

ME Bulletin

News for
Mechanical
Engineering Majors

Vol. 50, No. 1

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Fall, 2012

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New ME 280 instructor!! See page 2

Kathy Stevenson has joined the ME department as the new instructor for ME 280, replacing Bob Chalou who has retired. Read more about both Kathy and Bob on page 2.

The All-Important Course Plan by Professor Neil Wright, ME
Associate Chair for the Undergraduate Program



Making sure that you get the classes you will need to graduate is a straightforward, if not trivial, task. The most important step in the process is developing a course

plan with the Mechanical Engineering academic advisor, **Ms. Gaile Griffore**. Well, the most important part is to study as well as you can in the courses that are prerequisite for the classes that you need to take to graduate. Then, the next most important thing to do is to have a course plan on file. Actually, the most important thing is to get out of bed to get to the classes that are prerequisites to . . . but you get the idea.

For a number of reasons (e.g., early registration privileges, prerequisite imbalances) some classes seem to fill faster than might be expected. By the time you register, it may be sometimes difficult to get a seat. Ms. Griffore works diligently to meet each student's reasonable request to get into a class. If a junior or senior ME student has a course plan on file with her, she will pull every trick out of the bag to make sure that the student gets the classes he or she needs to graduate according to plan. Having a course plan makes the argument stronger for the department to reallocate resources

that it has or find some means to aid the student in getting the classes needed. If a student doesn't have a course plan, we'll still try our best, but it can become more difficult.

Do course plans change? Sure, sometimes. A student might change interests or concentrations. A student might get an internship or a study abroad experience that requires reworking of his or her course plan. There are a number of reasons for which a course plan might change. Changing a course plan that is on file is usually easy and often works without delaying graduation.

Ah, you say, why not offer unlimited seats in each course? We'd like to, but classroom and laboratory capacities are limited, as are the size of the faculty and the hours in the day. (Okay, the hours in the day restriction is more rigid than the size of the faculty. The department only has so much control of either.)

So, meet with Ms. Griffore. File a course plan. Get a lollipop (a limited time offer – flavors may vary).

Oh yeah, and while we're at it, wear your safety glasses in the IPL and shop. And closed toed shoes, too. And have a fun and productive semester.

Department News



• **Mr Bob Chalou** has retired after 17 years of teaching ME engineering graphics and design, including ME 280, at MSU. Bob received a Master of Industrial Arts from North Carolina State University in 1995.



• **Dr. Peter Lillehoj** has joined the ME faculty as an assistant professor. He received his Ph.D. from the Univ. of California-Los Angeles in 2011. His research interests include BioMEMS, nanotechnology, microfluidics, biosensors, and point-of-care diagnostics. Next semester he will be teaching ME 332. Read about Dr. Lillehoj's research on page 8.



• **Ms. Kathy Stevenson** has joined the ME department as a teaching specialist in charge of ME 280. Kathy has a B.S. degree from Eastern Michigan University in Applied Technologies and a Certificate in Geometric Dimensioning & Tolerancing. She has 14 years of design experience at GM Powertrain and GM Truck Division as a senior designer specializing in exhaust systems, engine, and chassis design. In 1998 Kathy

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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was awarded a patent for an innovative exhaust bracket design at GM. She has had many years of design software experience with Unigraphics (NX) and Solid Edge. Her teaching experience includes one year at Eastern and three years at LCC.

• **Mr. Mike Koschmider** has joined the ME department as a research technician who will be working with Roy Bailiff in the machine shop.



• **Dr. Ahmed Naguib** has been appointed as ME Graduate Advisor, replacing Dr. André B nard who has served since Fall 2010.

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 1415 EB.

• *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.

Tutoring

• The Guided Learning Center (GLC), located in 1180 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."]

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

I thought you were an Engineer! What is Actuarial Science? by Jonathan DiClemente, Mechanical Engineering Senior



It seems as though I am asked this question every time I tell someone I am trying to earn a Bachelor of Science in Mechanical Engineering with a Specialization in Actuarial

Science. I am never quite sure how to reply. I could use the quick escape and reply by saying, "It's the study of predictive risk analysis over many disciplines and typically used by those who work in insurance." Although this is partially true, it does not encompass the whole story and is certainly not the reason I am studying it.

In the 2011 movie, *Money Ball*, the power of actuarial science is shown. **Jonah Hill** plays the role of **Peter Brand**, a young scouting as-

AN ENGINEER WHO IS ABLE TO UNDERSTAND THE RISK INVOLVED IN . . . A LARGE PROJECT. . . AND ATTACH A MONETARY VALUE TO THAT RISK IS INVALUABLE.

sistant for the Oakland Major League Baseball team. Peter's philosophy is to earn cheap wins from undervalued players. To do this he selects players who excel in specific capabilities, peak in performance, at the expense of other attributes. These players are typically seen as undesirable by most teams because they do not possess the "full package." Over time, Peter was able to construct the right equation of players and created a winning team with the lowest salary range in baseball. This was made possible because he was able to manage the players' specific strengths and hedge against their faults. Whether he knew it or not, Peter was conducting the work of an actuary.

As engineers, we are trained to find the most effective solution through a diverse understanding. Like Peter in *Money Ball*, we use many techniques and mechanisms to ensure that our work is designed as robustly or efficiently as possible. Nevertheless, we encounter systems that cannot

simply be optimized for a single solution due to their dynamic behavior. Through the understanding of predictive and dependence modeling, a level of confidence can be applied to a solution when an engineering problem is coupled with an actuarial approach. This level of confidence allows the engineer to proceed in a design, based on the level of associated risk.

Dr. Albert Cohen, Actuarial Science Specialist and Program Coordinator, Department of Mathematics and Department of Statistics and Probability, MSU, explains the inherent relationship between engineering and actuarial science perfectly, "The collaboration between engineering and actuarial science, in my opinion, is quite natural. An engineer who is able to understand the risk involved in the undertaking of a large project and is able to attach a monetary value to that risk is invaluable. By understanding reserving, stochastic stress-testing, and optimization, such an engineer can design a nimble strategy, which is both predictive and reactive. Similarly, an actuary who understands the project they are studying can tailor a strategy that is specific to the engineering work under consideration. As we continue into the 21st century, more collaboration and interdisciplinary work is the key to a deeper human understanding. We welcome a stronger connection with engineering students and look towards future collaboration between our departments."

An Actuarial Science Specialization is the perfect complement to a degree in Mechanical Engineering. Although it was difficult at times to balance these two studies concurrently, the rewards of becoming a well-rounded engineer were well worth it, and I would encourage every student to consider the specialization.

