Laker Racing

The Society of Automotive Engineers (SAE) Mini-Baja Competition has been a long-standing collegiate contest that challenges the skills of both graduate and undergraduate students.

LSSU's School of Engineering and Technology, in conjunction with the local SAE student chapter, assembled design teams to prepare for the summer 2007 event under the umbrella of Laker Racing.

The project was been broken into two main tasks: drivetrain and chassis. Design constraints, team management, budgetary limitations and work place procedures are all components of the project process. Superior Drivetrain Solutions (SDS) handled the drivetrain responsibilities while its sister team, Twisted Off Road Chassis (TORC), was responsible for the chassis. To ensure durability of the vehicle, all analyses will be based on demanding off-road conditions.

Laker Racing expects to compete at the SAE Midwest Regional competition at Rochester Institute of Technology (Rochester, NY) in June 2007.

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*Cooperative Education Participants

The following students, who have or will be completing their senior design projects through cooperative education employment at various industries, participated with this year's teams during the fall 2006 semester:

RCS:	Erik Fredericks
TORC:	Jon Paul LaFave
USR:	Adam Staber

The School of Engineering and Technology is comprised of the following disciplines:

- Computer Engineering
- Electrical Engineering
- Mechanical Engineering
- Manufacturing Engineering Technology
- Industrial Technology
- Engineering Management

All of the senior engineering and technology students at Lake Superior State University are required to complete a challenging senior design project.

The students work in teams and use a composite of their technical and general education courses to successfully complete these projects.

Each project requires a detailed technical engineering analysis and is a challenging and realistic experience for our graduates. The intention of the senior design project is to provide valuable engineering experience that will help the team members transistion well from academia to industry or graduate school.

For more information about LSSU's School of Engineering & Technology, contact the office at 906-635-2207 or visit us online at
http://www.lssu.edu/eng

THE SCHOOL OF ENGINEERING & TECHNOLOGY

presents the

Class of 2007 Senior Design Project Presentations & Demonstrations

**Friday • May 4, 2007
1:00 p.m. - 5:00 p.m.
in the
Center for Applied Science
and Engineering Technology**

Lake Superior State University

COMPUTER CONTROLLED PLASMA DESIGNS

Team Members:
Steve Gilbert, Greg Robertson, Manar Wadi, and Daniel Wagner
Faculty Advisor: Keith Schwiderson
Project Sponsor: Lake Superior State University
Industrial Customer Contact: Jon Coullard

Presentation: 3:15 p.m., CAS 212
Demonstration: 4:00 p.m., CAS 120

Team CCPD implemented the necessary hardware and software interfacing to incorporate a CNC controller into an existing plasma cutter. The final product is a fully-automated machine capable of cutting through conductive material to create precise 2-dimensional shapes.

ROBOTIC CALIBRATION SYSTEMS

Team Members:
Justin Darga, Erik Fredericks*, Jordan Grawbarger, Tim Hay, and Andy VanSickle
Faculty Advisor: Paul Duesing
Project Sponsor: Continental Automotive Systems
Industrial Customer Contact: Bob Andersen

Presentation: 1:45 p.m., CAS 212
Demonstration: 2:30 p.m., CAS 122

Team RCS designed and built two service test stands for Continental Automotive Systems (CAS). The stands will be used to calibrate and troubleshoot the Sprint 3 Programmable Steering Machine, manufactured by Heitz Automotive, which CAS uses in applications related to vehicle safety systems.

SPECIALIZED TESTING SYSTEMS

Team Members:
Chance Jacoby, Amber Kardes, Michael Lane, Matthew Rajala and Tyler Skowronek
**Faculty Advisor:** Jon Coullard
Project Sponsor: Algoma Steel
Industrial Customer Contact: Rani Lottey

Presentation: 2:30 p.m., CAS 212
Demonstration: 3:15 p.m., CAS 122

Team STS designed and built a beam-testing machine to collect data on the capabilities of semi-trailer cross member beams. The machine will measure the effects of various vertical, torsional and cyclical loads that are applied to the cross member beams.
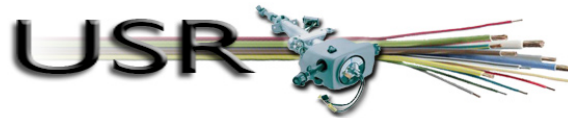
UNIVERSAL SIGNAL ROUTING

Team Members:
Natalie Buffone, Victor Grzeda, Dale Minkler, Jonathan Nolff, Justin Shaulis, and Adam Staber*
**Faculty Advisor:** David Baumann
Project Sponsor: Delphi Steering Systems
Industrial Customer Contact: Tim Bennett

Presentation: 1:00 p.m., CAS 212
Demonstration: 1:45 p.m., CAS 125

Team USR designed and manufactured circuit boards to enhance Delphi's steering column testing procedure. The design is used to route signals between the steering column and Delphi's testing machine to ensure safety and reliability. A computer program will allow for Delphi's engineers to route test signals via software to the correct location on the steering column.
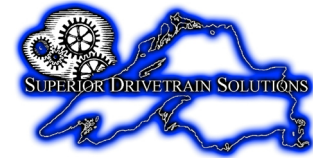
SUPERIOR DRIVETRAIN SOLUTIONS

Team Members:
Clifford Cook, Derek DeRossett, James Dilworth, Orlan Euale, Andrew Kissick, and Price McAllister
Faculty Advisor: Wael Mokhtar
Project Sponsor: Lake Superior State University-SAE
Industrial Customer Contacts:
Ray Adams & Paul Duesing

Presentation: 4:00 p.m., CAS 212
Demonstration: 4:45 p.m., CAS 122

Team SDS worked in conjunction with Team TORC in the development and construction of a Mini-Baja competition vehicle. SDS handled the drivetrain responsibilities including the design, construction and testing of the Mini-Baja engine, transmission, rear axle assembly, steering, brake, controls and throttle.

TWISTED OFF ROAD CHASSIS

Team Members:
Jon Paul LaFave*, Jeremy Jensen, Tom MacMillan, Matthew Slaght, Chris Valinski and Chris Winkler
Faculty Advisor: Robert Hildebrand
Project Sponsor: Lake Superior State University-SAE
Industrial Customer Contacts:
Ray Adams & Paul Duesing

Presentation: 4:00 p.m., CAS 212
Demonstration: 4:45 p.m., CAS 122

A companion team to SDS, Team TORC was responsible for the Mini-Baja vehicle's chassis. TORC used modern tecniques along with the basic principles of vehicle dynamics to design the vehicle's frame, roll cage, and suspension.