

COVER STORY

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Dr. John Weisend stands next to the vacuum vessel of a cryomodule produced by the NSCL ReA3 project. When complete, the cryomodule will contain superconducting 1/4 wave cavities for accelerating a heavy ion beam. These cavities will operate at liquid helium temperatures (4.5 K). Similar cryomodules are under design for the new Facility for Rare Isotope Beam (FRIB) project at MSU. Read about Dr. Weisend's exciting new course, Introduction to Cryogenics, on page 6!

Academic Advising

- *ME Freshmen* are advised in W8 Wilson Hall on a walk-in basis. They do not need to schedule an appointment.
- *ME Sophomores (except for Junior-to-Be's with a 3.0 or higher)* are advised by **Carmellia Davis-King**. To schedule an appointment with her, please call 355-6616 x 1, or go to W8 Wilson.
- *ME Juniors and Seniors plus Juniors-to-Be's with a 3.0 or higher GPA* are advised by **Gaile Griffore**. To schedule an appointment, please call 355-3338, or go to 2560 EB.

Department News

- **Professor Alex Díaz** has been appointed as chairperson of the ME department.
- **Professor Neil Wright** has been appointed as associate chairperson for the ME undergraduate program.
- **Professor André Bénard** has been appointed as associate chairperson for the ME graduate program.
- **Professor Jack Lloyd** has retired. He came to MSU in 1983 from Notre Dame to serve as ME department chair, a position he held until 1992. In 1990 he received the title of University Distinguished Professor in recognition of his distinguished achievement in

teaching, research and public service.

- **Professor George Zhu** has been promoted to associate professor with tenure.
- **Professor Steve Shaw** is the new ASME faculty advisor.
- **Professor Brian Feeny** has been elected to the rank of Fellow in the ASME. The ASME confers the distinction of Fellow grade on "worthy candidates to recognize their outstanding engineering achievements." Only a few ASME members reach the rank of Fellow.
- **Professor Tonghun Lee** has been selected as a 2010 SAE Ralph R. Teetor Educational Award recipient. One of seven awardees, Lee is cited for his "outstanding contributions" which have distinguished him as "one of the top engineering educators."
- **Professor Tamara Reid Bush** director of MSU's Biomechanical Design Research Laboratory, has been selected to participate in the United States Bone and Joint Decade's (USBJD) Young Investigators Initiative program.
- **Bob Chalou** has been elected Treasurer of the 40,000 member PLM World Board of Directors. PLM World's mission is to be the voice of the user in providing an open forum for the exchange of ideas within the Siemens PLM software Product Life-



cycle Management (PLM) product environment. Citizenship is open to users of NX, I-deas NX, Velocity Series, Teamcenter, and tecnomatix software. <http://www.plmworld.org>

Curriculum News

Co-op Students: Before you leave for your Spring 2011 co-op rotation, please be sure to discuss your schedule for next Fall 2011 / Spring 2012 with your academic advisor.

ME 481—ME Design Projects requires department approval before you can enroll, and you must take this course during your last semester (or spring for August graduates). To obtain approval, schedule an appointment with Gaile to finalize your long-term schedule. Call 355-3338 or stop by 2560 EB to make an appointment.

ME 489—Technical Communications (2 credits) is on the spring schedule. Instructor: **Craig Gunn**, ME Director of Communications. **IMPORTANT:** *This course is an Other Elective. It is not a Senior Elective.*

► **ME 491/001—Intro to Computational Fluid Dynamics** (3 credits) will be offered Spring 2011 as a non-design

ME Bulletin

The *ME Bulletin* is published twice a year (fall & spring) for sophomores, juniors, seniors, faculty, and staff of the Department of Mechanical Engineering. Photographs were taken by Craig Gunn unless noted otherwise.

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intensive Senior Elective. It will be taught along with graduate students who will take the course as ME 840, and who will have different assignments. For more information, see page 15.

► **ME 491/602–Intro to Cryogenic Engineering** (3 credits) will be offered Spring 2011 as a design intensive Senior Elective. It will be taught by Professor Weisend from the Facility for Rare Isotope Beams (FRIB) project. For more information, see pages 6 & 15.

Class Standing. ME juniors and seniors can obtain this information in 2560 EB. Sophomores should go to W8 Wilson. Be prepared to show your MSU I.D.

Job Search Advice: Jennifer Jennings from Career Services & Placement is available to answer questions about your job search. To schedule an appointment with her, go to the Center in 1340 EB, or go to: <http://career-network.msu.edu/students/advising>

Prerequisites: The ME department expects all students, *including members of the Honors College*, to observe all course prerequisite requirements. If you have a question about prerequisites, contact the ME Advising Office.

IAH/ISS Diversity Requirement

Many courses in the Arts and Humanities area and in the Social, Behavioral, and Economic Sciences area, emphasize national diversity (designated “N” at the end of the course title), or international and multicultural diversity (designated “I” at the end of the course title). Some emphasize both national diversity, and international and multicultural diversity (designated “D” at the end of the course title).

Students must include at least one “N” course and one “I” course in their Integrative Studies programs. A “D” course may meet either an “N” or an “I” requirement, but not both.

Dean’s List

Congratulations to these 197 ME majors who made the Dean’s List after Spring and Summer 2010. To be on the Dean’s List, you must have a semester GPA of 3.5 or better. This list is from September 21. For updates, go to: <http://www.reg.msu.edu/ROInfo/GradHonor/DeansList.asp>.

SPRING 2010: Ryan Aenis, Abdus Agha, Hasan Alali, Nassar Alhajri, Hassan Alyousef, Benjamin Ambrose, Karl Anderson, Kevin Andreassi, Caitlin Bailey, Charles Baird, Derek Baker, Kyle Bateman, John Bellopatrick, Peter Bentley, Kyle Biega, Jayson Blough, Rachel Bogle, Stephanie Bonner, Benjamin Bosworth, Brendan Brown, Matthew Bur, David Caples, Owen Carpenter, Andrew Cawood, John Chancey, Menghan Chen, Kevin Compau, Benjamin Cooper, Kyle Crayne, Alexander Danaj, Drew Darling, Mark Davison, Benjamin Dean, Austin Deneff, Thomas Dennis, Jonathan Diclemente, Thomas Dionne, Daniel Dokter, Jared Dorvinen, Alexander Douglass, William Driscoll, Erik Durfee, Alexander Dutch, Brent Ewald, Christopher Fairbanks, Neil Ferguson, Michael Fetter, Bradford Filion, Kathleen Fitzsimons, Michelle Flachs, Ian Forney, Lucas Fratta, Justin Freeman, David Gaunt, Nathan Geib, Cameron Gibson, Samuel Goodsitt, Matthew Gorman, Todd Graham, Kevin Hanley, Matthew Hoffdal, Daniel Holmes, Mark Holmes, Motozo Horikawa, Jared Horny, Mark Hoyer, Yueyao Hu, Sisi Huang, Nicholas Huehl, Clarence Huff, Nathan Jandernoa, Rami Janoudi, Yichu Jin, Marcus Johnston, Nur Joned, Kyle Justus, Andrew Kappler, Brandon Kelly, Jeffrey Klegon, Thomas Klotzbach, Kyle Kocarek, Peter Koenigsnecht, Joseph Koterba, Ashley Kulczycki, Nick Kuuttila, Andrew Lacy, Nicholas Lannes, Jeongseop Lee, Nicholas Lehman, Kevin Leikert, Matthew Lempke, Jiantao Liao, Yirang Liu, Austin Lo, Qiongyu Lou, Jiao Luo, Ryan Lureau, Jason Lyman, Courtney Macdonald, Joseph Marotta, Dane Marsack, Christopher Matthes, Rachel Maurer, Evan McCune, Charles McGovern, Patrick McKearney, Michael Mehall, Olukemi Mejabi, Thomas Michalik, Brandon Miller, Craig Miller, Kevin Miller, Jeffrey Movsesian, Ming Mu, Arthur Newman, Andrew Nuttall, Michael O’Brien, Michael Olsztyn, Haley Orr, Stephen Owczarek, David Parke, Matthew Pawlicki, Chad Payne, James Peers, Jeffrey Philippart, Isaac Platte, Timothy Polom, Florian Pribadi, Matthew Pung, Jiawei Qin, Thomas Qualman, Daniel Rabideau, Adam Rainbolt, Christopher Rawsky, Justin Raymond-Krochmal, Sylvia Reiser, Nicholas Righetti, Joshua Ringbloom, Brian Rockwell, Ryan Rosenburg, Adam Sajdak, Nicholas Schock, David Schrock, John Schultz, Peter Schultz, Shalin Shah, Corey Silvis, Manpreet Singh, Michael Skierski, Jordan Smart, Gregory Smiecinski, Brian Smith, Lindsay Smith, Keith Solomon, Stephen Sommerlot, Jacob Sprague, Zachariah Sprinkle, Jared St Aubin, Olivia Stacey, Christopher Stanos, Isaac Steinbrunner, Sarah Stuedle, Steven Stewart-Reeve, Sarah Stoner, Yubing Su, Nathaniel Sunderlin, Alexander Suradja, Joshua Talaga, Eric Tauzer, Gregory Tenbusch, Daniel Tepe, Diana Toan, Tollis, Alexander Andrew Tonkovich, Kyle Urban, Douglas Van Meter, Eric Waggy, Cory Waltz, Xiangyu Wang, Joshua Whitman, Nicholas Wilson, Matthew Witmer, Matthew Wolfe Jr, Robert Wooten, Yan Wu, Yanfeng Wu, Yingqi Xu, Jeremy Zalud, Oliver Zemanek, Tianyu Zhao.

