



SOUTH DAKOTA MINES

An engineering, science and technology university

Department of Mechanical Engineering

Fall/Winter 2020

A Message from the Department Head



This has been another exciting year for mechanical engineering at South Dakota Mines. Our family continues to grow! We are delighted to welcome Dr. Weibing Xing as our newest faculty member. Dr. Xing is the holder of the Larry and Linda Pearson Chair in Mechanical Engineering. The technical focus of the Pearson Chair is in renewable energy. Dr. Xing conducts research in electrochemical energy storage including primary lithium batteries, rechargeable Li-ion batteries, next-gen Li-ion batteries (Li metal anode, all-solid-state), beyond-Li-ion battery chemistries (Li-S, Li-air), and supercapacitors (symmetric, asymmetric). His research interests include fundamental material-level study (electrodes, electrolytes, separators) and integrated system cell-level investigation/optimization. He is in the process of establishing a new Energy Storage Laboratory for research and to support the new courses he is introducing. The first one will be offered in Spring 2021 as a senior year elective and is entitled *Introduction to Battery Storage and Energy Storage*. Before joining South Dakota Mines, he was a research scientist at ADA Technologies in Littleton, Colorado. At ADA, he served as the Principle Investigator for multiple government-funded projects for electrochemical energy storage materials and devices: primary and secondary batteries, and supercapacitors.

Our students and faculty continue to amaze us with their accomplishments and awards. You'll read about many of these activities and related honors in the following pages. Nevertheless, our alumni and industry partners have been sending us the message that in order for many of our B.S. Hardrock 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. Through a successful fundraising campaign last year, we have been able to establish a new Mechanical Engineering Doctoral Fellowship Program. This program provides \$25,000 fellowships for the 1st two years of doctoral studies: \$15k in Year #1 and \$10k in Year #2. The fellowships are available to graduate students after they have completed their master's degree at South Dakota Mines and are beginning their doctoral studies. M.S. students who wish to apply for a doctoral fellowship simply complete a brief application any time before commencing their doctoral degree studies.

Finally, I would like to take this opportunity to wish everyone in your Hardrocker family a most joyous holiday season. I sincerely wish that you and your loved ones remain safe and healthy throughout the COVID-19 pandemic.

Dr. Pierre Larochelle, P.E.

Department Head, Department of Mechanical Engineering

From generous donations of M.E. alumni and faculty throughout this last year, our fundraising campaign for graduate student support has been a huge success. With over \$115,000 in both donations and a 1-for-2 match from an anonymous benefactor, we are implementing the Mechanical Engineering Doctoral Fellowship Program.

We are continuing our fundraising efforts for this program and appreciate all support from our alumni, industrial partners, and friends of the department.

Donate Now

Click [here](#) to see a list of our [graduated students](#) and new [research awards and publications](#) from the 2019-20 academic year.



Faculty Addition



Weibing Xing, Ph.D., joined the South Dakota Mines Department of Mechanical Engineering in July 2020 as an associate professor and the Pearson Endowed Chair. Dr. Xing is developing and directs the Energy Storage Research Laboratory (ESRL) on the South Dakota Mines campus. A member of the Electrochemical Society, Dr. Xing's research focuses on electrochemical energy storage. Prior to joining South Dakota Mines, Dr. Xing was a research fellow at ADA Technologies, Inc. in Littleton, CO, for 9 years. Dr. Xing received his B.S. in Physics at Ningxia University. He attended Simon Fraser University where he received his M.S. in Applied Physics and his Ph.D.



Kiewit Corporation has long been a valuable partner of the mechanical engineering department. As a favorite career destination for our alumni, the South Dakota Mines family within Kiewit continues to grow. Kiewit has also offered input on curriculum development and provided financial support. Over the last year, Kiewit has increased their level of support by funding equipment used for the hands-on, project-based learning of the M.E. curriculum. With a total of \$22,000 for 2020, Kiewit's support is a major factor in the growth of the program. The bulk of the funds will go toward the purchase of a new vertical

machining center for our machine shop. This machine will significantly increase the capacity and capability of machining resources available to South Dakota Mines students. The M.E. machine shop is integral to several product development courses, but it also serves as a resource to the entire campus. CAMP and SEDS programs in particular are key partners to the M.E. machine shop and will benefit from equipment improvements. Kiewit's support is greatly appreciated by the M.E. department and the entire South Dakota Mines student body.



With generous donations from M.E. alumni and industrial partners, the Department of Mechanical Engineering has upgraded the furniture in the Civil/Mechanical building to create a more welcoming and productive environment for our students and visitors.

Recent and ongoing efforts have also been made to convert a section of our Integrated Lab into a new and different space called the Zoo (image below). This is a shared, multifunctional space for student group collaborations and projects. This is part of a larger effort to maximize space and efficiency for M.E. students on campus.



Faculty Highlight



Dr. Jason Ash, associate professor, was selected to receive the 2020 ASME Outstanding Student Section Advisor Award. This award recognizes an individual for their outstanding service and leadership qualities with at least three academic years experience in that role. Among many notable service achievements, Dr. Ash has served as the South Dakota Mines ASME Student Section advisor for the last 18 years and has been an invaluable member of the Department of Mechanical Engineering.

Congratulations to mechanical engineering professor, Dr. Karim Muci, and his co-authors Drs. Mark Bedillion, Cassandra Birrenkott, Marsha Lovett, and Clifford Whitecomb, for their paper "Incorporating Systems Thinking and Systems Engineering Concepts in a Freshman-Level Mechanical Engineering Course." This paper was selected as the ASEE Systems Engineering Division's (SED) Best Paper for the 2020 Conference. Their achievement was recognized during the virtual conference on June 25, 2020.



