



## EXPECTATIONS OF INCOMING STUDENTS

Applicants must meet the minimum South Dakota Mines graduate education requirements. In addition, they will be evaluated against the following criteria:

- A baccalaureate degree in mechanical engineering or a closely-related field;
- An undergraduate grade point average of 3.0 or greater;
- Scores on the GRE;
- And, for those applicants whose native language is not English, their TOEFL score.



## GRADUATION REQUIREMENTS

Students entering the program must submit a program of study and choose a major professor by mid-term of the second semester. Students pursuing the research focused thesis option will also be required to form a graduate committee to guide and evaluate their research.

Graduation with an ME MS requires 30 credit hours beyond the BS degree. For more information, visit [sdsmt.edu/GraduateEducation/](http://sdsmt.edu/GraduateEducation/).



## GRADUATE RESEARCH ASSISTANTSHIPS

Funding opportunities, in the form of both teaching and research assistantships, are available for exceptional students.



### ABOUT RAPID CITY

South Dakota's second-largest city (pop. over 70,000) offers a quality of life you will love, with restaurants, entertainment outlets and shopping in Historic Downtown. Just 20 minutes from Mount Rushmore and the Black Hills, Rapid City is a perfect location for students interested in enjoying the outdoors.

### ABOUT THE BLACK HILLS

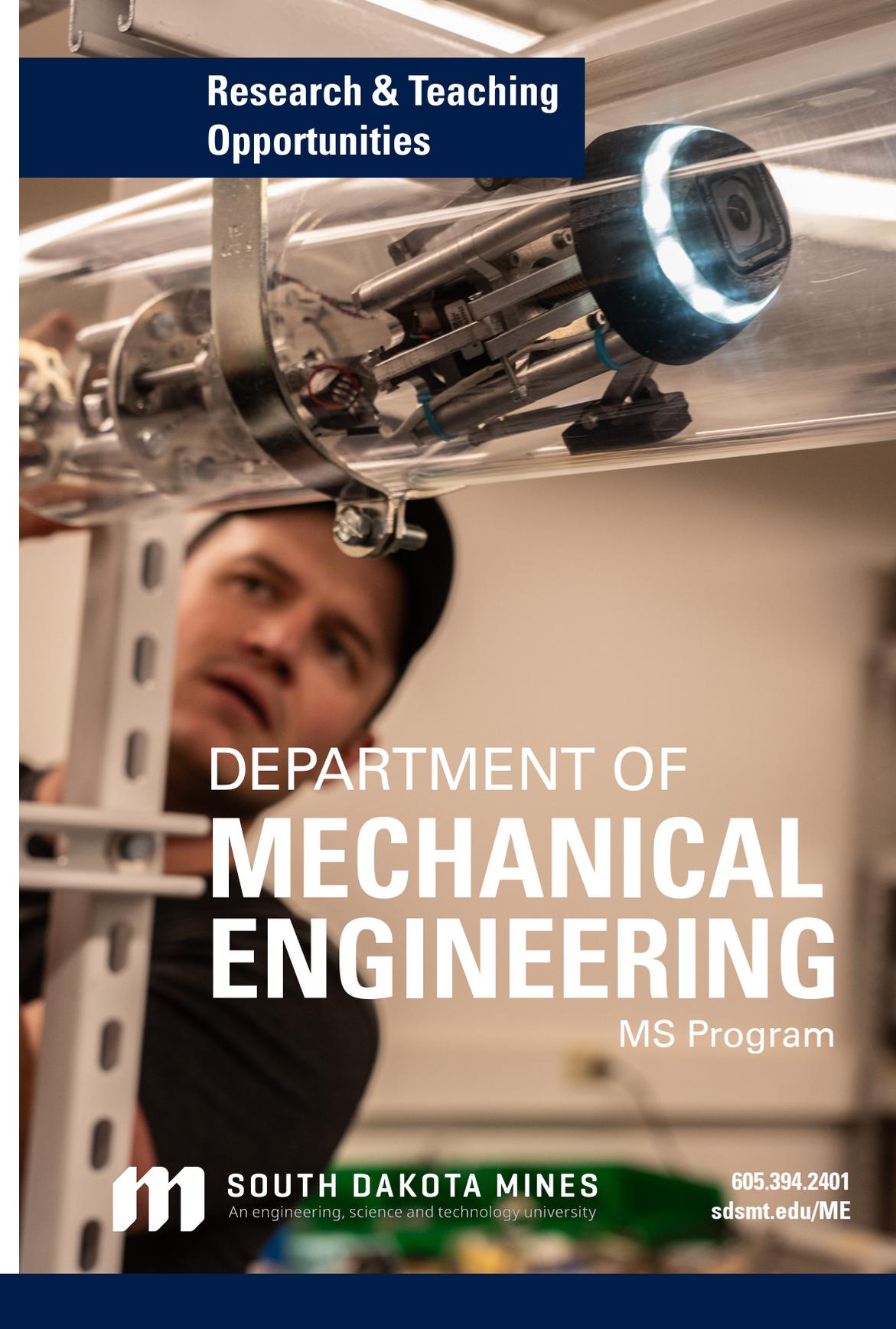
The name "Black Hills" is a translation of the Lakota Pahá Sápa or "hills that are black." One of the most historic and beautiful places in the country, the million-plus acre Black Hills National Forest and surrounding area feature Mount Rushmore, Crazy Horse Memorial, caves, canyons, wildlife, and other natural attractions. You can enjoy snowboarding, hiking, rock climbing, kayaking, mountain biking, fishing and more.