SUMMER 2010: Kyle Crayne, Alan Finder, Todd Graham, Jeongseop Lee, Jiawei Qin, Scott Shaw, Robert Wooten.

Tutoring

• The Guided Learning Center (GLC), located in 1108 EB, offers free drop in tutoring in math up to differential equations and science courses (chemistry, physics, etc.), as well as many core engineering courses. To request assistance, go to:

<http://www.egr.msu.edu/egr/departments/dpo/academicassistance/glc/index.html>

[Scroll down to Request Assistance, and click on “request form.”]

• The Engineering Residential Experience (ERE) provides tutoring in C2 Wilson Hall on Sunday through Thursday from 6 - 10 pm. This is a “drop-in” setting, aimed at the most common first and second year engineering courses (MTH 116, 132, 133, 234, 235; PHY 183 & 184; and CSE 231).

• The Peer Assisted Learning (PAL) program is targeted to specific classes. This fall they are MTH 116 & 132 and PHY 183. Upper class engineering students who have been successful in these courses attend each class session and then provide peer facilitated review sessions directly keyed to the week’s course materials. There is no required commitment, but the more you attend, the more you should benefit. For times and locations, visit the PAL website at <https://sites.google.com/a/msu.edu/ceer/pal---peer-assisted-learning>

• ME graduate student and Pi Tau Sigma undergraduate tutors can be contacted through the ME Advising Office. These tutors do charge a fee, which you can negotiate with them. If you are interested, email **Gaile Griffore** at griffore@egr.msu.edu

NEW SENIOR ELECTIVES!

• ME 491/001–Intro to Computational Fluid Dynamics

• ME 491/602–Intro to Cryogenic Engineering (Read about this course on page 6)

Associate Chair Corner
by Professor Neil T. Wright



At the end of Spring Semester, **Prof. Craig Somerton** stepped down after eight years as the Associate Chair for the Undergraduate Program. He had previously served the program in a

similar capacity for a number of years. Prof. Somerton has increased the time he is devoting to several projects, especially regarding engineering education and international humanitarian projects using appropriate technology. The faculty, students, and alumni owe their sincere gratitude to Prof. Somerton for his many years of exemplary service to the undergraduate program in mechanical engineering.

Recently, I have been appointed to the position of Associate Chair for the Undergraduate Program. I look forward to serving the students and the department in this capacity. From the viewpoint of students, little should change in the fine tradition of mechanical engineering at MSU. Students will continue, of course, to have the expert council of **Ms. Gaile Griffore** to guide them through the mechanical engineering curriculum.

This September, each undergraduate program in the College of Engineering underwent its periodic ABET accreditation review. This review gives assurance that a program meets established quality standards. Preparation for this review involved many of the faculty, staff, students, and alumni. Preliminary feedback from ABET suggests that the college in general, and ME in particular, did very well in this review. The ABET visitors met with several undergraduate student representatives, and were quite impressed (no surprise to us). On behalf of the department, a hearty thanks to everyone who participated in this important process.

If you have a question about the undergraduate program that you think I can answer, please let me know. My email address is ntwright@egr.msu.edu

32 Seniors to Graduate in December!

Congratulations to all mechanical engineering December graduates! On behalf of the ME faculty, I wish you the greatest happiness and success in your careers, graduate studies, and personal lives. The following students had applied for graduation by October 15. If your name is missing, please contact me immediately (Email Gaile at <griffore@egr.msu.edu> Tele: 517-355-3338).

- | | | |
|----------------------------|------------------------|----------------------------|
| Muamer Abdurahmanovic | Jeffrey David Holley | Matthew Lewis Pung |
| Kyle Thomas Bateman | Mark Andrew Holmes | Thomas John Qualman |
| Trevor Scott Betz | Jack Alan Johnson | Christopher Michael Rawsky |
| Adam William Blumerich | Christopher Eric Lange | Peter Joseph Redente |
| Adrienne Elizabeth Burger | Mitchell Lee | Ryan Alvin Rosenberg |
| Nicholas James Dallapiazza | Nicholas Brady Lehman | John Andrew Schultz |
| Alexander Scott Douglass | Ross Barry Loynes | Caroline Elizabeth Skuta |
| Kenneth Everett Eschbach | Mollie Fra Montague | Peter Joseph Strom |
| Daniel John Goettlicher | Benjamin James Nutsch | Andrew Joe Vander Klok |
| Mark Adam Goldy | David Edward Parke | Cody Richard Wagner |
| Andrew Denton Harbin | | Oliver Jordan Zemanek |



Attending Graduate School – For Juniors & Seniors
by Professor André Bénard, Associate Chair for Graduate Programs



As the Fall semester progresses students naturally begin to consider attending graduate school to obtain either a Master's degree or even a Ph.D. There are two features of pursuing a graduate degree that I would like to mention as they are important for Juniors and Seniors.

Obtaining your M.Sc. at an accelerated pace (for Juniors):

This program allows you to use up to 9 credits of qualifying 400-level (and above) classes taken at the undergraduate level to count toward the credit requirement of the master's degree. This effectively reduces the duration of the master's degree by one semester (or more sometimes). A minimum GPA of 3.5 is needed and more information can be found at <http://www.reg.msu.edu/AcademicPrograms/Text.asp?Section=120#s6448> Students thinking about this accelerated program should apply during the Spring semester of their Junior year for admission during the final semester of their undergraduate year.

