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12-2019

## ME-EM eNewsBrief, December 2019

Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University

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# ME-EM

Michigan Tech

eNewsBrief

Vol. 15 | Issue 4 | DEC 2019

Greetings from Dr. William (Bill) Predebon, J.S. Endowed Dept. Chair & Professor, Dept. of Mechanical Engineering - Engineering Mechanics at Michigan Tech. For your convenience, we have bolded the names of all **ME-EM alumni, students, faculty and staff** in the eNewsBrief. For the latest news and info about our faculty, students and staff, please visit our website at [www.mtu.edu/mechanical](http://www.mtu.edu/mechanical), and visit us on Facebook, [MEEM](#) and [Twitter](#).

## Upcoming Events

**ME Scholarship Winter Carnival Alumni Hockey Social** will be held on Saturday, February 8, 2020 during the Michigan Tech vs. Lake Superior State hockey game in the Husky Suite South Skybox of the John MacInnes Student Ice Arena. The game has a 5:07 p.m. start time. Tickets are \$30/person, which includes a \$15 donation to the ME-EM Alumni Scholarship Fund. Stadium food and refreshments are provided by the ME-EM department.

Visit the [registration link](#) on the Michigan Tech website for more information and to purchase tickets, or contact the Alumni Services office (906) 487-2400.



Tech alumni from far and wide reunite in the Husky Suite South Skybox at the ME-EM Alumni Hockey Social.

**SAE Clean Snowmobile Challenge - March 9-14, 2020** hosted by the Keweenaw Research Center and the ME-EM Department. If you are interested in becoming a CSC 2019 sponsor, contact Jay Meldrum at 906-487-2750, or email [jmeldrum@mtu.edu](mailto:jmeldrum@mtu.edu).

**SAE World Congress MTU Alumni Reunion Event - April 22, 2020.** Reunite and raise a glass with fellow MTU alumni during SAE's WCX. This year's alumni social event will be held on Wednesday evening starting at 5:30 pm in Cobo Hall's Ambassador Ballroom (Rm 360).

## Past Events

### Making a Difference Staff Awards

The Michigan Tech Staff Council collected 48 nomination from across campus in recognition of staff members who truly make a difference at this university. Faculty and staff here in the ME-EM department supported three of our own that deserve accolades, including: Cindy Wadaga, Graduate Program Assistant (Behind the Scenes); Brian Eggart, Research Engineer APSRC (Unsung Hero); and our Rookie Award winner and ME alum, Rachel Store, who is a Research Engineer/Scientist I.



Rachel Store,  
ME-EM Research  
Engineer/Scientist  
2019 Michigan Tech  
Rookie Award winner

Read more about the Awards in [Tech Today](#).



## Department Chair Travel

**April 15-19** - San Juan, Puerto Rico - ASME International ME Education Leadership Summit

**April 22-25** - Detroit, MI - SAE World Congress

**June 13-16** - Boston, MA - ASME Meeting

**June 21-24** - Montreal, Quebec, Canada - ASEE Annual Conference

If you'd like to meet with Dr. Predebon while he is in your area, please call the ME-EM office (906) 487-2911, or email Karen Bess at [kebess@mtu.edu](mailto:kebess@mtu.edu).



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## Promotions and Additions

**Marlene Lappeus** took a position within the department as the Director of Business Operations for the Advanced Power Systems Research Center (APSRC).



**Bob Page** has been promoted to the Director of Laboratory Facilities in the ME-EM department. His role has expanded in the oversight of lab spaces and equipment used for required and elective courses and research activities, and in providing guidance to students and researchers regarding matters related to the safe operation of the labs and equipment.



**Marty Toth** has been promoted to a Research Engineer/Scientist position with an active role in educating, training, certifying, and mentoring ME students on the proper operation of the equipment in the machine shop, wood shop and welding equipment.



**Shirin Jouzdani** joined the department as a postdoctoral scholar and is working with Dr. Jeff Naber on research associated with combustion and engine studies including experimental studies in the spray and combustion laboratory and engine laboratories. Dr. Jouzdani received her Ph.D. in Mechanical and Aerospace Engineering from Syracuse University.



