

ME-EM

Michigan Tech

eNewsBrief

Volume 8 Issue 4 - Dec 2012



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

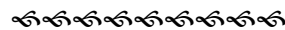


13th Annual

ME-EM Alumni Winter Carnival

Hockey Social will be held on Saturday, February 9, 2013 during the Michigan Tech versus Alaska Anchorage (Winter Carnival) game in the Husky Suite South Skybox of the Student Development Complex (SDC). The game has a 5:07 PM start time. Join us for this fun filled event. Admittance is free for ME alumni

and their guest and refreshments will be provided. Admission is limited so please RSVP to Kathy at kagoulet@mtu.edu or 906-487-2911 to reserve your space. There will be a check-in list at the table at the top of the stairs across from the ticket window. Please note the earlier start time.



For the 11th straight year, the ME-EM Department, along with the Keweenaw Research Center, will again be hosting the **SAE Clean Snowmobile Challenge** on March 4-9, 2013. For more information on this event, please contact the department at 906-487-2551 or email me at wwpredeb@mtu.edu. Sponsorship is always welcomed, contact Jay Meldrum at (906) 487- 3178 or jmel-drum@mtu.edu.



The ME-EM Department will again co-host a reception along with Michigan Tech's Corporate Development at the **SAE International Conference** in Detroit, MI the week of April 15th. Information on the reception will be in the next eNewsBrief. Refreshments will be served. Students from the SAE Student Chapter at Michigan Tech will be there with competition vehicles. Door prizes will be given out. Plan to come spend an evening with our students, hear about their competitions, see their vehicles, and hear what is happening on campus.

IN THIS ISSUE:

Upcoming Events	1
<u>Chair Travel</u>	2
<u>Current Contracts and Grants</u>	2
<u>Alumni and Friends News, Accomplishments and Awards</u>	3
<u>Capstone Corner</u>	4
<u>Student Awards and Accomplishments</u>	4-5
<u>Student Competitions and Team Awards</u>	5
<u>Faculty and Staff Awards and Accomplishments</u>	5-6
<u>University News/Awards</u>	6

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 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 winter and spring:

- San Diego, CA the week of March 10th for the ASME International ME Education Leadership Summit
- Detroit, MI the week of April 15th for the SAE World Congress

The Department of Mechanical Engineering - Engineering Mechanics invites you to join in the celebration of its 85th year of delivering a world class



mechanical engineering education to its students. Go to [85th anniversary](#) to see how you can participate.

Current Contracts and Grants

Jeremy Worm (PI, ME-EM), "Development and Delivery of High-Impact STEM Outreach Utilizing the Michigan Tech Mobile Laboratory in Support of TARDEC and Heroes Alliance", sponsor: US Department of Defense - Army -TARDEC, total project amount: \$35,847.

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**Ezra Bar Ziv and Jeffrey Naber** (co-PIs, ME-EM, David Shonnard (PI, Chem Eng). Andrew Burton and Audrey Mayer (coPIs, Forestry), "SEP: Sustainable Forest-Biofuel Pathways to Hydrocarbon Transportation Fuels: Biomass Production, Torrefecation, Pyrolysis, Catalytic Upgrading, and Combustion", sponsor: National Science Foundation, total project amount: \$2,034,814.

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Michele Miller (coPI, ME-EM) and **Brennan Tymrak** (PI, ME-EM), Joshua Pearce (PI, Materials Sci & Engr), "NSF Graduate Research Fellowship - Technolo-

gies for Developing Countries", sponsor: National Science Foundation, total project amount: \$126,000.

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**Charles Van Karsen** (PI, ME-EM), **Gregory Odegard**, and **James DeClerck** (coPIs, ME-EM), "Acoustic Boom Modeling". sponsor: General Motors, total project amount: \$184,481.

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Jeremy Worm (PI, ME-EM), **Jeffrey Naber** (coPI, ME-EM), "Diagnosing Induction System Degradation and Evaluation of Remedial Chemicals in Automotive Engines", sponsor: Illinois Tool Works Inc., total project amount: \$42,465.

