



## LSSU to offer classes through Gaylord University Center



Dr. Scott Amos

Lake Superior State University will once again have a presence in Gaylord as part of an agreement between the university and the Gaylord University Center. The LSSU Board of Trustees recently approved a plan that will see classes offered at the center beginning fall 2009.

The five-year agreement will allow students in the Northern Lower Peninsula to study toward degrees in LSSU's College of Science, Technology, Engineering and Mathematics.

The team putting together the plan said it hopes the agreement will result in the Gaylord University Center (formerly known as Alpine Regional Education Center) becoming known as the primary regional center for students

looking for baccalaureate degrees in the Northern Lower Peninsula while making the center the official south campus of LSSU.

"They've specifically asked for science and technology courses to start," said LSSU Provost and Academic Vice President Scott Amos at a recent board meeting.

Amos said his office is already working with the center to line up the fall semester offerings. Programs will be delivered by LSSU faculty on site, through interactive television, and through the Internet.

Engineering will offer courses covering the first two years of general engineering. Students can then transfer to the main campus to finish a bachelor's degree. Plans are being developed for expansion as the demand increases.

Amos said the Gaylord University Center is unique from other centers of its type since it is independent of any university or community college. Although several other colleges and universities offer programs at the center, LSSU will be an anchor university. High School counselors received information and articulation guides at their annual December meeting in Gaylord.

### From the Dean...

In my last report, I noted the expansion of the Engineering Prototype Development Center (<http://www.lssu.edu/eng/pdc>) via two grants from the Michigan Initiative for Innovation and Entrepreneurship (MIIE) and the Mott Foundation. Those grants will allow engineering and business faculty/staff/students to work directly with PDC clients to develop business and marketing plans to help move products towards commercialization. But apparently that wasn't enough for us!

Late in the summer, the LSSU Prototype Development Center and the Sault Ste. Marie Economic Development Corporation (EDC) submitted a proposal to the state of Michigan to become one of three new SmartZones in Michigan. The proposal was written by Eric Becks (LSSU-PDC), Jim

Hendricks (Sault-EDC), and me. So, what is a SmartZone - you ask?

SmartZones provide distinct geographical locations where technology-based firms, entrepreneurs and researchers locate in close proximity to all of the community assets that assist in their endeavors. SmartZone technology clusters promote resource collaborations between universities, industry, research organizations, government and other community institutions, growing technology-based businesses and jobs. New and emerging businesses in SmartZone technology clusters are primarily focused on commercializing ideas, patents and other opportunities surrounding corporate, university or private research institute R&D efforts.

Our proposal was successful and a SmartZone was created in

Sault Ste. Marie. This 7.5 million dollar venture is a collaboration between Lake Superior State University's Engineering Prototype Development Center (PDC); the School of Business, Entrepreneurial, and Legal Studies; and the Sault Ste. Marie Economic Development Corporation. Specifically, the SmartZone will provide a link between the PDC and the Sault Ste. Marie incubator. Clients will work with the staff of the PDC to develop and test new prototype products and processes. Once functional, these prototypes will move into a technology breeder (created by the SmartZone). This breeder is a form of technology accelerator with all the necessary equipment needed to demonstrate and test methods of efficiently building a "prototyped" product on a ramped up scale in an effort to help the prospective manufacture make intelligent build and equipment selection decisions.

The client will also work with the School of Business to develop commercialization plans including business plans, marketing materials, financial reviews, and other related items. The facility acts as a "teaching factory". Upon demonstration of feasibility, manufacturing entities will emerge from the breeder facility and be given space in the existing Sault Ste. Marie Industrial Incubator. Between the PDC, the breeder, and the incubator the Sault Ste. Marie SmartZone has all the necessary resources to create new products and processes and follow them from inception into production.

We hope to utilize projects in the SmartZone to provide excellent entrepreneurial, engineering, and business experiences for our students. This is a fantastic opportunity for both LSSU and the city of Sault Ste. Marie. I will certainly keep you posted as this develops further.

