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3-2010

ME-EM eNewsBrief, March 2010

Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University

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Department of Mechanical Engineering—Engineering Mechanics



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Greetings from William (Bill) W. Predebon, Chair, Department of Mechanical Engineering-Engineering Mechanics. For the latest news and information about our faculty, students, and staff please visit our web site at: <http://www.me.mtu.edu/>.

Upcoming Events

The ME-EM Department will co-host a reception along with Michigan Tech's Corporate Development at the SAE International Conference in Detroit, MI. The reception is Wednesday, April 13, 2010 from 5:00 p.m. to 8:00 p.m. in room D2-08, Cobo Hall. Current MTU students will be available to discuss their designs entered in national vehicle competitions. Dr. William Predebon, Department Chair, will give an update on progress in the Department and Michigan Tech. If you will be attending please RSVP to Kathy at kagoulet@mtu.edu or (906) 487-2551. Appetizers and refreshments will be provided.



When on travel for the Department, Dr. Predebon visits with alumni to get their feedback on our programs and their career and to give an update on the department and university. Please let the Department know if you would be available for a visit when he is in your area. (906) 487-2911.

Dr. Predebon will be traveling to the following cities this coming spring:

- Week of April 12th - Detroit, MI for the SAE World Congress
- Week of June 6th - Pittsburgh, PA for the ASME Annual meeting
- Week of June 20th - Louisville, KY for the AS

Department Accomplishments

The ME-EM's Alternative Energy Research Building in Hancock and the Keweenaw Research Center were two of the facilities at Michigan Tech that was highlighted on the "Stacey David GEARZ" show. Stacey David, host of the popular cable TV program spent February 22-23 at Michigan Tech shooting a segment for his program about Michigan Tech's engineering research and education. The program, which will air on the Speed Channel on a date not yet scheduled, will focus on research being conducted at Michigan Tech in automotive and snowmobile engines. Some of the faculty whose research was highlighted are Drs. Seong-Young Lee and Scott Miers (assistant professors, ME-EM), Dr. Jeffrey Naber (associate professor, ME-EM), and Jeremy Worm (research engineer, ME-EM) among others.

New Staff

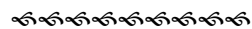


Jillian Spagnotti joined ME-EM as an office assistant. She earned a bachelor's degree in business from Michigan Tech in 2008, formerly worked at Wells Fargo Bank, and lives in Calumet.

Alumni and Friends News, Accomplishments, & Awards

It is my intent to highlight alumni accomplishments on a regular basis. I would like to hear from you about your accomplishments and those of other Michigan Tech ME-EM alumni who have achieved recognition. Please email me this information at wwpredeb@mtu.edu or Kathy at kagoulet@mtu.edu.

Richard Henes (BSME '48) has been selected by the Board of Directors of the Michigan Tech Alumni Association to receive the 2010 Distinguished Alumni Award. Dick, who was nominated by the ME-EM Department, was selected for outstanding contributions both in his career and to Michigan Tech, over a number of years.



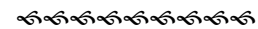
James Hayes (BSME '89) was appointed Commercial Director for Dow

Corning Construction Industry, Americas Region.



Stephen Williams (BSME '86) has been named head of advance engineering, planning and regulatory affairs at Chrysler Group LLC. In that role, Williams continues his responsibility for all advance engineering and assumes the company's regulatory and planning activities.

Dr. Terry Woychowski (BSME '78), vice president, global Vehicle Program Management, GM, spent 8 days as a volunteer in Haiti after the earthquake.

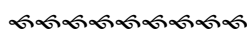


Dr. Terry Woychowski was appointed to the Michigan Tech Board of Control by Gov. Jennifer Granholm on March 26, 2010.

University News/ Awards

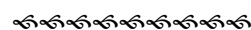


Michigan Tech was one of only two universities invited to exhibit at the North American Auto Show in Detroit January 11-24, 2010. As part of the EcoXperience Showcase on the lower level of Cobo Center, Michigan Tech unveiled a pioneering new graduate program for professional automotive engineers, one that will prepare them to work on the hybrid/electric vehicles of the future. Tech will develop this unique curriculum with a \$3-million grant from the US Department of Energy.



President Glenn D. Mroz has had his contract extended for another two years, to June 30, 2014 by the Michigan Technological University Board of Control.

