DEPARTMENT OF MINING ENGINEERING AND MANAGEMENT

MASTER OF SCIENCE STUDENT HANDBOOK

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY

SEPTEMBER 2021

MINING ENGINEERING AND MANAGEMENT FACULTY AND STAFF

Department Administration

Robert Hall Professor	Department Head, Mining Equipment and Automation	MI 235B
Cindy Hise	Senior Secretary	MI 235
Thomas Leonard	Computer Support Specialist	MI 120C

Mining Engineering Faculty

Ivy Allard Senior Lecturer	Management, Finance, Economics, Human Resources, International Business, Mediation/Negotiation, Mining Law, Project Management, Reputation Management,	MI 233A
Mark Bowron Lecturer	Mineral Economics and Finance, Resource Industry Mergers and Acquisitions	MI 233B
Andrea Brickey Associate Professor	Mine Planning, Surface and Underground Mine Design, Mine Systems Optimization.	MI 231
Michael Schlumpberger Instructor	Supply Chain Management, Operations, and Maintenance in the Global Mining Industry	MI235
Kelli McCormick Senior Lecturer	Mineral Exploration and Geostatistics, Mineralogy and Petrology, Ore Deposits, Mine Health and Safety, Computer Applications	MI 235A
Purushotham Tukkaraja Associate Professor	Ventilation, Materials Handling and Transportation, Rock Fragmentation	MI 229

Emeritus Faculty

Charles Kliche Emeritus Professor	Slope Stability and Blasting

ADMISSION REQUIREMENTS

- Completed graduate application form.
- $35 application fee.
- One official transcript of prior academic work, sent directly to SD Mines by the issuing institution, showing the undergraduate degree awarded.
- The TOEFL exam is required for students whose native language is not English.
- The Graduate Record Examination (GRE) is required for all applicants. The GRE requirement will be waived for the students who have significant industrial experience or for the students who have obtained their BS at SD Mines.
- Three recommendation letters.
- Preferably a GPA of 3.0 or above and GRE scores greater than the 50%.

PROGRAM REQUIREMENTS

Program requirements

Incoming M.S. students must choose one of the three offered Specializations. Links to detailed core courses and electives for each specialization are listed here under Mining Engineering and Management Programs.

Minerals Industry Management

The Minerals Industry Management Specialization was designed for those employed within the Mining (Minerals) Industry who are currently working in administrative departments, moving into management positions, and those who will move into management positions that desire additional and specific education.

Mining Industry Applications

The Mining Industry Applications Specialization was designed for those employed within the Mining (Minerals) Industry who are currently working in a variety of mining departments on or off a mine site, and for those employed in associated industries. This Specialization allows a Mining (Minerals) Industry employee who has a BS degree to further their education in the mining industry where they can add to their experience with a degree from a top-rated engineering school.

Mining Engineering

The Mining Engineering Specialization provides advanced level mining and other engineering courses to engineering professionals in the United States and around the world. It was designed for those employed within the Mining (Minerals) Industry who are currently working in a variety of departments on or off a mine site. Entry to this Specialization is available to students who have earned a BS or MS in Mining Engineering, and to those from Engineering degrees other than Mining Engineering. Applicants with an Engineering degree must have taken or complete leveling classes in Calculus I, II, and III, Differential Equations, General Chemistry I, Statics and Dynamics, Fluid Mechanics, General Physics I and II, Mechanics of Materials

GENERAL INFORMATION

Faculty Advisor

For students wishing to pursue a thesis, a faculty member must be identified as your advisor who will become your major professor. This faculty member will work with you upon your arrival to the program and assist in course registration and defining the area of interest upon which to focus your program. During the 1st semester enrolled in the graduate program, the major professor should be confirmed, and a full advisory committee selected.

For non-thesis students (both distance and on-campus), a faculty advisor will be assigned to you based on the track you wish to pursue. This advisor will be identified in your acceptance letter.

Non-thesis MS students must email the Graduate Education office to declare the non-thesis option. Thesis MS students must complete a Program of Study (POS) that outlines previous course credits incoming to the program and all courses and research credits (if applicable) that are to be completed as part of the graduate program. The full committee and Department Head must sign the POS.

