Collegiate Design Series News

Volume 3, Issue 4 January/February 2006

Issue Highlights

Final CSC Numbers are in – 16 Sleds to Compete!

Gearing up to kick off the 2006 Collegiate Design Series season, the Annual SAE Clean Snowmobile Challenge will be returning to Houghton, Michigan for its fourth year. The competition will be held March 13-18 at Michigan Tech's Keweenaw Research Center, which is known for its winter driving track and vehicle testing grounds. The competition is hosted by the Keweenaw Research Center and the Department of Mechanical Engineering – Engineering Mechanics.

Sixteen teams will be traveling to Houghton, MI to put their re-engineered sleds through a series of performance and emissions testing, including added events in 2005, ergonomic tests and subjective handling test. Teams will also be completing a 100 mile endurance event that starts with laps around the KRC winter track and then heads north to Copper Harbor on a snowmobile trail.

The testing for these teams has changed for both the traditional and zero-emissions entries. In the past, a control sled was used when ranking entries. Now, team members must beat the 2012 federal emissions standards. Team members must pass an objective noise test to get half of the points. After accumulating points for passing, the rest of the points are then earned as recordings of the sleds are played to individuals and rated according to appeal. "That's how it's done in industry. First you pass the test, and then you get to sell your sled", said Jay Meldrum, Director of the Keweenaw Research Center.

In 2003, McGill University was the first school to bring an all-electric sled, battery-powered snowmobile. In 2004, they returned to the event with sled modifications. With the increased inquiry from other teams, SAE International revised the competition rules for 2006 introducing two new classes in addition to the traditional class: Electric and Diesel.

This year for the first time, the zero-emissions sleds will compete in a separate class due to differences in speed and distance capabilities. The electric sleds will be subjected to different tests than those by the fuel-powered entries. Joining McGill this year in the electric class is Clarkson University.

Returning entries include teams from Clarkson University (traditional class), Ecole de Technologie Superieure, Kettering University, McGill University (electric class), Michigan Tech, Minnesota State University –Mankato, SUNY-Buffalo, University of Idaho, University of Maine, University of Wisconsin-Madison, University of Wisconsin-Platteville and Utah State University.

New challengers this year are teams from University of New Hampshire, University of Minnesota-Duluth and Clarkson University's zero-emissions entry.

The organizers encourage the public to attend. For event schedule, rules and information please visit http://students.sae.org/competitions/snow/

Student Deadlines:

Design Reports and TICA Spreadsheet are due Friday, March 3, 2006 by 5pm EST.

Late submittals will be penalized points

2006 FSAE at Ford's Michigan Proving Grounds

The Collegiate Design Series staff in conjunction with the Formula SAE Consortium is working with the host Ford Michigan Proving Ground (MPG) to finalize the last details of Formula SAE 2006.

This year the team paddocks will be spread out near the Proving Ground's vehicle dynamics area. Your paddock might be on gravel, grass, pavement or some combination of those surfaces. We can not predict what surface your paddock will have - so be prepared for anything. Paddocks are assigned first-come-first-served and we can't guarantee your location or surface. You may want to consider bringing your own hard surface to make it easier to work on your vehicle. Teams participating at past student competitions with unpaved paddocks have brought such things as; aluminum plates, interlocking plastic pads, rugs and plywood. The choice is up to you.

The paddock size will remain our standard 17' x 34.5'. NO EXCEPTIONS. Only a limited area is available for paddocks and we will not be able to accept tractor trailers. If you have any concerns about your transportation vehicle, please contact katklauz@aol.com.

A number of hotel contracts are now in place. You will find a list of available hotels in the Auburn Hills and Utica, Michigan areas through the FSAE website at http://students.sae.org/competitions/formulaseries/fsae/hotelinfo.htm

Attached to these hotels are links displaying the driving directions and time according to Mapquest.com. The nearest concentration of hotels is in Utica roughly 18 – 20 miles and 25 – 35 minutes drive time away from the site. Keep in mind that unless you're combining Formula with an Olympics training program walking to the site is not an option; you will need a car.