Preliminary numbers of graduate students enrolled at Michigan Tech have hit a record high of 1,189 for the spring 2010 semester, nearly a 22-percent increase over Spring 2009. The numbers include 71 first-time master's degree students and 31 first-time doctoral students.



The Michigan Tech Board of Control has announced a significant increase in financial aid for students struggling to afford a college education. Michigan Tech will increase financial aid by approximately 10 percent for next school year. Financial aid totals \$38 million, 20 percent of the University's budget.

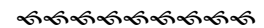


President Glenn Mroz has been elected to a two year term as chair of the Presidents' Council, State Universities of Michigan (PCSUM).

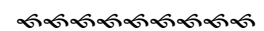
Michigan Tech has the largest Peace Corps Master's International Program (PCMI) in the nation, with 55 students enrolled in seven programs. Eric Goldman, national manager of the PCMI program, was on campus March 30th to recognize the University and President Mroz. He stated that "it isn't just the quantity of volunteers; it's also their quality. We're fortunate to have Michigan Tech people involved in Peace Corps." The Department of Mechanical Engineering-Engineering Mechanics has the only mechanical engineering PCMI program in the nation.

The Detroit News spotlighted Michigan Tech's women's basketball team in a feature story about the state's best college athletes. Read the article at: <http://www.detnews.com/article/20100318/SPORTS07/3180468/Have-you-heard-of-them?-Here-are-some-of-state%E2%80%99s-best-college-athletes>.

On Monday, Feb. 15, Max J. Seel was named provost and vice president for academic affairs. Seel, who has been acting as interim provost since January 2009, was one of two finalists for the position.



Tech Today and William Kennedy, who writes a weekly column about teaching, are cited on educational psychologist Daniel Willingham's website about his new book, "Why Students Don't Like School." See "Michigan Tech Newsletter" under "web coverage" at Willingham's website: <http://www.danielwillingham.com/>



Michigan Tech's Corporate Advisory Board for Institutional Diversity (CABID), in an effort to encourage a diverse group of students to participate in Tech's Youth Programs this summer, have set up a subcommittee to raise scholarships for those students. For more information or to donate please go to: <http://youthprograms.mtu.edu/alumni-send-a-kid.php>.

CAPSTONE

ORZUAR

We kicked off another group of excellent projects this past January; one of our best groups, top to bottom, in many years. As always, diverse types of design projects comprise this group, which includes:

- multi-path interdependent process optimization
- development and commercialization of a consumer product
- development of a therapeutic medical device
- wind turbine hydraulic power transmission system
- drivetrain component wear characterization
- design optimization of self-contained generator modules

Michigan Tech mobile hybrid electric vehicle lab
This is YOUR Capstone program—the pinnacle of Michigan Tech’s undergraduate engineering curriculum—a program which is aiming toward graduate student involvement as well. We all take pride in its continued evolution. We’re sure you do as well! Our project sponsors and alumni are THE key part of its growth. Thank You !

You may want to consider taking in part of this year’s design expo, where Tech’s students showcase their work.

Some near-term Capstone-related items of interest:

- Undergraduate design expo — Thursday, 15 April
- MEEM Senior Capstone Design team presentations —Tuesday, 20



Faculty and Student Invention Disclosures

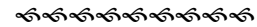
Dr. John Beard (associate professor, ME-EM) has filed an invention disclosure, "Variable Compression Ratio Internal Combustion Engine".



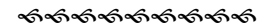
Dr. Bo Chen (assistant professor, ME-EM), **Dr. Jeffrey Naber** (associate professor, ME-EM), **Jeremy Worm** (research scientist, ME-EM, and **Dr. Wayne Weaver** (assistant professor, ECE) have filed an invention disclosure, "A Novel Technique for Performing In-Situ Powertrain Calibration".



Dr. L. Brad King (associate professor, ME-EM) has filed an invention disclosure, "Gridless PET".



Dr. Jeffrey Naber, Jeremy Worm, and Karthik Krishna (research scholar, ME-EM) have filed an invention Disclosure, "Vehicle-to-microCHP Integration".



Dr. Jeffrey Naber and Jeremy Worm have filed an invention disclosure, "Utilization of Hydrogen Through Water Electrolysis as an Additional Energy Storage Media On-Board Hybrid Electric Vehicles".



