

Department of Mechanical Engineering—Engineering Mechanics



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 11th Annual **ME-EM Alumni Winter Carnival Hockey Social** will be held on Saturday, February 12, 2011 during the Michigan Tech versus Bemidji State (Winter Carnival) game in the MacInnes Presidential Skybox of the Student Development Complex (SDC). The game has a 5:07 PM start time. Join us in the newly renovated SDC suites. Admittance is free for ME alumni and their guest and snacks and drinks will be

provided, Complimentary tickets are required so please RSVP to Kathy at kagoulet@mtu.edu or 906-487- 2911. to reserve yours. Please RSVP early.

The **MEEM Annual Alumni/SAE Reception** will be held at the 2011 SAE World Congress in Detroit, MI the week of April 12th, 2011. The time and place will be announced later, please plan on joining us.

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MEEM 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. Dr. Predebon will be traveling to Vancouver, British Columbia, November 12-18, 2010 for the ASME International Mechanical Engineering Congress and Exposition with a stop in Seattle, WA. Please call (906) 487-2911 to arrange a meeting.

Past Events

Approximately 130 alumni, friends, faculty and staff were aboard for the 2010 ME-EM Alumni Reunion cruise on August 5th, the first on the National Park Service boat the Ranger III.



New Staff



Ryan Towles has joined the Department as an academic advisor. He comes to Michigan Tech from Wausau Steel Center. He is a Michigan Tech alumnus having received a BSE degree in 1999.

ME-EM Retirements



James Mattson retired from his position as senior academic advisor this past May after 10 years of service in the advising office.



Jerry Dion retired from his position as the manager of laboratory facilities in August after almost thirty nine years of service.

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.

David Cvengros (BSME '62) was named to the Michigan Tech Sports Hall of Fame. A two-sport athlete at Tech from 1958-62, he played both basketball and tennis. The first player in Michigan Tech basketball history to score 1,000 points, he finished his career with 1,032. Named all-conference twice in basketball, he was team MVP in 1961-62. In tennis, David played No. 1 singles, won a conference doubles title in 1962, and was runner-up in 1961. He served as team captain in both sports. David worked for Goodyear in Akron, Ohio, for 38 years before retiring.



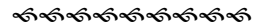
Richard (Dick) Henes (BSME '48) was named the recipient of the 2010 Michi-

gan Tech Alumni Association's Distinguished Alumni Award. Dick established and was president of Henes Stamping, Inc. and Henes Products Corp. as well as being active in real estate development in Arizona. Dick and his wife, Liz, have established the Henes Endowed Scholarship for students in mechanical, computer, electrical, and chemical engineering; the Henes Chair in the Department of Mechanical Engineering-Engineering Mechanics; and the Richard and Elizabeth Henes Professorship in Mathematical Sciences at Michigan Tech.

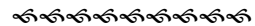


Martha Sullivan (BSME '80) has been promoted to President of Sensata Technologies in addition to her current role

as Chief Operating Officer. Martha is also a member of the Michigan Tech President's Council of Alumnae and the Department of Mechanical Engineering - Engineering Mechanic's Alumni Academy.



Matt Trombley (BSME '95) was named to the Michigan Tech Sports Hall of Fame. He scored 1,327 points in his basketball career from 1991-95 and was one of only four players in Michigan Tech history to have been named GLIAC Player of the Year (1994-95). He resides in St. Clair Shores, where he serves as a math teacher at Henry Ford II High School and senior pastor at Life of Purpose Christian Church.



Jeffrey Van Karsen (BSME '06 and MSME '07) has accepted the position of research engineer II at Michigan Tech's Keweenaw Research Center.

University News/Awards

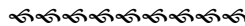


On July 26, 2010, twelve faculty members and University Department Heads participated with about thirty GM technical leaders in a Michigan Tech/GM Research Symposium in Warren, MI. The goal of the symposium was to expand awareness of Michigan Tech's research and development capabilities and recent projects with GM as well as to identify mutually beneficial collaboration opportunities for the future.