Course Registration

Registering for courses is done through the Self-Service Banner system. Banner is accessible via the SD Mines website. A username and password accessing SD Mines email and various platforms will be provided to you upon acceptance into the MS program. Course offerings for the upcoming semester, along with at least one additional semester, can be viewed and course registration completed in the system. The course prefix for Mining Engineering and Management courses is MEM. Please contact the Graduate Coordinator, your advisor, or the Office of the Registrar for any assistance.

Distance Students

The MS Program in the Department of Mining Engineering and Management can be completed without coming onto the SD Mines campus. All graduate-level courses are offered either fully on-line or mixed (on-line and on-campus). Instructors in the program use a number of different distance learning technologies to deliver their courses to those students who are not on-campus. Each course has a separate "internet/on-line" section for which distance students should register. Once the semester begins, the Instructor will communicate via email regarding how the course will be delivered. The delivery options include: (1) real-time video feed through Zoom, Blackboard Collaborate or Adobe Connect system where distance students can interact with the Instructor (2) recorded videos of lectures or lecture material that are uploaded to a central website immediately after the course is delivered on-campus, or (3) through the Desire to Learn (D2L) on-line course management system where reading materials are posted, and discussion boards are held. It is important that distance students check their SD Mines email frequently as this will serve as one of the primary communication methods between the Instructor and student and will also be used to provide links to access the various course delivery systems. The D2L course system will also be used regularly to deliver and manage course content (see below for more information about D2L).

Permission of Instructor Form

When registering for courses using Self-Service Banner, the system may require verification that prerequisite courses have been satisfied before you will be able to register for the course. In many of these cases, a Permission of Instructor form must be completed and signed by both the Instructor of the course and the Department Head for the department offering the course. The `Permission of Instructor` form can be found on the SD Mines website https://www.sdsmt.edu/Academics/Registrar/Forms/.

Accessing Course Materials

Course materials can be accessed using the (D2L) on-line course management system. A username and password for the D2L system will be provided to you upon acceptance into the MS program. The course syllabus, handouts, homework, exams, and other materials will be posted by the Instructor to the appropriate course folder in D2L. Students can also submit homework, reports, and exams through D2L. If the Instructor is using a video system to record lectures, those lectures can be accessed either through D2L or through a website link provided by the Instructor. At the beginning of each semester, the Instructor will email you and will provide instructions regarding how to access the course materials.

Key Information

Outside door access, lab keys, and office keys for the Mineral Industries (MI) Building and the Mining Engineering and Management (MEM) Department are available upon request and approval from the Department Head. The Department Secretary will prepare the key request form. You must have a student ID to pick up keys from Facility Services. All keys must be returned to Facility Services and the proper return key form signed prior to graduation.

OTHER GRADUATE STUDENT INFORMATION

1. It is the graduate student's responsibility to comply with all university requirements in the SD Mines Catalog, as well as departmental requirements in this handbook and the department website.

2. All graduate students must maintain a 3.0/4.0 GPA. If the graduate student fails to achieve a 3.0 GPA, he/she will be placed on probationary status. Students placed on probation must achieve a semester GPA higher than 3.0 in the immediately subsequent semester. If the cumulative GPA remains less than 3.0 after the probationary semester, the student must petition the departmental faculty for continuation of probationary status for one more semester. If, at the end of this extended semester of probation, the cumulative GPA is greater than 3.0, the student will be reinstated as a graduate student in good standing. If at the end of the extended semester the cumulative GPA remains less than 3.0, further enrollment in the graduate program will be denied. Students on probation may not hold a GTA or GRA position. Please refer to the SD Mines Catalog for more information.

3. Degree-seeking graduate students must be registered on a continuing basis during each fall and spring semester of the regular academic year. Failure to maintain continuing registration

will result in deactivation of the graduate student's program. Leave of absences are available for students that need to interrupt their graduate studies for personal or professional reasons, for a period up to one calendar year. Please refer to the SD Mines Catalog for more information.

4. Each graduate student seeking to complete a thesis is required to organize meetings with his/her graduate advisory committee at specified intervals as established by department policy. The purpose of these meetings will be to ensure coursework and research topics are being adequately advanced according to the POS and to gage progress within the program.

