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ME-EM eNewsBrief, March 2017

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ME-EM

Michigan Tech

eNewsBrief

Volume 13 Issue 1 - Mar 2017



Greetings from William (Bill) Predebon, Chair, Department of Mechanical Engineering-Engineering Mechanics at Michigan Tech. For the latest news and info about our faculty, students and staff, please visit our website at www.mtu.edu/mechanical. Visit us on Facebook, [MEEM](#).

Upcoming Events

Early Bird Notification - ME-EM Reunion Scholarship Cruise.



Come join us for an afternoon cruise down the Portage Canal on the Ranger III on Thursday, August 3, 2017. We depart at 1:00 p.m. and will return at 3:30 p.m. (plenty of time to attend the Pasty Picnic). Cost of the cruise is \$35 per person which covers the ticket for the Ranger and a \$15 donation to a department scholarship. Food and beer, wine, water and soda are compliments

of the ME-EM Department. If you think you may be interested, please contact Alumni Relations at 906-487-2400 to put your name on the early bird list or register online on the Alumni Relations reunion website when [regis-](#)

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ME-EM Department Chair Travel

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 the University. Please let the Department know if you would be available for a visit when he is in your area. (906) 487-2551.

Dr. Predebon will be traveling to the following cities later this summer:

- Week of June 11th—Newport Beach, CA for the ASME Summer Annual meeting
- Week of July 17th—Detroit, MI for Corporate Alumni Events

New Faculty



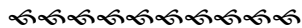
Dr. Umesh Korde has joined the faculty of the ME-EM Department as the Richard and Elizabeth Henes Chair in Wave Energy. He received his PhD from the University of Notre Dame. He comes to

Michigan Tech from the South Dakota School of Mines and Technology where

he held the Pearson Chair in Mechanical Engineering. He has been active in the area of ocean wave energy utilization. His research over the last three decades has primarily been concerned with the dynamics, control, and hydrodynamics of oscillating bodies and pressure distributions performing as the primary working element of wave energy converters. Visit his [website](#).

Alumni and Friends News, Accomplishments & Awards

Dennis Grumm (BSME '04) and **Josh Van Den Heuvel (BSME '04)** have designed, built and are now selling an aluminum can sealer that can be used to can and liquid. It's primarily used by micro-brewers to affordably can small batches, on-site, directly from a tap. Dennis is co-owner and Josh is the COO of Oktober Design LLC. Visit their [website](#).



Denise Rizzo (PhD, '14) was the recipient of the SAE Cordell Breed Award for Women Leaders for 2017. The award "recognizes the role of women in the mobility



industry by the contributions they make both professionally and personally. Selection is based primarily on excellence in creatively dealing with the challenges professional women are faced with in the mobility industry." Denise is a Senior Research Mechanical Engineer at U.S. Army TARDEC.

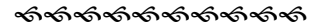


Dr. Robin Johnson-Cash (PhD '15) was the featured speaker in the Michigan Tech Social Justice lecture Series on February 14, 2017. She is the first

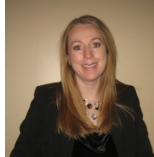


African American women to graduate from the ME-EM Department with a PhD. Her talk centered on her experiences both in the UP and through her many years as an engineer at Ford Motor Company. She is currently a Technical Training

Manager at Ford Motor Co.



Trista Shieffer (BSME '97) was quoted in the Chicago Tribune in a story about women automotive engineers. Shieffer is engineering group manager for noise and vibration in advanced vehicle development at General Motors.

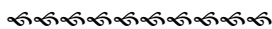


Area News

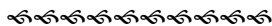
Houghton was ranked 20th out of 117 other cities as one of the best cities in the US for grad school by Magoosh, an online college test-prep company. According to their website, each location was analyzed based on 12 key indicators of academic, social and economic strength, paying special attention to the needs of graduate [students](#).

Current Contracts and Grants

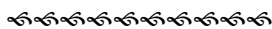
Abdelkhalik, Ossama (PI, ME-EM) and Robinett, Rush (Co-PI, ME-EM); "On Integrating New Capability into Coastal Energy Conversion Systems"; sponsor: South Dakota School of Mines and Technology; total award amount: \$405,139.