There are no restaurants of fast food outlets anywhere near MPG. We are in the process of arranging for some on-site food sellers, but you may want to consider bringing food and beverages.

We are finalizing and fine tuning the following:
Camera use rules – Keep in mind that MPG is an active test facility.
Event registration location – Registration might, or might not, be located offsite.
Site and schedule details– Access times, shuttle schedules, parking, etc

Please keep tuned to the newsletter and the SAE International FSAE forum for final details

For more event information please refer to the event website:
http://students.sae.org/competitions/formulaseries/west/

FSAE - Michigan Cont'd

Student Deadlines:

- Structural Equivalency Forms are due Wednesday, February 1, 2006. Email to katklauz@aol.com
- Impact Attenuator Data, Design Report and Design Spec Sheet are due Wednesday, March 1, 2006 by 5pm EST. These documents can be uploaded online under your team's registration page.
- Cost Report must be postmarked no later than Saturday, April 1, 2006. These reports must also be mailed to:
  Attn: Suzy Zukowski
  Team SAE – DaimlerChrysler Corporation
  CIMS 483-01-14
  800 Chrysler Drive East
  Auburn Hills, MI 48326-2757
- Fuel Order Type is due Saturday, April 15, 2006. Email to katklauz@aol.com
- Team Data – Reminder this information is required. This is NOT an option.
  1. Be sure to fill in team vehicle specifications online under team registration page by Wednesday, March 1, 2006
  2. Please email the following data by Wednesday, March 1, 2006, to shellham@sae.org : (A) car number, (B) team member's names, (C) faculty advisor and (D) sponsors in the following format:

     Car #
     Team Members: name; name; name; name; name; name; name; name; name; name; name;
     Faculty Advisor (s): name; name
     Sponsors: name; name; name; name; name; name; name; name; name; name; name; name

Late submittals will be penalized points

CDS EVENTS - Registered Teams

Clean Snowmobile – 16

Mini Baja East - 67

Aero Design East - 50

Mini Baja West - 83

Formula SAE - 140

Mini Baja Midwest - 140

Aero Design West - 48

Supermileage – 28 (Colleges)

Formula West – 70

2006 FSAE West Update

Planning and preparation for the 1st Formula SAE West competition is on schedule and everything will be ready when teams start to arrive at California Speedway on Wednesday, June 14, 2006. The FSAE West Captains Committee recently held a lengthy planning meeting at the track and developed preliminary locations and layouts for all the dynamic events. We anticipate having a preliminary schedule posted on the FSAE West web site in the near future.

You can find various maps of California Speedway on their website at http://www.californiaspeedway.com/seating/TrackMaps.jsp

Team paddocks will be located in the "Motor coach paddock" as indicated on the track map. Each paddocks space is 15 ft wide x 60 ft long and has electrical power.

Technical inspection, design and cost will be take place in the infield garages. Presentations will be done in the terrace suites immediately adjacent to the garages.

The autocross and endurance courses will be laid out on a portion of the infield road course.

Even though this will be first year for the competition we expect it to be very challenging. The registered teams include a number of schools that had previously finished in the top 10 and no less than four past first place winners: Texas A&M, University of Akron, University of Texas Arlington and University of Wollongong. So if you're coming – come prepared.

For more event information please refer to the event website: http://students.sae.org/competitions/formulaseries/west/

SAE-West Cont'd

Student Deadlines:

- Structural Equivalency Forms are due Wednesday, February 1, 2006. Email to katklauz@aol.com
- Impact Attenuator Data, Design Report and Design Spec Sheet are due Wednesday, March 1, 2006 by 5pm EST. These documents can be uploaded online under your team's registration page.
- Cost Report must be postmarked no later than Saturday, April 1, 2006. These reports must also be mailed to:
  Attn: Suzy Zukowski
  Team SAE – DaimlerChrysler Corporation
  CIMS 483-01-14
  800 Chrysler Drive East
  Auburn Hills, MI 48326-2757
- Fuel Order Type is due Saturday, April 15, 2006. Email to katklauz@aol.com
- Team Data – Reminder this information is required. This is NOT an option.
  1. Be sure to fill in team vehicle specifications online under team registration page by Wednesday, March 1, 2006
  2. Please email the following data by Wednesday, March 1, 2006, to shellham@sae.org : (A) car number, (B) team member's names, (C) faculty advisor and (D) sponsors in the following format:
     Car #
     Team Members: name; name; name; name; name; name; name; name; name; name; name;
     Faculty Advisor (s): name; name
     Sponsors: name; name; name; name; name; name; name; name; name; name; name; name