Accelerated Ph.D. Entry Program

If you are interested in a Ph.D. degree but think that it's a long commitment, notice that Master's degree students can be admitted provisionally into the Ph.D. program before the completion of their M.S. degree provided that they maintain a GPA of 3.5 and pass the qualifying examinations. In addition, students can either work on a research thesis or take 22 credits of coursework and write a journal article to be admitted. This allows students to move very quickly through their M.S. program while working on their research needed for a Ph.D. degree.

Students considering graduate school can stop by the ME graduate office (2418EB) where **Ms. Aida Montalvo** can make an appointment with **Prof. Andre Benard** (the ME graduate advisor) to discuss your options at MSU. Much information about pursuing graduate school at MSU can be found under www.egr.msu.edu/me/graduate.

Professor Wichman Receives the 2010 Withrow Award!

Professor Indrek Wichman received the 2010 Withrow Teaching Excellence Award last spring at a special awards luncheon and ceremony. He was presented with an inscribed plaque, a medalion to wear at commencement ceremonies, and a small stipend. Dr. Wichman is a second-time recipient of this award. Each year a committee consisting of the last three faculty award winners, plus student representatives from ASME, SAE, and Pi Tau Sigma, makes the selection after reviewing nominations from ME juniors and seniors.

Louis Armstrong, the great 20th century jazz trumpet player was once asked whether he preferred the trumpet playing of **Bobby Hackett** or **Billy Butterfield**. Armstrong thought it over and replied, "Bobby. He got more ingredients." When he was in college, Professor Wichman liked classes that had "more ingredients." In other words, they covered more material, not less. He admired professors who seemed to know a lot and shared it with their students. He considers himself to be a composite of all of those favorite teachers, including some in non-science/engineering areas, like music and philosophy. His favorite engineering course was the first one in fluids, which he decided is what ME is all about.

For Dr. Wichman, the idea of having more ingredients is a key to his teaching. Furthermore, he believes that if the university can hold a coach, such as **Tom Izzo**, to a high standard of excellence, then surely we should hold professors to such a standard in class. So, he covers a lot of material and he presents it as a slightly higher level, always in a quest for excellence. He also gives hard tests. One might expect that such a teacher would not win praise from many students, and it is true that some do not agree.

However, there are many who do appreciate his rigorous approach to teaching, and they have given voice to their feelings. Listen to these representative comments students:

- Dr. Wichman is a great teacher. I could listen to him lecture for hours at a time.
- Professor W has aided my academic experience at MSU with his thorough and refined teaching style, high expectations, and demanding exams. ME students are better prepared for the job world because of his efforts.
- Professor W's lectures were by far and away the most entertaining and informative of any professor I have had. His combustion class was my favorite at MSU.
- Dr. W is easily the best professor I've ever had. At the same time, he is the hardest professor I have had. His tests are very difficult, but he hides nothing from you. He is very available for help and often will hold review sessions during the week if asked, or if he feels we need more help.
- Professor W is a genius. I thoroughly enjoy his class. He is very enthusiastic, and I am fortunate to have him for a professor. He gives many examples and takes time to make sure we really understand the material. He is overall an EXCELLENT professor. He truly deserves this honor.



PHOTO BY KURT STEPINITZ, MSU UNIV RELATIONS

After receiving his Ph.D. from Princeton University in 1983, Dr. Wichman pursued post-doctoral work at the National Bureau of Standards in Washington D.C., and then in 1986 he joined the ME department at Michigan State. His research interests include combustion and flame studies related to fire and theoretical combustion, analytical modeling (fire, ignition, quenching, flame spread, instabilities), computational modeling (flame spread, triple flames, instabilities, solid pyrolysis, microgravity flames), experimentation (MSU fire tunnel, thermal property measurement, flames in small enclosed spaces [micro flames], and burner flame attachment). Over the years Dr. Wichman has developed 4 courses and taught 16 courses. This semester he is teaching ME 332, and next semester he is scheduled to teach a graduate-level course, ME 804-Micro-Scale Transfer. In his spare time, he likes to read, exercise at the health club, and enjoy the good weather when we have it.

The Withrow Teaching Excellence

Award Nomination Link is

NOW LIVE!

Nominate your favorite prof for the 2011 Withrow Teaching Excellence Award! It's easy! Just go to:

<https://stuedms.msu.edu/withrow.php>

Deadline: Friday, Nov. 19

COVER STORY**New Design Intensive Senior Elective for Spring!**

The ME department is very proud to offer an exciting new design intensive Senior Elective for Spring 2011. ME 491/602—Introduction to Cryogenics (Prerequisite: ME 410 or concurrently) will be taught by **Dr. John Weisend**, who is a Professor of Engineering at the National Superconducting Cyclotron Laboratory at MSU and the Cryogenics Group Leader for the Facility for Rare Isotope Beams (FRIB) Project. He also holds a joint appointment in the Dept of Mechanical Engineering.

Cryogenics is the science and engineering of phenomena that occur at a temperature below 120 K. Cryogenics is the basis for a multi-billion industry and is a key enabling technology in such areas as the production and use of industrial gases, liquefied natural gas, space exploration, high energy physics, fusion energy and magnetic resonance imaging. This class emphasizes the engineering aspects of cryogenics including: cryogenic properties of materials, air separation, refrigeration, liquefaction, cryostat design, cryocoolers, two-phase flow, instrumentation, cryogenic safety and the properties of cryogenic fluids. An introduction to general project management concepts will also be given. Extensive examples will be drawn from current activities in both industry and research. The class will consist of lectures and a semester long design project using real world problems.

Dr. Weisend received his Ph.D. in Nuclear Engineering & Engineering Physics from the University of Wisconsin – Madison, where he investigated engineering applications of He II. He has worked at the SSC Laboratory, the Centre D'Etudes Nucleaires Grenoble, the Deutsches Elektronen-Synchrotron Laboratory (DESY), the Stanford Linear Accelerator Laboratory (SLAC) and the National Science Foundation.

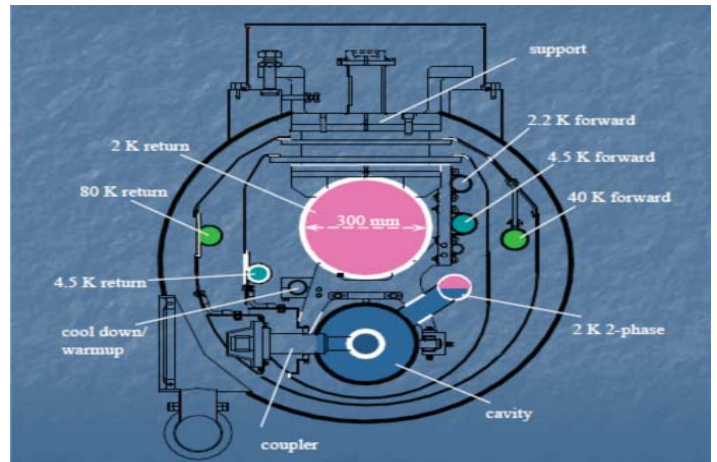
Dr. Weisend's research interests include He II and large scale accelerator cryogenics. He is the Chairman of the Board of Directors of the Cryogenic Society of America (CSA) He has led the CSA Short Course Program since 2001. He is Chief Technical Editor of *Advances in Cryogenic Engineering*. In addition to co-authoring more than 60 technical papers, Dr. Weisend is the co-author (with N. Filina) of *Cryogenic Two-Phase Flow* and the editor of the *Handbook of Cryogenic Engineering*. He is currently writing a biography of **Dr. Kurt Mendelssohn**.

To enroll you will need an override, which can be requested by submitting the ME Override Request form (<http://www.egr.msu.edu/me/undergrad/forms>).