**Shanwu Li** joined the department as a postdoctoral scholar is working with Dr. Yongchul Yang. His research is in the area of computer modeling, simulation and processing for dynamical system analysis, identification and control. Dr. Li received his Ph.D. in Civil Engineering from Harbin Institute of Technology, in Harbin, China.



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## Faculty, Staff & Grad Student Awards & Accomplishments

**Dr. Parisa Abadi**, Asst. Prof. (ME-EM) was featured in a story that appeared in wogrammer.org, an online organization that highlights inspirational women in STEM. Scroll down about half way to read the story "Persisting in the Name of Passion. How Parisa Abadi Went From Mechanical Engineering to Heart Repair": [Women in STEM](#).



**Dr. Jung Yun Bae**, Asst. Prof. (ME-EM) was selected as a recipient of a [2019 Research Seed \(RS\) grant](#). Dr. Bae's main goal of research is the development of operational strategy for multi-agent autonomous vehicle systems. Her research interests include coordination of heterogeneous robot teams, vehicle routing problems, multi-robot system control and optimization, autonomous navigation, and unmanned vehicles.



**Dr. Andrew Barnard**, Assoc. Prof. (ME-EM/GLRC Director) was quoted in the story "The science behind all that noise inside Albertson's Stadium," in [BlueTurfSports.com](#).



**Dr. Andrew Barnard** and **Dr. Guy Meadows**, Res. Prof. (ME-EM) and Prof. (GLRC), were quoted in the story "[Water Levels Continue to Rise](#)" on ABC 10, Marquette.



**Dr. Nancy Barr**, Prof. of Practice (ME-EM) has been elevated to IEEE Senior Member status. In addition to developing an extensive communication and teaming undergraduate curriculum in the ME-EM, Barr teaches two graduate communication courses. She is secretary to the IEEE Professional Communication Society Board of Governors and the ASEE North Midwest Section Campus Representative.



**Dr. John Johnson**, Res. Prof. and Prof. Emeritus (ME-EM) has been named by SAE International to the inaugural Contributor of the Year Class, recognizing those for their ongoing commitment and contributions to the organization and the entire mobility industry. Read the full [SAE International press release](#).



**Dr. Brad King**, Prof. (ME-EM) and Orbion Technology were featured in the article "Houghton space company launches after thriving as a start-up," which has appeared in several news outlets including the [Miami Herald](#), [News Observer](#), [Merced Sun-Star](#), [The State](#) the Ledger Inquirer (Columbus, Georgia) and the Daily Mining Gazette. In November the Gazette published the article "[Houghton-based company: multimillion dollars and growing](#)".

Orbion was also featured on Interlochen Public Radio (IPR). Listen to the broadcast, or read the transcript: "[Upper Peninsula aerospace company recognized for satellite thruster manufacturing](#)".



Orbion team members pictured L to R: Dr. Brad King - CEO and Founder, Dr. Jason Sommerville (MSME '06, PhD '09), Tristan Slabaugh (BSME '17, MSME '19, current PhD student), Steven Battel, Kurt Terhune (BSME '10, MSME '13, PhD '17), Jason Makela (BSME '04, PhD '10), Carl Fruncek (BSME '19) and Ashish Patel (past intern).



## Department Accomplishments

Michigan Tech's College of Computing and the Departments of Mechanical Engineering-Engineering Mechanics and Civil and Environmental Engineering were mentioned in the story "[Snowbots Storm the Yeti Cup](#)" in the Daily Mining Gazette.



The latest NSF national ranking of research expenditures by discipline classifications has just been published. It is for FY18 and Mechanical Engineering at Michigan Tech is ranked 16th in the nation at \$19.359 MM. It is the best ranking in the department's history and a notable achievement thanks to the quality and productivity of the faculty and the essential support of our staff and the university.



ME-EM received a 2019 Best of Houghton Award in the Colleges and Universities category. The Houghton Award Program honors the achievements and accomplishments of local businesses throughout the Houghton area that have shown the ability to use their best practices and implemented programs to generate competitive advantages and long-term value. Read the notice in the [COE blog](#).