Late submittals will be penalized points

Preliminary Schedule Midwest Mini Baja

Wednesday May 24, 2006	
8 am	Gates to Walworth County Fairgrounds Open
9 am - 5 pm	Team Registration
9:30 am - 5 pm	Pre Inspection - Vehicle Weight, Ramp Angle, Governor Check
10 am - 5 pm	Safety Inspection
2 pm - 5:15 pm	Brake Testing
5:30 pm	Mandatory Team Meeting - Penalty for non-attendance
Thursday May 25, 2006	
7 am	Gates Open
8 am - noon, 1 pm - 5 pm	Safety Inspections, Design Judging
8 am - 2 pm	Late Registration
5:30 pm	Mandatory Team/Drivers Meeting - Penalty for non-attendance
Friday May 26, 2006	
6 am	MGA Gates Open
8 am - 12:30, 1 pm - 2:30 pm	Dynamic Events
4 pm - 6 pm	Endurance Course Open - Prize and Trophy for fasted posted practice lap
6:30 pm	Mandatory Team/Drivers Meeting - Penalty for non-attendance
6:45 pm- 9:45 pm	Cars cued for endurance race - Those cars not cued by 9:45 will forfeit their pole position (move to back of pack)
10 pm	MGA Gates Close
Saturday May 27, 2006	
6:30 am	MGA Gates Open
7:30 a.m.	Cars moved to Grid - Cars worked on overnight not in cue by 7:30 will start with a one lap penalty
7:55 am	National Anthem
8 am	Endurance Event Starts
Noon	Endurance Event Ends
Noon - 2 pm	Engine/Car Checks for Top Finishers
3 pm	MGA Gates Close
5:30 pm	Awards Ceremony

Preliminary Schedule Mini Baja East

Please note:
The optional pre-event Safety Inspection session on Apr 12 (previously listed here) has been canceled.

Apr 13, 2006: Static Events

Events: Registration, Design Judging, Safety Inspection, Dynamic Brake Test
Location: Auburn University Campus; Auburn, AL

Apr 14, 2006 2: Dynamic Events

Events: Incline (Tilt) Test, Acceleration & Top Speed, Land Maneuverability, Water Maneuverability, Log Pull, Suspension & Traction
Location: NCAT Facility; Opelika, AL

Apr 15, 2006: Endurance, Awards Banquet

Events: Endurance Race, Awards Banquet
Endurance Location: NCAT Facility; Opelika, AL
Banquet Location: TBA

Preliminary Schedule Mini Baja West

May 11, 2006

Day 1:
Portland Expo Center
- Sales Presentations
- Design Evaluation
- Safety/Tech inspection
- Engine Check
- Cost Analysis

May 12, 2006

Day 2:
Washougal MX Park
- Acceleration
- Hill climb
- Maneuverability
- Rock/Tree Crawl

May 13, 2006

Day 3:
Washougal MX Park
- Endurance Event!!

Reminders

- Engines were shipped after the deadline of 12/29, as soon as we receive tracking information we will pass it along.
- Mini Baja rules and technical questions should be emailed to bajarules@sae.org
- Purchase your transponder at http://www.amb-it.com/shop/amer/catalog/index.php?cPath=7_9
- Please email your transponder code number to jcutler@sae.org when you receive it. (It is extremely important to ensure your scores will be accurate)
- Pay Attention to Design and Cost Report deadlines!!

Mini Baja TRANSPONDERS!!

As stated in the rules 25.2 Transponder Requirement, all vehicles must be equipped with at least one AMB MX Rechargeable transponder. See www.amb-it.com for more details.