### CONTACT

605.394.2401  
[Mechanical.Engineering@sdsmt.edu](mailto:Mechanical.Engineering@sdsmt.edu)

### APPLICATIONS

[sdsmt.edu/GraduateEducation/](http://sdsmt.edu/GraduateEducation/)



## Research & Teaching Opportunities

# DEPARTMENT OF MECHANICAL ENGINEERING

MS Program



**SOUTH DAKOTA MINES**  
 An engineering, science and technology university

605.394.2401  
[sdsmt.edu/ME](http://sdsmt.edu/ME)

## ME MS PROGRAM

The mechanical engineering (ME) MS program at South Dakota School of Mines and Technology allows students to reach the highest level of academic achievement. The mission of the mechanical engineering graduate program is to provide students with advanced learning in the areas of thermo-fluid sciences, mechanical systems, or manufacturing/controls. The primary goals of the program are to develop the scholastic ability, independent creativity, and professional competence of the student to a higher level than is possible in an undergraduate program. Graduates have the knowledge and skills to make a difference by leading teams to solve the problems that challenge our world. Students will have a chance to work with faculty involved in research at the forefront of their fields and to publish in acclaimed journals. Students undertaking education in the MS in ME program are expected to:

- expand their knowledge and understanding of methods and approaches to advancing knowledge in the basic areas of mechanical engineering
- formulate solutions to problems related to thermo-fluid sciences, mechanical systems, or manufacturing/controls
- be able to conduct basic or applied research and development in mechanical engineering
- become an engineer who will serve their profession and community as valuable contributing leaders

## TWO DEGREE PATHS: Research & Courses or Courses Only

The MS ME degree may be pursued in one of two degree paths: thesis (involving courses and research) or non-thesis (involving courses only). Each of these paths requires 30 credits of graduate coursework. The thesis path requires 6 credits of thesis research coursework, the preparation of a masters thesis, and the successful defense of the research to the student's graduate committee. The non-thesis option requires 30 credits of graduate coursework, which may include 3 or more credits of graduate project work. The 30 credits include the required core course ME 673 Applied Engineering Analysis I.



