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 will also be required to form a graduate committee to evaluate individual student progress through the qualifying and comprehensive exams, and the dissertation defense process.

Graduation with an ME PhD requires 72 credit hours beyond the BS degree. Those entering with an appropriate master's degree may obtain credit for work done toward that degree. For more information, visit 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

APPLICATIONS

sdsmt.edu/GraduateEducation/

SOUTH DAKOTA MINES

DEPARTMENT OF
MECHANICAL ENGINEERING
PhD Program

605.394.2401
sdsmt.edu/ME

SOUTH DAKOTA MINES
An engineering, science and technology university

ME PHD PROGRAM

The mechanical engineering (ME) PhD program at South Dakota School of Mines and Technology allows students to reach the highest level of academic achievement. In addition to teaching in academia, program graduates can pursue careers at research centers in national laboratories and research & development (R&D) centers in automotive, aerospace, oil, and gas. Students will have a chance to work with faculty involved in research at the forefront of their fields and to publish in acclaimed journals. They will conduct experimental/numerical/theoretical research in one of three areas - thermo-fluid sciences, solid mechanics & materials science, and robotics & controls. The program emphasizes flexibility, breadth, and depth: flexibility for the student and his/her doctoral committee to make choices; breadth across disciplines within and outside of mechanical engineering; and depth in one or more sub-disciplines. Graduates of the program will have demonstrated:

a) an ability to contribute new ideas, knowledge, applications, developments, and/or insights in an area of mechanical engineering;

b) a sufficient breadth of knowledge in their chosen areas within and outside of mechanical engineering;

c) an ability to formulate, and bring to meaningful completion, a research project.

NUMEROUS OPPORTUNITIES

The ME Graduate Studies and Research Program focuses on three primary areas of scientific research in mechanical engineering and engineering mechanics: fluid dynamics & thermal science, solid mechanics & material science, and robotics & controls. The research activities of the ME faculty involve both computational and experimental efforts across several departmental laboratories, including the Advanced Intelligent Mechatronics Systems (AIMS) lab; Center of Excellence for Advanced Manufacturing and Production (CAMP); Experimental and Computational Mechanics Laboratory (ECML); Fluids, Thermodynamics, and Heat Transfer lab; Joining and Mechanics of Polymers (JMP) lab; Laboratory of Engineered Multifunctional Materials and Alloys (LEMMA); Powerful high-performance computing cluster; and Robotics and Computational Kinematics Innovation (ROCKIN) Lab.

Strong research collaborations exist among these laboratories as well as campus-wide research centers, such as:

• Additive Manufacturing Laboratory (AML)

• Arbegast Materials Processing and Joining (AMP) lab

• Center for Security Printing and Anti-Counterfeiting Technology (SPACT)

• Composites and Polymer Engineering (CAPE) lab

• Surface Engineering Research Center (SERC)

PHD STUDENT TESTIMONIALS

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

I chose South Dakota Mines because of research opportunities with Dr. Albert Romkes, who is well known in his field of study. My undergraduate experience was stellar at South Dakota Mines, and I found a well-established professor along the way who believed in my skills and work ethic enough to take me on as a PhD student. This led to a fantastic graduate experience with reputable studies.

Austin Kaul, PhD student

"Mechanical engineering at SD Mines has a wonderful, academic atmosphere, which supports diverse teams in finding creative new approaches to existing problems in the world. From coursework, to classmates, to the resources, to the facilities, to the research opportunities, to the professors, it is unparalleled. The best part is the abundant research opportunities available through the SD Mines Department of Mechanical Engineering. Highly accomplished professors and a wide variety of advanced and interesting classes, distinct school cultures, and tight knit communities prepare you well for any future career."

Subhasish Malik, PhD student

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

My whole goal in obtaining a PhD is to eventually become a professor. A PhD is a requirement upon entry for most collegiate teaching positions. Also, gaining copious amounts of knowledge in the mechanical engineering field has vastly improved my odds of obtaining an engineering job in any field or company I desire. It has let me become a subject matter expert in almost anything I choose to pursue and has served me well thus far.

Austin Kaul, PhD student

"My PhD studies here have led me to seek a career in academia. At the same time, I'm sure a career in industry would have been an option that could have easily been pursued with my experience from the ME department."

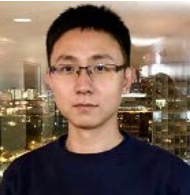Eirik Valseth, PhD candidate

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 PhD 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. Prasoon 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

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