PHOTO PROVIDED BY DR. WEISEND

A tanker containing 130,000 cubic meters of Liquefied Natural Gas ($T \sim 112$ K) Cryogenics is at the heart of a multibillion dollar industry in both LNG and in the separation and delivery of industrial gases (oxygen, nitrogen, argon etc).



GRAPHIC PROVIDED BY DR. WEISEND

Cross section of a Cryomodule for a Superconducting Linac. The superconducting cavity operates at 1.8 K. The entire cryomodule is roughly 1 m in diameter by 15 m in length. Roughly 2000 of these devices will be required for the proposed International Linear Collider. Successful design of such a device requires a knowledge of heat transfer, properties of materials at cryogenic temperatures, cryogenic instrumentation, safety and the behavior of superfluid helium. All these topics will be introduced in the class.

Intellectual Property Law



The practice of intellectual property (IP) law has grown dramatically in recent years as technology has become more important to businesses and services in the global economy. Intellectual property law includes patent law, copyright law, trademark and trade secret law. It also deals with issues such as licensing, unfair competition, legal protections for new products and services, works of art, inventions and even product logos. Intellectual property has also expanded to cross over into other practice areas, such as computer law, international law and corporate law.

Intellectual property lawyers may work in the intellectual property department of large general practice law firms, in small to medium sized boutique firms which specialize in intellectual property law, or in corporations as in-house legal staff. Intellectual property lawyers may also work for the federal government in the patent and trademark office. The practice of intellectual property law involves four major areas:

- **Patents:** Patents provide 20 years of protection to inventions that meet certain requirements. A patent precludes others from making, using or selling an invention. Some patent attorneys specialize in preparing and obtaining patent application before the U.S. Patent and Trademark Office (PTO). These practitioners must have some technical training or background in the sciences. In order to practice in the specialty of patent law, an attorney must also pass the Patent Bar Exam. Others become involved in the litigation of patent rights belonging to an inventor or corporate entities.
- **Trademarks:** Trademarks protect words, sounds, colors, or other symbols that are used to identify a source of goods (or services). They prevent others from using marks or representations similar to those protected under the trademark. For example, "MTV" is a protected trademark, as are "Kellogg's," "IBM," and "Forbes." Attorneys watch for unauthorized use of trademarks, litigate against infringements, and negotiate licenses.
- **Copyrights:** Copyrights protect original works of authorship, such as books, paintings or music. Copyright law concerns the rights of creators of works in the entertainment, publishing and fine arts industries. Attorneys counsel playwrights, authors, artists, and composers.
- **Trade Secrets:** Trade secrets are secret formulas, processes, or data compilations with economic value. Its value derives from the fact that only certain people know the

information that the owner has taken steps to maintain the secrecy of the information. Examples include the formula for making Coca-Cola and the "original recipe" for fried chicken that Colonel Sanders developed for Kentucky Fried Chicken. Attorneys advise clients, strategize, draft non-compete agreements, and assist with business start-up issues. In addition to these specific practice tasks, intellectual property attorneys spend time conferencing with clients, expert witnesses and other attorneys. They draft correspondence, pleadings, briefs, patent applications, interrogatories and opinion letters to clients concerning the validity of a patent. Intellectual property attorneys further spend their time researching and writing, reviewing the likelihood of a patent infringement and arguing motions while representing their clients in trials and hearings.

A technical or scientific degree generally is required for those who wish to sit for the Patent Bar Examination. Attorneys dealing with IP issues other than patents may come from a variety of educational backgrounds and are not required to have a technical or scientific background.

What skills are important to intellectual property lawyers?

- **Reading, writing, negotiation and communication skills:** Intellectual property attorneys combine all these skills in the daily activities that they perform. They draft patent applications and licensing agreements as well as briefs and memoranda. In order to do this effectively and efficiently an attorney must be able to communicate with a client, understand the material the client seeks to protect and negotiate and contractual relationships necessary to establish results for the client.
- **Client counseling skills:** It is important that an intellectual property attorney be able to render opinions as to whether a client's product can be patented, registered as a trademark or copyrighted. An attorney must also be able to suggest what could be done in order to otherwise protect the client's property.
- **Understanding of business and economics:** Many issues in intellectual property law deal with corporations or businesses trying to protect their products and economic interests. Understanding the law and how those laws relate to a client is vital in the intellectual property practice.
- **Understanding of international issues:** Intellectual property has entered an international realm, and it is necessary for an intellectual property lawyer to keep abreast of new developments and proceedings as they relate to their clients.

Article provided by Charles Roboski, Assistant Dean for Admissions & Financial Aid, Michigan State University College of Law (<http://www.law.msu.edu/>)

Using Vibrations of Tiny Devices for Sensing and Signal Processing

by Dr. Steve Shaw

My research interests are in the general area of dynamics and vibrations of mechanical systems. I am particularly interested in understanding unusual dynamic behavior in vibratory systems and exploiting it in applications. Currently, my research projects are in two areas. One of these is quite traditional for mechanical engineers; it deals with the development of vibration absorbers for rotating machinery. In particular, we are working with engineers at Chrysler to design devices that will reduce torsional vibrations in automotive engines. These vibration absorbers have the potential to significantly improve the fuel economy of engines by allowing them to operate in torque/speed regimes that are currently avoided due to NVH (noise-vibration-harshness) issues. Examples

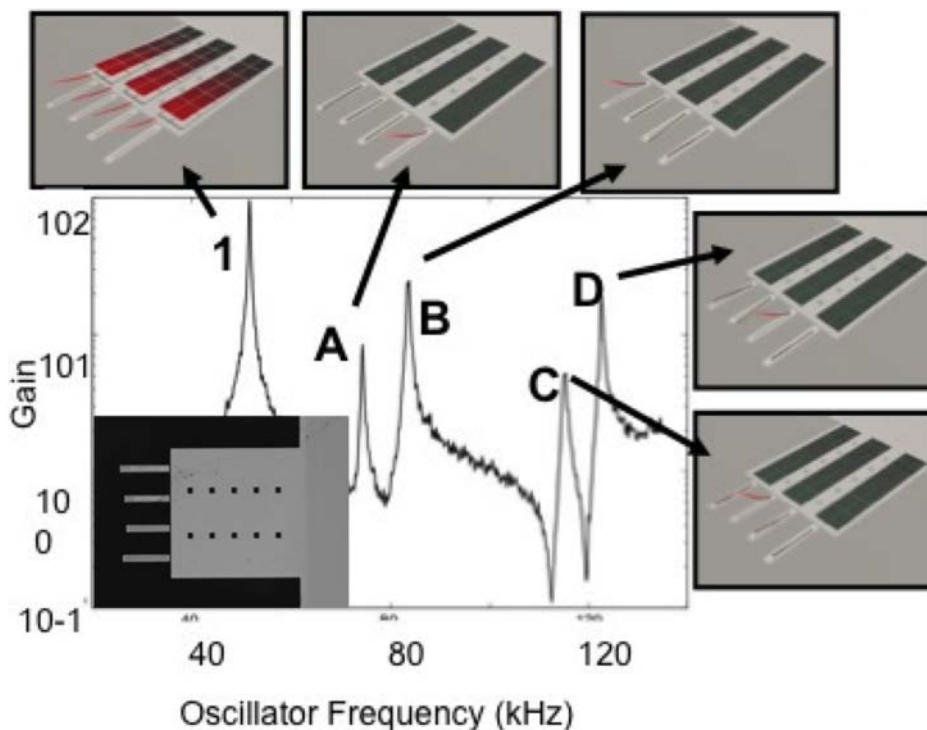
include low-speed operations of high torque four cylinder engines and low-engine-speed cylinder deactivation in variable displacement engines.