## **Michigan Tech ME Program Earns 2019 Top Ranking**

College Factual ranked the ME program at Michigan Tech #16 out of 272 schools nationwide for 2019. College Factual states that "This puts Michigan Tech's ME program in the Top 10% of all ME programs in the United States". They also rank Michigan Tech's ME program as #3 out of 13 colleges in the state of Michigan. Michigan Tech's ME program has achieved this State ranking two years in a row.

## Student Accomplishments & Awards

**Nathan Ford, (ME-EM PhD candidate)**, currently Research Chair for Michigan Tech's Graduate Student Government ([GSG](#)), has been elected President-Elect and will assume the office as President of the GSG on May 1. Read more in [Tech Today](#).



The open-source book "Printing 3D Models for Chemistry - A Step-by-Step Open-Source Guide for Hobbyists, Corporate Professionals, and Educators and Students in K-12 and Higher Education", by undergraduate students Elisabeth Grace Billman-Benveniste (Chemistry), **Jacob Franz (sr. ME)**, and Associate Professor Loredana Valenzano-Slough (Chem) was recently featured in the news section of "[3dprint.com - Voice of 3D Printing and Additive Manufacturing](#)".



Michigan Tech's Sustainability Demonstration House was featured in an article in the [Daily Mining Gazette](#). Michigan Tech students **Lexi Steve (sr. ME)** and Rose Turner (EE) were quoted in the story.



**Cora Taylor (current MS student)**, was selected to receive the 2019 Rumbaugh Outstanding Student Leader Award as a result of her unyielding leadership of and dedication to the SAE Formula Team and the SAE Student Chapter board, as well as her initiative with SAE International's "A World in Motion" AWIM program. The award will be presented to Cora at the SAE WCX20 Awards Ceremony on Tuesday, April 21 at Cobo Hall in Detroit.



**Mark Wallach (sr. ME)**, was recently ranked eighth of eight thousand plus graduating cadets across the nation. The competitive ranking process takes into account academics, physical fitness, student involvement, and performance during advanced camp, a grueling 37-day training event in Fort Knox Kentucky. Read more in [Tech Today](#).



The Michigan Tech football program recently announced the 2019 team awards at the annual postseason meeting. Headlining the list of honorees is senior wide receiver **Jacob Wenzlick, (sr. ME)** who was named the Alan Bovard Most Valuable Player for the second season in a row. Wenzlick also received the Offensive Back of the Year and the Harold Meese Sportsmanship Award. Read the full story on [michigantechhuskies.com](#).



**Zhuo Xu (ME-EM PhD student)**, was recently awarded Best Oral Presentation at the 5th International Conference on Sustainable Chemical Product and Process Engineering (SCPPE) last summer in Tianjin, China. Xu's presentation "Sustainable waste to clean energy solutions" was presented in the 'Alternative and renewable energy systems and supply chain' session of the Conference.



**Michigan Tech  
2020 Winter Carnival  
February 5-8, 2020**

## Student Competitions & Team Awards

Ten members of the Michigan Tech chapter of the Society of Women Engineers (SWE), including **Erika Carne (sr. ME)** and **Katy Pioch (so. ME)**, attended the national WE19 conference in Anaheim, California. Students participated in the SWE Future Leaders (SWEFL) program, and attend the SWE Collegiate Leadership Institute (CLI), a day-long leadership development event. Read the article in [Tech Today](#).



**Stas Zinchik (ME-EM PhD '19)**, **Shreyas Kolapkar (MSME '18)** and **Zhuo Xu (current ME-EM PhD student)** were awarded the second prize in the student design competition that took place at the 2019 WasteCon conference in Phoenix, AZ in October. The prestigious Solid Waste Association of North America (SWANA) professional society challenged students on "Evaluating Recycling Rate Metrics and Achieving Recycling Goals." Read more in [Tech Today](#). The team is advised by **Dr. Ezra Bar-Ziv, Prof. (ME-EM)**.