The timing system is capable of recording two transponder identifications per vehicle; therefore, teams may, at their option mount a second transponder as a backup in case the primary is damaged, knocked off the car or loses power.

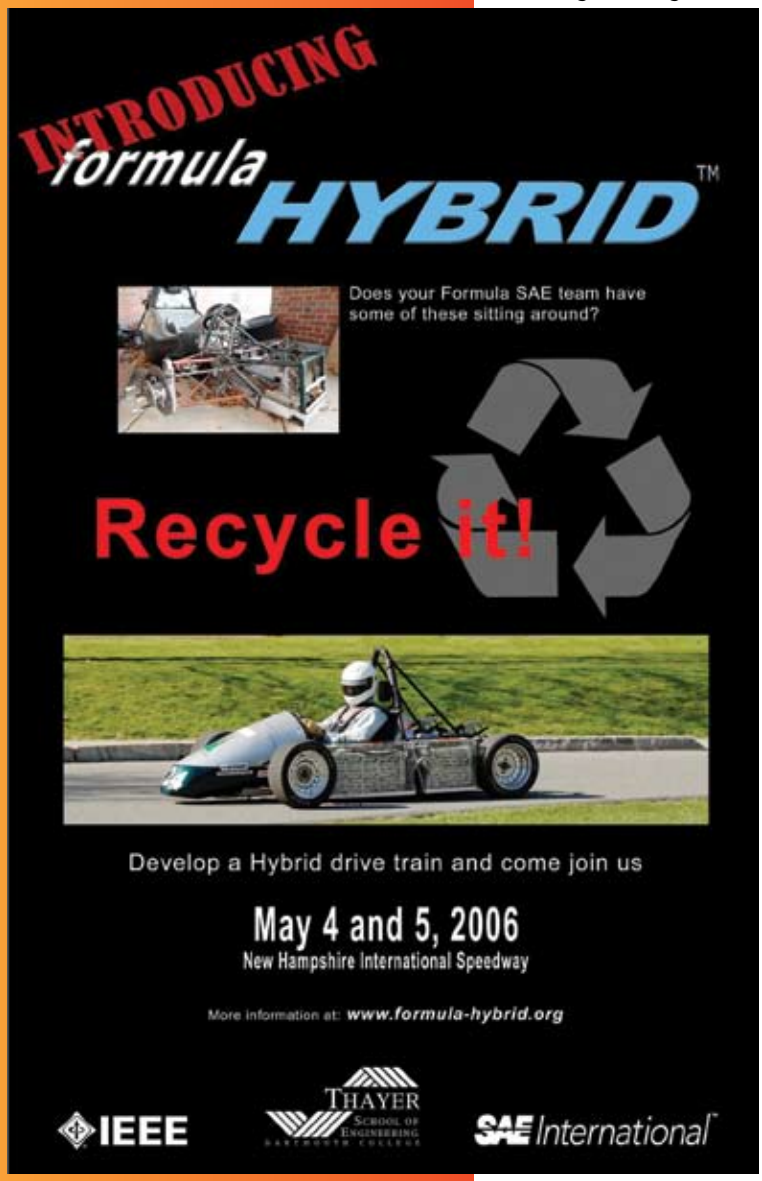
Transponders will used as part of the primary timing system for all dynamic events run closed loop courses at competitions in the United States and Canada. The use of transponders at competitions outside the United States and Canada is the organizers option. Check the individual event website prior to the competition.

It is each team's responsibility to have a functional, properly mounted and fully charged transponder of the specified type on their vehicle. Vehicles without a specified transponder will not be allowed to compete in any event for which a transponder is used for timing.

To purchase transponder directly, contact: Balton Aulls, AMB at 678-816-4000, ext 313. Balton is our contact and will assist all teams with the purchase of your transponder.

Formula Hybrid

We are pleased to announce the first "Formula Hybrid™," a competition for student-built hybrid-electric race cars, to be held May 4 - 5, 2006, at New Hampshire International Speedway in Loudon, NH, hosted by Thayer School of Engineering at Dartmouth College.