Capstone Design Team #6 members Kathryn Hill, David Palmer, Phillip Schichtel, Jason Swanson, and Eric Wank, (seniors, ME-EM) and Zach Brent (MBA student, SBE) have filed an invention disclosure, "The Expanded Brass Catcher". Their advisor is **Dr. Chris Passerello** (professor, ME-EM).

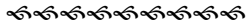
Past Events

On February 6, 2010, approximately 60 ME-EM alumni, family, and friends attended the annual ME-EM Hockey Social at the MacInnes Ice Arena. This year was the inaugural year for the new sky boxes. Next year’s event will take place during the Saturday night game of Winter Carnival. If you are planning on attending next year’s Winter Carnival, please join us. Seem more pictures at: <http://www.me.mtu.edu/alumni/2010/Feb2010hockeysocial.html>.

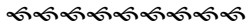


Faculty/Staff Awards Accomplishments

Dr. Jeffrey Allen (associate professor, ME-EM) has been selected as a finalist for the Michigan Tech annual Distinguished Teaching Award in the Associate Professor/Professor Category.

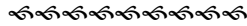


Dr. John Hill (assistant professor, ME-EM) had his research on just how bad driving suffers while texting was featured on WLUC TV6 Wednesday. Read the story at: <http://www.uppermichiganssource.com/news/story.aspx?id=424739>.



Inventors' Digest magazine's website has published a video "Enhancing Bio-Morphological Helmet made" by a team of Michigan Tech engineering students about the helmet they are building that can help prevent head injuries in football and other sports. Their advisor is **Dr. G. Jayaraman** (Professor, ME - EM). See the video at: <http://www.inventorsdigest.com/?p=3042&cpage=1#comment-2940>.

Michael LaCourt (research engineer/scientist, ME-EM) has been named Copper Country Habitat for Humanity Volunteer of the Year. Read the story in the Daily Mining Gazette: <http://www.mininggazette.com/page/content.detail/id/509082.html?nav=5006>.



Dr. Charles Margraves (lecturer, ME-EM) has been selected as a finalist for the Michigan Tech annual Distinguished Teaching Award in the Assistant Professor/Lecturer/Professor of Practice Category.



Dr. Jeffrey D. Naber (associate professor, ME-EM) has been selected to receive the 2010 SAE Forest R. McFarland Award. This Award recognizes individuals for their outstanding contributions toward the work of the SAE Engineering Meetings Board (EMB) in the planning, development, and dissemination of technical information through technical meetings, conferences and professional devel-

opment programs or outstanding contributions to the EMB operations in facilitating or enhancing the interchange of technical information.



Dr. Jeffrey D. Naber received the Best Graduate Student Mentor Award by Michigan Tech's Graduate Student Government.



Dr. Jeffrey Naber and **Dr. Carl Anderson** (associate Dean, COE) met with DOE and other educational providers and outlined Michigan Tech's DOE sponsored program, "An Interdisciplinary Program for Education and Outreach in Transportation Electrification." The meeting was at DOE's National Energy and Technology Laboratory in Morgantown, W.Va. They presented the program goals and objectives and discussed opportunities for collaboration among the other funded education and training partners.



Dr. Jeffrey Naber was highlighted in the Michigan Tech Research 2010 article "Major Overhaul". Read the whole article at <http://www.mtu.edu/research/archives/magazine/2010>.

Student Competitions and Team Awards



Michigan Tech's Clean Snowmobile Enterprise team finished second overall in this year's Clean Snowmobile Challenge held at the Michigan Tech's Keweenaw Research Center March 15-20. The SAE event was co-hosted by KRC and the Department of Mechanical Engineering - Engineering Mechanics. Michigan Tech's snowmobile took second place in the internal combustion category. It also received the SAE Award for Best Design in the internal combustion category, the Land and Sea Award for Best Performance, and the Altair Engineering Award for Design Simulation. A spring thaw that sent temperatures into the 50s hampered the completion. See video of the Challenge at: Http://www.me.mtu.edu/snowmobile_challenge/index.html. The team's faculty advisor is **Dr. Jason R. Blough** (associate professor, ME-EM).

SAE Aero Design Team placed 2nd (regular class) at the 2010 SAE West Competition in Van Nuys, CA on March 5-7. There were a total of 29 teams from the US including Puerto Rico, Canada, South America, and Europe. Their 2nd place finish earned them an Elliot and Dorothy Green Award of Excellence. They also earned the 2nd place award in Team Technical Presentation and the 2nd place award in Most Payload. Their faculty advisor is **Dr. Jeffrey S. Allen** (associate professor, ME-EM).