My other area of research, which is the focus for this article, is the development of very small vibration devices, known as micro/nano-electro-mechanical-systems, or M/NEMS, that are used in sensing and signal processing applications. This topic is multidisciplinary in nature and involves people from physics, materials science, and electrical engineering. The development of M/NEMS is driven by the fact that tiny mechanical vibratory devices have certain advantages over their electrical circuit counterparts. Specifically, they dissipate less energy, thereby offering larger signal amplification and higher efficiency when

compared with analogous electrical systems. These devices are also attractive since they can be built directly on chips using standard integrated circuit fabrication tools, bringing mechanical and electrical functions together in a single package.

An example of a micro-scale mechanical device is shown in Figure 1, which is a prototype sensor used for the detection of airborne chemicals, for example, explosives or toxins. The device consists of a small plate from which four cantilever beams extend. The size of these beams is about $150\mu\text{m}$ (length) \times $20\mu\text{m}$ (wide) \times $2\mu\text{m}$ (thick), that is, the beam length is about same as the thickness of a human hair. In this device, the tips of the individual beams are treated chemically such that certain specific substances will adhere to them. When these target substances, or analytes, are present, the mass of the attendant beam will increase slightly, changing its natural frequency. By tracking the vibration properties of the coupled plate/beam system, it is possible to track changes in the masses of each beam, thereby indicating the presence, or even the concentration, of various analytes. The benefit of the plate/beam configuration is that one can measure multiple analytes (in this case four) using a single measurement. These devices were conceived and designed at MSU, and fabricated and tested by our collaborators at the University of California-Santa Barbara. This concept for sensing airborne substances has been issued a US Patent (# 7584649, Sensor with Microelectromechanical Oscillators, inventors: S. W. Shaw, J. F. Rhoads, B. E. DeMartini, and K. L. Turner; September 8, 2009).

Other areas of M/NEMS research in which I am involved include: the design of micro-gyros for measuring rotational rates, for example, yaw rate sensors used for automobile stability control; the design of small scale frequency sources, essentially clocks,



GRAPHIC PROVIDED BY DR. SHAW

Figure 1. Cantilever plate with four integrated sensing beams. Lower left inset is an SEM (scanning electron microscope) image of the device. The frequency response shows five resonance peaks (1 & A-D) and their attendant vibrational mode shapes, measured using a scanning laser vibrometer (note that the vibration amplitudes depicted are exaggerated for clarity). Shifts in peaks A-D, corresponding to changes in the corresponding beam frequencies, can be used for sensing.

built with nanoscale beams, for high precision timing in communications systems; the exploitation of noise in sensors that use response statistics, for example, generated by thermal fluctuations, for detecting changes in environmental conditions; the development of bifurcation amplifiers, which are devices with extremely strong amplification near critical operating points; and the development of MEMS that perform frequency down-conversion, which is useful in communications systems. Note that the operating frequencies for these devices range from 104 Hz (cycles/second), like the plate in Figure 1, to over 109 Hz (1 GHz) for nano-scale beams, which puts them in the realm of radio frequencies.

These are just a few of the many exciting examples where mechanical engineers can play a leading role in the development of M/NEMS. In order to contribute in these areas it is important that one be well-grounded in fundamental aspects of science and engineering, and be willing to continue learning new things!

Acknowledgments: I benefit greatly from collaborations with a number of very talented people, including: current MSU graduate students **Nick Miller, Ryan Monroe, Brendan Vidmar, Scott Strachan, Thomas Theisen,** and Michael **Farmer**; current MSU undergraduate students **Ashley Kulczycki** and **Brian Rockwell**; MSU professors **Brian Feeny** (ME), **Alan Haddow** (ME), and **Mark Dykman** (Physics); former MSU students **Brian Olson** (B.S. 1999, M.S. 2001, Ph.D., 2006) and **Jeff Rhoads** (B.S. 2002, M.S. 2004; Ph.D. 2007); **Professor Kimberly Turner** and her research group at UCSB, especially **Chris Burgner** and **Barry DeMartini**; and **Dr. Bruce Geist** of Chrysler. Our work is funded by grants from the National Science Foundation, Chrysler Group LLC, and the Defense Advanced Research Projects Agency.

Group Qualifies for ASME International Competition!

by Dr. Scott Kiefer

A group of mechanical engineering students recently completed an independent study project that involved the design and construction of an autonomous recyclable material sorting machine for the ASME student design competition. The group was composed of four very skilled and unique students who came together to develop an outstanding device. However, the device did not perform as well as the group had anticipated at the regional ASME student design competition.

The sorter used an induction sensor that was very sensitive to ambient conditions. The group set up their device and calibrated it in the morning, but by the time the contest run was to take place (about 2 hours later, 20 degrees warmer, and a move across the room) the calibration had changed. They asked the judges if they would be allowed to recalibrate their device directly before the contest run, but the judges determined that it was clearly stated in the rules that they would not be able to change their device in any way because the inspection process was complete. The device competed with the incorrect calibration, but its performance suffered and the it earned third place (not good enough to qualify for the international competition).

Immediately after their one and only contest run, the students recalibrated their device and demonstrated how well it actually worked. This left a positive impression on the judges, and after a later appeal to the design competition committee, the group will be allowed to compete at ASME International competition. After returning to MSU, the group changed the control code so that the device will now automatically adjust to changes in ambient conditions, and the device should make an excellent showing at the international competition in November.



PHOTO PROVIDED BY DR. KIEFER

Group members: Eric Tauzer, Scott Kiefer (advisor), Nate Geib, Jeff Mousesian, Ollie Zemanek

Study Abroad in Peru

by Dr. Brian Thompson

Enhance community health and human nutrition at 11,000 feet !

W. H. Welch, MD (1850 – 1934) founder of the School of Public Health at Johns Hopkins University wrote, “It is a well known fact that there are no social, no industrial, no economic problems which are not related to health.” Motivated by this self-evident truth, why not pause from your narrow, traditional, academic studies on the banks of the Red Cedar, and contemplate how you could exploit your engineering prowess to enhance the health of under-represented Peruvian men, women and children living in abject poverty? Why not enroll in a study abroad program entitled “Community Engagement and Interdisciplinary Study of Global Issues in the Peruvian Andes” so that you contribute meaningfully to the public good?

During the 2010 Summer Semester, MSU students from six colleges supervised by faculty mentors completed a raft of diverse interdisciplinary team projects in the remote Andean town of Huamachuco by collaborating with NGOs and local government. These projects included the creation of affordable solar technologies and the delivery of community workshops in Spanish; improved horticultural practices; enhanced social services for abused women; and the development of educational programs for vulnerable children.

The engineering students created six different solar water heaters for three towns. Two were installed in two remote health posts and two in a village school. One water heater at the school permits students to shower several times each week in order to mitigate dermatological



PHOTO PROVIDED BY DR. THOMPSON

Engineering student Kate Bonnen putting the final touches to her solar dehydrator for fruit and vegetables at the NGO Proyecto Amigo in the town of Huamachuco Peru.

diseases while enhancing self-esteem, and in a separate school installation, students now wash their hands prior to eating so that the incidence of dysentery and other life-threatening diarrheal diseases is reduced. In addition, MSU students created a solar dehydrator for drying fruit and vegetables. This device permits horticultural produce to be preserved for several months so that families can benefit from the consumption of nutritional food with crucial micronutrients long after the remainder of the crop has rotted in the fields.

Before this cohort of students embarked upon the defense of human life in Huamachuco, they prepared for the community development projects by enrolling in classes on Andean culture and also conversational Spanish at an institute in the city of Cusco, near Machu Picchu. Language competency was enhanced further by daily interactions with each student’s host family and also during the execution of the projects.