The inaugural 2006 Formula Hybrid competition is a demonstration event; there will be no published scored. All participants will be recognized through awards for their technical innovation, etc. Teams with cars that are still under design and construction are encouraged to attend the show and discuss their progress.

The purpose of this event is to encourage the development of hybrid automotive drive trains, with an emphasis on efficiency in a high-performance application. A Formula-Hybrid car is an open-wheel, single-seat race car built to a specific formula which emphasizes power train efficiency, overall vehicle design, and fuel efficiency in a high-performance application. Improved efficiency in an automotive drive system can be used to increase fuel economy, performance, or both. Fostering innovation in hybrid drive systems, even though the immediate goal is to improve performance, can ultimately benefit society and the environment.

The chassis and safety systems in a Formula-Hybrid car must meet all applicable Formula SAE rules. There are supplemental rules specific to the Formula-Hybrid with regards to drive train and electrical systems. Currently, only gas-electric hybrids are permitted, and flywheel energy accumulators are not allowed. These restrictions will be reconsidered as the competition evolves.

Kicking off the event, there will be a Formula Hybrid conference held on May 3, 2006. This conference is intended for Faculty Advisors, Industry experts, and others with an interest in Formula Hybrid. Topics that will be discussed are safety issues, the configuration of specific events, and the technical aspects of scoring as well as sharing information on how to get started in this program. There is a conference fee of $150.00. For details please contact Douglas A Fraser.

For more information on the event location and schedule please refer to the website: http://engineering.dartmouth.edu/other/formula-hybrid/

Or contact Douglas A Fraser, P.E. at (603) 646-3522 or douglas.a.fraser@Dartmouth.edu

Salina Region, Sports Car Club of America, PRESENTS

~ The Second Annual ~

Midwest Division Formula SAE Challenge

March 25-26, 2006 ~ Salina, Kansas

East Crawford Recreation Area (south end)

- This event will be part of Salina Region's regular Solo II season opener -- a test 'n tune on Saturday and autocross competition on Sunday. Saturday will have a short autocross-style test course and a Detroit-style figure-8 skidpad, while Sunday will feature a longer autocross course.
- Formula SAE teams are encouraged to shake down their cars with any number of drivers on Saturday. There will also be an informal autocross driving school.
- On Sunday, the F/SAE teams run in heats along with our regular autocross competitors.
- Schedule: Coursewalk about 9 am, cars on course about 10:30 am each day.

Rules for the Formula SAE Challenge:

1. Each team will consist of three to five drivers from the same school, either 2-3 male plus 1-2 female, or four male drivers. Team drivers must be eligible to compete in the Formula SAE competition in Detroit (e.g. a current student). More than one car/team may be entered by a school.
2. Cars must be Formula SAE-legal per SCCA rules. A team may use any number of cars, and may use older cars, but the cars must have been constructed by the team's school.
3. The first two runs will be the Challenge runs. Times comprising the team's score will be either:
   - **(a)** The best two male times plus the best female time, -or-
   - **(b)** The best two male times plus the fourth-best male time with handicap added (two pylons added to best time and one pylon added to second-best time, best resultant time to count)

All competitors also will be competing in the Formula SAE class, or the F/SAE Ladies class, in the regular autocross. Any other drivers, including ringers, faculty, alumni, etc., may compete in the autocross competition (but not in the Challenge) in the FSAE classes, or any other class with other cars.

The normal limitation of two drivers per car per class will not apply to F/SAE entries.

~ Entry fees ~

$20 per driver -- includes both days ~ (Saturday only -- $8)

• • • NEWS FLASH: AN ANONYMOUS SPONSOR HAS SIGNED ON TO PAY THE ENTRY FEES FOR ALL TEAM DRIVERS! • • •

There is no team entry fee. Only bona-fide college Formula SAE teams may enter the Challenge

Why?

- It'll be fun. All teams from schools within SCCA's Midwest Division (and any others) are invited.
- It'll give F/SAE teams a chance to shake down their cars and give drivers seat time before Detroit.
- We hope to encourage teams to participate in SCCA Solo (autocross) events, including the MiDiv Divisional Solo Championship Series and the Solo Nationals in September.
- We hope to encourage female participation in the F/SAE-L class. Including at Nationals.