For more information on this and other specializations, go to: <http://www.reg.msu.edu/AcademicPrograms/Programs.asp?PType=SPCU>

Professor Cloud Receives Murray Medal



PHOTO PROVIDED BY DR. CLOUD

Professor Cloud (left) receives the Murray Medal from Peter Iffu, President of the Society for Experimental Mechanics.

Last June the prestigious Murray Medal was awarded to **Professor Gary L. Cloud** in recognition of his distinguished contributions uniting optical and electronic techniques to solving significant problems in mechanics. The medal was presented at the International Congress and Exposition on Experimental and Applied Mechanics where he delivered a lecture entitled, "Some Curious Unresolved Problems, Speculations, and Advances in Mechanical Fastening."

Mechanical joining is one of the oldest, most important, and most neglected aspects of the engineering design of machines and structures of all types and sizes. Approximately 250 U.S. companies manufacture fasteners worth over \$8 billion per year. There are 18,000 fasteners in a common fighter jet airframe, and roughly one-third the cost of a typical airplane is in the fasteners. Still, most failures of structures, including aircraft,

originate at fasteners, suggesting that improved understanding of fastener mechanics, better design criteria, and informed applications of fundamental knowledge are required. This issue is exacerbated by increased demands on systems, particularly in the transportation and military sectors, and by the growing use of composites, for which current fastening practice seems to be underdeveloped owing to complexity.

Dr. Cloud traced a brief history of mechanical joining, its importance, and the problems faced by engineers in designing for fastening. Research and development of fasteners through analysis and experiment are complicated by the large array of variables involved, and investigators must have at hand an extensive array of experimental and analytical techniques as well as an appreciation of the practicalities of fastening. Verification and validation of findings are crucial, and extrapolation is fraught with pitfalls.

Dr. Cloud described some examples of incomplete experimental results that generate speculation and that might provide points of entry for investigators who are willing to take on difficult challenges where progress would be useful, but is not easily recognized. These cases include, among others, odd and perhaps dangerous behaviors resulting from coldworking holes in engines and structures, stress

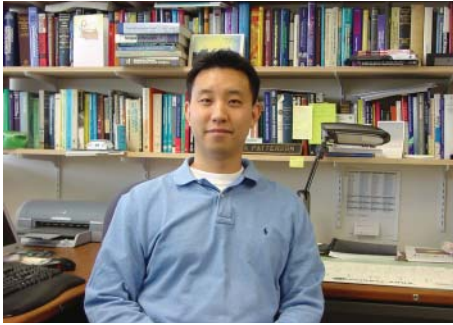
THERE ARE 18,000 FASTENERS IN A COMMON FIGHTER JET AIRFRAME, AND ROUGHLY ONE-THIRD THE COST OF A TYPICAL AIRPLANE IS IN THE FASTENERS.

waves caused by joint slippage in composites, the use of inserts to control stress concentrations, difficulties in applying sufficient clamping force in composites, merits of hold and fastener shaping, and unusual configurations of conical washers. Finally, some ideas for hybrid joining and for systems that allow quick field assembly/disassembly were briefly described.

Dr. Cloud received his Ph.D. from Michigan State where he has served on the faculty for 45 years. He is a University Distinguished Professor, a Registered Professional Engineer, a Chartered Scientist, and a Chartered Physicist. He is a Fellow of the Society for Experimental Mechanics and a Fellow of the Institute of Physics (London). He has received the Withrow Senior Distinguished Scholar Award, and he is a two-time recipient of the Withrow Teaching Excellence Award. In 1992 he received the Outstanding Engineer Award from the Michigan Society of Professional Engineers for his work in engineering education.

Dr. Cloud and his wife Libby have been married for 38 years and have two daughters and one grandchild. He studied voice for more than 20 years and currently sings in a semi-professional chorale. He also enjoys playing squash, fishing, competitive shooting, camping, reading, and working in his shops.

Dr. Lee Receives Withrow Distinguished Junior Scholar Award



Last spring Professor Tonghun Lee was presented with the 2012 Withrow Distinguished Junior Scholar Award, which recognizes a faculty member who has demonstrated excellence in scholarship. The junior award recipient must have been in service to the university for not more than seven years and hold the rank of associate professor.

Dr. Tonghun Lee, associate professor of mechanical engineering, is an expert in advanced propulsion systems and laser diagnostics. His work on plasma assisted combustion earns him recognition as one of the top young investigators in the world in the field of experimental combustion physics. His research continues to open new and exciting directions with many possibilities for groundbreaking discovery and innovation. As one expert puts it, his work “balances diagnostics development with a strong emphasis on the application of advanced laser diagnostics to fundamental studies of combustion physics, bio-fuel and alternative energy source development, and air-breathing propulsion (hypersonics).”

Dr. Lee has developed a world-class laser diagnostics capability at MSU and has established long-lasting and productive collaborations with top research teams around the world, including one with the U.S. Air Force Research Laboratory, on high speed imaging diagnostics. His research is well funded, having received awards in excess of \$13 million in total funding.

Dr. Lee has been recognized for his accomplishments with numerous awards, including the the Air Force Office of Scientific Research Young Investigator Award, the Office of Naval Research Young Investigator Award and a Defense University Research Instrumentation Program Award (DURIP). He has also received the very prestigious and highly competitive Presidential Early Career Award for Scientists and Engineers (PCASE), a most fitting recognition for his outstanding and promising accomplishments.

In 2009 he received a Withrow Teaching Excellence Award from the College of Engineering. He received the Society of Automotive Engineers Ralph R. Teeter Educational Award and in 2010, and a Teacher-Scholar Award from MSU at the Annual Awards Convocation in 2011.

Dr. Lee has also been recognized as an outstanding mentor and instructor. One graduate assistant notes: “He has a gift for identifying the most important steps needed to obtain the most fruitful results. In conducting research, he constantly insists that all uncertainty be eliminated from an experiment, and that work be done to the highest standard.”

An important aspect of his educational activities is to promote science education to our country’s youth in the field of energy and to engage in activities to increase diversity and minority participation in engineering at MSU. Since 2007, Dr. Lee has spent much time developing a seminar series and hands-on workshop in alternative energy. Since 2008, he has conducted full-day seminars and workshops for K-12 students. Over the years, more than 1500 students have participated; content has been gradually modified and the workshops are now targeted to include high school teacher participation.

Curriculum News

Summer 2013 Courses: ME 201, 222, 361, 391, 410, 412, and 471 will be on the Summer 2013 schedule.

