



IOWA STATE UNIVERSITY BAJA SAE SPONSORSHIP PROPOSAL

2016 SEASON

The Iowa State SAE International Baja team, a student organization that designs, builds, and competes with a custom off-road racecar, is currently seeking partners for sponsorship in the 2015-2016 season. Donations to the organization can be made in the form of parts, services, or monetary donations. Sponsorship benefits both the team and you, the sponsor, as well. Your support of the Iowa State SAE International Baja team is an investment in the future of engineering. We pride ourselves on producing world class engineers that will one day be doing world class engineering for you!

7/12/2015



MISSION STATEMENT

The purpose of Iowa State SAE International is to expand upon and apply theory learned in the classroom through participation, leadership, outreach, design, and fabrication of a mini-formula racecar, a fuel-efficient super-mileage car, and an off-road Baja vehicle for SAE Collegiate Design Series competitions. The team shall also be involved in local community outreach events aimed at educating youth in the fields of science, technology, engineering, and mathematics (S.T.E.M.).

IOWA STATE SAE

Iowa State University SAE is a student chapter of SAE International Collegiate Design Series. SAE International is a global association of engineers and other technical experts in the aerospace, automotive, and commercial vehicle industries. This organization hosts five collegiate design competitions. Iowa State SAE participates in the Baja SAE series, the Formula SAE series, and the Supermileage SAE series.

Each year student members of Iowa State SAE develop three vehicles to participate in the SAE International Collegiate Design Series. Both Baja and Formula events challenge members to market, design, and test the vehicles on various courses. All events accept both national and international entries, thus making them diverse cultural events. Several competitions are held annually for each design series, each typically hosting over 100 entries. The majority of the work performed by members is project based, enabling members to work on teams and gain leadership-experience.

COMMUNITY OUTREACH

Iowa State SAE hosts youth events that engage all ages in science and technology activities. In past years the organization has hosted events for groups such as 4-H, ISEK (Iowa State Engineering Kids), and FIRST Robotic League. Iowa State SAE believes every child has potential that just needs to be unlocked. We also believe that this is our chance to help develop the future of engineering by showcasing to these kids that one day they could be at Iowa State helping to design, build and race the Baja SAE car. If you would like our organization to participate in or host an event please contact our outreach coordinator Jason Whited at jwhited@iastate.edu for more information.



THE COMPETITION

SAE hosts three Baja competitive events in the West, Midwest and East regions of the United States, as well as additional competitions internationally in India, South Africa, Brazil and Korea. All competitions are open to any college internationally and typically limit the field to 100 competitors.

All competitions include static and dynamic events. Static events consist of design and sales presentations in addition to design and cost reports submitted prior to competition. Dynamic events include acceleration, traction, maneuverability, a specialty event, and endurance. Each competition is based on a total of 1000 points

ACCELERATION: 75 PTS



The acceleration event is designed to measure the vehicle's ability to accelerate from a rest down a 100 or 150 ft. flat runway.

ENDURANCE: 400 PTS

The endurance event assesses the vehicle's ability to operate continuously and at speed over rough terrain for 4 hours.



MANEUVERABILITY: 75 PTS



Maneuverability is designed to assess the vehicle's handling ability over typical off-road terrain (tight turns, ruts and bumps, drop-offs, rocks, gullies, logs and inclines).

DESIGN: 150 PTS

Engineering design assessment consists of a written design report and presentation. Team



design decisions are evaluated by professional engineers.

HILL CLIMB: 75 PTS

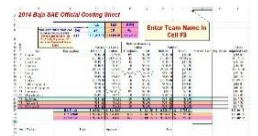


The hill climb event is designed to measure each vehicle's traction and weight distribution.

Hills may be steeper than 45°

COST: 100 PTS

The cost report is a detailed report that includes every component's MSRP cost.



Lowest prototype cost earns the most points.

SPECIALTY: 75 PTS



Specialty events test the vehicle under unique off-road conditions. 2015 events include rock

crawl & suspension.

SALES: 50 PTS

Members convince the hypothetical executives of a manufacturing co. to purchase the team's



vehicle design and put it into production at 4000 units per year.



THE CAR

FRONT SUSPENSION

Unequal length parallel A-Arm
12 in wheel travel
Custom geometry
Manufactured in house
Dual-rate coilover shocks



BRAKES & CONTROLS

Hydraulic disc brakes
7 in front disc
6.75 in rear disc
Custom laser cut design
Adjustable front/rear bias

FRAME

Tubular space frame
4130 steel
TIG welded
CNC Bent
CNC Notched



BODY

Custom design
Aluminum front/side panels
Vacuum-molded plastic rear
Full rear enclosure
Easy-to-use fasteners

CVT

Variable belt sheaves
Roller cam secondary
Complex profile ramps
Shifts from 1:4 to 1:1
Maximizes power from engine



DRIVETRAIN

8.25:1 gear reduction
Custom spur gears
CNC machined alum. case
Cam & pawl limit-slip diff.
Normalized half-shafts