**Dr. Bar-Ziv's** research group co-authored an original research article, "[Properties of Torrefied U.S. Waste Blends](#)" that appears in *Frontiers in Energy Research: Bioenergy and Biofuels*. The article is part of a special topic collection "Advancements in Biomass Feedstock Preprocessing: Conversion Ready Feedstocks," and is one of the 10 finalists for the 2019 *Frontiers Spotlight Award*, which supports important fields of research published as special issues in *Frontiers journals*. *Frontiers Spotlight* nomination and the "economic eco-fuels" topic: <https://spotlight.frontiersin.org/economic-eco-fuels>.



## Tech Captures GLI for 11th Time

Michigan Tech won the 55th annual Great Lakes Invitational Tuesday (Dec. 31) with a 4-2 victory over the University of Michigan at Little Caesars Arena in Detroit. The Huskies won the MacInnes Cup for the first time since 2012 in the final game of the decade. ME students on the team include: #21 - **Todd Kiilunen (sr.)**; #19-**Eric Gotz (so.)**; #13-**Logan Pietila (fr.)**; #12-**Brian Halonen (so.)**; and #8-**David Raisanen (jr.)**. Go Huskies!

## Contracts and Grants

**Andrew Barnard (PI, ME-EM)** - Great Lakes Research Center (GLRC). Title: "Various Sponsors". Sponsor: Various Sponsors. Total Award: \$1,991.



**Brian Eggart (PI, ME-EM)** - APSRC. Title: "Vehicle Exhaust System Temperature Investigation". Sponsor: ThermoAnalytics, Inc. Total Award: \$16,500.



**Guy Meadows (PI, GLRC / ME-EM); Pengfei Xue (co-PI, CEE/ GLRC)** - Title: "Advancing Coastal Hazard Knowledge on Resiliency Alternatives". Sponsor: Michigan Department of Environment, Great Lakes, and Energy. Total Award: \$99,999.



**Jeff Naber and Darrell Robinette (Co-PIs, ME-EM)**, William Buller (PI, MTRI); Chris Morgan (Co-PI, Pavlis) - Advanced Power Systems Research Center (APSRC). Title: "Validating Connected, Automated, and Electric Vehicle Models and Simulation". Sponsor: American Center for Mobility. Total Award: \$3,108,438.



**William Predebon (PI, ME-EM); Brad King (Co-PI, ME-EM)** - Multi-Scale Technologies Institute (MuSTI). Title: "Performance and Lifetime Characterization of a Low-Power Hall-Effect Thruster". Sponsor: Orbion Space Technology, Inc. Total Award: \$206,146.



**William Predebon (PI, ME-EM)** - Center for Agile and Interconnected Microgrids (AIM). Title: "Modular Buoyancy Kit Wave Tank Testing". Sponsor: Great Lakes Sound and Vibration. Total Award: \$15,000.



**Paul van Susante (PI, ME-EM); Chris Morgan (Co-PI, Pavlis)** - Michigan Tech Aerospace Engineering Research Center (MARC). Title: "Center for Lunar and Asteroid Surface Science (NASA SSERVI CAN)". Sponsor: University of Central Florida. Total Award: \$150,000.



**Jeremy Worm (PI, ME-EM); Tucker Alsup, Darrell Robinette, Wayne Weaver (Co-PIs, ME-EM)**. Title: "Delivery of Hands-On Professional Development Modules in Propulsion Systems". Sponsor: Dana, Inc. Total Award: \$23,925.



**Yongchao Yang (PI, ME-EM)**. Title: "Making Physical Sense of Machine Learning: Full Field, High Resolution Imaging of Structural Dynamics". Sponsor: Uchicago Argonne, LLC. Total Award: \$300,000.



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## Alumni & Friends: News, Accomplishments & Awards



**Erik Alburg (BSME '97)** was featured in the article "[Lawnbot Grows Leadership Team, Welcomes Erik Alburg as Chief Technical Officer](#)," in Green Industry Pros.



**Joe Berger (BSME '04)** was listed in the article "[25 Greatest Football Players of All Time from the Muskegon Area](#)," on MLive. Read more in [Tech Today](#).



**Keith A. Foerster (BSME '86)** was featured in the RVBusiness article "[Lazydays Names Foerster VP of Service Operations](#)".



