



BAJA RACING



MICHIGAN ENGINEERING
UNIVERSITY OF MICHIGAN

**INFORMATION
BOOKLET**

THE TEAM, THE TEAM, THE TEAM



MICHIGAN BAJA SAE RACING'S MISSION IS TO DESIGN, BUILD, TEST, AND COMPETE WITH A GOAL OF ENGINEERING THE BEST, MOST WINNING BAJA VEHICLE IN MULTIPLE SAE BAJA COMPETITIONS. IN ACCORDANCE WITH THIS GOAL, TEAM MEMBERS DEVELOP REAL WORLD SKILLS THROUGH APPLYING CLASSROOM THEORIES TO DESIGN CHALLENGES, BUILDING POSITIVE RELATIONSHIPS WITH PROFESSIONAL AND UNIVERSITY ORGANIZATIONS, AND TO MANAGE A COMPLEX ENGINEERING PROJECT.

THE 2017 CAR: MBR-28



FRAME:

4130 CHROMOLY STEEL
TUBE ROLL CAGE

BRAKES:

CUSTOM FRONT AND REAR
ROTORS AND CALIPERS

ENGINE:

BRIGGS AND STRATTON
INTEK MODEL 19

SUSPENSION:

FRONT: DUAL A-ARM WITH
CUSTOM UPRIGHT
ASSEMBLY
REAR: ALUMINUM H-ARM
WITH DETACHABLE ANTI-
ROLL BAR

DRIVETRAIN:

CUSTOM CONTINUOUSLY
VARIABLE TRANSMISSION,
GEARBOX AND AXIALLY
STRESSED DRIVE SHAFT

PANELS:

CUSTOM CARBON FIBER
LAYUPS

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.

TESTING



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.

A high-angle photograph of a group of seven students in a workshop, working on a go-kart. The students are wearing casual clothing like t-shirts and jeans. They are gathered around the go-kart, which has a black frame and a yellow engine. One student is sitting on the ground, another is leaning over the kart, and others are standing or sitting nearby. The workshop has a yellow wall with 'FLAMMABLE' signs, a stack of tires, and various tools and equipment. The word 'MANUFACTURING' is written in large blue letters across the top of the image. A semi-transparent text box at the bottom contains a paragraph about design for manufacturability and assembly.

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.

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COMPETITIONS



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

EVERY YEAR THE TEAM TRAVELS TO ALL THREE NORTH AMERICAN COMPETITIONS LOCATED ACROSS THE COUNTRY. 2017 EVENTS WERE HELD IN GORMAN, CA; PITTSBURG, KS; AND EDWARDS, IL. 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.



104

ASSISTED TECH

OPERATION

PROTECT

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

NO

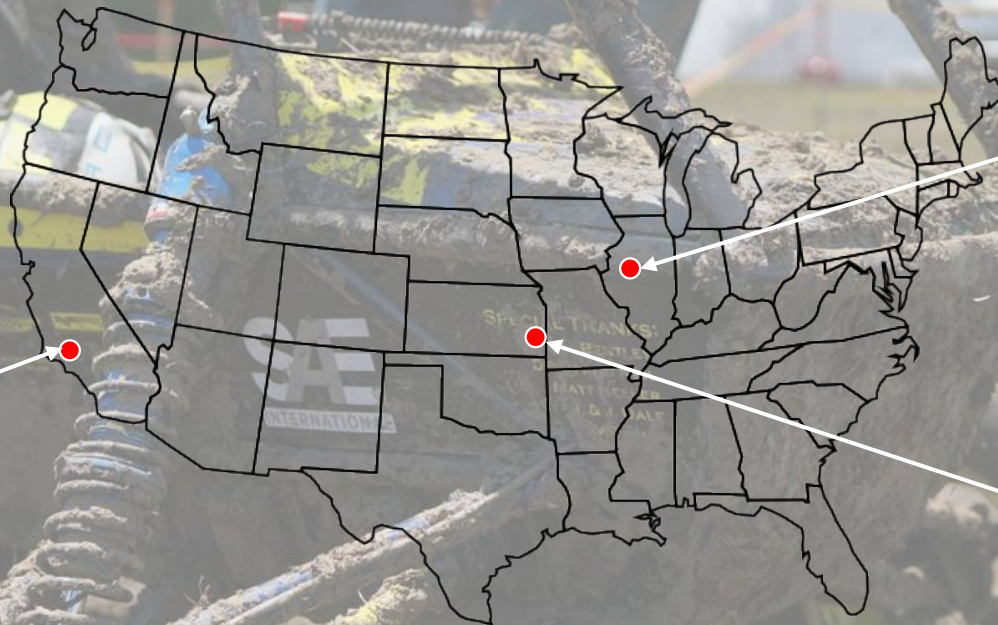
NO

RESULTS

1ST PLACE

MIKE SCHMIDT MEMORIAL IRON TEAM AWARD

ACKNOWLEDGING THE TEAM WITH THE
HIGHEST CUMULATIVE SCORE FROM ALL
THREE NORTH AMERICAN COMPETITIONS.



GORMAN, CA

APRIL 27-30

2ND OVERALL

1ST ACCELERATION

1ST MANEUVERABILITY

1ST SALES

2ND HILL CLIMB

2ND DESIGN

3RD COST

EDWARDS, IL

JUNE 7-10

3RD OVERALL

2ND ACCELERATION

2ND HILL CLIMB

2ND DESIGN

2ND ENDURANCE

PITTSBURG, KS

MAY 25-28

1ST OVERALL

1ST ACCELERATION

1ST SUSPENSION

1ST ENDURANCE

1ST MANEUVERABILITY

2ND DESIGN

2ND SALES



SPONSORSHIP BENEFITS

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!



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MECHANICAL ENGINEERING
UNIVERSITY OF MICHIGAN



MICHIGAN ENGINEERING
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Micro Gauge, Inc.



COLLEGE OF ENGINEERING
COMPUTER SCIENCE & ENGINEERING
UNIVERSITY OF MICHIGAN

Temp-Rite Steel Treating



ALL TEAM SPONSORS RECEIVE A WEBSITE LINK, LOGO ON THE VEHICLE, TEAM PHOTO, AND SEASON RECAP VIDEO

| LEVEL | DIAMOND (\$10000+) | PLATINUM (\$9999-\$5000) | GOLD (\$4999-\$2500) | SILVER (\$2499-\$1000) | BRONZE (\$999-\$250) |
|--------------|--|--|---------------------------------------|--|-------------------------------|
| APPRECIATION | PLATINUM + COMPANY BANNER DISPLAYED AT COMPETITION, DETAILED COMPANY DESCRIPTION ON WEBSITE | GOLD + EXTRA LARGE WEBSITE AND VEHICLE LOGOS, TEAM RESUME BOOK. | LARGE WEBSITE AND VEHICLE LOGOS | MEDIUM WEBSITE AND VEHICLE LOGOS | WEBSITE LINK, VEHICLE LOGO |

INTERESTED IN LEARNING MORE ABOUT THE TEAM? CONTACT US AT BAJARACING@UMICH.EDU, OR VISIT OUR WEBSITE: BAJA.ENGIN.UMICH.EDU