Under the guidance of M.E. assistant professor [Dr. Praseen Diwakar](#) and C.B.E. assistant professor [Dr. Timothy Brenza](#), cold plasma research has expanded on the South Dakota Mines campus. Read more about this research and the student research involvement [here](#).



Matt Schulte has been selected as this year's Outstanding Recent Mechanical Engineering Graduate. Matt graduated with his BSME in 2009. In December 2014, Matt graduated from UMKC--Henry W. Bloch School of Management with his MBA. He works at Burns & McDonnell as the section manager for Supplier Quality. Matt has served on the South Dakota Mines Department of Mechanical Engineering's Industrial Advisory Board since 2014 and has been active with the American Society of Mechanical Engineers (ASME). Matt spends much of his free time with his wife, Rachel, and their three boys, and he enjoys meeting and catching up with his fellow Hardrockers.

Carter Barkley, mechanical engineering M.S. student, was selected as the recipient of the 2020 Society of Experimental Mechanics' Gary Cloud Scholarship. This award recognizes students for their aspirations to pursue a graduate degree in experimental mechanics and pursue the advancement and improvement in the human condition.



The scholarship award includes reimbursement of all SEM Annual conference fees and travel expenses and a \$3,000 award with a framed certificate to be presented at the SEM Conference Luncheon and Awards Ceremonies. This year, alterations have been made to accommodate COVID restrictions.

Nicole Miller, a recent graduate of the B.S. program in mechanical engineering, has been selected as a recipient of the 2020 Society for Applied Spectroscopy (SAS) Undergraduate Student Award. Nicole was recognized at the virtually-held SciX 2020 conference that took place on October 12-15, 2020.

Nicole's undergraduate research in laser induced breakdown spectroscopy of complex mineral samples and the application of plasmas to cancer research earned her this award. The SAS Undergraduate Student Award is a national award that recognizes a junior or senior for outstanding research in spectroscopy.



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South Dakota Mines Center for Alumni Relations and
Advancement: <https://alumni.sdsmt.edu/connect/update-my-info>



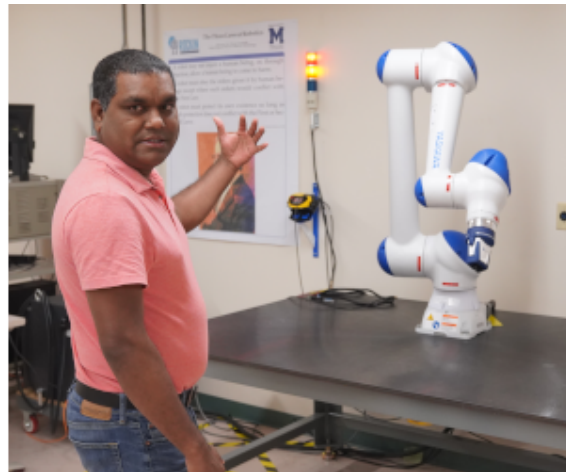
Congratulations to our 2019-20 Outstanding Mechanical Engineering Juniors!
Ryan Kappenman and Sommer Scott



Congratulations to our 2019-20 Outstanding Mechanical Engineering Seniors!
Joseph Allen and Samuel Ryckman



Congratulations to our 2019-20 Outstanding Graduate Student!
Daniel Boe



Congratulations to the recipients of the 2019-20 Outstanding Undergraduate and Graduate Student Service to the M.E. Department awards!

Paige Ling (undergraduate) and Subhasish Malik (graduate)

Paige Ling also received honorable mention for the American Society of Mechanical Engineers' 2020 Charles T. Main Student Section Leadership Award. The General Awards Committee of ASME is responsible for selecting recipients to receive this award by examining the leadership and service qualities of eligible undergraduate students.

ME at a Glance

95%

South Dakota Mines ME graduate placement rate

\$64,849

Average starting salary for AY 2019 BS ME graduates

85%

Internship rates for AY 2019-20 ME graduates

\$19.70/hour

Average internship or co-op salary

482

Undergraduate Students – 2020

18

Graduate Students – 2020

17

Full-time Faculty

95

BS ME graduates in AY 2019-20

1

MS ME graduate in AY 2019-20

1

PhD ME graduate in AY 2019-20

32

Total number of faculty publications in AY 2019-20

\$1.9M

Total amount of new research funding obtained in AY 2019-20



Faculty

Professors

Dr. Duane Abata
Dr. Pierre Larochelle (department head)
Dr. Demetris Kouris
Dr. Karim Muci

Associate Professors

Dr. Jason Ash
Dr. Cassandra Birrenkott
Dr. Albert Romkes
Dr. Khosro Shahbazi
Dr. Weibing Xing (Pearson Endowed Chair)

Assistant Professors

Dr. Nickolaus Bruno
Dr. Prasoon Diwakar
Dr. Hadi Fekrmandi
Dr. Micah Lande (E.R. Stensaas Chair for Engineering Education)

Instructor

Ardell Knudson

Lecturer

Dr. Aaron Lalley
Dr. Peter McKeon
Dr. Daniel Rederth

Research Scientist IV

Dr. Andrea Surovek

Staff

Brittany Brzozowski – Secretary
Leslee Moore – Program Assistant I
Vasilii Tseptsura – Machinist (Equipment Technician)

Spring 2020 Career Fair –
124 companies recruiting;
73 recruiting for ME students
Fall 2020 Career Fair –
136 companies recruiting;
87 recruiting for ME students

FOR MORE INFORMATION

Contact

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