# Seen around campus...

## IEEE plays games

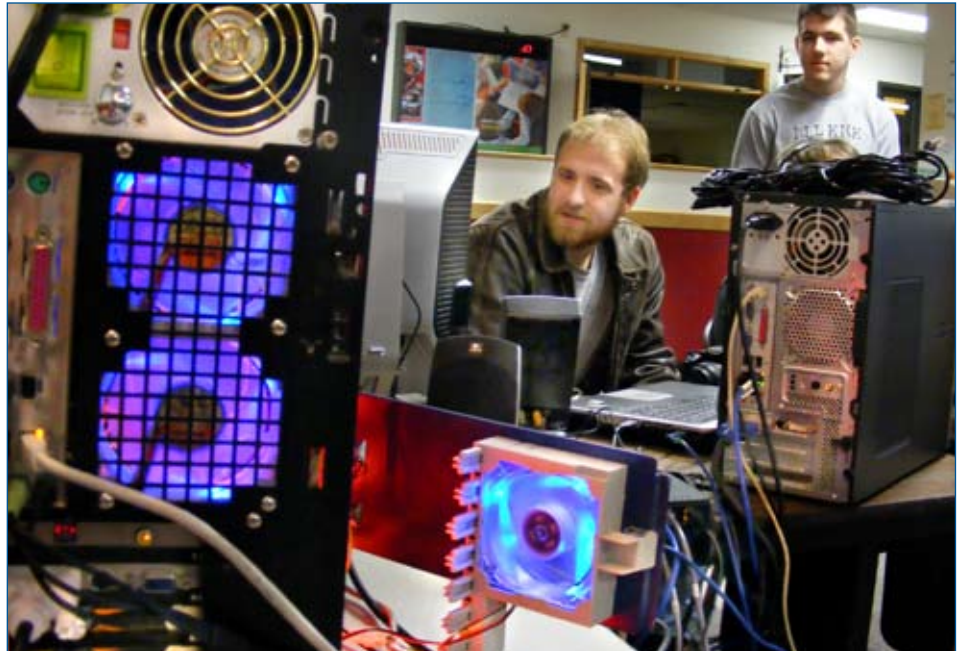
Members of the LSSU chapter of Institute of Electrical and Electronics Engineers brought tricked-out computers and the obligatory pizza and Mountain Dew to an LAN gamer party in Cisler Center's Peacock Cove.

The all-day event took place in early November with the assistance of IEEE LAN manager Jake Weinmann, president Josh Laplander, vice president Dereck Wonnacott, and Skylar Clark, secretary.

Gamers were charged a per person fee for the first event and a nominal fee for each additional event. They were treated to computers with LED-enhanced cooling fans and the opportunity to participate in gaming tournaments such as HALO 3, WarCraft, Counter Strike, Guitar Hero II, NHL 09, Call of Duty 4, and other PC and Xbox 360 games.

Tournament winners earned prizes and gift coupons supplied by the event sponsors: Applebee's, BAWLS Guarana, Cup of the Day, dotgames, Guido's, Jeff's Fifties Restaurant, Pizza Hut, and Taco Bell.

According to an article in *The Compass*, IEEE wanted to have a fundraiser that would appeal to a larger audience at LSSU. It was the club's first LAN party. A few hiccups gave the day a rough start, but



IEEE MY COMPUTER – Students participate in a LAN gamer party sponsored by IEEE held in Peacock Cove. The group deemed the party a success and plan to hold another in February. (LSSU student photographer Brian Kloosterman)

the bugs were worked out and the day ran well. The group looks forward to hosting another LAN party in February.

Funds raised from the tournament will be combined with income from doughnut and coffee sales held weekly in the Center for Applied Science and Engineering Technology to afford participation at the

Mars Rover Competition on March 27 and to continue maintenance and upgrades for the "Snickers robot."

Ten members of the group are also serving as mentors to Sault Area High School's FIRST Robotics Team. They will travel with the team to competitions in Ypsilanti and Troy in mid-March.