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**Jeremy Worm** (PI, ME-EM), "Delivering STEM Outreach Through Inspirational Hands-On Activities", sponsor: National Instruments Corporation, total project amount: \$19,976.

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Gregory Odegard (PI, ME-EM), "Finite Element Modeling of Internally-Reinforced Pressure Tanks", sponsor: REL, Inc., total project amount: \$176,371.

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**Jeremy Worm** (PI, ME-EM), "Short Course Delivery: Experimental Studies in Hybrid Electric Vehicles", sponsor: Wisconsin Technical College System, total project amount: \$25,015.

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Jeremy Worm (PI, ME-EM), **Jeffrey Naber**, and **Mahdi Shahbakti** (coPIs, ME-EM), "Short Course Delivery: Spark Ignition Engine Management Systems", sponsor: DENSO International America Inc., total project amount: \$32,004.

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**Mohan Rao** (PI, ME-EM), "Vibration Based Flow Detection in Fiber Reinforced Polymer Wraps", sponsor: Neptune Research, Inc., total project amount: \$43,369.

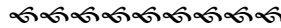
## Alumni and Friends News, Accomplishments & Awards

Steven Bethel's (BSME '83 & MSME '85) company, Leadfoot Engineering, has received a grant of \$10,000 by the Michigan Corporate Relations Network, The company has received one of four Small Company Innovation Program (SCIP) grants to support research partnerships between small businesses and state universities. SCIP enables small businesses to work with universities to commercialize research. The grant will help support research at Michigan Tech to develop new piston materials with improved mechanical properties at elevated temperatures. Leadfoot, based in Chassell. Bethel serves on the School of Technology's Mechanical Engineering Technology Industrial Advisory Board.



Linda Kennedy (BSME '91) of Troy, MI along with Robert "Bob" Jacquart of Ironwood were appointed by Governor Rick Snyder to the Michigan Tech Board of Control. Kennedy is a shareholder in the Detroit office of Butzel Long PC, one of Michigan's oldest law firms. Jacquart is chief executive officer of Jacquart Fabric Products, a textile designing and manufacturing company his father began in 1958. Read more at: [Board of Control](#)

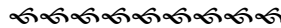
Greg Ives (BSME '03) has been named Crew Chief for JR Motorsports and driver, Regan Smith for next year's NASCAR Nationwide Series season. Articles can be found at [NASCAR](#) or [Crew Chief](#).



Long-time Michigan Tech equipment supervisor and coach Sheldon Moose Larson passed away on December 7, 2012. He was 88 years old. Read the obituary at [Larson](#)

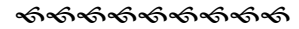


Susan Mentink (BSME '86) was highlighted in a Nov 19, 2012 article in the Marietta Times. Sue is an instructor in Washington State Community College's engineering department and is coordinator of their Engineering Technology program. Read the article at [Mentink](#).



Gerald F "Jerry" Philo (BSME '80) an associate and senior project manager with Harley Ellis Devereaux, was re-appointed on 10/1/2012 to the Board of Mechanical Rules by Governor Rick Snyder. The four-year term will end 10/1/2016. The board makes recommendations for mechanical code rules, issues mechanical contractor's licenses to qualified applicants and makes necessary orders, rules, and regulations. Philo

will represent professional mechanical engineers.



Dr. Paul Rogers (right) (BSME '88 & Phd M E E M '04) was named director of the U.S. Army Tank Automotive, Research Development and Engineering Center on August 13, 2012. Paul is also a member of the ME-EM External Advisory Board. Read the article at [TARDEC](#).



## Department Accomplishments

US News ranks Mechanical Engineering #6 among best technology jobs and #17 in the ranking of top 100 jobs. Mechanical Engineering (#6) and Civil Engineering (#9) and are the only jobs in the top 9 that are not computer services jobs (which are highly outsourced and less so for ME). Also Mechanical Engineering (#17) is the only engineering profession in the top 17 plus best jobs. See the article at [Mechanical](#).