Co-op Students: Before you leave for your Spring 2013 co-op rotation, please be sure to discuss your schedule for next Fall 2013 / Spring 2014 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 464—Intermediate Dynamics (3 credits) will be taught during Spring 2013 along with graduate students who will take the course as ME 861, and who will have different assignments. For more information, see **Dr. Shaw**.

Class Standing. ME juniors and seniors can obtain this information in 2560 EB. Sophomores should go to 1410 EB. 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 1340 EB, or go to: <http://careernetwork.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.

Dr. Genik Receives Withrow Award

Dr. Laura Genik received the 2012 Withrow Teaching Excellence Award last spring at a special awards luncheon and ceremony. She was presented with an inscribed plaque, a medallion to wear at commencement ceremonies, and a small stipend. Each year a committee consisting of student representatives from ASME, SAE, and Pi Tau Sigma, makes the selection after reviewing nominations from ME juniors and seniors.

Dr. Laura J. Genik, academic specialist in mechanical engineering, is referred to by her students as an interesting, fair, fun, and extremely competent instructor. One student remarks, "She teaches with a serious focus but allows enough entertainment into the courses she teaches to make it worthwhile to attend class." She teaches a broad portfolio of courses, from introductory courses in thermodynamics to senior-level courses in heat transfer and design. Students routinely comment that they want to attend class because Dr. Genik is able to put complex ideas into terms that an undergraduate student can understand. Outside the classroom, she is accessible to any student who passes by her open door. She gives advice about the classes she teaches—and some that she does not—and about subjects relevant to students outside the classroom. One student comments, "She is able to explain the material because she understands the material." Her ability to



HARLEY SEELEY

Professor Craig Somerton (right), presents the Withrow Teaching Excellence Award to Dr. Genik.

relate theory and practice by illustrating her explanations with meaningful examples, and her talent to make students think outside the box and challenge them to do well, are just two of her many positive attributes noted in the nominating letters. In letter after letter students proclaim, "She is the best teacher I have had at MSU!"

Dr. Genik received her B.S., M.S., and Ph.D. degrees in ME from Michigan State. Her husband is also an MSU alumnus with a B.S. in CE and an M.S. in ENE (Environmental Engineering). In her spare time, she enjoys reading and spending time with her two children who are active in gymnastics and swimming. Dr. Genik also enjoys sewing for herself and for her children.

Following Directions

by Craig Gunn, Director of Communications



This semester one of the graduate students approached me and asked a very simple question, "Do students ever follow directions?" I had to laugh and responded, "We never follow directions!" This covered the entire population from the youngest child to the oldest characters showing up on Smucker's jars on the Today Show. But as I thought about my flippant response I realized that it really isn't funny anymore. We have become a nation of people who deliberately ignore the rules and choose to go at things with total abandon. We do what we feel and what we feel denies any need to place an importance in going step by step through any process. We see it in the taking of tests where clear instructions are given but no one reads them and then the complaints start when scores are less than desired because the rules were not followed.

Engineers are one breed of individual who march to the drum of rules and directions. Yes, there can be an enormous amount of creativity, but even within creativity there are structures to be followed. For the engineer to accomplish great things, a concern for directions and how they shape products and designs must be kept in mind. There is also a clear indication that individuals who cannot follow directions may cause irreparable damage in their fields, simply because they ignore simple things that were necessary in the process.

Following directions communicates a great deal to employers, colleagues, managers, and the general public. If we take into consideration the need to follow the directions given along with a constant concern for making those directions better, we can end up being productive and useful to the world around us.

Nominate

**your favorite professor for the 2013
Withrow Teaching Excellence Award!**

<http://www.surveymonkey.com/s/9L7XFL8>

Deadline: Friday, Nov. 16

Dean's List

Congratulations to these 252 ME majors who made the Dean's List after Spring and Summer 2012. To be on the Dean's List, you must have a semester GPA of 3.5 or better. This list is from September 12. For updates, go to: <http://www.reg.msu.edu/ROInfo/GradHonor/DeansList.asp>.

SPRING 2012: Reema Al Dhaneem, Hasan Alali, Bara Aldasouqi, Joseph Aljajawi, Benjamin Allen, Benjamin Ambrose, Corey Anderson, Kevin Andreas-si, Zachary Averill, Matthew Bach, Abdulrahman Ba-faraj, Caitlin Bailey, Zeb Baldwin, Vito Balsamo, Ann Barrett, Nilutpol Basumatari, Eric Beatham, Angel Begov, Alexander Benson, Jayson Blough, Alexander Bonnen, Jordan Bowman, Evan Boyers, Christopher Brady, Steven Brickel, Wendy Brodsky, Brendan Brown, Toby Buckley, Matthew Bur, Stephanie Bury, Jessic Buschman, Brandon Cameron, Michael Camp-bell, Marcus Cannon, David Caples, Benjamin Car-ruthers, John Casuccio, Riley Chapdelaine, Miriam Chege, Jinbo Chen, Yuhao Chen, Brinn Cochrane, Robert Conley, Joel Cosner, Scott Coy, David Crouse, Caitlyn Cubba, Harrison Cummings, Werner Dahm, Eric Darin, Mark Davison, Benjamin Dean, Stephanie Dejong, Austin Deneff, Joshua Dewalt, Jonathan Diclement, Louis Dionise, Thomas Dionne, Deanna Doan, Daniel Dokter, Jared Dorvinen, Emma Drenth, Ryan Du Tour, David Dudley, Danielle Durocher, Alexander Dutch, Eric Ellis, Sean Fabian, Brian Farber, Brett Farnsworth, Bradford Fillion, Kellen Fitzpatrick, Kathleen Fitzsimons, Chad Floria, Evan Flynn, Eddie Franklin, William Freed, Tianyi Fu, Gerald Gentz, Steven Gerdeman, Cameron Gibson, Taylor Gilliland, John Gillis, Graham Goble, Gustavo Gomes, Matthew Gorman, Todd Graham, Andrew Grossman, Laura Gumper, Scott Hall, Shaoyu Han, Sean Hand, Rebecca Hannon, Camden Harp, Lauren Hart, Juntai He, Jarrod Heck, Matthew Heimonen, Jennifer Henige, Brett Hewitt, Joshua Hill, Katherine Hilton, Mallory Hoffman, Daniel Holmes, Mark Hoyer, Zachary Hoyle, Daniel Ignatowski, Robert Jakubowski, Shadi Jammoul, Rami Janoudi, Katherine Jansen, Croix Jastrow, John Jess, Xue Jiang, Yichu Jin, Trent Johnson, Marcus Johnston, Kyle Justus, Yousib Kammo, Andrew Kaye, Ravin Kelsner, Daniel Kenny, Hong Kim, Rajitha Kiridena, Jeffrey Klegon, Thomas Klotzbach, Aerin Klump, Adam Kluz, Frank Kmet, Adithya Kosgi, Joseph Koterba, Jacob Kramer, Mariah Krebs, Andrew Kristufek, Lukasz Kurczab, Sarah Kurtz, Adam Lang, Nicholas Lannes, Adam Leenheer, Yan Li, Jiantao Liao, Yirang Liu, Jonathan Luszczakoski, Charles Maines, Matthew Malek, Angela Marinich, Dane Marsack, Michael Marshall, Christopher Matthes, John Mccarthy, Michael McKin-ley, Zakary Mclennan, Trevor McSween, Michael Mehall, Craig Miller, James Miller, Paul Miller, Jocelyn Modelski, Margaret Moore, Ming Mu, Jeffrey Narkis, Anna Nham, Andrew Nuttall, Benjamin Ober-ski, Scott Oconnor, Haley Orr, Stephen Owczarek, Thomas Parshall, Sapan Patel, Seirra Patrick, Cody Paupert, Colin Perrault, Brooke Peruski, Matthew Pingel, Michael Pinger, Eric Pitsch, Ashley Pomaville, Kevin Pruess, Nicholas Putman, Daniel Pylar, Jiawei Qin, Jinyang Qiu, Shivakumar Ramasami, Travis