Dr. Max Seel (Michigan Tech Provost) has announced that last year 87.5 per-

cent of graduating students were hired or accepted to graduate school in their chosen field.



The University is again listed in the Princeton Review's "Best in the Midwest" in the "The Best 373 Colleges, 2011 Edition." Only about 15 percent of America's 2,500 four-year colleges and two Canadian colleges are profiled in the book, according to the Princeton Review. Michigan Tech was among the 152 Midwest schools singled out.

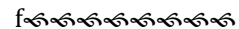


Michigan Tech has been ranked 117th by US News & World Report in the 2011 "Best Colleges" report, up from 121st last year. The University was also ranked 57th among national public universities. Michigan Tech also made the "A-Plus Schools for B Students list. This is a category comprising top-quality universities that also admit a significant proportion of students with ACT scores between 20

and 30, while at the same time maintaining a high retention rate.



The US House of Representatives unanimously passed a resolution Sept. 14 introduced by Congressman Bart Stupak (D-Menominee) honoring Michigan Tech on its 125th anniversary and for its contributions to Michigan and the country.



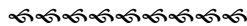
Michigan Tech ranks among the top 20 "Best Bargain Colleges" in the nation, according to a study by Payscale Inc. National media, including Bloomberg Businessweek and the Chronicle of Higher Education, reported on the study of the return on investment (ROI) of undergraduate degrees from 554 public and private colleges and universities nationwide. Overall, Michigan Tech's ROI is among the top three in Michigan, after the University of Michigan and Kettering University, and in the top 25 percent of schools nationwide.

Student Accomplishments and Awards

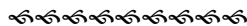
Atakan Altinkaynak (graduate student, ME-EM) was the recipient of a Summer 2010 Finishing Fellowship. His advisor is Dr. Mahesh Gupta (professor, ME-EM).



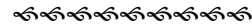
Edwar Romero-Ramirez (graduate student, ME-EM) was the recipient of a Summer 2010 Finishing Fellowship. His co-advisors are Dr. Robert Warrington (professor, ME-EM) and Dr. Michael Neuman (professor, Biomed Eng).



Jaclyn Nesbit (graduate student, ME-EM) has been awarded a Winnikow Fellowship for 2010-2011. Her advisor is Dr. Jeffrey Naber (associate professor, ME-EM).



Paul Sleik (jr, ME-EM) has received a Benjamin A. Gilman International Scholarship. The federal grant helps undergraduates fund studies abroad and aims to better prepare students for participation in an increasingly global economy. Paul will be studying in Prague, Czech Republic from September 6 through mid-December 2010.

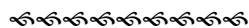


Ken Gilkerson (sr, ME-EM) was named a US Track and Field and Cross Country Coaches Association All-Academic Honoree for outdoor track and field for the second year in a row. Student-athletes must have a cumulative GPA above 3.30 and have posted a provisional or automatic qualifying mark. He finished 12th at the 2010 NCAA Division II Outdoor Track and Field National Championships in the 800 (1:51.08). He recently graduated with a 3.94 GPA in mechanical engineering.

Student Competitions and Team Awards



The Michigan Tech SAE Baja team earned a gold at the Baja SAE Rochester competition, held June 10-13 at the Rochester Institute of Technology, in New York. They finished first in the design portion of the Society of Automotive Engineers competition.



Both the men's and women's track and field teams were honored recently as All-Academic Teams by the US Track and Field and Cross Country Coaches Association. The women's team, with a 3.45 cumulative grade point average (GPA), tied for eighth in the nation and first in the Great Lakes Intercollegiate Athletic Conference. The men's team finished second-best in the GLIAC with a 3.06 cumulative GPA.



According to the Women's Basketball Coaches Association, the Michigan Tech's 2009-10 women's basketball team finished with the nation's top grade point average with an average of 3.732.