Foerster joined Lazydays from Heraeus Medical Components, where he served as president and general manager of North and Central America Operations and led a team of 800 employees in four operating locations.



**Curtis Fortier (BSME '91, MSME '94)** returned to campus in November for the [41 Film Festival](#) screening of his web series "[12 Sided Die](#)", and a short film, "[Hide and Seek](#)". Learn more about this engineer turned comedian on the Alumni and Friends [webpage](#), and read about his time as a student in the [Michigan Tech Magazine](#)

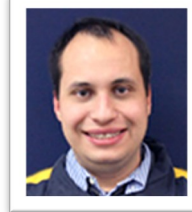


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**Karl Haapala (BSME '01, MSME '03 ME-EM PhD '08)** was featured in the article "[OSU Researchers Discuss Sustainability in Additive Manufacturing and New Sustainable Development Methodology](#)," in AdditiveManufacturing.com. Haapala is an Assoc. Prof. in the School of Mechanical, Industrial, and Manufacturing Engineering at Oregon State University, where he directs the Industrial Sustainability Lab and serves as Asst. Director of the OSU Ind'l Assessment Ctr.



**Jason Markesino (BSME '03)** was featured in the article "[2019 Engineering Leader Under 40: Jason Markesino, 37](#)," Control Engineering. Jason became the lead electrical mentor of Team RUSH, a FIRST Robotics Team, in 2013.



**Doug Parks (BSME '84)** was featured in the article "[GM names EV exec Parks to lead purchasing, product development](#)," in Automotive News.



New ME alumni attending the Fall 2019 ME-EM Senior Banquet & Order of the Engineer Ceremony held December 10, 2019 - See more [Photos](#) from the event.

**Denise Rizzo (ME-EM PhD '14)** was elected fellow of the Society of Automotive Engineers (SAE) for 2019. Dr. Rizzo is a Senior Research Mechanical Engineer at the U.S. Army CCDC Ground Vehicle Systems Center (GVSC), formerly U.S. Army Tank Automotive Research and Development Engineering Center (TARDEC).



**Sheryl Sorby (BSCE, '82, MSEM '86, PhD ME-EM '91)** and ME-EM Prof Emerita, now a professor of engineering education at the University of Cincinnati, was recently elected President-Elect of the American Society for Engineering Education (ASEE), a term she will hold one year before assuming the presidency in 2020. [Read more](#) in the COE Blog.



**Tim Swanson (BSME '89)** was named CEO of Bettcher Industries. The story was reported in several publications including [Crain's Cleveland Business](#), the [National Provisioner](#), [MarketsInsider](#) & [Benzinga](#).



**Shawn Vij, (BSME '92)**, was the subject of the article "[India's Moral Fiber in Business](#)," in the International Business Times. Also, Shawn talks about his upcoming book, "Moral Fiber - A Practical Guide to Living Our Values", in an article that appeared in [The Statesman](#), one of India's oldest English newspapers.



## Area News

In late November the SnowBots middle school robotics teams competed in Kingsford, Michigan for the Yeti Cup U.P. FIRST Tech Challenge robotic qualifier competition. All three teams were in the finals and brought home awards from the competition. Read "[SnowBots Storm the Yeti Cup](#)" in the Daily Mining Gazette.



The SnowBots teams reached a first- ever milestone at the Pellston regional FIRST Tech Challenge qualifier in November. All three teams qualified to compete at the state championship in Battle Creek. The ME-EM department is a proud sponsor of the program. Read all about it in [The Daily Mining Gazette](#), and in [The Mining Journal](#).

## University News

WalletHub put 500 institutions on its "[2020 College Ranking: Best Colleges & Universities](#)," list. Michigan Tech was ranked No. 146 on the overall list. Read Tech Today's analysis.



A live shot of the Michigan Tech campus was featured on the [CBS Evening News](#), last Thursday (Nov. 7).



Michigan Tech was mentioned in the article "[A New Focus On Making Traverse City A HealthTech Hub](#)," in The Ticker (Traverse City, Michigan).



Michigan Tech's chapter of the Society for Women and Engineering (SWE) held a "Think Like an Engineer" event on Saturday (Nov. 16). The story was covered by [WLUC TV 6](#).