Harvard professor **D.M. Berwick, MD**, the current chief of Medicare and Medicaid said, “...that sick people tend to be poorer and that poor people tend to be sicker...” In 2011, will you join the throng providing humanitarian aid to Huamachuco where 85 percent of the populous live in a state of poverty? Will you?

Learn more at http://www.iaa.msu.edu/Peru_study_abroad.html. For more information please contact Thompson@egr.msu.edu

Pi Tau Sigma



The Tau Epsilon chapter of Pi Tau Sigma, the Mechanical Engineering honor society, has already been busy this semester and several more events are planned. We kicked off the semester with Wing Night at Buffalo Wild Wings, an evening of socializing and all you can eat wings that has become a chapter tradition over the years. During the week of Career Gallery, we hosted a presentation by Shell Oil Company

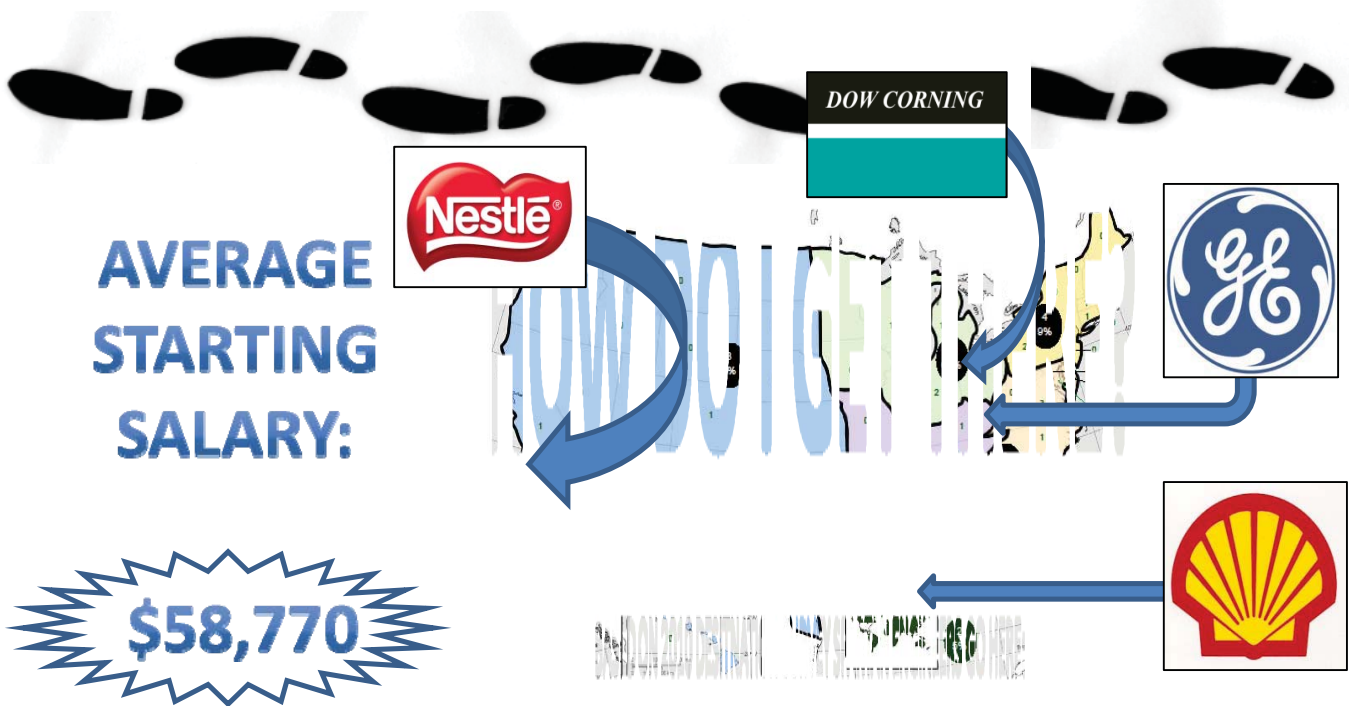
which gave students the opportunity to learn about the life of a mechanical engineer at an oil company as well as to meet recruiters in a more casual setting. We also hosted a presentation by General Motors which exposed students to the career possibilities in the auto industry. As service is one of our core values, Pi Tau Sigma also volunteered at Ronald McDonald House on October 23, preparing dinner for the families staying there.

Later this month Pi Tau Sigma will be hosting Crunchy’s Night, a second social event for our members which we hope will become a regular tradition like Wing Night. We will also be volunteering at the Lego Competition hosted by K-12 Outreach in November.

For more information about Pi Tau Sigma or any of our events, please visit www.egr.msu.edu/pts. Submitted by Brian Rockwell, President.

HOW DO I GET THERE?

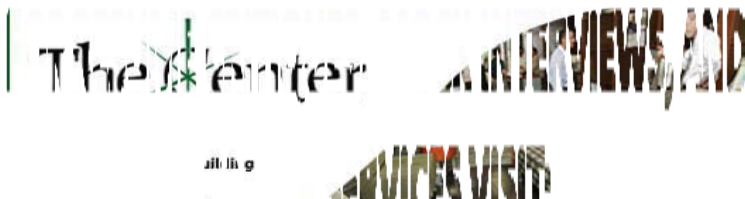
BASED ON 2010 DESTINATION SURVEY SPARTAN ENGINEERS GO HERE:



1) Commit to take the Steps: *build your resume, network, and apply.*

- 2) Your Resume:** *close in on gaps*
- Internship/Co-op
 - Relevant work experience
 - Research Experience
 - Join Student Organizations

FOR RESUME CRITIQUES, MOCK INTERVIEWS, AND CAREER SERVICES VISIT:



- 3) Network:** *do your magic*
- Set up LinkedIn account
 - Attend Career Gallery & Engineering Expo
 - Go to Student Org Events

- 4) Apply & Follow-up:**
- MySpartanCareer*
- Pursue genuine interests but stay OPEN
 - Keep track of where, who, what, and when in a spreadsheet

PHOTO PROVIDED BY DR. THOMPSON

Inside Out - A Few Thoughts on Communication

by Craig Gunn, Director of Communications

Over the years I have picked on a lot of communication issues that everyone needs to be concerned with when it comes to being an engineer in the real world. I have written about proper grammar, asking questions, plagiarism, building a readership, puzzles, and the steps in the writing process. I haven't exhausted the topics, but I thought that maybe it was time to just go back to the basics and speak to the issue of communication in general, just in case someone has been lost in the engineering wilderness for a while and has lost contact with reality.

Reality is something that engineers deal with on a daily basis. The things that you encounter in your classes and will encounter on the job involve real world activities. This is not the imaginary and silly stuff that goes on in "The Real World" of television. You investigate and solve problems that impact the lives of those around you and those you will never come in contact with. It is important then to put as much effort into the content of your engineering as you do with the communication of that content.

Now more than ever you will have to speak and write to people who do not have the engineering background that you do. They will have to understand what you are talking about in order to make critical decisions that will, in turn, impact your life. Promotions, success, and satisfaction will hinge on your ability as a great communicator.

While it is true that you are not an English major, your ability to communicate is critical. It will enable you to give coherent, intelligent, and interesting presentations that will sway your listeners. And, your documents will not only need to include all the important information, but they will

Study Abroad at the University of Edinburgh by Gaile Griffore & Craig Somerton

Perhaps you should spend a semester studying abroad at the University of Edinburgh in Scotland! Founded in 1582 the University of Edinburgh is one of Europe's finest universities with a great tradition of producing outstanding scholars, including such giants as **Charles Darwin** and **Sir Arthur Conan Doyle**. In engineering, there is **William John Macquorn Rankine**, who proposed both the Rankine cycle (primary in the operation of steam power plants) and the Rankine temperature scale (the absolute scale used in English units).