## In the Spotlight

A visiting group of Japanese tourists put computer engineering junior, Derek Wonnacott in the spotlight. He had spent a year as part of the study-abroad program in Japan and was asked to assist the visitors as campus tour guide and translator. The resulting photo and quotation is now part of a collection of student "action shots" used on the LSSU Web site and promotional materials.

"Lake Superior State is the only robotics program of its kind in the country. I can work up any research or senior project idea with a professor or my advisor. I studied for a year in Japan through LSSU's connection with the Japan Center for Michigan Universities, and became fluent in Japanese. A Japanese company called Fanuc makes most of the robots in our lab. I'd like to roll my senior research project into a career with Fanuc that bridges the two countries and cultures."



*Do you have a quote, photo or story about your experiences at LSSU that you would like us to use?*  
**engineering@lssu.edu**

# Athletic engineers continue to make their mark

It seems the engineering students at Lake Superior State University have a penchant for succeeding both in academic and athletic pursuits.

The men's basketball team has a great strength in Mark Morse, a senior in the electrical engineering program (see page 7 for the write-up about his senior project, Team Superior Prototype Development).

Morse made a school-record nine threes during LSSU's Great Lakes Intercollegiate Athletic Conference men's basketball home opener over Saginaw Valley State on January 3.

The guard from Harbor Springs made 6-of-8 three-pointers in the first half, and all three attempts in the second half for 9-of-11 for the game, and tied his career high of 29 points. He broke the previous single-game school record of eight three-pointers set in 1989, 1996, 1997 and 2002.

Morse's contributions helped the Lakers finish 22-of-33 from behind the arc. It appears the Lakers broke the GLIAC single-game team record of 20 set by Hillsdale on Dec. 19, 1992.

The Lakers' no. 3 scorer earned Great Lakes Intercollegiate Athletic Conference North Division Player of the Week.

Prior to the SVSU game, Morse was one of three Laker players recognized for reaching the 1,000-point career scoring milestone. He ranks fourth in the GLIAC in three-point field goals made, and fifth on LSSU's career three-point field goal list with 208 and first in career free-throw percentage at .842.

**POUNDING A DIFFERENT FLOOR.** Adam Smith, a mechanical engineering senior and Team SPD co-member with Morse, is returning to action with the LSSU Track and Field team.

"Two years ago Adam Smith made both the indoor and outdoor national meets, was an all-American placing sixth in the 400-meter dash indoors and was also recognized as an academic all-American. Last year we red-shirted Adam with the hopes of improving upon those results, so we have high expectations for him this spring season," said Stephen Eles, Laker cross country and track coach.

Smith, a half-mile specialist from Mt. Pleasant, earned all-America status at the winter 2007 NCAA Championships and placed 15th in the NCAA Division II men's 400-meter dash preliminaries. Smith was ranked eighth nationally in men's Division II 400-meter dash in May 2007.

Eles, a 2003 LSSU mechanical engineering alumnus, was distinguished in the steeplechase earning all-GLIAC honors and currently holds the LSSU steeplechase record.



Matthew Mitchell/Traverse City Record Eagle

## It may officially be winter, but it's not too early to think summer

**Yes, that's grass and trees in full leaf as a summer camper gestures from his web of rappelling gear.**

Our 19th year of summer robotics camps will begin with the Women in Technology session on June 21-26.

Robotics Camp for young men will be held July 5-10 (Session I), and July 12-17 (Session II).

**Visit:**  
[www.lssu.edu/eng/camps](http://www.lssu.edu/eng/camps)

Application forms are available for download along with a scholarship application and general information.

**Interested in sponsoring a camper?**  
Contact Jim Devaprasad at:  
[jdevaprasad@lssu.edu](mailto:jdevaprasad@lssu.edu) or  
906-635-2131.





GOOD NEWS FOR THE SAULT AND LSSU – LSSU engineering seniors Mark Morris of Harbor Springs, left, and Adam Smith of Mt. Pleasant, present the scopes of their research projects in partnership with the Prototype Development Center. The presentation wrapped up the new Sault Ste. Marie SmartZone announcement by James Epolito, director of Michigan Economic Development Corporation. Several MEDC officials and government representatives were on hand to congratulate LSSU and the city in its cooperative proposal.