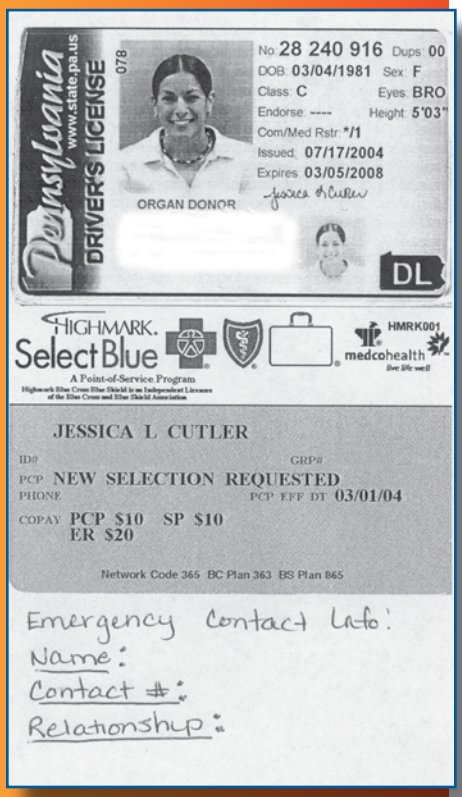
SALINA REGION SPORTS CAR CLUB OF AMERICA

FOR FURTHER INFORMATION:

Rocky Entriken

785-827-5143

rocky@tri.net



Registration:

- All team members (for all CDS competitions) must be paid SAE members
  All team members must have medical/health insurance
  Drivers must have a valid (up to date) driver's license
- Cost and design reports can be uploaded by clicking "Update Team Info" then selecting your team, the next screen will have two options to select "add a new team member" (please remember to attach team members using this link!) and "upload document" (to upload reports)
- Engines will only be shipped within the United States and Canada. The deadline for engine orders is December 29, engines will be shipped after the new year.
- Documents needed for registration:
  Photocopies of all team member's photo ID and health insurance
  Emergency contact information (please include this on the photocopy)
  Liability waver signed by all team members and faculty advisors
  Membership number

For Aero Design - If you are a pilot, you will need your license.

Competition Public Forums:

Forums are available for the following Collegiate Design Series competitions:

Aero Design - http://forums.sae.org/access/dispatch.cgi/aerodesign_pf

Clean Snowmobile
http://forums.sae.org/access/dispatch.cgi/CLEAN_SNOWMOBILE

Formula SAE - http://www.formulasae.org/forums/formula/dispatch.cgi

Mini Baja - http://forums.sae.org/access/dispatch.cgi/minibaja_pf

Supermileage - http://forums.sae.org/access/dispatch.cgi/supermileage_pf

Organizers will post official announcements. Students and Faculty Advisors are encouraged to post questions, comments, and general information about the events.

Don't forget to:

- Renew your membership
- Update your contact information in MySAE
- Read the newsletter
- Utilize the SAE competition forums

FUTURE Formula SAE Seminars

Two Training Opportunities for 2006 FSAE Students!

Monday, May 22 following 2006 FSAE
8:30 a.m. to 4:30 p.m.
SAE Automotive Headquarters
755 W. Big Beaver Road, Top of Troy Building, 16th Floor, Troy, MI

Fundamentals of Aerodynamics Applied to Race Cars, C0515

Taught by Paul T. Glessner, Chief Aerodynamicist at XCOR Aerospace
This course provides a basic foundation in vehicle aerodynamics as it applies to racing or performance vehicles. The powers of lift and drag are emphasized, particularly the drag coefficient. These are illustrated through wing lift and drag curves, basic equations and principles, various forms of drag making up overall drag, and atmospheric charts. Also covered are wind tunnel designs, mass flow rates and Reynolds number (Re) for wind tunnel model testing, inlet/radiator/cooling design insight, computational fluid dynamics (CFD), coast down testing, and many "do's and don'ts" of automotive design.

