



Department of Mechanical Engineering
Fall/Winter 2019

A Message from the Department Head



This has been another exciting year for mechanical engineering at SD Mines. Our family has grown! We've added two new faculty members and two new staff persons this year: Drs. Micah Lande and Peter McKeon, Mrs. Brittany Brzozowski, and Mr. Vasilii Tseptsura. We welcome Dr. Micah Lande (Ph.D., Mechanical Engineering, Stanford University) as an assistant professor and the E.R. Stensaas Chair. Before joining SD Mines, he was a faculty member at Arizona State University. His research expertise is in human-centered engineering design, design thinking, and design innovation courses. Dr. Lande researches how technical and non-technical people learn and apply design thinking and making processes to their work. Dr. Peter McKeon (Ph.D., Mechanical Engineering, Georgia Tech) joins us as a lecturer. His area of expertise focuses on waves in solids and fluids, and control theory. Most recently, he served as a lecturer for Georgia Tech at their campus in Lorraine, France. Mrs. Brittany Brzozowski recently joined us as a part-time secretary. She brings to the department office staff support, her expansive skills, and a positive attitude. Mr. Vasilii Tseptsura comes to us from Western Dakota Tech, and he provides his can-do attitude and extensive machine shop skills in support of our project-based learning curriculum and research projects.

Our students continue to amaze us with their accomplishments and honors. Nevertheless, our alumni and industry partners have been sending us the message that in order for many of our B.S. Hardrocker mechanical engineering graduates to reach their full career potentials, they should be pursuing post graduate education. We've heard that message, and we're taking action. As you may know, our bachelor's graduates are extremely well-prepared to excel in their careers. Nevertheless, many opportunities aren't open to them unless they possess an advanced degree. We are establishing scholarships to support our

master's and doctoral degree students. These scholarships will enable both SD Mines mechanical engineering undergraduates and others to pursue their advanced degrees in our graduate programs. If this is a cause that you would like to support, then please consider donating. If you are interested, I have some exciting news! One of our alumni has pledged a match: "1 for 2" of each dollar donated toward ME graduate student scholarships (up to \$20k). For example, a donation of \$1,000 gets matched with \$500 and becomes a total gift of \$1,500 to the scholarship fund. Regrettably, the cost of higher education in our nation is continually increasing. SD Mines remains a great bargain for a top-notch mechanical engineering education, and these scholarship dollars will enable many more Hardrockers to stay at SD Mines to obtain the graduate degree that they need to realize the fullest potential in their careers. To make a donation, please visit <https://foundation.sdsmt.edu/me-challenge>.

Finally, I would like to take this opportunity to wish everyone in your Hardrocker family a most joyous holiday season.

Dr. Pierre Larochelle, P.E.

Department Head, Department of Mechanical Engineering

Click here to see a list of our [graduated students](#) and new [research awards and publications](#) from the 2018-19 academic year.



[Brittany Brzozowski](#) joined the SD Mines Department of Mechanical Engineering in October 2019 as department secretary. Originally from Wisconsin, Brittany recently moved to the Black Hills area. When she is not cheering on the Packers or enjoying her favorite Wisco foods, you'll most likely find her wandering the hills in search of new hiking adventures. Brittany received her Bachelor of Science degree in Anthropology from University of Wisconsin – Oshkosh. Her most recent work experience ranges from bartending in local pubs to admin work for Wisconsin Spice to fish stocking, aquatic applications and mapping out ponds for Wisconsin Lake & Pond Resource. Prior to moving to the area, she served on the Board of Directors for the Winnebago Community Historical and Archaeological Society.



Micah Lande, Ph.D., joined the SD Mines Department of Mechanical Engineering in August 2019 as an assistant professor and the E.R. Stensaas Chair for Engineering Education. Dr. Lande directs the Holistic Engineering Lab & Observatory. He teaches human-centered engineering design, design thinking, and design innovation courses. Dr. Lande researches how technical and non-technical people learn and apply design thinking and making processes to their work. He is interested in the intersection of designerly epistemic identities and vocational pathways. Dr. Lande received his B.S. in Engineering (Product Design), M.A. in Education (Learning, Design and Technology), and Ph.D. in Mechanical Engineering (Design Education) from Stanford University.

