Suspension is a critical characteristic of the SAE Mini Baja vehicle. It determines the feel and ride of the vehicle while taking all sorts of impact from any incoming obstacles. Steering effects the handle and the agility of the vehicle. These two subgroups designed correctly can optimize vehicle performance.

- **Wheel Travel**: Our vehicle has a travel capacity of 10 inches.
- **Steering**: The vehicle can turn within a 15 ft radius.
- **Ride Height**: Our ride height allows for 10 inches of ground clearance to be able to ride over larger objects.

Suspension and steering mechanisms are complex. It includes multiple parameters combined between the front and rear. To optimize vehicle performance the team focused on camber, toe, spring rate, caster, rollcenter, and Ackerman Geometry.

**Methods**

Design methods and characteristics of the suspension and steering include:

1. Dual A arm suspension
2. LOTUS Suspension Software
3. Rack and pinion
4. In house fabrication
5. Custom knuckle and uniball joints

Our ZBROZ shocks are filled with nitrogen gas to prevent density and viscosity change at different altitudes.

**Results**

To test the handling of the vehicle a course was set up with 5 logs about 10 in. in diameter 3 ft. apart to drive over at about 20 mph. The buggy from last year lost control after about the third log. The buggy this year kept a straight path over the logs keeping the driver in control. The 10 in. of travel soaked up the bumps to keep the vehicle in control. The other parameter focused on improving was the turn radius. The buggy made a turn at a 12.5 ft. radius, exceeding our original requirement of 15 ft.

**Conclusions**

The performance and results of the vehicle shall make us competitive in the SAE BAJA competition. We expect to perform to the best of our abilities and represent USU with great results.

Interested in BAJA? Please feel free to ask questions about our vehicle.