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Thanks to all our corporate partners for continued enthusiastic support of Capstone!

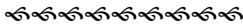
A great group of design projects was kicked off this fall: 25 projects have ME student involvement, 20 projects based in MEEM, 12 teams made up of multiple engineering disciplines.

A non-scientific study while attending the career fair this fall revealed a vast majority of recruiters specifically asking for students who have been part of Capstone projects. The importance students place upon their project work, and the need for an engineering team to optimally focus their collective efforts, make it irreplaceable in experiential terms. These are truly engineers upon graduation!



Faculty & Student Invention Disclosures

Dr. William Endres (associate professor, ME-EM) has received a patent for "Cutting Tool Insert Having Internal Microduct for Coolant". This is the 3rd US patent he has been issued in the last year and a half with another one pending.



Dr. John Gershenson (professor, ME-EM) and a Student Senior Design team

have filed an invention disclosure, "Next Generation Chamois Design - Velovations Enterprise".



Dr. John Hill (assistant professor, ME-EM) and **Jonathan Salzman** (graduate student, ME-EM) have filed an invention disclosure, "Magnetically activated rumble strip".

Dr. Dennis Desheng Meng (assistant professor, ME-EM) has filed an invention disclosure, "A self-adaptive thermal switch array to stabilize the temperature of MEMS devices".



Dr. Dennis Desheng Meng has filed an invention disclosure, "Microfluidic fabrication of self-healing microfibers".

Faculty/Staff Awards & Accomplishments

Dr. John H. Johnson has been appointed chair of the National Academies committee created to review phase two of the 21st Century Truck Partnership Program, which is a cooperative effort of the Department of Energy, the Department of Transportation, the Environmental Protection Agency and the Department of Defense. Launched in 2000, the program's mission is to explore technological improvements in commercial and military trucks and buses.



Under the leadership of **Dr. L. Brad King** (associate professor, ME-EM) the ME-EM Department is a leadership partner with the University of Michigan of the Michigan/Air Force Center of Excellence in Electric Propulsion (MACEEP). The University of Michigan is the lead university. The other partners are: Colorado State, Penn State, UCLA, the University of Washington (UW) and MSNW/UW. It is a 5 year program with an FY10 start. It is funded at \$6M by the the Air Force, with total university matching funds of \$744k. Michigan Tech's portion is \$1.04 M. AFRL in collaboration with AFOSR will focus aca-

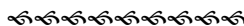
ademic investments in four thrust areas of fundamental research: High-Power Plasma Propulsion, Electrospray Propulsion Development, Time-Resolved Plasma Diagnostics, Modeling and Simulation.



The November issue of Circle Track magazine highlights the work on internal combustion by **Jeffrey D. Naber** (associate professor, ME-EM) and his research team. **Jeremy Worm** (research engineer, ME-EM) is quoted extensively in the story, "The Secret Is in the Burn."



Dr. Fernando Ponta (assistant professor, ME-EM) has received a 2010 NSF CAREER Award. The National Science Foundation award is a prestigious award in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations.



Dr. William W. Predebon (professor and ME-EM Department Chair) received the Michigan Tech Alumni Association's Honorary Alumni Award on August 7th, 2010. The award recognizes individuals who have provided service and support to the University characteristic of dedicated alum. The Association reserves this award to recognize the strongest non-alumni supporters.



Dr. Sheryl Sorby (professor, ME-EM) was quoted in the article "Closing the Gender Gap" in the July 2010 issue of Civil Engineering. Read the article at: http://civil-engineering.asce.org/wps/portals/ce/c0/04_SB8K8xLLM9MSSzPy8xBz9CP0os3iLkCAPEzcPIwP_Acc3AyMXF4sQk6AQY_cAE_11_ShznPIhhvohIBMz9SPNLA2MQcxi_UgDEF0AFNIvyE5MqkqNVAQATSSyDQ!!/



Arthur Weaver (Professor Emeritus, ME-EM) was awarded the Michigan Tech Huskies Club Ken Hamar Award which honors "true supporters" of Michigan Tech athletics.

