION:
The SAE Mini Baja event was held in Auburn Alabama, April 19th – 22nd 2012. 100 schools from 15 different countries participated in the event. Due to mechanical failure UTM was unable to complete the endurance race, but was still able to place 32nd overall in the competition.

SENIOR TEAM MEMBERS:
Cody Jackson, Tyler Smith, Spencer Bean, Michael Bonville, Jebb Long, Eric Davidson

FACULTY ADVISOR:
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