46 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 10. If your name is missing, please contact me immedi-ately (Email Gaile at <griffore@egr.msu.edu> Tele: 517-355-3338).

Ryan Charles Aenis	Matthew Ian Gorman	Khoa Dang Nguyen
Zachary James Albright	Zachary David Graham	Patrick Charles O'Malley
Michael Anthony Aurino	Sarah Margaret Haas	Haley Elizabeth Orr
Sam Tobin Balasz	Karsten Franz Harns	Colin Nicholas Perrault
Shannon Marie Beard	Jarrod Dean Andrew Heck	Daniel Richard Pylar
Alex James Bergquist	Samantha Ann Hilk	Peter Zachary Schall
William Michael Blancke	Matthew Robert Hoffdal	Trevor Michael Shane
Jordan Harrison Bowman	Mark Alan Hoyer	Joel Cameron St. Cyr
Matthew Andrew Bur	Zachary John Hoyle	Kevin Thomas Svacha
Stephen Douglas Campbell	Evan Daniel Koleda	Russell John Tindall
Marcus Anthony Cannon	Karl Alexander Krug	Michael Robert Trotter
Werner Karl Schwind Dahm	Jiantao Liao	Jonathan Ross Tuse
Mark Alexander Davison	Yirang Liu	Matthew John Witmer
Kellen Joseph Fitzpatrick	Matthew Josef-John Malek	Shawn Robert Wright
Cameron Edward Gibson	Michael James Mehall	Benjamin Joseph Zondlak
	Robert Ogle Mishkin	



Reinhart, Sylvia Reiser, Jeremy Ries, Eric Rightor, Madeline Roe, Lance Roth, Michael Ryerkerk, Todd Sabotta, Adam Sajdak, Travis Schafer, Scott Schimp, Nicholas Schooley, Kyle Schubel, Peter Schultz, Daniel Schwartz, Jason Seely, Christoffer Sehling, Jo-seph Senechal, Jonathan Shapiro, Ankit Sharma, Jun Sheng, Kyle Sherman, Andrew Shih, Dylan Simmer, Michael Skierski, Gregory Smiecinski, Scott Smith, Tim Smith, Paul Snyder, Stephen Sommerlot, Jared St Aubin, Hunter St Pierre, Christopher Stanos, Isaac Steinbrunner, Thomas Stevenson, Kyle Sweet, Grego-ry Tenbusch, Seium Teshome, Nicholas Theis, Brady

Thom, Russell Tindall, Shane Toreki, Samuel Troiano, Michael Trotter, Steven Utz, Hanna VanderMoere, Jeffrey Vonlinsowe, Jason Wagnitz, Shenquan Wang, Elisabeth Warner, Travis Welton, Ethan Welzbacker, Andrew Wheatley, Joshua Whitman, Benjamin Wilburn, Barrett Winrick, Matthew Witmer, Jonathan Woo, Qin Wu, Tong Wu, Yan Wu, Evan Yoder, Tianyu Zhao, Benjamin Zondlak.

SUMMER 2012: Katherine Jansen, Michael Temple, Xiangyu Wang, Brittany Watton, Benjamin Zondlak.



Announcing the renewal of the 2012-2013

College of Engineering Poetry Forum

Celebrating a year's worth of poetry from April 1, 2012 to March 1, 2013. All poets are welcome. (All poems created in Spring 2012 have been entered.)

JOIN the excitement of creating a lasting poetical endeavor!

SEE <http://www.egr.msu.edu/fses/2012-2013.pdf> for rules

SEND all poems to poetryforum@egr.msu.edu

Submissions will be printed!

Micro- and Nanotechnologies for Next-Generation Biodetection Platforms

by Professor Peter Lillehoj

Professor Lillehoj is currently seeking highly motivated graduate and undergraduate students to join his laboratory, particularly, those with prior experiences in micro/nanofabrication, biotechnology and computer/microcontroller programming. Interested students should send an email to Prof. Lillehoj and include a brief personal statement and CV (resume).

My laboratory focuses on utilizing micro- and nanotechnologies for developing novel platforms for biodetection and diagnostics.

Most of you have probably heard the terms “micro” or “nano” before, either in the media (news, TV shows, magazines), or maybe in one of your classes. Some of you even own products that are advertised as being micro or nano (e.g. iPod nano, microSD card). But how many of you have actually thought about what micro- or nanotechnology is? Briefly, it’s the science and technology at the micro- (1×10^{-6} m) and nanometer (1×10^{-9} m) scales.

Just to give you an idea of how small this is, the diameters of a human hair, red blood cell and DNA strand are approximately 80 micrometers (μm), 10 μm and 2 nanometers (nm) respectively. In general, objects smaller than 100 μm cannot even be seen with the naked eye!

Some of you may be wondering how technology at such small scales can be used for making functional devices for biodetection and diagnostic testing. Well, that’s a great question! One of the ways my lab does this is by fabricating micro-sized channels and structures and integrating them onto chip-based platforms, which are commonly referred as micro-electrical-mechanical systems (MEMS).