REAR SUSPENSION

Independent 3 link
1.88 Leverage Ratio
11 in travel
Dual-Rate Coilover Shocks



ENGINE

10hp Briggs and Stratton
14.7 ft-lbs of torque
Governed at 3800rpm
Can NOT be modified

OVERALL



Top Speed: 36mph • Weight: 390lbs • Wheelbase: 59in • Track Width: 54in



THE TEAM

Highlights

2015 Oregon: 19th

- Endurance 21st
- Maneuverability 13th
- Sales Presentation 13th

2015 Auburn: 25th

- Dynamics Overall 15th
- Maneuverability 8th
- Sales Presentation 14th

2014 Kansas: 3rd

- Endurance 1st
- Dynamics Overall 3rd
- Design: 8th

2014 UTEP: 7th

- Endurance 1st
- Maneuverability 5th
- Hill Climb 8th

2013 Overall: 10th

- Endurance 13th
- Suspension 11th

Over Iowa State Baja's nearly **thirty year history**, we have seen great success both in the SAE Design Series and in hosting youth events.



In recent years, we have consistently placed in the top quarter of teams and won endurance races. This past year, we earned high placings in all areas of the competition, while improving scores primarily in the static events. As a young team, we learned a lot about the competition.

We will carry over that knowledge to the design to be even more competitive this year. A lot of team members dedicate themselves and an incredible portion of their time to building a winning car so that future teams can build on success. Focusing on communication and goals helps guide the team to success year after year. Each new year is filled with new ideas, enthusiasm, and new recruits.

Considering each competition typically has **100 entries**, consistently placing in the top quarter of teams and winning endurance races is a great achievement. In addition to achievements in the

design series, more than a dozen leaders at Iowa State SAE have also made notable accomplishments. Project Directors have been the recipient of the Leadership Development Program Award in past years. Leaders have also received other awards for exhibiting high quality leadership from the university.



CAREER DEVELOPMENT

Many "real world" skills are obtained on the Baja team. The list of companies that have recruited and benefited from members of the Baja team is long. Some of the more prevailing companies include **Space-X, Honda, Caterpillar, Polaris, Union Pacific, John Deere, Emerson, Jacobs Corporation, and Power Engineering and Manufacturing.**



JOHN DEERE



POLARIS
The Way Out.

SPACEX



SUPPORTING THE BAJA TEAM

The Baja team can be supported with and welcomes many forms of sponsorship. Common forms of sponsorship include material, service donations, and general funding. Supporting the team gives your company recognition of supporting higher education. With the organization's classification under the 501(c)(3) of the Internal Revenue Code,

YOUR DONATIONS ARE TAX DEDUCTIBLE.

Your sponsorship also serves as advertising. Iowa State Baja is a top team regularly featured in periodicals including newspapers and other academic publications where sponsors are able to gain more exposure. Your name will be exposed in at least three prime locations: the car, the trailer, and on banners flown during competition.

SPONSORSHIP LEVELS AND LOCATIONS:



Cardinal <\$500	Bronze ≥\$500	Silver ≥\$1000	Gold ≥\$2500	Platinum ≥\$5000
•Name on banner •Logo on car (10 in²)	•Larger name on banner •Logo on car (14 in²)	•Small logo on banner •Med logo on car (18 in²)	•Large logo on banner •Large logo on car (24 in²)	•Largest logo on banner •Largest logo on car (36 in²)

If the number of sponsors causes a shortage of space, logos will be sized down equally. Locations are color coded but approximate and depend heavily upon this year's body design. All material donations will be totaled up at retail cost and added to monetary donations to determine sponsorship level. To keep up with the team, sponsors will also receive a quarterly newsletter if requested. If you have any questions or requests, please contact Business Project Director Joshua Adam (see p6).

FUNDING NEEDED

Much support is needed for the manufacturing of the Baja vehicle as well as ensuring that that team is able to travel to competitions. Iowa State University has supplied the organization with office and shop space; however, a great deal of equipment and supplies are still necessary to operate the shop.



The following is an *estimated* report of the costs the team experiences throughout the year. Costs are often difficult to estimate because they include extensive time and materials that are donated. If you would like to view more detailed cost documentation, please ask.

1. Car Costs.....	39,800
a. Powertrain.....	900
b. Transmission.....	9,200
c. Drivetrain.....	1,700
d. Frame.....	11,500
e. Body.....	1,000
f. Steering.....	1,000
g. Suspension.....	3,600
h. Brakes.....	1,000
i. Fasteners.....	400
j. Electrical.....	400
k. Data Acquisition.....	8,000
l. Miscellaneous.....	400
m. Testing & Sponsor Visit Travel.....	800
2. Competitions.....	24,200
a. Louisville Midnight Mayhem.....	2,500
b. UW-Stout Backwoods Baja.....	1,500
c. Michigan Tech Winter Baja.....	1,700
d. SAE Rochester.....	5,600
e. SAE Tennessee.....	5,100
f. SAE California.....	7,700
3. Safety.....	1,200
a. On-Car.....	300
b. Driver.....	900
4. Shop Overhead.....	1,800
5. 2014-15 SEASON TOTAL	
ESTIMATED FINANCIAL NEED	67,000

CONTACT INFORMATION

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