Remember the Houghton winters. Refresh your memory, watch the YouTube video on How to Turn Left in the UP. [Winter](#)

# CAPSTONE ORGANIZATION

## Capstone Receives National Coverage...

Four Capstone teams were recognized for their work this past fall, as the fruit of their labor was rolled out for a national audience. Check this out:

<http://tinyurl.com/TechAchilles>

At the time of this update being released, eleven new projects are getting underway. As always, our students had a nice range of both product and process development projects to become a part of. We appreciate all of you who are involved with this program and are happy you are deriving value from the experience.

April is always a great time to visit Tech. On Tuesday, 23 April, sixteen Capstone teams will be presenting their final designs and prototypes. These projects began last September, and represent a great body of engineering work. We would suggest coming to see first-hand just what can be accomplished through Capstone!

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



### Student Accomplishments and Awards

**Michael Kivisalu** (PhD candidate, ME-EM) was awarded the Michigan Tech Finishing Fellowship. Competition for these fellowships is strong. The selection panel was impressed with Michael's research, publication record, and contribution to the mission of Michigan Tech. Michael's advisor is **Dr. Amibtabh Narain** (professor, ME-EM).



**Nathan Koetsier** (sr., ME-EM) is the recipient of a

\$5,000 scholarship from ASCO Numatics, the world's leading manufacturer of comprehensive fluid automation, flow control, and pneumatics solutions. ASCO Numatics stated that this year they had "the largest and most qualified field of applicants in our scholarship program's history". Michigan Tech will also receive a \$1,000 grant. Read the article at [ASCO](#)



**Ryan Leisenring** (fr., ME-

EM) named to manage the CONTROLTEC office in the Lakeshore Building in Houghton, MI. Read the article at [CONTROLTEC](#).



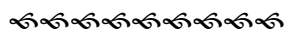
**Erik Wachlin** (jr., ME-EM) is part of a team of Michigan Tech students working to create a mobile medical clinic for the rural poor of Ghana. The students are converting a van that was donated by Husky Motors in order to build the clinic. Read the article at [Ghana](#).





## Student Accomplishments and Awards Continued

**Alicia Walby** (sr., ME-EM) was elected as a regional collegiate representative (RCRs) for Region H, which encompasses Illinois, Indiana, Iowa, Michigan, Minnesota, North Dakota, South Dakota and Wisconsin. Read the article at [Walby](#).



**Andrea Walvatne** (sr. ME-EM) was the national grand prize winner in the annual Stilettoes to Steel Toes essay contest, sponsored by Schlumberger and endorsed by the Society of Women Engineers (SWE). Schlumberger is a leading international oil-field services provider. The

contest invites women engineering students to write short essays examining "Where will your shoes take you?" explaining why a non-traditional job is the way to go. The grand prize was a \$2,000 scholarship and an expense-paid trip to the SWE 2012 national conference in Houston in November, 2012, where she read her essay. Read her essay at [Essay](#).

## Student Competitions and Team Awards



A team of 20 Michigan Tech en-

gineering students were in Detroit the weekend of October 20th helping the Achilles Freedom Team of wounded veterans who participated in the Detroit Free Press/Talmer Bank marathon on Sunday, Oct. 21, 2012. The Tech students are a Mechanical Engineering Senior Design team that is working on a capstone project sponsored by General Motors to create a better hand-cranked racing cycle. The cycle was unveiled on na-

tional television during half time at the Army-Navy game on December 8, 2012. The team received national attention, having been featured in the Daily Mining Gazette, Michigan Tech News, a Chevy commercial, The Detroit News, Autoweek, and the Detroit Free Press. Read the articles at [Gazette](#), [Tech Today](#), [News](#), [You Tube](#), [Detroit News](#), [Autoweek](#), and [Detroit Free Press](#).