There are several advantages of MEMS devices vs. conventional laboratory technologies: 1. minimal chemical and reagent consumption, making it more cost effective, 2. simultaneous processing, which is achieved by fabricating multiple components onto

a single chip, 3. shortened analysis times, and 4. higher resolution and sensitivity. These characteristics make MEMS technologies well-suited for the handling, processing and detection of cells and biomolecules since we can fabricate structures that have similar dimensions.

One topic of research that my lab is investigating is microfluidic bioprocessing, which has both analytical and diagnostic applications. For example, the quantification of blood cells (known as a complete

blood count (CBC)) is one of the most important diagnostic tests for determining a wide variety of diseases and conditions, which requires precise cell sorting.

I have developed a flow-based cell sorter which utilizes strategically configured micropillars within a microchannel. (See Figure 1). These micropillars, 60 μm wide and 300 μm long, alter the fluid flow pathway in the channel, which causes the cells to be diverted toward predetermined, size-specific reservoirs. When the cells

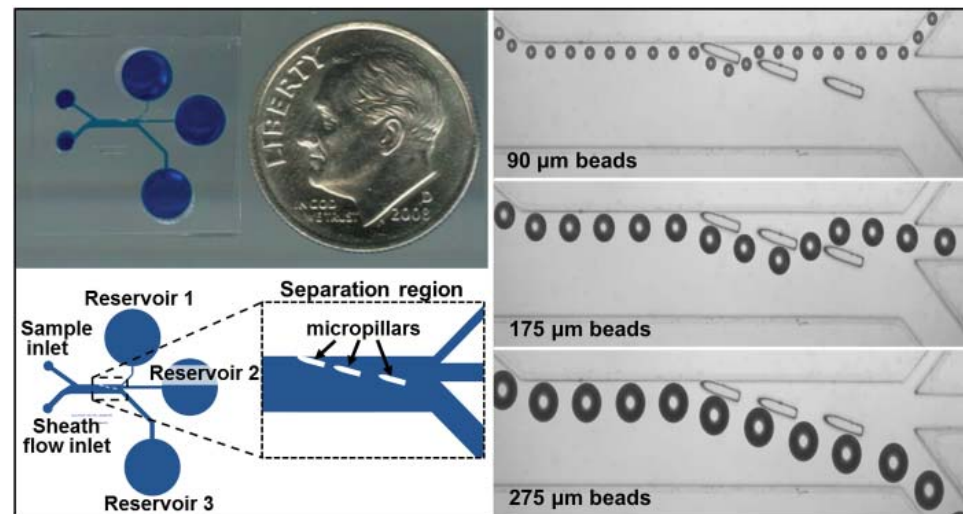


Figure 1: Microfluidic cell sorter

FIGURE PROVIDED BY PROF. LILLEHOJ

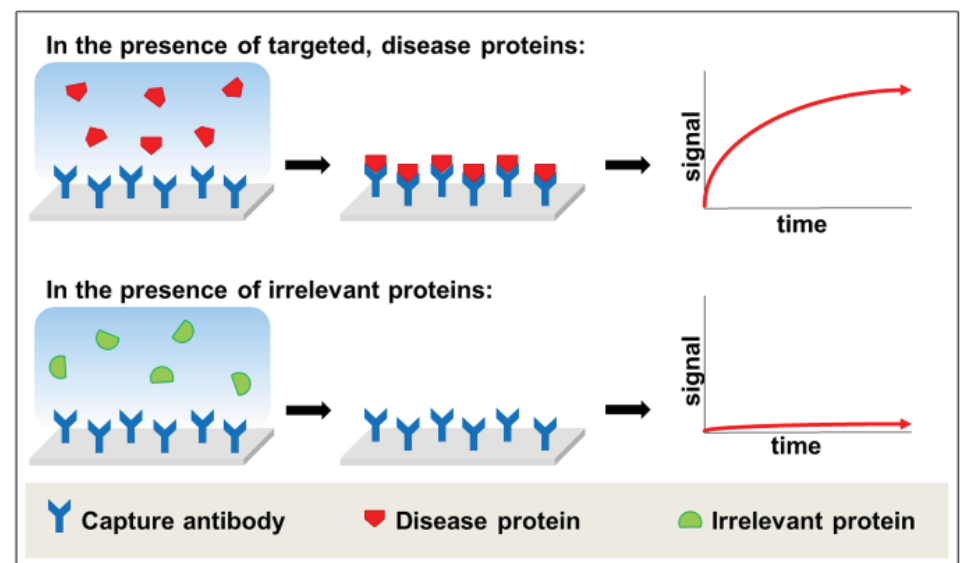


Figure 2: Illustration of a generalized

FIGURE PROVIDED BY PROF. LILLEHOJ

encounter the “separation region,” they either flow in between or around the micropillars, which is determined by the configuration of the micropillars and the cell’s size. Since this separation technique is solely based on fluid flows, we eliminate any adverse effects on the cells, which is useful if they’re being used for downstream studies or regenerative medicine.

Another topic of research that my lab is investigating is rapid detection of disease biomarkers. Generally, when an individual becomes sick with disease or infection, their body produces proteins that are specific to that disease. By detecting and quantifying the concentration of these proteins in the individual’s blood, we can use this information for disease diagnosis so they can receive the appropriate treatment.

I have created several biosensors that utilize unique capturing biomolecules (antibodies, aptamers, peptides) to target and bind to specific disease proteins. (See Figure 2) These capturing molecules are designed to precisely target one type of protein and will not bind to irrelevant proteins in the sample. When the targeted proteins bind to the sensor, it produces an optical or electrical signal, which is measured and correlated to the protein concentration.

By utilizing MEMS and nanotechnologies, we can create devices that require a minimal amount of blood (finger-prick), provide rapid results (< 30 min) and achieve high sensitivity. Because of these advantages, one of the main applications for this technology is diagnostic testing in resource-limited communities and underdeveloped countries that have limited laboratory and medical facilities. In addition to improving global healthcare, these platforms can be utilized to detect various other “targets” including pathogens, chemicals and toxins, thereby addressing other grand challenges facing our society such as food/water safety and biosecurity, with the eventual goal of enhancing human health, safety and longevity.

ME Study Abroad: RWTH-Aachen, Germany 2013

by Dr. John Foss with Contributions by Evan McCune, Charlie Ferreria and Paul Snyder

MSU/ME students with a 3.0 GPA or higher have the amazing opportunity to: 1) live in Aachen, Germany (mid-May to end of July 2013), 2) carry out 5 credits independent study plus 4 credits German language study as credits for their MSU degree, and 3) travel in Europe with courses and lab schedules that include 3-day weekends. Also, with thanks to the North American Rockwell Endowment, substantial scholarship funds are available to the students in this program.