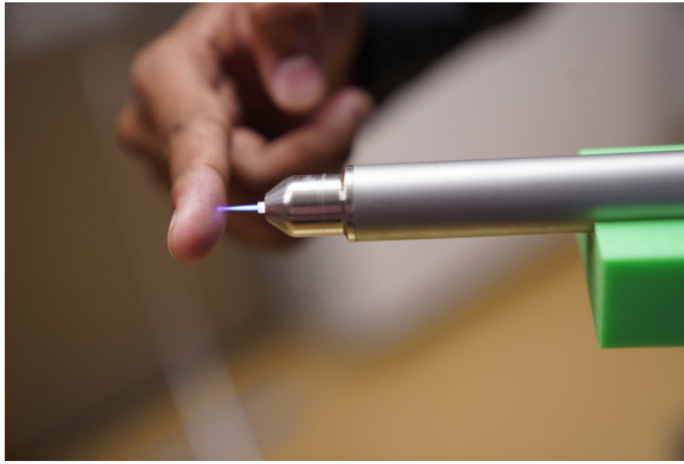


Peter McKeon, Ph.D., joined the SD Mines Department of Mechanical Engineering as a lecturer in January 2019. Prior to this appointment, he served as a lecture for Georgia Tech Lorraine from 2014-2017. Dr. McKeon received his Ph.D. in mechanical engineering from the Georgia Institute of Technology at the European campus in Metz, France. Prior to receiving his Ph.D., Dr. McKeon received his B.S. from the University of Pittsburgh, also in mechanical engineering.

Dr. McKeon's previous research focused mainly on the development of methodologies for the nondestructive evaluation and structural health assessment of multi-layered, anisotropic materials. In the future, he would like to expand his research interests to structural vibration in the frequency range of human perception, both in terms of comfort and audio quality.



Vasili Tseptsura joined the Department of Mechanical Engineering in June 2019 as an equipment technician. Originally from Orenburg, Russia, Vasili moved to Saratov at the age of 18 and worked in a glass factory packing and shipping safety glass. Two years ago, Vasili moved to the US and. In May 2019, he graduated from the Precision Machining Technology diploma program at Western Dakota Technical Institute. Vasili brings to the department his technical experience and education, his efficiency, and his outstanding support to our faculty, staff, and students.



ME assistant professor Dr. Prasoon Diwakar, along with CBEC assistant professor Dr. Timothy Brenza, are working with SD Mines students to further research utilizing cold plasma technology to target cancer cells. [Click here](#) to read more.

Additional articles on this research:

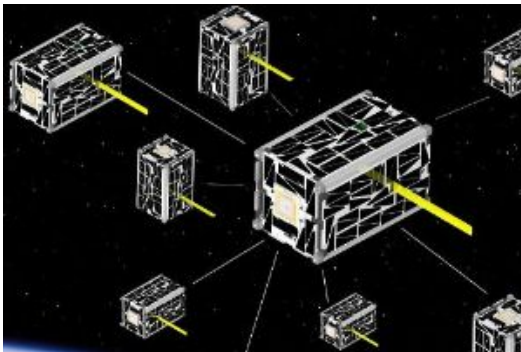
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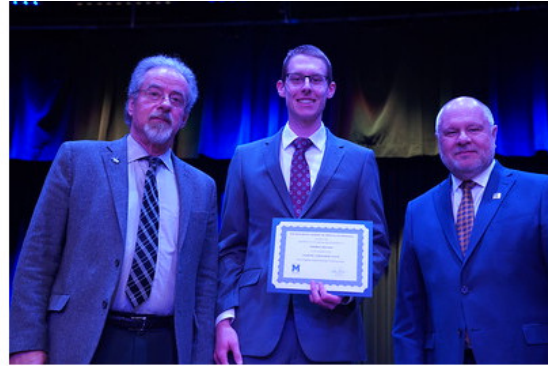


SD Mines ME assistant professor Dr. Hadi Fekrmandi is one of the faculty leading the CubeSat project with a focus on collaborations with NASA centers, SDSU, and private industry.

[Click here to read more.](#)

The 10th Annual Student Research Symposium was held on April 9, 2019, in which 106 undergraduate and graduate students participated. ME student Matthew Phillips won 3rd place in the Undergraduate Poster Presentation. Pictured is Matthew (center) with keynote speaker and astronaut Captain Winston Scott (left) and Dr. Jan Puszynski (right).





Congratulations to Daniel Boe (left) and Matthew Howard (right), who both received the Academic Achievement award at the 2019 Honors Convocation. The award goes to students who maintain a 4.0 GPA with at least 100 credits earned. Pictured are the recipients with Provost Demetris Kouris (left) and President Jim Rankin (right).



ASME Student Leaders toured L3Harris Technologies in Salt Lake City, UT, with advisor Dr. Jason Ash (ME 99). Many thanks to Mark Bsharah (EE 83), Margo Helms (ME 87), and Michael Cowan (CSC 12), along with Kelsey Jensen (HR) for the coordination of the visit. Pictured left to right are John Kiehn (ASME Treasurer), Paige Ling (ASME Chair), and Samuel Ryckman (ASME Vice-Chair).



ASME 2019 Student Leadership Training Conference in Salt Lake City, UT, with ASME Student Leaders (Paige Ling, Samuel Ryckman, and John Kiehn).