## Faculty/Staff Awards/Accomplishments

The following ME-EM faculty were featured in the College of Engineering "Engineering Research 2012" publication:

- **Dr. Ezra Bar-Ziv** (professor, ME-EM) - pages 4 - 5
- **Dr. Michele H. Miller** (associate professor, Associate Chair, & Director of Undergraduate Studies, ME-EM) - pages 16 - 17
- **Dr. Reza Shahbazian-Yasser** (associate professor, ME-EM) - pages 6 - 7

In addition the following two of our alumni were featured:

- **Doug Parks** (BSME '84), page 25
- **Dr. Paul Rogers**, PhD 2004, page 24

Read the articles at [Engineering](#).



**Nancy Barr** (Communications and Senior Capstone Design Programs Advisor, ME-EM) has joined the Conference on College Composition and Communication (CCCC) of the National Council of Teachers of English (NCTE).



**Dr. Ezra Bar Ziv** was featured in the article "Michigan Tech professor at forefront of emerging 'biocoal' industry" in the September 26, 2012 edition of Upper Peninsula's Second Wave. Read the article at [Wave](#)

**The Mechanical Engineering - Engineering Mechanics Department** was recognized by the Michigan Tech Youth Programs on October 17, 2012. The Department received the following awards:

## Faculty/Staff Awards/Accomplishments Cont.

- Mind Trekkers Champion - **William Endres** (associate professor, ME-EM) for Senior Design
- Mind Trekkers Champion - **Jeremy Worm** (research engineer/instructor, ME-EM) for HEV
- Innovation Award (Women In Engineering (WIE) and Engineering Scholars Program (ESP) - **Mechanical Engineering Department-Department Tours**
- Innovation Award (WIE/ESP group projects) - **Mechanical Engineering Department** - Remotely Operated Underwater Vehicles

- Program Exceeding Capacity (Summer Youth Program) - Engineering the Human Body.



**Dr. Jeffrey Naber** (professor, ME-EM) was one of 3 Michigan Tech faculty members to present at the Engineering Society of Detroit's Hybrid Vehicle Systems Course held on November 12, 2012 in Southfield, MI.



**Dr. Reza Shahbazian Yassar's** (associate professor, ME-EM)

research on sodium batteries was highlighted in Michigan Tech's Tech today. Read the article at [Battery](#). The research was also highlighted in Science Daily. See that article at [Science](#).



**Dr. Paul van Susante** (lecturer, ME-EM) was selected as a 2012 Outstanding Reviewer for the ASCE's Journal of Aerospace Engineering. ASCE's reviewer recognition program gives the editors of the Society's journals an opportunity to express their gratitude to these reviewers and to commend them for their efforts.

## University News

Michigan Tech has won a national award for its diversity initiatives. INSIGHT into Diversity, the oldest and largest magazine about diversity on college and university campuses, announced its first annual Higher Education Excellence in Diversity (HEED) award today. The award cites Michigan Tech for "its outstanding commitment to diversity and inclusion for the year 2012." The December 2012 issue of INSIGHTS into Diversity highlights Michigan Tech. For the full story, see [Diversity](#)



Intellectual Property Citation Index (IPCI), a product of the National Applied Research

Laboratories in Taiwan, has listed Michigan Tech as 39th in the world in instrument and instrumentation research leading directly to patent and industry application. The release stated that Michigan Tech particularly excels in research related to instruments and instrumentation, materials science, electrical engineering and physics. Read the article at [Research](#).



Michigan Tech is one of 29 colleges and universities showcased in a new National Academy of Engineering (NAE) report called Infusing Real World Experiences into Engineering Education that effectively incorporate real world experiences into their curriculum and highlights best practices for schools seeking to create new programs. The best practices outlined in the report include incor-

porating multidisciplinary team-based projects into curricula to help students develop skills in decision-making, leadership, written and oral communication, organization/time management, cultural awareness, and problem-solving. The report identifies frequent impediments to infusing real-world experiences into engineering programs and suggests ideas for overcoming these barriers to program implementation. Read the report at [NAE](#) and [Engineering](#).

**Come Join the Fun**



**Heroes and Villains Find Their Powers  
In These Frozen Winter Hours  
February 6-9, 2013**