Blough, Jason R. (PI, ME-EM) and Wayne Weaver (Co-PI, ECE); "Development of Dynamic Torsional Measurement Capability using Hybrid Electric Motor - Year 1"; sponsor: General Motors; total award amount: \$94,845.



Lee, Seong-Young (PI, ME-EM and Naber, Jeffrey (Co-PI, ME-EM); "Evaporation Sub-Model Development for Volume of Fluid (eVOF) Method Applicable to Spray-Wall Interaction Including Film Characteristics with Validation at High Pressure/Temperature Controls"; sponsor: US Department of Energy - Office of Energy Efficient and Renewable Energy; total award amount: \$655,159.

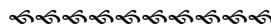


Naber, Jeffrey (PI, ME-EM) and Chen, Bo (Co-PI, ME-EM); "Closed Loop Combustion Control (CLCC) for SI Engines"; sponsor: Ford Motor Company;

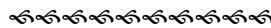
total award amount: \$89,317.



Naber, Jeffrey (PI, ME-EM); Lee, Seong-Young and Shahbakhti, Mahdi (Co-PIs, ME-EM); "Continuation of Engine Ignition Studies"; sponsor: Ford Motor Company; total award amount: \$115,000.



Naber, Jeffrey (PI, ME-EM) and Dice, Paul (Co-PI, ME-EM); "Injector Evaluation and Validation on a Single Cylinder DI SI Engine with Combustion Analysis, Exhaust Gaseous and PN Emissions"; sponsor: Nostrum Energy, LLC; total award amount: \$187,711.



Naber, Jeffrey (PI, ME-EM) and Dice, Paul (Co-PI, ME-EM); "Engine Dynamometer Studies and Analysis of Nostrum Cycle and Injectors on Cummins 6.7 ISB Diesel Engine with Facilities for Nostrum On-Site Engineering Team"; sponsor: Nostrum Energy, LLC; total award amount: \$129,215.

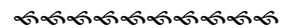


Naber, Jeffrey (PI, ME-EM); Dice, Paul and Miers, Scott (Co-PI, ME-EM); "Testing of a NG CHP System for Leidos Engineering"; sponsor: Leidos Engineer-

ing LLC; total award amount: \$107,380.



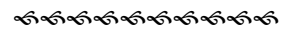
Naber, Jeffrey (PI, ME-EM); Dice, Paul and Shahbakhti, Mahdi (Co-PI, ME-EM); "Investigation of Ignition Performance of Hitachi Coils for PFI Natural Gas Fueled Engine on a Single Cylinder, Boosted, Spark-Ignition Engine"; sponsor: Hitachi America, Ltd; total award amount: \$42,500.



Ra, Youngchul (PI, ME-EM); "Development of Advanced Modeling Tools for Diesel Engines"; sponsor: Korea Institute of Machinery and Materials; total award amount: \$94,362.



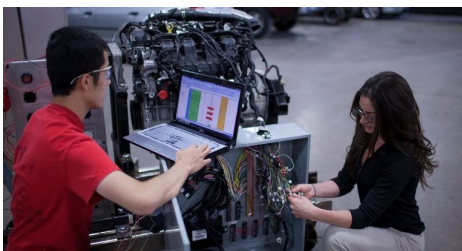
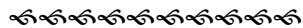
Worm, Jeremy (PI, ME-EM); Naber, Jeffrey and Morgan, Chris (Co-PIs, ME-EM); "Delivery of Hands-On Professional Development Courses in Diesel Engine Systems"; sponsor: Deere and Company; total award amount: \$84,858.



Worm, Jeremy (PI, ME-EM) and Naber, Jeffrey (Co-PI, ME-EM); "The Impact of Fuel Properties on Ignition Delay in a Compression Ignition Engine"; sponsor: VP Racing Fuels; total award amount: \$10,604.