The ME 490 experience gives students the opportunity to participate in a project that meets their interest at the RWTH-Aachen, a premiere European university. Project opportunities include tissue engineering, composite design, fluid flow analysis, automotive topics, plus many more. (It is useful to think of the RWTH as a university on the scale of MIT). The city center – a blend of a historic European city and a vibrant college town – reflects the history of Aachen as one of the Charlemagne capitals (800 AD) and the superb rail system allows our students to easily reach destinations of their choosing. Participants of last year’s program utilized 3-day weekends to travel to Berlin, Heidelberg, Köln, Paris, Amsterdam, Bruges, Barcelona, Milan, Rome, London and more!

Former students are the best sources of information for this program; they can be reached through **Prof. J. Foss, Program Director**. The 2013 organizational meeting will be held soon after the publication of this Bulletin issue. Make contact at foss@msu.edu or 355-3337. It is intended that the 2013 group will be formed by mid-semester, Fall 2012.

In the words of a 2012 participant: “Please don’t hesitate to talk to former students! They are more than willing

Study Abroad at the University of Edinburgh

by Gaile Griffore & Craig Somerton

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.

Consider spending a fall or spring semester (or maybe an entire year) studying abroad at the University of Edinburgh in Scotland!

You may be able to take courses that fulfill your entire Senior Elective requirement. Or, you could take a variety of courses that approximate what you would have been taking at MSU.

For more information about this exciting study abroad program, contact **Gaile Griffore**, ME Advisor, 2560 EB, 517-355-3338 (griffore@egr.msu.edu)



to share experiences and information about the program. This is an opportunity you don’t want to miss. *Submitted by Professor Foss.*

ME491/603--International Development for Spring Semester 2013

by Professor Brian Thompson *"Hands-on" Creativity, Innovation, and Entrepreneurship*

W. H. Welch, MD (1850 – 1934) founder of the School of Public Health at Johns Hopkins University in Baltimore, Maryland, 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 men, women and children living at the margins of life on planet Earth? Why not enroll in an exhilarating design-build-test-refine class that's limited to only 24 students who will meet with the instructor each week in small teams?

This special topics class will transform you irreversibly by infusing contemporary thinking about creativity, innovation and entrepreneurship in a global context. Moreover, this triumvirate will enable you to not only contribute to the public good in the USA, but also in under-developed countries where 80% of the world's population struggle to survive on an income of only U.S.\$2.00 each and every day.

The World Health Organization has predicted that the world's population will increase by 50 percent before 2050. Let's reflect on that prediction for a moment. How will planet Earth sustain this huge torrent of hungry people? How can we ensure international peace, equality and justice, as people in this demographic deluge struggle to survive despite the inevitable poverty, trauma and absence of life's essential ingredients? . . . potable water, nutritious food, education, sanitation, clean air, employment, shelter, and health. Will this unprecedented global situation precipitate social unrest and mass starvation?

The fabric of this design-intensive ME 491 course is woven from a thread of ideas on humanitarian societal development in third-world

countries with a second orthogonal thread of fundamental ideas on the engineering problem-solving process relevant to every nation that shares our small planet. This warp and weft of intertwined fibers constitute the biggest challenge confronting humanity today; therefore it's of paramount importance that the next generation of engineers (yes, YOU!) provides leadership at the vanguard of this international societal struggle for survival.

Student teams in this project-based course will embark upon authentic bone-fide eclectic product development projects in the complex inter-disciplinary cauldron called the developing world located in Africa, Asia, and Latin America. Past team projects include the solar powered dehydration of mangoes in Kenya; the threshing of beans in Guatemala; and the energy-efficient cooking of legumes to enhance the diet in Tanzania. Students will interact directly with foreign advisors overseas, and furthermore teams will receive support to travel to the country where their innovative product will be dif-

fused into that culture. Yes, this is undoubtedly a profound indelible life-changing experience!

Experts from all over the campus will reinforce this core pedagogical structure with a suite of guest lectures ranging from horticulture to medicine. Further buttressing of engineering concepts will be provided by a rigorous treatment of the fundamentals of creative problem solving, decision theory, psychological impediments to creativity, and the numerous multicultural issues associated with diffusing innovations in sophisticated state-of-the-art organizations here in the United States, and also in less developed parts of the world.

Margaret Meade (1901 – 1978) wrote, "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."

So! . . . why not make a difference NOW, before you graduate??

For more information, please contact **Professor Thompson** at Thompson@egr.msu.edu

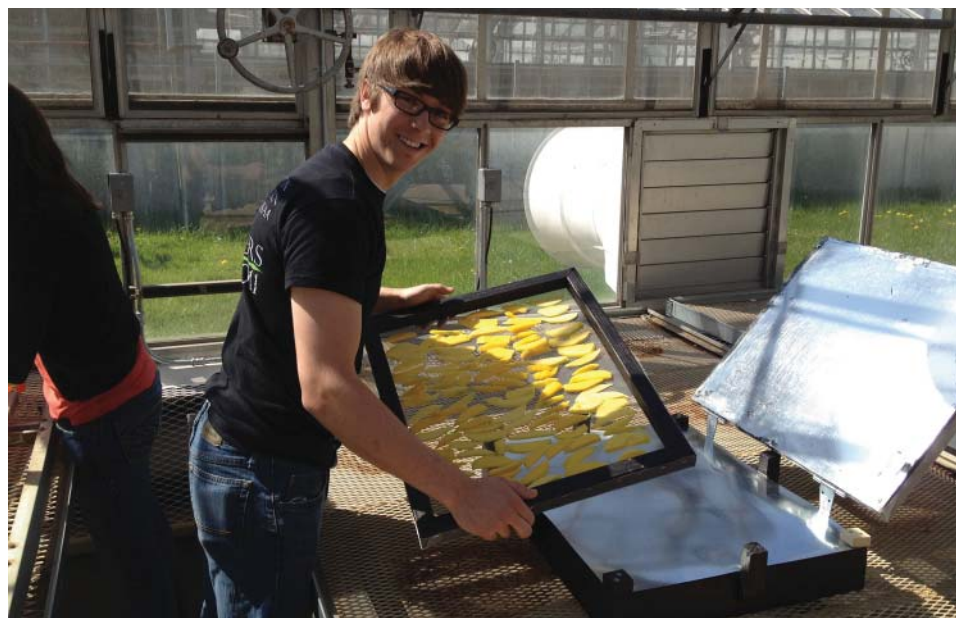


PHOTO PROVIDED BY DR. HADDOW

Nicholas Schooley (B.S., Spring '12) demonstrates a solar-powered mango dehydrator for Kenyan orchards where 50% of the crop rots in the fields. He designed this innovative device with Marcus Cannon, Haley Orr, and Michael Trotter last spring in ME 491/603-International Development.