The **2009 men's and women's cross country teams** were both named Scholar Teams by the NCAA Division II US Track and Field and Cross Country Coaches Association. The women's team, with a 3.59 cumulative team grade point average, finished tied for 11th out of the 97 teams who received the award. The women also finished second among the eight Great Lakes Intercollegiate Athletic Conference teams to be honored. The men's team, with a 3.32 cumulative team grade point average, finished tied for 14th among the 62 men's teams honored. The men also finished second among the seven GLIAC teams to win the award.

Student Accomplishments/Awards

Corson Cramer (jr, ME-EM) and **Alexander MacLeod** (so, ME-EM) were among the ten Michigan Tech students named to the All-WCHA Academic Hockey Team. To earn recognition as a member of the All-WCHA Academic Team, student-athletes must meet the following criteria: have completed one year of residency at present institution, prior to the current academic year; and have a grade point average of at least 3.00 (on a 4.00 scale) for the previous two semesters or three quarters; or may qualify if his overall GPA is at least 3.00 for all terms at his present institution.



Corson Cramer was one of 79 WCHA student-athletes to be awarded a WCHA Scholar-Athlete Award. The award, established in the 2005-06 season, recognizes student-athletes who have completed at least one year of residency at their present institution prior to the current academic year, and have a grade point average of at least 3.50 on a 4.0 scale for the previous two semesters or three quarters, or may qualify if his or her overall GPA is at least 3.50 for all terms at his or her present institution.

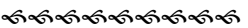


The following 8 mechanical engineering students were among the 71 Michigan Tech student-athletes honored for their academic success by the Great Lakes Intercollegiate Athletic Conference.

- **Kenneth Gilkerson** (sr), Men's Cross Country
- **Karen Jarvey** (sr), Women's Cross Country
- **Emmett Bjorn** (so), Football
- **Michael Rittenour** (sr), Football
- **Anthony Santi** (BSME '09), Football
- **Charles Schlaud** (MS student), Football
- **Chet White** (jr), Football
- **Kaari Nevanen** (BSME '09), Volleyball



Alexandru Herescu (PhD student, ME-EM) has been awarded the 2010 DeVlieg PhD Fellowship.



Michael Hojnacki (jr, ME-EM) has been named to the All-Great Lakes Intercollegiate Athletic Conference Basketball team. Michigan Tech students **Rei Tangko** (BSME '09); **Wayne Bell** (sr - ESME); **Nikki Long** (sr - ESME); and **Eric Tangko** (sr - SBE) had their invention, Enhanced BioMorphic (EBM) helmet layer displayed at March Madness for the Mind, San Francisco Inventors Expo, March 25th - 27th, 2010. The team was one of sixteen chosen from more than 200 colleges and universities. The invention uses the human head as a model for building a helmet lining that mimics the body's own tricks for deflecting blows to the head. See a video of the helmet at: <http://www.inventorsdigest.com/?p=3042> or http://www.youtube.com/watch?v=EOf2rUKoS3M&feature=player_embedded. The proto-

type has passed drop-test standards set by the National Operating Committee on Standards for Athletic Equipment (NOCSAE), preventing damage at 155 times the force of gravity (155 g's), the maximum load the brain can take without sustaining injury. They are also evaluating their invention using a mathematical model that enables them to optimize performance based on the properties of the materials they use. Their advisors are **Dr. Gopal Jayaraman** (professor, ME-EM) and **Dr. Paul Nelson** (associate professor, SBE)



Tim Jenkins (PhD student, ME-EM) was one of the speakers for "Future Fuels from Forests" on Tuesday, March 16 and Thursday, March 18. Biology classes from Calumet High and a physics class from Lake Linden-Hubbell High attended the day long field trips sponsored by the Western Upper Peninsula Center for Science, Mathematics and Environmental Education.



Oscar Lund (sr, ME-EM) was named to the Central Collegiate Ski Association men's all conference team.



Oskar Lund won the men's 10-kilometer freestyle (23:24) and finished fifth in the 15-kilometer classic (38:32) at the Central Super Tour races held at Theodore Wirth Park in Minneapolis, MN on January 22nd and 23rd.