The mechanical engineering facilities are very modern, allowing the faculty and students to pursue research topics varying from wave energy to micro-fabrication.

The city of Edinburgh, whose downtown is a short bus ride from the university's engineering buildings, is listed as a World Heritage Site. In addition, for students seeking leisure activities the city has a terrific night life with many activities for young adults.

You will be able to take courses that fulfill your entire Senior Elective requirement (i.e., 12 credits of Senior Electives, including the 3-credit design intensive course). For more information, contact **Gaile Griffore**, ME Advisor, 2560 EB, 517-355-3338 (griffore@egr.msu.edu)



also have to present it in a manner that draws in your readers and excites them to want to read your text. Your good communication skills will place you above other engineers. Communication works hand in hand with engineering because Great Engineering is Great Communication!

ME Study Abroad: RWTH-Aachen, Germany 2011 by Dr. John Foss

Consider that you – in the not too distant future – are in discussion with a company recruiter or a graduate admissions officer. When the question is posed, like that in the Bible: "What do ye more than others?" the following can provide a powerful answer. "I carried out an independent research project at the RWTH-Aachen and studied their language in an environment with many opportunities to practice what I was learning."

In addition to this future benefit, you can also (if accepted) enjoy the near term benefits of establishing a close working relationship with an ME (at MSU) professor (important for future letters of reference), live in a capital city of **Charlemagne** (from 800 AD), take advantage of European travel (3-day weekends) and establish long-term friendships with your MSU and your RWTH colleagues from the summer in Aachen.

An informational meeting, with students from the 2010 summer experience will be held soon after this article is made available in the ME Bulletin. If you are interested in the 2011 Program, you are encouraged to contact BOTH **Gaile Griffore** (griffore@egr.msu.edu) and **Prof. J. Foss** (foss@egr.msu.edu; 5-3337) asap to ensure your awareness of this meeting. We will form the 2011 group this fall such that the student interests in their 1-credit spring and their 5-credit summer 490 experiences best fit their interests. Student interest in later (2012, 2013) programs are also welcome.

A generous endowment by the North American Rockwell Corp. has made substantial scholarship funds available for the MSU/ME students. This corporate gift to MSU emphasizes the importance that multinational companies place on an in-depth international experience for their engineering workforce.

SAE International

Formula SAE



The MSU Formula Racing Team is back in the grind after a long racing season. The car performed exceptionally well in its first race at Michigan International Speedway placing 24th Overall with an outstanding 12th Place in Acceleration, 15th in Design and 7th place in Presentation. The team competes against 120 teams from all over the world making it an extremely competitive competition. Since then the team has focused on starting from the ground up on this year's newest

race car, Car 51.

With the chassis nearly designed and many other components of the race car underway, the team is on track for spring testing in order to get ready for next year's competition. Car 51 will consist of a newly designed space frame chassis, CFD designed air intake, Salisbury differential, a high compression powertrain system and many more innovations to make it one of the most exciting race cars to date.

Over the summer the team also wrapped up its Race for a Cause campaign with the Susan G. Komen mid-michigan affiliate in their 1st annual Ride for the Cure. Over 10 members of the team spent over 14 hours in one day volunteering for the race. Car 71 was the "pace car" for the event and taxied the riders off onto their 97 mile journey.

Please follow our progress on our website (www.msuformularacing.com) where we regularly post updates, pictures and videos of our latest work and upcoming events! Submitted by Josh Frontiera, Project Manager.



PHOTO PROVIDED BY JOSH FRONTIERA

The MSU Formula Racing Team members at the Susan G. Komen Ride for the Cure. From left: Josh Frontiera, Alex Horn, Andrew Mozer, David Caples, Trevor Shane, Erik Stitt, Brian Smith, Ben Bosworth, Chris Archambo, Brady Thom.

American Society of Mechanical Engineers



The MSU Student Chapter of the American Society of Mechanical Engineers (ASME)

is dedicated to helping students network outside the classroom and providing opportunities to meet with MSU mechanical engineering majors. During the Fall Semester of 2010, things have been off to a fresh new start with the addition of **Dr. Steve Shaw** as the group's faculty advisor and presentations from Fortune 500 companies such as Dow, GE, and Whirlpool. ASME looks forward to seeing you at more promising events in upcoming dates!

Other news from the MSU chapter is the ASME Design Team's entrance into the IMECE design contest. The team, which is comprised of **Eric Tauzer, Jeff Movsesian, Oliver Zemanek, Nate Geib, and Dr. Scott Kiefer**, will be in the spirit of competition as they showcase their recyclable material sorter in Vancouver during November. Wish them luck!

Interested in participating in upcoming community events? ASME and the K-12 outreach group of the College of Engineering are looking for volunteers for the FIRST Lego League Challenge on Saturday, November 13th. Please contact **Dustin Colthorp** (colthor6@msu.edu) for more details.

ASME wishes you the best of luck during the Fall 2010 semester, and we hope to see you at the next ASME event. Go Green! Submitted by April Oesterle, Newsletter Editor for ASME.



Looking for a fun new way to meet some cool people, have a great time, and learn practical engineering skills? Well you're in luck! Baja is recruiting new members!

As a part of Baja SAE, members develop great teamwork and problem-solving skills and have the opportunity to get involved in the design, build and test process. Every year we design, build, and test an off-roading vehicle and compete against schools from around the world.

Last season was very successful. We placed 8th at the Wet World Challenge, and earned 6th place for the Iron Man Award (out of 220 registered vehicles). Also, just recently the team came back from an Invitational Midnight Mayhem, where the team placed 4th and 7th out of 40 registered vehicles.

We are really excited to build upon last year's success and build a better, faster, more competitive vehicle. This year the team will be competing at all three North American SAE competitions: SAE Alabama, SAE Kansas, and SAE Illinois. Still interested? Great! Because this is the perfect opportunity to join and get involved with the team! Check us out or email us with any questions, comments, or concerns you may have at MichiganStateBaja@gmail.com. Submitted by Jelena Paripovic.



PHOTO PROVIDED BY JELENA PARIPOVIC

MSU Solar Car



The Michigan State Solar Car Racing Team has been working on their newest car modifications for the Solar Car, Brasidius, named after a Spartan King. They are looking forward to attending the Formula Sun Grand Prix Track Race in May of 2011 tentatively to be held at the Indianapolis Speedway in conjunction with the 100 year anniversary celebration. So far a new canopy has been built with the assistance of **Steve Hager** from Midwest Technologies and **Scott Copeland** from SC Enterprises. With the new canopy comes improved suspension and body frame. New designs for the array and lower body are being made and coming into fruition with the gracious help from Northrop Grumman and MSU's College of Engineering.

With continued improvements the team is looking forward to testing the car in early spring before the race. They will be testing the solar array, electronics and the basic mechanics of the vehicle, time and place are to be announced. Submitted by Manila Ounsombath, Business Manager.