Department Accomplishments

The Department of Mechanical Engineering - Engineering Mechanics graduate program was ranked 65th by US News and World Report's Engineering Specialty [rankings](#). Michigan Tech's graduate engineering programs ranked 85th out of 214 engineering schools that grant doctoral degrees. The online graduate engineering programs were [ranked](#) 47th in the nation.

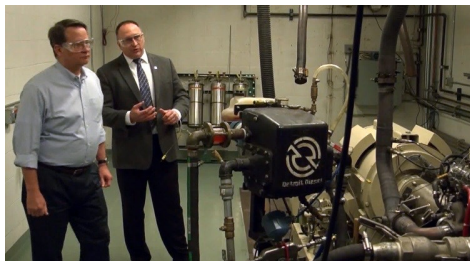
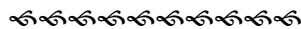


The Michigan Tech's **Light Duty Engine Consortium** partnership with General Motors, FCA US and BorgWarner (the initial industry partners) and the US Department of Energy was featured in many publications including [The Peninsula](#) - Michigan Business News and Perspectives, the Daily Mining Gazette and [mitechnews.com](#). Read more in the [Michigan Tech Today](#). The Light Duty Engine Consortium is a part of the Advanced Power Systems Research Cen-

ter under the direction of **Dr. Jeffrey Naber (the Ron & Elaine Starr Professor in Energy Systems and director of the APSRC, ME-EM)**. The consortium was developed as a way to get competitors to participate in projects that are mutually beneficial but doesn't give anyone a competitive edge. Both Dr. Naber and **Jeremy Worm (research engineer and director of the Mobile Lab, ME-EM)** were quoted in the articles.



The Department of Mechanical Engineering - Engineering Mechanics was mentioned in Governor Snyder's State of the State address. The Governor told a story about a Michigan Tech dad at the Auto Show press conference. The story begins at about 55:30 of the [clip](#).



[WLUC TV6](#), [WJMN TV3](#), [ABC 10 News](#) and The Daily Mining Gazette

covered US Senator Gary Peters' visit to Michigan Tech's **Advanced Power Systems Research Center (APSRC)** on Friday, March 3rd. **Christopher Morgan (research engineer, ME-EM)** was highlighted in the ABC 10 report. Dr. Jeffrey Naber and Jeremy Worm can be seen in the reports.



WLUC-TV6 and [Upper Michigan Source](#) reported on Michigan Gov. Rick Snyder's capital outlay recommendation in his proposed budget that would fund a \$39.6 million H-STEM Engineering and Health Technologies Complex at Michigan Tech. This interdisciplinary project would include ME-EM.



Steven Tomaszewski (GM's global facilities director of operations North America and a member of Michigan Tech's Board of Trustees) presented a **\$110,000 grant** to the University to fund a variety of student activities. ME-EM Department activities that will benefit from the grant include the Advanced Hybrid Electric Vehicle and Advanced Motorsports Enterprises. The University's Manufacturing Engineering Initiative, pre-college STEM outreach programs, and diversity programs will also benefit.

Student Accomplishments/Awards

Drew Hanover (sr., ME-EM) placed third in the Michigan Tech Undergraduate Research Symposium held on March 17, 2017.

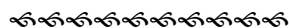


Kyle Monroe (jr., ME-EM) was named the Great Lakes Intercollegiate Athletic Conference North Division Basketball Player of the Week the week of January 23rd.



Kyle Monroe (jr., ME-EM) was

named to the All-GLIAC Basketball First Team.



Ali Soloukmofrad (PhD student, ME-EM) was the first author of the joint paper (with Ford Motor Company) entitled "Fuel Economy Benefits of Integrating a Multi-Mode Low Temperature Combustion (LTC) Engine in a Series Extended Range Electric Powertrain" that received the Best Presentation Award of SAE 2016 Int. Powertrains, Fuels & Lubricants Conference, held in Baltimore, MD, Oct. 24-26, 2016. There

were 366 papers and presentations submitted for this event. Only 9 papers received this award. The co-authors of the paper are Mohammad Shakiba (Ford), **Kaushik Kannan (MS student, ME-EM)**, **Hamit Solmaz (post doctoral fellow, ME-EM)**, **Mehran Bidarvatan (PhD, ME-EM)**, **Nithin Kondipati (MSME '16)**, **Paul Dice (research engineer, ME-EM; MSME '16)**, and **Mahdi Shahbakhti (assistant professor, ME-EM)**. Read the [abstract](#). His advisor is **Dr. Mahdi Shahbakhti**.