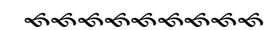
Oskar Lund placed first in the 10-kilometer classic and second in the 20-kilometer freestyle at the Central Collegiate Ski Association championships held on the Michigan Tech trails on Feb. 12-14th.



Anahita Pakzad (PhD student, ME-EM) received the Best Graduate Student Leader Award from Michigan Tech's Graduate Student Government. Her PhD advisor is **Dr. Reza Shahbazian-Yaasar** (assistant professor, ME-EM).



Henna Riikonen-Purtsi (MS student, ME-EM) posted one of the greatest performances by a Michigan Tech Nordic skier at US Nationals January 2-8, 2010. She tied for sixth overall among collegiate women skiers in the two-race competition and fourth (10th overall) in the "B" Final of the classical sprints and 32nd in the 10-kilometer freestyle. This paced the women's team to a fifth place finish. The men were sixth and together they finished sixth in the combined competition.



Henna Riikonen-Purtsi finished fifth in the five-kilometer freestyle (13:23) and third in the 10-kilometer classic race (31:06) at the Central Super Tour races held at Theodore Wirth Park in Minneapolis, MN on January 22nd and 23rd 2010.

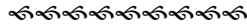
Current Contracts and Grants

Carl L. Anderson (PI, CoE, APSRC, and ME-EM); **Jeffrey Allen, John Beard, Bo Chen, Jeffrey Naber, Chris Passerello, Jeremy Worm** (co-PIs, ME-EM); L. Bohmann, (co-PI, COE); W. Weaver, and B. Mork (co-PIs, ECE); S. Hackney (co-PI, MSE); J. Keith (co-PI, - ECM); and J. Meldrum (co-PI, KRC); "Recovery Act - An Interdisciplinary Program for Education and Outreach in Transportation Electrification"; sponsor: US Department of Energy; total award amount: \$3,791,030.



Jason Blough (PI, ME-EM), **Carl Anderson** (co-PI, CoE, APSRC, and ME-EM), and M. Johnson (co-PI, SoT); "Characterizing Torque Converter Noise Generation at Various Speed Ratios to Enable Vehicle Fuel Efficiency Improvements"; sponsor: General Motors Corporation; total award amount: \$102,560.

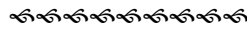
John Gershenson (PI, ME-EM), **Michele Miller** (CoPI, ME-EM), S. Suryanarayana (CoPI, EDOP); "Multi-Disciplinary Systems Engineering: Engaging MSI STEM Students through Space-Based Capstone Design"; sponsor: Universidad del Turabo; total award amount: \$81,839.



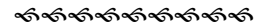
Seong-Young Lee (PI, ME-EM) and **Jeffrey Naber** (co-PI, ME-EM); "E3 Spark Plugs - Chemiluminescence Images for Movie Creation"; sponsor: E3 Spark Plugs; total award amount: \$7,000.



Spandan Maiti (PI, ME-EM); "EAGER: Accurate and Efficient Surrogate Modeling Applied to Computational Mechanics"; sponsor: National Science Foundation; total award amount: \$106,123.



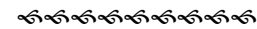
Scott Miers (PI, ME-EM); "Exploring the Impact of Mid-blend Fuel on the Motorized Recreational Industry"; sponsor: Michigan Tech; total award amount: \$74,267.



Jeffrey Naber (PI, ME-EM), **Bo Chen, and Jeremy Worm** (co-PIs, ME-EM); "Engine Studies and Modeling Phase II"; sponsor: Nostrum Energy; total award amount: \$39,969.



Sheryl Sorby (PI, ME-EM) and **Michele Miller** (co-PI, ME-EM); "Workshops to Increase Engineering Participation in the Noyce Program"; sponsor: National Science Foundation; total award amount: \$278,156



Network with fellow Alumni

Join the ME-EM Department and Corporate Development for our annual alumni reception at the SAE International Conference in Detroit, MI. Meet with students as they discuss their designs for the national vehicle competitions. Dr. William (Bill) W. Predebon, Department Chair, will give an update on Mechanical Engineering's latest research, faculty, and student accomplishments.

RSVP by contacting Kathy Goulette at kagoulet@mtu.edu, 906-487-2911.

Tuesday, April 13, 2010, 5-8pm
Room D2-08, Cobo Hall
Detroit, MI

Complimentary appetizers and refreshments