## SmartZone finds a home with LSSU and Sault Ste. Marie

Michigan Economic Development Corporation (MEDC) President and CEO James C. Epolito recently joined state, local and Lake Superior State University officials to announce a new SmartZone in Sault Ste. Marie.

The new economic development zone, put together in a proposal by the City of Sault Ste. Marie and LSSU, was established following a competitive application process approved by the legislature and administered by the MEDC. SmartZones are technology centers designated to promote resource collaborations between universities, industry, research organizations, government and other community institutions, establishing technology-based businesses and jobs.

The Sault SmartZone proposal was put together by Jim Hendricks, director of the Sault Ste. Marie Economic Development Corporation, Morrie Walworth, director of LSSU Intellectual Property and Economic Development, and Eric Becks, project manager with the Prototype Development Center. The proposal was supported by David Leach, PDC project manager, and Jim Devaprasad, director of LSSU's Robotics and Automation Lab.

Epolito and other government representatives in attendance commended the group that put the SmartZone proposal together.

"Our committee looked at each of the submissions and your plan included the collaboration and the ability to incubate new businesses, consult with them and help them grow," Epolito said. "Your efforts with the community bolstered the plan and brought it to the top of our list."

"We're excited about this news," said LSSU President Rodney L. Lowman. "Things that we've been quietly doing at the university are a very important part of the proposal," he added, noting that Walworth's team's earlier successful 21st Century Job Fund proposal brought the PDC to campus. The PDC is a collaborative effort between LSSU, the MEDC, and the Michigan Small Business and Technology Development Centers.

Supported by LSSU and officials from the city of Sault Ste. Marie, the zone will stimulate the growth of regional technology-based companies. It will focus on injection-molded plastics, precision-machined surgical tools, precision bearings, and electronic manufacturers, and robotics.

"This partnership between the city of Sault Ste. Marie and LSSU is going to help launch our technology sector into the 21st century," said Hendricks. "We're extremely enthusiastic about the outcome."

"High-tech initiatives like the SmartZones program enable our colleges and

universities to become partners with communities and innovators to commercialize cutting-edge research into new businesses and jobs," Gov. Jennifer M. Granholm said. "This SmartZone will be a huge asset to Sault Ste. Marie and Michigan."

At the conclusion of the announcement, two LSSU senior engineering students, Mark Morris of Harbor Springs and Adam Smith of Mt. Pleasant, presented the scope of their senior research projects, the first to be done under the direction of the LSSU PDC. The projects, which will produce electronic components for a remote-controlled vehicle, a wristwatch-type device worn by athletes, and a medical tool used for treating skin, will involve students not only in engineering, but biology, chemistry and business.

Since the inception of the SmartZones program in 2002, more than 845 businesses have located or expanded in the zones, resulting in more than 16,359 jobs and \$1.1 billion in private investment. The Sault SmartZone is the second to be established in the UP out of a total of 15 zones statewide.

For more information on MEDC initiatives and programs, visit <http://www.themedc.org/>. For more information on the LSSU PDC, visit <http://www.lssu.edu/eng/pdc/>.

# Alumni Spotlight: The Nightingales-birds of a feather

LSSU mechanical engineering alumni Alice (Duesing) Nightingale '03 and Jason Nightingale (Dec.) '02 continue to successfully blend academics and athletics as they travel on a convergent path. Each contributed a legacy to challenge future athletic engineers.

Alice dominated the hardwood in women's basketball from 1999-2003. She scored a school record 1,933 points and was named NCAA II Conference Commissioners Association Scholar-Athlete of the Year. She received NCAA Today's Top VIII Award, and will be recognized for her legacy when she is inducted into the UP Sports Hall of Fame in April 2009.

Jason Nightingale beat a path on the ice as a forward for Laker hockey from 1998-2002. He totaled 28 goals and 21 assists during his career. Jason was an assistant captain for the 2000-2001 season.

Academically, they were co-recipients of the department's Outstanding Mechanical Engineering Student Award in spring 2003.