Faculty/Staff Awards/ Accomplishments

Dr. Andrew Barnard's (assistant professor, ME-EM) CNT active exhaust system was chosen to compete in the semifinals of the Global Automotive and Mobility Innovation Competition (GAMIC) that took place at the SAE World Congress in the Cobo Center, Detroit on April 4.. **Suraj Prabhu (PhD student, ME-EM)** is also working on the [project](#). Michigan Tech's Engineering Research and Innovation also reported the [story](#).

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**Dr. Nancy Barr (director of the Engineering Communications Program, ME-EM)** presented work at the Conference on College Composition and Communication (CCCC) 2017 annual convention in Portland, Oregon, a competitive, peer-reviewed conference.

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Dr. Lucia Gauchia (the Richard and Elizabeth Henes Assistant Professor of Energy Storage Systems and assistant professor, ME-EM & ECE) has received the NSF CAREER Award for her work in energy storage. The proposal titled "CAREER: An Ecologically Inspired Approach to Battery Lifetime Analysis and Testing" is a 5 year award started February 1, 2017 with an award amount of \$500,000. Read about it at

[energy](#).

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**Dr. Umesh Korde (The Richard and Elizabeth Henes Chair of Wave Energy and professor, ME-EM)** presented in the Break-2-Collaborate event held Tuesday, March 7, 2017 on the Michigan Tech Campus.

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Dr. Nina Mahmoudian (associate professor, ME-EM) was one of the presenters at the February 21, 2017 TechTalks. **Dr. Jeffrey Naber (Ron & Elaine Starr Professor in Energy Systems and professor, ME-EM)** was selected as the closing speaker for this session.

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**Dr. Scott Miers (associate professor, ME-EM)** received the 2017 Michigan Tech Distinguished Teaching Award in the Professor/Associate Professor category. This is based on his spring and fall 2016 semester teaching evaluations. He earned the 2014 Distinguished Teaching Award in the Assistant Professor/Lecturer/Professor of Practice Category. It is a rare occurrence to receive the award in both categories.

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Dr Gregory Odegard (Richard and Elizabeth Henes Professor of Computational Mechanics, Associate Chair and Director of Undergraduate Stud-

ies, and professor, ME-EM) will lead a new, multidisciplinary and multi-institution [Space Technology Research Institute \(STRI\)](#). The institute is one of only two funded nationwide is funded by a \$15 million five-year grant from the National Aeronautics and Space Administration (NASA). He leads a multidisciplinary team of 22 faculty from 10 universities, two companies, and the U. S. Air Force Research Lab. TechCentury (an engineering and technology news website published by the [Engineering Society of Detroit](#), [Nature World](#), and [UP Matters](#) also ran the story.

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**Dr. Gregory Odegard and Jeremy Worm (research engineer and Director of the Michigan Tech Mobile Lab, ME-EM)** will present at the March 15th session of Tech Talks 2017. Researchers from across campus present rapid-paced samplings of their work, both published and unpublished.

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Dr. Paul van Susante (senior lecturer, ME-EM) gave a [lecture](#) in the NASA Solar System Exploration Research Virtual Institute In-Situ Resource Utilization ([ISRU](#)) seminar series. ISRU is a suite of concepts and technologies that can enable safer and more cost-effective use of space by exploiting local resources rather than bringing everything from Earth.

CAPSTONE DESIGN PROGRAM

Final Presentations 18 April

Another diverse set of projects were completed when sixteen Senior Capstone Design project teams presented results of their projects on Tuesday, 18 April.

We are already planning projects that will be getting underway this coming fall, so please get in touch if you would like to know more about Tech's Senior Capstone Design program, or if you would like to consider getting a project going!

Thanks to all (you know who you are) who continue to make this Number One program possible-!