Current Contracts and Grants



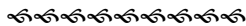
Bo Chen (PI, ME-EM) and **Jeffrey D. Naber** (Co-PI, ME-EM); "Engine Studies and On-Site Visiting Researcher - Phase II"; sponsor: Nostrum Energy, Incorporated; total award amount: \$26,444.



Bo Chen (PI, ME-EM); "EAGER: Multi-Agent Network Control for Adaptive Sensing and Monitoring in Wireless Sensor Networks"; sponsor: National Science Foundation; total award amount: \$112,986.

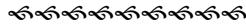


Chang-Kyoung Choi (PI, ME-EM); "Microfluidic-Based Dynamic Cell Culture System: Do Shear Flow Rates and Flow Patterns Provide Better Paracrine Signal Environments?"; sponsor: REF - State of MI; total award amount: \$15,500.

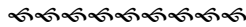


John K. Gershenson (PI, ME-EM);

"Velovations Enterprise: Brake Power Meter"; sponsor: SRAM Corporation; total award amount: \$7,261.



Tammy L. Haut Donahue (Co-PI, ME-EM); "Design of Nanosphere Drug Delivery for Disuse Model"; sponsor: University of Michigan - Michigan Space Grant Consortium; total award amount: \$5,000.



John D. Hill (PI, ME-EM); "Establishing Virtual Transportation Research at Michigan Tech"; sponsor: REF - State of MI; total award amount: \$10,848.



John D. Hill (PI, ME-EM); "Integrating Clarus Weather Station Data and State Crash Data into a Travel Decision Support Tool"; sponsor: Federal Highway Administration; total award amount: \$84,541.



Scott A. Miers (PI, ME-EM) and Jason Blough (Co-PI, ME-EM); "Impact of E15 Fuel on Snowmobile Engine Durability and Vehicle Driveability"; sponsor: Alliance for Sustainable Energy, LLC; total award amount: \$403,128.

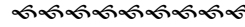


Michele H. Miller (PI, ME-EM); "Michigan Tech SSEED: Sustained Support to Ensure Engineering Degrees"; sponsor: National Science Foundation; total award amount: \$622,144.



Jeffrey D. Naber (PI, ME-EM), **Jeffrey S. Allen** (Co-PI, ME-EM), **Jeremy J. Worm** (research engineer, ME-EM), and **Karthik Krishna** (graduate stu-

dent, ME-EM); "Development of a Combined Heat and Pwer Research Test Bed"; sponsor: REF - State of MI; total award amount: \$34,000.



Jeffrey D. Naber (PI, ME-EM), **Jeffrey S. Allen** (Co-PI, ME-EM) and **Charles H. Margraves** (Co-PI, ME-EM); "State Energy Sector Program Advanced Energy Storage (SESP AES) Professional Development"; sponsor: Macomb/ St. Clair Workforce Development Board, Incorporated; total award amount: \$309,600.



Amitabh Narain (PI, ME-EM); "Flow Prediction and Fluctuation-Sensitivity Investigations for Quasi-Steady Shear Driven Condensing Flows in Milli-Meter to Micro-Meter Scale Two Phase Systems"; sponsor: National Science Foundation; total award amount: \$297,288.



Fernando L. Ponta (PI, ME-EM); "CAREER: Dynamics of Fluid-Structure -Control Interaction in Rotating Aerodynamic Bodies"; sponsor: National Science Foundation; total award amount: \$548,111.



Sheryl A. Sorby (PI, ME-EM) and **Tammy L. Haut Donahue**; "Research in Engineering Self-Efficacy of Minority Students"; sponsor: National Science Foundation; total award amount: \$400,652.