Alice also had the honor of speaking as the student respondent for the May 2003 commencement ceremony.

Leaving Michigan behind, Jason and Alice moved on to graduate school at



**FLOCK OF NIGHTINGALES – Jason Nightingale '02 and Alice (Duesing) Nightingale '03 at home with Ruth Marie. They continue to maintain their athletic roots while advancing their degrees. Both teach and serve as assistant coaches at Culver Academies in Culver, Ind.**

Notre Dame. Both received a master's in Aerospace and Mechanical Engineering in spring 2007. Alice is working towards a Ph.D. Aerospace and Mechanical Engineering, while Jason is pursuing a joint

Ph.D. in Mechanical Engineering and Mathematics.

The focus of Alice's post-graduate research work has been in adaptive optics and controls. She was a Directed Energy Professional Society Fellow while she was a graduate research assistant.

Jason was a 2006-07 Graduate Fellow of the Center for Applied Mathematics. His research interests include nonlinear control theory, geometric mechanics, affine differential geometry, and Riemannian geometry.

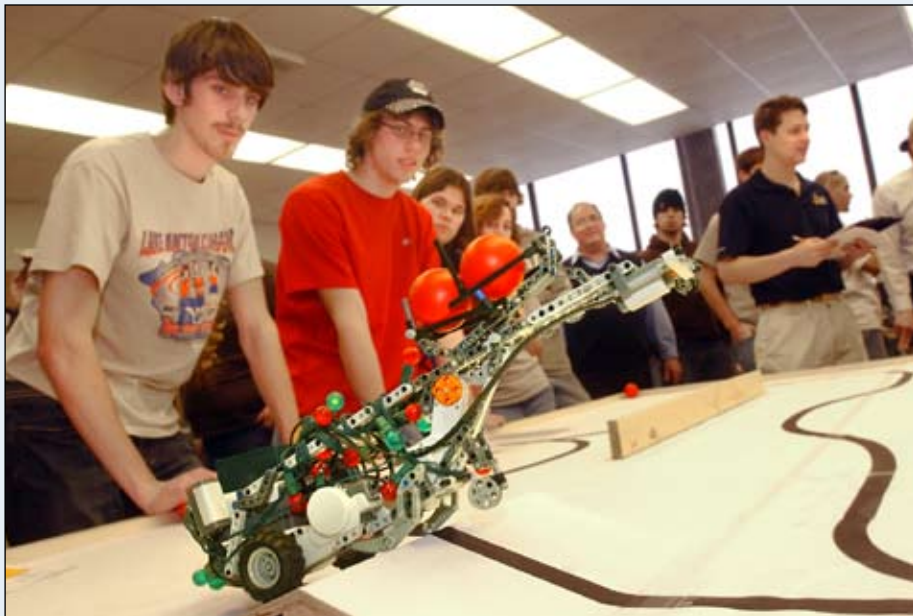
The Nightingales' parallel paths merged when they married, and role of parents to their lives when their daughter, Ruth Marie, was born in March 2008.

Doctoral work continues to be a part of their busy schedule as first-year teachers at Culver Academies high school in Culver, Ind. Both are filling the roles of student, teacher and assistant coach.

Jason teaches physics and serves as the assistant hockey coach for the Eagles, the Academies' U-16 boys ice hockey team. The position follows on the heels of a successful run as hockey coach for the Marian High School Knights in Mishawaka, Ind.

Alice teaches Algebra II and is one of the assistant coaches for girls basketball.

The challenge has been made engineering athletes, the standards have been set.



**CYBER CLIMBER** - An automated rubber ball conveyor (RuBaCon) charges up an incline while under the collective eye of its creators. Five teams comprised of 33 first-year engineering students at Lake Superior State University developed the devices for an end-of-semester competition. Successful machines migrated a maze by laser and sonar to drop balls into a target pocket. Looking on from left to right are Dion Tchokreff (from Iron Mountain), Ben Newland (Trout Lake), Lauryn Lafoille (Kinchloe), and Alyssa Dobson (Croswell, Mich.).