Bob De Jonge
rdejonge@mtu.edu
906-487-2142



Student Competitions and Team Awards

For the 15th year running, Michigan Tech's Department of Mechanical Engineering - Engineering Mechanics and the Keweenaw Research Center hosted the **SAE Clean Snowmobile Challenge** at



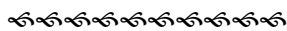
[Michigan Tech](#). 25 teams of students competed the week of March 7th for the quietest, cleanest snowmobile. The event is sanctioned by SAE International. The Michigan Tech Electric Sled Category (Zero Emission) team took first place overall and was the Best Design winner (Cummins Sponsor: \$500 prize). The Internal Combustion (IC) Engine team placed seventh overall. The faculty advisor is **Dr. Jason Bough (professor, ME-EM)** and **Dr. Scott Miers (associate professor, ME-EM)** is the engine advisor for the IC team. See all the [results](#).

The Michigan Tech **Enterprise Program** was awarded the ASME 2017 Donald N. Zweip Innovation in Education Award on April 19th at the ASME Mechanical Engineering Education Leadership Summit in Washington, DC. The award recognizes exceptional and innovative engagement in and fostering advances in mechanical engineering education, particularly those who have demonstrated exemplary contributions to the advancement of mechanical and multi-disciplinary project-based engineering education.

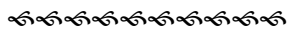


University News/Awards

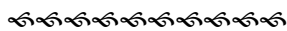
The **Bucareers.com** website has ranked Michigan Tech third in the state among best-value colleges and universities. Read more [here](#).



Dr. Leonard Bohmann (associate dean, College of Engineering) was quoted in the Virginia Gazette in an article on power companies' back-up plans for handling power outages on peninsulas caused by faults in the transmission system. Read about [power](#).



Michigan Tech is one of 85 partners in a **U.S. Department of Energy**-funded \$70 million energy-saving project called the REMADE (Reducing Embodied-energy and Decreasing Emissions) Institute. Read the [article](#).



Michigan Tech hosted the 19th Annual **Western UP Science Fair, Science and Engineering Festival** on Thursday, March 16, 2017. Students in grades 4-8 came to campus to participate.



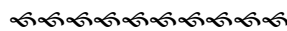
The Detroit Free Press commented on the Governor's **proposed increases** for state universities. See where Michigan Tech [stands](#).



The new **Michigan Tech Huskies logo** was ranked 10th in the Best New Primary Logo of 2016 category in the Creamer Awards. A team of twelve judges, consisting of logo and uniform gurus from across North America picked the winners.

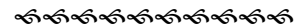


Michigan Tech **President Mroz** issued a statement on President Trump's executive order regarding immigration. Read the [statement](#). Both the [Daily Mining Gazette](#), [WLUC-TV6](#), [WJMN TV-3](#) and [WBUP-TV10](#) have run articles of how the executive order restricting travel and immigration from seven Muslim countries is affecting the Michigan Tech community.

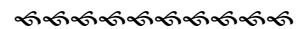


Michigan Tech President Glenn D. Mroz testified before the **Michigan House Appropriations Subcommittee for Higher Education** on March 16, 2017. [WLUC TV6](#) and Upper Michigan Source cov-

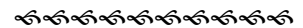
ered his testimony



Michigan Tech's **online graduate engineering programs** was ranked 47th in the nation by the 2017 Best Online Graduate Engineering Programs. Read the [article](#).



Former Michigan Tech **President Raymond L. Smith** celebrated his 100th birthday on January 25th. He came to Michigan Tech from the Franklin Institute in Philadelphia in 1959. He became the University's sixth president in 1965 and served in that capacity until 1979. The R. L. Smith/MEEM building is named in his honor. Read about the former [president](#).



Michigan Tech reported in the February 27, 2017 issue of Tech Today that "**Student Loan Report**, a website with news about student loans and financial aid, has ranked Michigan Tech 108 among the 250 colleges and universities offering the most financial aid to the largest percentage of students with financial need." Read the rest of the [article](#). The rankings can be seen [here](#).