

# BAYLOR BAJA

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The Baylor Baja Experience

## SAE COMPETITIONS



- ▶ Society of Automotive Engineers
- ▶ Based in United States, extends internationally
- ▶ Several branches:
  - Baja
  - Formula
  - Clean snowmobiles
  - Aero
  - Super mileage
- ▶ Has held competitions since the 1970's



## The Challenge

- ▶ Design and build a vehicle that the "fictitious" company would want to mass produce and sell to the public
- ▶ Compete against an international field of collegiate students



## Baja SAE Series

- ▶ Annual Competitions
  - 2011–2012 Baja Competition Locations
    - Auburn, Alabama (Auburn University)
    - Portland, Oregon (SAE Oregon Section)
    - **Burlington, Wisconsin (University of Wisconsin – Madison)**
  - Four Day Competition
    - Day 1: Check in and set up
    - Day 2: Inspection, engine check, and design presentation
    - Day 3: Dynamic events
      - acceleration, mud bog, tractor pull, maneuverability, suspension and traction, hill climb, rock crawl
    - Day 4: Endurance race and competition results

## Participation

- ▶ Five to ten members representing their University
  - Freshman through Graduate students
- ▶ Over one hundred competing universities
  - 2012 Wisconsin competition, 115 registered competitors
- ▶ International Participation
  - **Venezuela** – Universidad Simon Bolivar
  - **Brazil** – Escola Politecnica Univ Sao Paulo, Escola de Eng de Sao Carlos USP
  - **India** – Manipal Institute of Technology
  - **Canada** – Ecole De Technologie Superieure, Universite Laval
  - **Mexico** – Universidad De La Salle Bajio, Universidad La Salle

## Recognized Engineering Programs

- ▶ Top US Engineering Programs:
 

◦ Cornell University	3 <sup>rd</sup>
◦ Rochester Institute of Technology	10 <sup>th</sup>
◦ Johns Hopkins University	14 <sup>th</sup>
◦ University of Notre Dame	32 <sup>nd</sup>
◦ Purdue University	37 <sup>th</sup>
◦ University of Illinois–Urbana Champaign	81 <sup>st</sup>
- ▶ Big 12 Competitors
 

◦ University of Oklahoma	44 <sup>th</sup>
◦ Iowa State University	69 <sup>th</sup>
◦ <b>Baylor University</b>	<b>74<sup>th</sup></b>
◦ Oklahoma State University	78 <sup>th</sup>

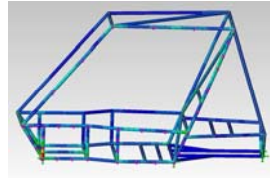
## Competition Events Overview

- ▶ **Dynamic Events (300)**
  - Acceleration Land Maneuverability
  - Mud Bog
  - Sled Pull
  - Suspension & Traction
- ▶ **Static Events (300)**
  - Cost
  - Design
- ▶ **Endurance Race (400)**
- ▶ **1000 Total Points**



## Baylor Baja's First Competition

### ▶ Design



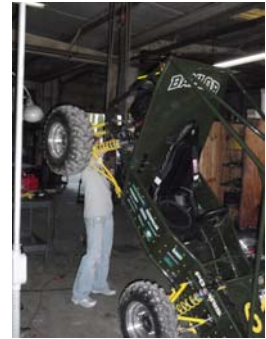
## Baylor Baja's First Competition

### ▶ Fabrication



## Baylor Baja's First Competition

### ▶ Testing



## Baylor Baja's First Competition

### ▶ Competition



## Baylor Baja's First Competition

### ▶ Burlington, Wisconsin (June 7-10, 2011)

- ▶ **115 registered teams**
  - **74<sup>th</sup> Overall**
  - 75<sup>th</sup> Design
  - 43<sup>rd</sup> Endurance
  - 29<sup>th</sup> Mud Bog
  - 25<sup>th</sup> Tractor Pull
  - 54<sup>th</sup> Acceleration
  - 85<sup>th</sup> Maneuverability
  - 86<sup>th</sup> Suspension and Traction
  - 68<sup>th</sup> Prototype Cost



## The Baja Experience



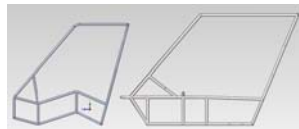
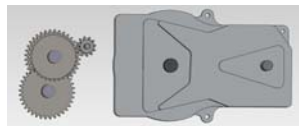
## 2012-2013 Goals

- Place in the top third at the Bellingham, Washington Competition
  - Reduce weight and maintain durability
  - Improve suspension and handling
  - Increase external sponsorship
- Continue to set a strong foundation for the program
  - Organizational structure
  - Financial security



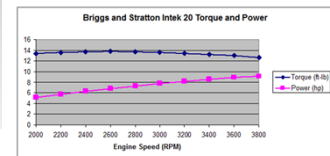
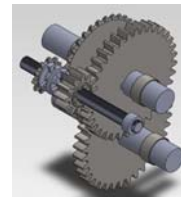
## Weight Reduction

- Material Selection
- Component Sizing

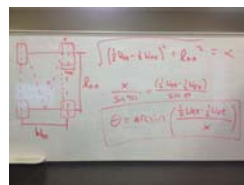
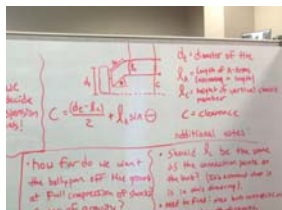


## Improved Acceleration

- Tire size
- Custom Gearbox
- Weight Reduction



## Better Handling & Ground Clearance



## Estimated Costs (2012-2013)

Materials and Parts	\$14,000
Competition Registration	\$1,000
Travel to Bellingham, WA	\$7,000
Tools	\$3,000

**Total \$25,000**

## Sponsorship

- ▶ Increase external interest in Baylor Baja
- ▶ Sponsorship Opportunities
  - **Green \$250–\$1,499**
    - Recognition plaque
    - Company name/logo on website and team shirts
    - Regular updates on team progress
  - **Gold \$1,500–\$2,499**
    - All Green rewards
    - Company name/logo displayed on vehicle
  - **Bear \$2,500+**
    - All Gold rewards
    - Company name/logo prominently displayed on vehicle

## 2011–2012 Sponsors

### Unitex Properties



## Questions



## How Can You Help?

### Monetary Donations – \$25,000

Car Fabrication & Assembly	\$14,000
Competition Registration	\$1,000
Team Travel to Bellingham, WA	\$7,000
Tools	\$3,000

### Trailer to Transport Car to Competition



### Tools

- Welder with Shielding Gas Cylinder
- Oxygen & Acetylene Cylinders
- Cutting Torch
- Standard Tool Set
- Drill with Cutting & Tap Sets
- Bench Grinder
- Tube Roller
- Chop Saw
- Angle Grinder
- Pipe Bender

### Build Space



2011 – 2012 Team Utilized Hangar Space at TSTC (through Dr. Harold Rafuse)

## How to Donate

**Tax deductible donations to:**  
Baylor University for Baylor Baja

Dr. Lesley Wright  
Baylor University  
Dept. Mechanical Engineering  
One Bear Place #97356  
Waco, Texas 76798–7356

## Contact Information

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