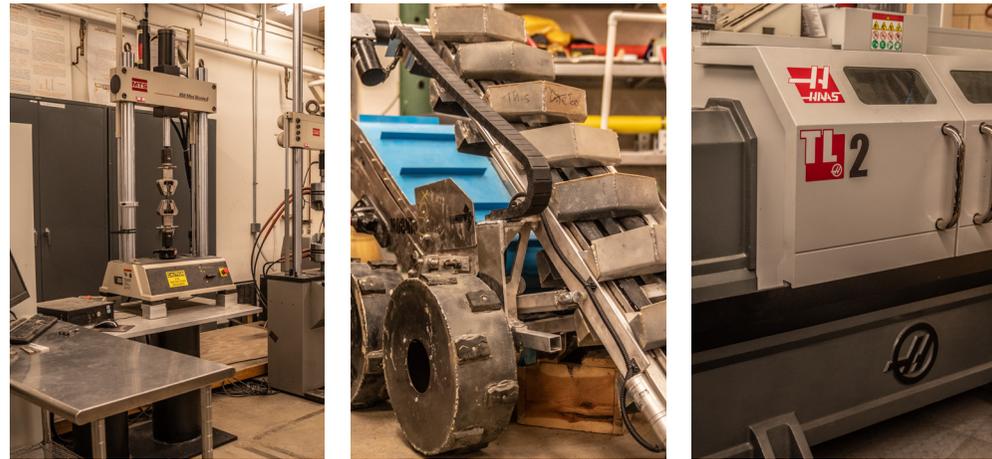
## Why choose the Department of Mechanical Engineering's MS program at South Dakota Mines?

*I chose to pursue the Department of Mechanical Engineering's MS program based on my undergraduate experience at South Dakota Mines. I got to know many professors very well and knew that they would be an excellent source of knowledge and support throughout my MS degree. The professors at Mines truly care about their students and invest the time and energy needed for students to thrive.*

**Kaytie Barkley, ME MS student**

*Continuing my education at SD Mines was an easy choice for me. Through the accelerated master's program, I was able to take 12 credits of graduate-level work as a senior; this is an excellent program as it allows for undergraduates to get a taste of upper-level classes and develop a feel for what is involved in obtaining a master's degree while simultaneously earning credit for both the B.S. and M.S. degrees. Because of this opportunity, I have significant flexibility with my class, research, and workloads as I transition into the M.S. program full-time.*

Daniel Boe, ME MS student



## What career paths have opened up for you due to your MS studies?

*I have had many opportunities to further my career path because of my MS degree. While working on my degree, I was encouraged by my advisors to apply to several fellowships – one of which resulted in receiving a research grant with NASA. Furthermore, the company I accepted a position with advanced me to a tier 2 engineering position rather than an entry level position. This jump started my career significantly after taking only 2 years to complete my MS degree.*

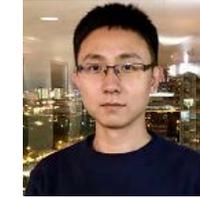
**Kaytie Barkley, ME MS student**

## FACULTY

The faculty members in the Department of Mechanical Engineering at South Dakota Mines are dedicated to providing the highest quality academic guidance. Below are current ME faculty members associated with the MS program.



**Dr. Pierre Larochelle**  
experimental/  
theoretical robotics  
Department Head



**Dr. Xuanhong An**  
flow control



**Dr. Jason Ash**  
experimental solid  
mechanics



**Dr. Cassandra Birrenkott**  
solid mechanics of  
polymers



**Dr. Praseon Diwakar**  
plasma physics and  
aerosol measurements



**Dr. Joseph John  
Thalakkottor**  
features at limits of  
continuum field theory



**Dr. Aaron Lalley**  
advanced manufacturing  
and VMC machining



**Dr. Micah Lande**  
design education,  
design thinking,  
engineering education



**Dr. Peter McKeon**  
structural health  
monitoring



**Dr. Daniel Rederth**  
magnetic quantum  
physics



**Dr. Albert Romkes**  
numerical solid  
mechanics and finite  
element methods



**Dr. Khosro Shahbazi**  
computational fluid  
dynamics and  
compressible/two-  
phase flows



**Dr. Weibing Xing**  
electrochemical  
energy storage