For 27 continuous years, Michigan SAE Baja Racing has competed in national competitions that challenge student teams to design, build, and race a single-seat off-road vehicle. All class levels are represented, from freshmen to graduate students. Participating on such a team helps students develop valuable real-world skills such as time and project management, communication, teamwork, and practical engineering. These skills give them a competitive advantage when entering the workforce.
**THE 2016 CAR: MBR-27**

**Frame:**
4130 Chromoly steel tube roll cage

**Suspension:**
*Front:* Dual A-arm, custom corner assemblies
*Rear:* Trailing Link with single camber link per side

**Panels:**
Custom carbon fiber layups

**Engine:**
Briggs & Stratton Intek Model 20

**Brakes:**
Custom rotors
*Front:* Custom calipers
*Rear:* Wilwood PS1 caliper

**Drivetrain:**
Entirely custom continuously variable transmission, single-speed gearbox, & axially-stressed driveshaft
DESIGN

To design the vehicle, the team uses a powerful and versatile library of Computer Aided Engineering software. The team approaches design as an iterative process which includes component and system integration, manufacturing, and testing. The car is broken down into numerous subsystems, each having a lead engineer. This approach gives a valuable experience in both component and overall system design.
CAE models are compared to on-car testing data using a robust and customizable data acquisition system. Students utilize strain gauges, hall effect sensors, linear potentiometers, and more to measure loads, speeds, and displacements of various vehicle components. The overall design process is presented to and evaluated by a panel of judges at each competition.
MANUFACTURING

Design for manufacturability and assembly is a key component to our success. Through involvement with the team, members gain valuable hands-on experience with many processes. Students manufacture their designs using manual and CNC mills and lathes, welding machines, 3-D printers, and composite layups. Processes not available in our shop are provided by numerous companies and sponsors.
Every year the team travels to all three North American competitions located across the country. The 2016 events were held in Cookeville, TN; Gorman, CA; and Rochester, NY. Universities from across the U.S. and around the world compete in the grueling three day competition. Competitions provide the opportunity to compare our design with this diverse field of competitors.

Day 0  Briggs & Stratton engine inspection, sales presentation

Day 1  Static Day: technical inspection, brake check, design review with industry professionals, cost audit

Day 2  Dynamic Day: acceleration, maneuverability, suspension & traction or rock crawl, hill climb or sled pull

Day 3  Endurance Day: a grueling four hour wheel-to-wheel race with up to one hundred vehicles
RESULTS

1st Place
Mike Schmidt Memorial Award
Acknowledging the team with the highest cumulative score from all three North American competitions

Gorman, CA
May 19-22
1st Overall
1st Acceleration
1st Hill Climb
1st Design
1st Maneuverability
1st Cost
2nd Endurance
3rd Sales

Rochester, NY
June 9-12
1st Overall
1st Acceleration
1st Hill Climb
1st Design
1st Endurance
2nd Cost
3rd Maneuverability
3rd Sales

Cookeville, TN
April 14-17
4th Overall
1st Acceleration
1st Design
2nd Maneuverability
2nd Cost
3rd Sales
Interaction with the Engineers and Leaders of Tomorrow
Michigan Baja Racing challenges our members to go beyond the classroom by thinking creatively and developing time management, communication, and leadership skills. This gives Michigan Baja Racing members a valuable experience that prepares them for work at industry-leading companies. Supporting Michigan Baja Racing provides sponsors with a unique opportunity to not only foster the development of tomorrow’s engineers but also recruit them for future employment.

Sponsor Publicity
Michigan Baja Racing proudly recognizes our sponsors with a logo on our car as well as a logo and link on our web page. Please see the table on the next page for further details.

Team Appreciation
All sponsors receive a team photo and video recap of the race season as a thank-you for their support.

Tax Deductions
Michigan Baja Racing is a non-profit organization; therefore, all donations are acknowledged as contributions to the University of Michigan and will be credited to the sponsor’s cumulative giving total.
THANK YOU TO OUR SPONSORS!

<table>
<thead>
<tr>
<th>Level</th>
<th>Diamond ($10000+)</th>
<th>Platinum ($9999-$5000)</th>
<th>Gold ($4999-$2500)</th>
<th>Silver ($2499-$1000)</th>
<th>Bronze ($999-$250)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appreciation</td>
<td>Platinum + company banner displayed at competition, detailed company description on website</td>
<td>Gold + extra large website and vehicle logos, team Resume Book.</td>
<td>Large website and vehicle logos</td>
<td>Medium website and vehicle logos</td>
<td>Website link, vehicle logo</td>
</tr>
</tbody>
</table>

Interested in learning more about the team? Contact us at michiganbajaracing@umich.edu, or visit our website: baja.engin.umich.edu