The Marquette television station also covered snow-making and other preparations on [Michigan Tech's Mont Ripley](#).



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## The Big IDEA: New Hub Transforms Education

Michigan Tech's IDEA Hub has a big goal: to re-imagine and revolutionize university education, transforming the undergraduate experience at Michigan Tech. There are already three hubs within the Hub: Husky Innovate, Global and Community Engagement, and Tech Forward Educational Innovation. Find out more about them and how to be involved — details in the latest [Michigan Tech Unscripted Research Blog](#).



Three staff members of Northwestern Michigan College (NMC) are receiving an award from the Michigan Association of Collegiate Registrars and Admissions Officers (MACRAO) for their work with Michigan Tech. In August, NMC and Michigan Tech formalized a partnership designed to expedite degree completion for engineering students transferring to Michigan Tech from NMC. The story was covered on [News Channel 26](#).



The Michigan Tech Mind Trekkers were mentioned in the story "Michigan Tech students set young minds on fire," on [ABC 10](#).



Michigan Tech was featured in the article "Choice of Michigan College can Make a (Million Dollar) Difference," in [Bridge](#).



Tech's [Tomorrow Needs](#) microsite has won WebAwards for [Outstanding Achievement](#) as well as [Best University Mobile Website](#) from the Web Marketing Association. Originally launched in October 2018, "Tomorrow Needs" supports UMC's national digital marketing campaign.



Michigan Tech's 2019 Midyear Commencement was covered by [WLUC TV6](#), Marquette.



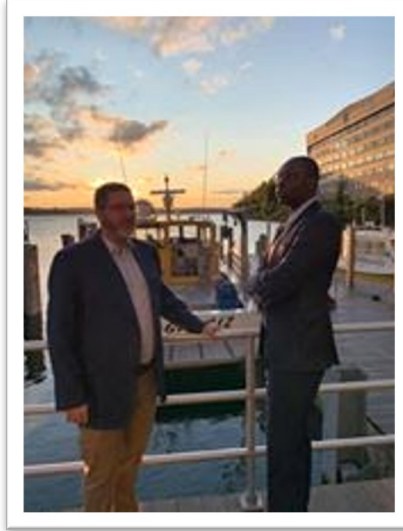
Michigan Tech's Summer Youth Programs 2020 registration is now live. Since 1972, these programs have been providing a hands-on approach for middle and high school students to learn about science, technology, engineering and math (STEM) fields and careers. [View our 2020 courses](#) and register your child soon, as seats fill quickly.

## University & Department News

Michigan's Lieutenant Governor, Garlin Gilchrist, visited Michigan Tech in early October. An editorial appeared in the [Marquette Mining Journal](#), and the Lt. Gov. posted on his [Facebook page](#) about his "Thriving Cities" stops in the Upper Peninsula, one of which was at Michigan Tech where he toured the labs of ME-EM faculty members **Brad King**, **Andrew Barnard** and **Jay Meldrum** to learn about their research in marine autonomy and space propulsion.



Michigan's Lt. Gov. Gilchrist received the official Aerospace Enterprise Lab tour from Dr. Brad King.



Dr. Andrew Barnard, Director of the GLRC, taking the Lt. Gov. on the grand tour of Tech's multi-disciplinary, faculty-driven Great Lakes Research Center.



Dr. Guy Meadows, Robbins Professor of Sustainable Marine Engineering, showed the Lt. Gov. the exciting research being done in his Marine Engineering Lab in the GLRC.

# CAPSTONE

# ORGANIZER

## New Year Capstone Update

Twenty projects got underway this past fall, and those teams are heading into their second semester. These project teams all pass through a critical gateway at the end of their first of two semesters- termed a Project Continuation Review. During this review of each team, their readiness to successfully reach their project goals is reviewed. These twenty teams passed through this gateway this past December and are now beginning to execute their project plans to complete their projects.

As this goes to press, 12-13 projects are about to get underway. These projects will conclude December 2020. So, 32-33 projects on an annual basis in MEEM's SCD program. Thanks to all of you who make this possible.

**Bob De Jonge**  
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