# Introducing the 2008-09 Senior projects

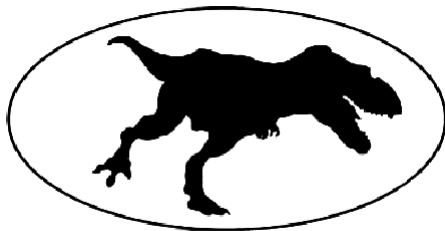


**Project:** Process Measurement Device  
**Customer:** Western Engineered Products  
**Faculty Advisor:** Dr. Ron DeLap  
**Project Synopsis:** The purpose of this project is to design and develop a manufacturing system used to monitor lubricant quality for a copper extruding process. The system will be used to monitor the

concentration of organic contaminants and to determine the current condition of three other specific properties: lubricant temperature, pH level, and electrical conductivity. These conditions will be used to preemptively determine a point where the lubrication must be replaced in order to avoid equipment malfunction and station downtime.

Major goals of both the design and development include: design and construction of analog circuits used to monitor sensors, develop programming for micro-controllers to read and display the sensors' output data and construction of a housing for the lubrication channel, sensor manifold, filtration system and pumping system. Additionally, the team will select all vital parts of the project including pumps, filters, sensors, and microcontrollers.

The team consists of four students from electrical, mechanical, and computer engineering.



## Great Lakes Dyno Systems

**Project:** Dynamometer  
**Customer:** LSSU  
**Faculty Advisor:** Prof. David McConald  
**Project Synopsis:** The team's objective is to create an instructional test cell for evaluating automobile performance. It will

control a dynamometer via computer to record the torque, speed and horsepower of a vehicle. The project has two phases. Phase I involves the installation, refurbishing, training and calibration of a donated dynamometer. Phase II will access the Controller Area Network (CAN) of a vehicle with a LabVIEW interface. Together, the programs will record data from the vehicle and the dynamometer. In the completion of this project, torque, speed and horsepower are logged. The work cell will be able to accommodate additional instrumentation to measure the vehicle's emissions and vibrations in a controlled environment. The finished dynamometer and test cell will be the only one in the Eastern Upper Peninsula which can be outsourced to the community.



**Project:** Train Coupler  
**Customer:** LSSU  
**Faculty Advisor:** Dr. Andrew Jones  
**Project Synopsis:** Team Iron-Horse Coupler Engineering (ICE)

will design and build a scale prototype coupler for "O" scale model railroads. The coupler will allow remote controlled coupling and uncoupling of model railroad cars and engines at any location along the track.

A major goal in addition to the design and construction of the prototype coupler is to obtain Intellectual Property and filing for Patent rights.

The team has five engineers with electrical, computer, and mechanical background.



## INNOVATIVE MEDICAL TRAINING DEVICES

**Project:** Dynamic Flow Phantom  
**Customer:** Cardiovascular Research Institute of Albuquerque  
**Faculty Advisor:** Dr. Wael Mokhtar

**Project Synopsis:** The purpose of this project is to develop a mechanism to be used to train Doppler technicians in the proper operation of the Doppler ultrasound device.

The major goals of the mechanism include the following: the ability to vary blockages and flow rates, meet all required customer specifications, make an appropriate selection of tubing material that simulates human tissue, select a pump that imitates the pulsating flow of blood, and provide a user friendly interface. Team IMTD has five engineering students: three mechanical and two electrical.

# Introducing the 2008-09 Senior projects



**Project:** Mini Baja  
**Customer:** LSSU  
**Faculty Advisor:** Mr. Jon Coullard

**Project Synopsis:** The purpose of this project is to design, build and test a Mini Baja vehicle to compete at the 2009 SAE Mini Baja competition. Team RTI will be creating the third generation of LSSU mini-Baja vehicles. It will tackle the challenges of an even lighter vehicle, improving handling, and increase overall performance using data from the 2007 and 2008 vehicles. There are six members on the team representing mechanical engineering and manufacturing engineering technology. The crew will head to the Oregon race site at the end of March.