Seeing new students wearing freshman beanies has been a long-held tradition at SD Mines. [Click here](#) to read more about the history of these green and yellow beanies.



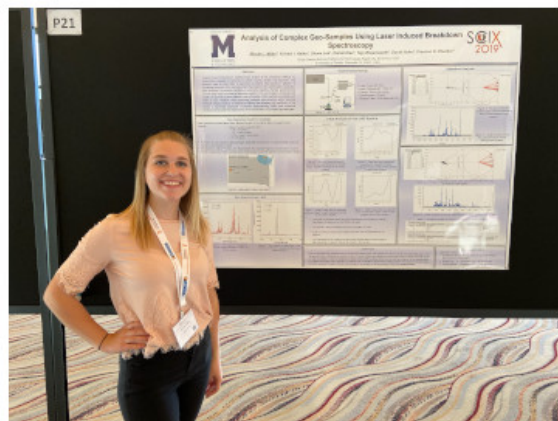
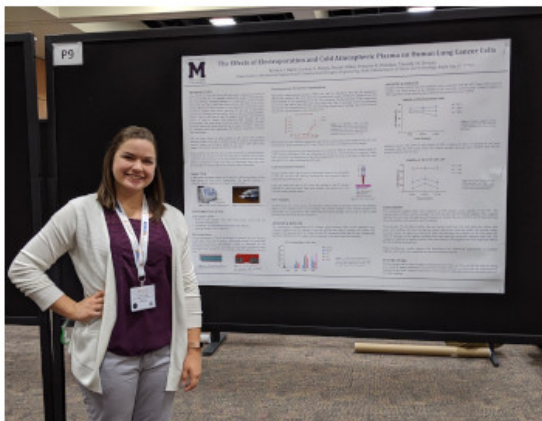
Mechanical engineering students John and Phillip Hillard were selected to participate in the [2019 Legislative Poster Session](#) on February 28, 2019 in the South Dakota State Capitol. Their poster titled "Electric Paramotor" highlighted the research and work involved in designing and constructing a paramotor running on electric power. Chosen from five entries submitted at SD Mines, John and Phil's poster was one of 10 on display at the state capitol for the event.



Mike Fontaine has been selected as this year's Outstanding Recent Mechanical Engineering Graduate. Mike graduated with his BSME in 2008, and his MSME in 2011. During his time at SD Mines, Mike served as a graduate research assistant in the Advanced Dynamics Lab. Currently a senior mechanical engineer at Fisher Controls, Mike researches and develops the company's next generation of servo mechanisms.



Congratulations to our 2018-19 Outstanding Mechanical Engineering Seniors!
Daniel Boe, Samuel Ryckman, and Christina Taylor



ME undergrad students Kristen Haller (left) and Nicole Miller (right) were recipients of a travel grant from the Society for Applied Spectroscopy to attend the SciX 2019 conference in Palm Springs, CA. Selected nationally, 5-6 students receive this annual award. Haller and Miller attended the conference and presented posters detailing their work with SD Mines ME assistant professor Dr. Prasoon Diwakar on cold plasma technology.



Mechanical engineering master's student Carter Barkley is the recipient of the Joseph Nelson Fellowship. Chosen from a pool of campus-wide graduate students, the selection was based on evidence of scholarly excellence and demonstrated leadership qualities.



The multidisciplinary SD Mines VEX U Robotics team has been active in their outreach activities. After their volunteer work at the Douglas VEX Robotics Tournament, the team was awarded the Volunteer of the Year Award by Douglas High School. Receiving the award with high honors, the team had spent the semester mentoring the high school's VEX team. Pictured above is the team after receiving the award.



The SD Mines VEX U Robotics team also received the Community Award at the VEX Robotics World Championship- VEX U Division in April 2019. A notable accomplishment, the VEX organization selects ten teams for this award per division at the elite level.

The SD Mines VEX U Robotics team has received outstanding support this year. We thank the following for their donations to the team: Jason Boeding and Douglas High School, Gary Stevens, Caterpillar Inc., Andy Pattyantus, and Lance Weaver. The team looks forward to an exciting and competitive spring, sending two teams to regional qualification tournaments and anticipating to participate in the World Championship Tournament in Louisville, KY.



ALUMNI HIGHLIGHT

Wade Morris (ME 97) served as the lead mechanical design engineer and program manager for a recent, major renovation to the Space Needle in Seattle, Washington. Named “The Century Project,” this renovation took place in Summer 2018 and consisted of adding floor-to-ceiling glass to the observation deck and the restaurant. Wade and his team at Fives Lund, LLC designed and built all the mechanisms for the glass frames, rolling supports, and drive mechanisms, and Wade is the PE on record with the City of Seattle for the revolving glass floor portion of the project. Pictured left is Wade servicing one of the drive motors under the glass floor.

[Click here](#) to read more about this project.



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