It's recruiting season! Brought to you by the Career Service
Network/Center for Spartan Engineering



Graduating this year? Graduating in the near future? According to the Center's Destination survey, 96% of all May 2012 engineering graduates reported being employed or continuing their education. Prepare for your full-time interview by signing up

for a practice (mock) interview on MySpartanCareer.com or come into The Center (1340 EB). Interview slots begin the week of October 8.

Looking for an internship for this summer? About 25% of engineering graduates find their full-time position from previous internship/co-op experiences. What better way to form a network and gain professional experience? Companies who have hired MEs in the past include: Ford, General Motors, Chrysler, Boeing, General Electric, 3M, Whirlpool, and Eaton Corporation.

Be ahead of the rest and be sure you:

1) Take advantage of opportunities to meet with employers

- a. Hallway "Ask" Sessions
- b. Student org meetings
- c. Class visits
- d. Job Shadows
- e. Career Fairs
- i. Agriculture Fair Oct 11
- ii. Construction Management Fair Oct 17
- iii. Diversity Career Fair Jan 24
- iv. Engineering Expo Feb 21

You can stay up to date on all events at www.myspartancareer.com
"Events"

2) Update your resume each semester

3) Prepare for interviews

- a. Workshops
- b. Practice Interviews

You can sign up at www.myspartancareer.com "Jobs" "View Postings"
and Keyword: "practice interview"

4) Network/follow up with employers you meet

- a. Thank you notes
- b. Email
- c. Site visits

5) Keep us posted

- a. Stop in the Center

Follow us on Facebook (The Center for Spartan Engineering) and Twitter (@MSU_Egr_Intern and @MSU_Egr_Job) to stay updated on new job opportunities, recruitment, and networking events at the College of Engineering.

<http://www.facebook.com/pages/The-Center-for-Spartan-Engineering/226159694117936>

http://twitter.com/msu_egr_intern

http://twitter.com/msu_egr_job

**Study Abroad in
Lyon, France (ECAM)**
by Professor André Bénard

The Department of Mechanical Engineering offers a five to six week study abroad program for ME junior-level students in Lyon, France each summer. The students stay at ECAM, a French engineering school located in the old part of Lyon. Students are required to enroll for a minimum of 3 credits, and pending confirmation, can obtain credits for ME 201, ME 410 or ME 416 (the classes are taught in English and will require a minimum number of students to be held). Students will also take a French language course (taught in French). If you are interested in this program, please contact:

Ms. Maggie Blair-Ramsey
<blairram@egr.msu.edu> or
Professor André Bénard
<benard@egr.msu.edu>

**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.

American Society of Mechanical Engineers



ASME offers many events throughout the year. This semester, we've brought representatives from nine companies to discuss their industries and career opportunities. We also plan to bring in many more throughout the year. If there's a company you want to see, let us know!

ASME also participates in community outreach events. We helped with the College of Engineering Preview Day and Project Green & White this semester. If you want to get involved in outreach, ASME is a great way to do it.

We also like to have fun. ASME hosts a number of social events throughout the year. So far this semester we have hosted a Tailgate and Bowling Night. We have more in the works for later this semester including another tailgate.

Additionally, Junkyard Wars will be bigger than ever this spring so keep an eye open for more information on that. These events are a great way to get to know your fellow ME's. We hope to see you at our next event.

ASME would also like to thank the people that have made our club possible. **Dr. Shaw**, our faculty advisor, has been a great contributor to our activities. We would also like to thank our generous sponsors, Shell, Dow Chemical and BP.

It is easy and beneficial to become a member. With job placement becoming more of an issue every day, joining a student group gives you a competitive edge. To sign up, please visit the "Membership" section of our website, <http://www.egr.msu.edu/asme/membership.html>. The cost is only \$30 per year, and free for freshmen. *Submitted by Christopher Baldwin, President.*

MSU Solar Car



Last summer, the MSU Solar Car Team successfully qualified for and competed in the American Solar Challenge 2012, a 1600-mile cross-country com-

petition from Rochester, New York to Minneapolis, Minnesota. Although the young crew composed of Miles Turrell, Dan Howarth, Steve Zajac, Ethan Akerly, Scott O'Connor, Meng Cao, and James Miller did not complete the ASC 2012 due to a motor malfunction, crucial experience was gained.

After two consecutive summers of first-ever competitions in the Formula Sun Grand Prix 2011 and the American Solar Challenge 2012, the MSU Solar Car Team has attained the experience necessary to move on to the next daunting challenge.

MSU will begin the two-year design cycle for Leonidas, its second car in team history. Leonidas will present an exciting challenge for the innovative students of MSU, as it will allow members to take part in the design, fabrication, testing, and racing of a brand new car over a two-year period. The goal of Leonidas is to push the solar team further than ever before by qualifying for and completing the American Solar Challenge 2014.

Building a fantastic car capable of completing the ASC 2014 will require the commitment of a team of focused, dedicated students who want to do something big. It will need a cross-section of talented students from multiple disciplines across campus. Fellow Spartans, if you have a desire to leave a lasting mark on MSU, please consider joining the MSU Solar Car Racing Team. Our website is: <http://www.egr.msu.edu/solar/MichiganStateSolarTeam/Home.html> *Submitted by James Miller, President.*



Pi Tau Sigma

The Tau Epsilon chapter of Pi Tau Sigma, the international mechanical engineering honor society, has had a busy start to the semester.

We started the semester off with our traditional "Wing Night" at Buffalo Wild Wings. We enjoyed all-you-can eat wings and had a good time socializing with each other. We invited all eligible members to join us and learn more about our organization. Soon, we will be volunteering at Ronald McDonald House of Mid-Michigan on two dates, as well as participating in service and academic activities through the College of Engineering.

We will also be hosting a presentation from General Motors in the Engineering Building, with additional details forthcoming. This event aims to inform students about career opportunities and give them a chance to ask questions of a current employee. This will be both fun and informative.