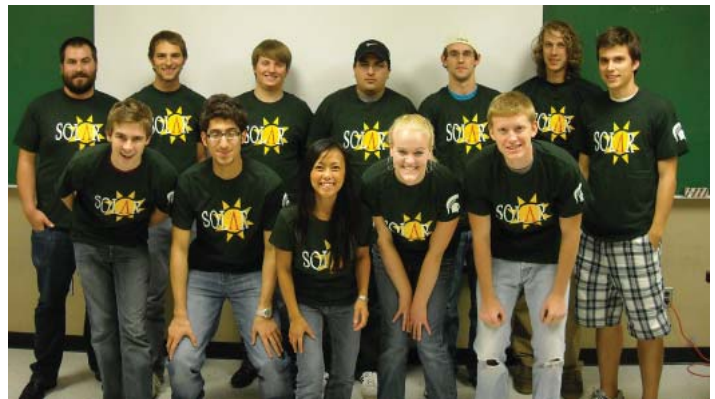


PHOTO PROVIDED BY MANILA OUNSOBATH

Front Row: James Miller, ME Freshman, Hasan Alali, ME Sophomore, Manila Ounsombath, ME Senior, Lindsay Karn, Elementary Education Senior, Florian Cherdron, ME Freshman. Back Row: Joel Anderson, EE Grad Student, Kyle Urban, ME Senior, Ryan Hunt, EE Senior, Amar Shah, ME Senior, Josh Dewalt, ME Senior, Eric Hatch, EE Senior, Brendan Brown, ME Senior.

Undergraduate Program Educational Objectives Department of Mechanical Engineering Michigan State University

(Approved by the ME Department Faculty on February 17, 2005)

- Objective 1:** Our graduates will be competent engineers practicing in a diverse range of activities.
- Objective 2:** Our graduates will use their mechanical engineering education as an impetus for personal & professional growth.
- Objective 3:** Our graduates will have achieved a noteworthy level of workplace responsibility through understanding their environment and capabilities, including the importance of knowledge management.
- Objective 4:** Our graduates will be independent thinkers who take ownership in identifying problems and determining effective solution strategies in a timely manner.

SPRING SEMESTER SENIOR ELECTIVES

►The asterisk (*) after a course number indicates that it has been officially designated as “Design Intensive.”

- ME 417* **Design of Alternative Energy Systems.** 3(3-0). Prereq: ME 410 or concurrently. *Somerton.*
- ME 442* **Turbomachinery.** 3(3-0). Prereq: ME 332. *Engeda.*
- ME 445* **Automotive Powertrain Design.** 3(3-0). Prereq: ME 444. *Novak.*
- ME 464 **Intermediate Dynamics.** 3(3-0). Prereq: ME 361. *Shaw.*
- ME 475* **Computer Aided Design of Structures.** 3(2-3). Prereq: ME 471 or concurrently. *Averill.*
- ME 477 **Manufacturing Processes.** 3(3-0). Prereq: ME 222 and MSE 250. *Thompson.*
- ME 478 **Product Development.** 3(3-0). Prereq: ME 361, 477, and Tier I Writing. *Kwon.*
- ME 490 **Independent Study.** 1-4 credits. *Requires Override—See #1 Below.* You may re-enroll for a maximum of 6 credits.
- ME 491 **Selected Topics in Mechanical Engineering.** Section 001: Intro to Computational Fluid Dynamics. *Requires Override—See #2 Below.* Course Description: Theory and application of finite difference and finite volume methods to selected fluid mechanics and heat transfer models including a potential flow model, a compressible flow model and an incompressible Navier-Stokes model. Prereq: ME 410. *Jaberi.*
- ME 491* **Selected Topics in Mechanical Engineering.** Section 601: Intro to Cryogenic Engineering. *Requires Override—See #2 Below.* Course Description: Cryogenics is the science and engineering of phenomena that occur at a temperature below 120 K. The class will emphasize the engineering aspects of cryogenics including: cryogenic properties of materials, air separation, refrigeration, liquefaction, cryostat design, cryocoolers, two-phase flow, instrumentation, cryogenic safety and the properties of cryogenic fluids. Prereq: ME 410 or concurrently. *Weisend.*
- ME 495 **Tissue Mechanics.** 3(3-0). Prereq: ME 222. *Biomechanical Concentration Course.* *Haut.*
- ME 497 **Biomechanical Design.** 3(3-0). Prereq: None for ME majors. *Biomechanical Concentration Course.* *Reid-Bush.*
- BE 445 **Biosensors for Medical Diagnostics.** 3(3-0). Prereqs: BS 111 and CEM 141 and ECE 345. *Biomechanical Concentration Course.* *Alocilia.*
- CE 422 **Applied Hydraulics.** 3(2-2). Prereqs: ME 332 and 391. *Wallace*
- CE 492 **Selected Topics in Civil Engineering.** Section 601: Air Pollution Science: Science & Engineering. *Requires Override—See #3 Below.* Course Description: Basic physical and chemical principles governing indoor and atmospheric air pollution. Elements of air pollution meteorology, climate change, atmospheric transformations and transport. Air pollution sources and methods for their control and the role of local, state and federal government in air pollution control. Prereqs: (MTH 133), (CEM 141), (CE 280 waived for ME majors). *Masten.*
- MSE 425 **Biomaterials & Biocompatibility.** 3(3-0). Prereq: PSL 250 or concurrently and MSE 250. *Biomechanical Concentration Course.* *Baumann.*
- MSE 426 **Introduction to Composite Materials.** 3(3-0). Prereq: ME 222. *Xiao.*
- MSE 465 **Design & Application of Engineering Materials.** 3(3-0). Prereq: *Requires Override—See #4 Below.* *Subramanian.*
- ME 802 **Advanced Classical Thermodynamics.** *Requires Override—See #3 Below.* 3(3-0). Prereq: ME 412 plus GPA of 3.5+. *Engeda.*

OVERRIDE INSTRUCTIONS

ME Override Form Link:

<http://www.egr.msu.edu/me/undergrad/forms>

- 1) ME 490–Independent Study: Find a professor who is willing to supervise your project, and discuss your plans with him/her. Complete an *ME 490/490H Enrollment Contract*, available in the ME Advising Office in 2560 EB. After you and your professor have signed it, return the form to the ME Advising Office for the remaining signatures and override.
- 2) Complete and submit the *ME Override Request* form: <http://www.egr.msu.edu/me/undergrad/forms>
- 3) Complete and submit the *CE Override Request* form: <http://www.egr.msu.edu/cee/forms/override.html>
- 4) ME students who have completed MSE 250 are eligible for an override in MSE 465. Contact Professor Subramanian (subraman@msu.edu).
- 5) Complete the *Graduate Course Override form*, available in the ME Advising Office in 2560 EB. This is a paper form.

Fall Semester Calendar

November 12	All currently enrolled students who have not enrolled by 8 p.m. in at least one course for Spring will pay a \$50 late fee.
November 13	ASME First Lego League Challenge. Contact Dustin Colthorp (colthor6@msu.edu) for details.
November 19	Deadline for Withrow Teaching Award Nominations. The nomination form is located at: https://stuedms.msu.edu/withrow.php
Nov 25-26	Thanksgiving recess
December 10	Last day of classes & Design Day.
December 11	Undergrad Commencement Ceremony-Breslin at 2 pm. Lasts about 2 hours. No tickets required.
Dec 13-17	Final Exams
Dec 18-Jan 9	Semester Break
January 14	On-line Open Add Period for Spring 2011 ends at 8 p.m.
March 1	Approximate application deadline for April FE exam
March 14	Scheduled Computer/Telephone Enrollment period for summer semester begins. (Open enrollment begins on March 26.)
April 1	Computer Enrollment period for fall/spring 2011-2012 begins. Your enrollment access date will be posted on StuInfo in mid-March.

The MSU College of Engineering Design Day

Friday, December 10, 2010
MSU Union

Come and see our students
lead, create, and innovate

Activities include:

- Competitions
- Presentations
- Demonstrations
- Awards



MICHIGAN STATE UNIVERSITY

ME Advising Office

Dept of Mechanical Engineering

2560 Engineering Building

East Lansing MI 48824-1226