**Project:** Mars Land Rover  
**Customer:** LSSU-ASME  
**Faculty Advisor:** Dr. Robert Hildebrand  
**Project Synopsis:** Rock Rover Design and Development (R2D2) is responsible for designing and building a prototype Mars rover for the 2009 American Society of Mechanical Engineers (ASME) Student Design Competition.

The rover must be able to retrieve rocks, navigate obstacles, and accurately place them. The project is funded by Lake Superior State University (LSSU) in order to increase the universities visibility and attract students to the engineering programs at LSSU. The competition seeks to model some of the known environmental conditions on Mars by requiring the rover to navigate an obstacle course while retrieving rock samples and then place them on a target, all within a set time limit.

The rover and the control mechanism must both fit within a box of approximate dimensions 14.5" x 6.5" x 6.5". Weight, power consumption, rock placement, and time are all scoring factors. After building and testing the rover, the team will participate in the ASME competition in early April at Dayton, Ohio.



## Superior Prototype Development

**Project:** Prototype Development Projects  
**Customer:** LSSU Prototype Development Center  
**Faculty Advisor:** Dr. Ron DeLap  
**Project Synopsis:** This team will work on projects as assigned by

the LSSU Prototype Development Center which creates prototypes for various companies and/or individuals who lack the technical skills to bring their ideas to life. The PDC will coordinate the various project requirements and specifications. The major goal of this team is to successfully take ideas from companies or individuals and create working prototypes in a timely manner which accurately reflect the ideas and needs of the customers. SPD is comprised of two engineering students with electrical and mechanical engineering training.

## Coming Spring Semester...

**FE EXAM:** Planning on taking the Fundamentals of Engineering Exam on April 25? Join us for a weekly evening course to brush up on engineering topics in mathematics, probability and statistics, ethics and business practices, statics and dynamics, strength of materials, material properties, fluid mechanics, electricity and magnetism, and thermodynamics. There is an opportunity at the end of the course to take a practice exam.

For more information regarding dates, times, and fees, contact Prof. David Baumann at 906-635-2142 or [dbaumann@lssu.edu](mailto:dbaumann@lssu.edu).

**ENGINEERING BANQUET:** This annual event will take place on Thursday, March 12 in the Superior Room of the Cisler Center. We encourage all to attend - especially our alumni. The evening begins

at 6:00 p.m. with dinner served at 6:30 p.m. There are plenty of door prizes and humor along with the passing of the Big Nut & Tool Award, the Little Screw and the Big Resistor. On a more serious note, there are recognitions for scholarly achievement and service. Tickets are typically \$15 per person and can be obtained by contacting the department office at 906-635-2207 or [engineering@lssu.edu](mailto:engineering@lssu.edu).

**ORDER OF THE ENGINEER:** This year's class will receive rings on Thursday, April 23 at 7:00 p.m. in Crow's Nest in the Cisler Center. If you have lost your ring or would like to receive a ring, please contact Jeanne Shibley at 906-635-2597 or [jmshibly@lssu.edu](mailto:jmshibly@lssu.edu) to find out if you qualify to receive a ring and make arrangements for participation.



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## Drop us a line...

It's been a while since we've heard from many of you and we want to know about you! Let us know what's happening — perhaps you've welcomed a new addition to your family; recently relocated; taken on a new job, challenge or hobby; or you are a seasoned traveler who's had an unusual experience...anything.

We'd also like to hear from you regarding your experiences at LSSU or any suggestions you may have. Your feedback helps faculty members improve curriculum and educational experiences for future engineering and technology students.

Fill out the form below and mail it to: Engineering & Technology Newsletter, Lake Superior State University, 650 W. Easterday Avenue, Sault Ste. Marie, MI 49783. You can also contact us via e-mail at: [engineering@lssu.edu](mailto:engineering@lssu.edu) or [jmshibly@lssu.edu](mailto:jmshibly@lssu.edu).

Current Name: \_\_\_\_\_

Name in school, if different: \_\_\_\_\_

Current Address: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Degree Major/Option & Year: \_\_\_\_\_

Current profession and title: \_\_\_\_\_

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