Abstract
Using the previous year’s car as a baseline product, design changes were made to increase the performance of the vehicle. Our Baja team focused on the rear end of the car in addition to working with another team that focused on the front of the car. Each component of the rear drivetrain as well as rear suspension was redesigned and improved for the SAE international competition.

Project Objectives
• Fabricate an off-road vehicle designed to compete in, and finish, the SAE Baja Competition
• Surpass last year’s top speed of 22 mph by at least 5 mph
• Rear section shortened at least 12” based on last year’s design of 36”
• Ground clearance of 13.5”
• Include three gears: high, low, and reverse

Design Development
• Benchmarking: used the previous year’s car to obtain baseline performance characteristics, including: top speed, suspension travel, width, and length
• Visited Wilson Motorsports for research and design inspiration concerning full-sized baja vehicles
• Produced detailed drawings, established dimensions, built a proof-of-concept model, and developed SolidWorks models
• Used CosmosWorks to validate models by placing real-world forces on them

Results
• Achieved top speed: 35 MPH
• Ground clearance: 13.5”
• Width: 63”
• Wheel base: 67”
• Competition highlights:
  • 12th in the rock crawl
  • 21st in the business presentation
  • 18th in overall design

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