Later in the semester, we will meet up for dinner at Crunchy's, another of our fun social traditions. Finally, we will hold initiation in November to induct new members into our chapter, followed by a complimentary dinner at Olive Garden. For any more information on Pi Tau Sigma or any of our events, please visit our website at <http://www.egr.msu.edu/pts/index.html>. *Submitted by Kevin Andreassi, President.*

SAE Baja



The Michigan State Baja team is gearing up for another exciting competition season after placing 11th overall out of more than 100 teams.

The team just recently traveled to Charlestown, Indiana to compete in Midnight Madness where the team raced under the lights in a four hour endurance race against almost 50 other cars. We have also been recruiting very heavily this season and have many new members joining our team. With this influx of new faces we have divided the new car's design into four different teams each being led by at least two of our returning members. This gives our new

members the opportunity to brainstorm and design ideas with other new members while also having the guidance of more experienced members.

This year we plan on redesigning our car from last year while also trying to incorporate new ergonomics into the body of the car. Once these redesigns are finished we will push ahead into the design of our new vehicle for the 2013/2014 season.

Anyone interested in joining or just curious about what we do please contact **Erik Dudek** at baja@msu.edu. No previous knowledge is required as we teach you everything you might need to know. *Submitted by Austin Tokarski, Chief Engineer.*



PHOTO PROVIDED BY AUSTIN TOKARSKI

Katie Worley is shown doing her first run in the Athena car at the maneuverability course in Auburn, Alabama.

Go Green, Go White, Go MSU!

Formula SAE



Every year students on the Formula SAE Racing team work hard to design, manufacture, and test an open wheel formula style car. Last year the Formula Team took 6th place out of 80 teams in the Formula SAE Nebraska competition and they are now busy working on the 2013 race car.

Formula SAE is the world's largest engineering competition with over 300 schools competing from around the globe. This year the team will compete in two events, the first is in May at Michigan International Speedway and the second is in June at Lincoln Airpark, Nebraska. Students on the team gain experience in design, analysis, manufacturing, and testing. The whole car is designed in CAD and all structural components are analyzed using Finite Element Analysis (FEA) software or physical testing.

Students also run Computational Fluid Dynamic (CFD) analyses, engine performance simulations, suspension kinematic simulations, composite structure analyses, and more.

The team is always looking for more members and any student at Michigan State University can join. If you are interested in joining the team please contact Chris Archambo at archam15@msu.edu. Submitted by Chris Archambo, Team Captain & Electrical Team Leader.



PHOTO PROVIDED BY CHRIS ARCHAMBO

Jason Thelen, Shiva Ramasami, Dr. Gary Cloud (Faculty Advisor), Kammi England, Chris Archambo, Brady Thom, Ben Bosworth, David Caples, Matt Bach, and Sylvia Reiser.

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. *Schock.*
- ME 464 **Intermediate Dynamics.** 3(3-0). Prereq: ME 361. *Shaw.*
- ME 465* **Computer Aided Optimal Design.** 3(3-0). Prereq: ME 471 or concurrently. *Averill.*
- ME 477 **Manufacturing Processes.** 3(3-0). Prereq: ME 222 and MSE 250, and Tier I Writing. *Thompson.*
- ME 478 **Product Development.** 3(3-0). Prereq: ME 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.* ► *This course will be taught with graduate students who will take the course as ME 840, and who will have different assignments. If you have questions, contact the instructor.*
- ME 491* **Selected Topics in Mechanical Engineering.** Section 603: International Development: Dialogue; Discovery; Design; Development; Dissemination. *Requires Override—See #2 Below.* Course Description: Case studies, lectures, group mini-projects, and a major project, in which students will apply design methodologies to create and manufacture a sustainable solution to an engineering problem as might be sited in a developing nation such as India, Peru, or Tanzania. Prereq: ME 410 and ME 471. *Thompson.*
- ME 495 **Tissue Mechanics.** 3(3-0). Prereq: ME 222. *Biomechanical Concentration Course.* *Haut.*
- ME 497 **Biomechanical Design.** 3(3-0). Prereq: (ME 371 or concurrently). *Biomechanical Concentration Course.* *Reid-Bush.*
- BE 445 **Biosensors for Medical Diagnostics.** 3(3-0). Prereqs: (BS 111 or 161) and CEM 141 and ECE 345. *Biomechanical Concentration Course.* *Alocilia.*
- CHE 491 **Selected Topics in Chemical Engineering.** Section 701: Brewing and Distilled Beverage Technology. *Requires Override—See 3 Below.* Course Description: Fundamentals of fermented beverage production from a chemical/biochemical engineering perspective. Raw materials for fermentation and basics of alcohol fermentation, beer and cider production; basics of distillation; brandy and eau de vie production; whiskey production; vodka, gin, and flavored spirits production; flavor chemistry. ► *All lectures and laboratories will take place at 2000 Merritt Road, East Lansing.* Prereq: (Age 21 or higher) and (Senior standing) and (ME 410 or concurrently). *Berglund.*
- ENE 422 **Applied Hydraulics.** 3(2-2). Prereqs: ME 332. *Wallace.* ► *This was previously listed as CE 422.*
- 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. *Loos.*
- MSE 465 **Design & Application of Engineering Materials.** 3(3-0). Prereq: MSE 250. *Subramanian.*
- MSE 466 **Fracture & Failure Analysis.** 3(2-3). Prereq: MSE 250 and Tier I Writing. Recommended background: MSE 320 and 331. *Crimp.*
- ME 802 **Advanced Classical Thermodynamics.** *Requires Override—See #4 Below.* 3(3-0). Prereq: ME 412 plus GPA of 3.5+. *Genik.*

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 *CHE Override Request form*: <https://www.egr.msu.edu/chems/override/index.php>
- 4) Complete the *Graduate Course Override form*, available in the ME Advising Office in 2560 EB. This is a paper form.

Fall Semester Calendar

November 9	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 16	Deadline for Withrow Teaching Award Nominations. The nomination form is located at: http://www.surveymonkey.com/s/9L7XFL8
Nov 22-23	Thanksgiving recess
December 7	Last day of classes & Design Day.
Dec 10-14	Final Exams
December 15	Undergrad Commencement Ceremony-Breslin at 2 pm. Lasts about 2 hours. No tickets required.
Dec 16-Jan 6	Semester Break
January 11	On-line Open Add Period for Spring 2013 ends at 8 p.m.
March 1	Approximate application deadline for April FE exam
March 11	Scheduled Computer/Telephone Enrollment period for summer semester begins.
March 29	Computer Enrollment period for fall/spring 2013-2014 begins. Your enrollment access date (the first time you can log on) will be posted on StuInfo in mid-March.

The MSU College of Engineering

Design Day

Friday, December 7, 2012
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