Race Engine Calibration for Optimal Performance, C0602

Taught by Ron Matthews, Head of the General Motors Foundation Engines Research Laboratory on the campus of the University of Texas at Austin and FSAE advisor. This course provides a practical introduction to ECMs, including the uses for the various sensors. It also covers the specific methods used to incorporate the various sensor signals into the ECM's control systems for the fuel injection rate, fuel injection timing, and ignition timing. Background information will include an understanding of the desired air/fuel ratio and optimum ignition timing. Examples are tailored around the application of the ECM to Formula SAE race engines.

Fees: $195, SAE Students; $595, SAE Mbrs; $685, Non-Mbrs

To Register
For complete registration information, call SAE Customer Service at 877-606-7323 (U.S. & Canada only) or 724-776-4970. Fee includes all learning materials, lunch, and refreshment breaks. CEUs: .65.

Two Training Opportunities for 2006 FSAE West Students!

Sunday, June 18 following 2006 FSAE West
8:30 a.m. to 4:30 p.m.
At a Hotel Near Calif Motor Speedway--Exact Location TBD

Fundamentals of Aerodynamics Applied to Race Cars, C0515

Taught by Paul T. Glessner, Chief Aerodynamicist at XCOR Aerospace
This course provides a basic foundation in vehicle aerodynamics as it applies to racing or performance vehicles. The powers of lift and drag are emphasized, particularly the drag coefficient. These are illustrated through wing lift and drag curves, basic equations and principles, various forms of drag making up overall drag, and atmospheric charts. Also covered are wind tunnel designs, mass flow rates and Reynolds number (Re) for wind tunnel model testing, inlet/radiator/cooling design insight, computational fluid dynamics (CFD), coast down testing, and many "do's and don'ts" of automotive design.

Tires and Handling for Racing and High Performance Vehicles, C0517

Taught by Paul Haney, acclaimed tire expert and author of The Racing & High Performance Tire
This course provides a practical applied approach to understanding how a car gets around a corner, rubber friction, tire behavior, and basic vehicle dynamics. While the information presented explains tire technology and vehicle dynamincs in general, the seminar uses racing and high performance settings to illustrate the major points.

Fees: $195, SAE Students; $595, SAE Mbrs; $685, Non-Mbrs

To Register
For complete registration information, call SAE Customer Service at 877-606-7323 (U.S. & Canada only) or 724-776-4970.
Fee includes all learning materials, lunch, and refreshment breaks. CEUs: .65.

.

Mid-Michigan SAE Dinner and Program
Thursday, February 23, 2006
6:00 PM Social Hour/Cash Bar
6:45 PM Dinner 7:45 PM Program
Bavarian Inn
Frankenmuth, MI

The Mid-Michigan Section of
SAE INTERNATIONAL®
midmichigansae.org

Saginaw Valley Engineering Council's 2006 National Engineer's Week Annual Banquet Hosted by ASM

Magneti Marelli USA's Technological Innovations for Motorsports Racing

Speaker:
Phil Fioravante, CEO of
Magneti Marelli Powertrain USA Inc.

Magneti Marelli is an international group which is a leader in the design and production of systems, modules and technologically advanced components for the automotive industry. Present in 23 countries with 57 production facilities and 24 research and development centers, Magneti Marelli can meet the world wide demands of its customers. Along with the traditionally strong presence in Europe, North America, and Mercosur, its presence has been strengthened recently in China. **This company is highly involved in Formula 1 Racing.**

Magneti Marelli Powertrain USA is a Full-service Supplier able to provide turnkey systems from concept through development, testing and production.

Magneti Marelli Powertrain USA is the corporate Center of Expertise for Canister Purge Valves and is a major participant in global design teams for Best Practices Throttle Bodies, Integrated Air/Fuel Modules, Selespeed, and Fuel Pressure Regulators.

SVSU to unveil their new 2006 Formula SAE car!

Reservations required by
Noon Monday, Feb. 20
Contact:
Mark Pope
(248) 685-4537
SAEMidMichSec@cs.com

Ticket Prices:

Students $12.00
Members, Spouses
$20.00