GUIDELINES FOR GRADUATE TEACHING ASSISTANTS

Many of the GTA positions within the department will require the GTA to oversee a laboratory section for a course. This will require working with the faculty member responsible for the course and lab to ensure the correct and proper materials are used and discussed in the lab sessions. SD Mines uses the web-based program Desire to Learn, or D2L. Every student enrolled has a D2L account and if the faculty utilizes this service, there will be a course D2L page. This is useful to post lab materials and to communicate with the students in the lab. Feedback and other means of student contact can be made with D2L. In general, the duties for a GTA include

- Meet for every scheduled lab, be punctual, and be there for the entire lab period.
- Prepare all photocopies, handouts, quizzes, exams, etc., prior to the course meeting time. The copier code is available from the Department Secretary.
- Many of the labs include one or more field trips and GTAs typically serve as drivers for these excursions.
    - Have necessary paperwork completed to be able to drive State vehicles. Your supervisor must initiate through DocuSign both the volunteer form and the fleet check out form (Under My SD MINES, PowerForms).
- A half-time GTA corresponds to 10 hours of work per week, while a full-time GTA is equal to 20 hours per week. As part of the load, the faculty member in charge of the course may ask you to assist with grading in the lecture class.
- All instructors, whether faculty or graduate students, are required to be familiar with and abide by all FERPA regulations protecting student privacy. A brief set of FERPA guidelines is included at the end of this document.

ADDITIONAL REQUIREMENTS FOR THESIS-SEEKING STUDENTS

MS Thesis Committee

1. All MS thesis committees must have a minimum of three full-time SD Mines faculty members. Required faculty members on the committee include the major professor, another faculty member from the MEM Department, and a Graduate Division Representative from outside the department. One additional faculty member or industry person having expertise in the student's research topic is desirable. Refer to the Graduate Education Policies in the SD Mines Catalog for additional information about who may serve on graduate committees and who can be the major professor.

2. Emeritus and part-time faculty may be voting members of thesis committees but may not serve as the major professor. In situations where Emeritus and part-time faculty serve on a thesis committee, the committee shall consist of one additional full-time departmental faculty member. A minimum of three faculty members from the SD Mines campus is required, or when there are more than five members, a majority must be from SD Mines.

Thesis Proposal Defense

1. A thesis proposal must be submitted to the thesis committee within one year of starting the M.S. program for full time students and upon completion of no more than 18 credits for part time students. The completed proposal requirement must be reported to the Graduate Office using the Masters Exam-Masters Proposal Reporting Form.

2. Thesis-seeking students must present the thesis proposal to their thesis committee. In addition, all faculty and graduate students within the department will be invited to attend. This presentation provides an opportunity for the student to receive feedback and for the thesis committee to confirm the direction of the research.

3. At the conclusion of the thesis proposal defense, the thesis committee will provide one of two recommendations: (1) pass, the student will be allowed to continue with the research, or (2) fail, the student must immediately meet with the thesis committee to either implement a new research plan or to switch to the non-thesis track. By the end of the next semester, the student must prepare a new thesis proposal and must successfully defend this proposal before proceeding with the project and conducting a final defense.

Thesis Research

1. All graduate students registered for thesis research credits will be required to perform the research activities outlined by the major professor and thesis committee. In addition, to receive a satisfactory grade for the thesis research, all students are encouraged to complete one of the following each academic year they are enrolled in research credits:

    - Present research in the form of a poster or oral presentation at an approved academic conference. These include:
        - Professional society meetings
        - Industry-sponsored meetings
        - State or local scientific conferences
    - Publish or submit a manuscript in a scholarly journal.
    - Submit a research proposal to a funding agency.
    - Successfully complete the proposal presentation.
    - Defend your thesis/dissertation.

2. A satisfactory grade for thesis credits each semester will require the student to participate in one of the required activities listed above. Each student's major professor will make the **final decision as to meeting these requirements**.

3. All graduate students are encouraged to attend other students' research proposal defenses for understanding of the process and completing adjustments to your own defense.

Thesis Drafts and Final Defense

1. The Graduate School maintains deadlines for final submission of thesis defense results. These are typically at the end of each semester. However, to facilitate faculty feedback on the thesis and to allow adequate time for these changes to be made and reviewed by the MS thesis committee, all theses must be defended at least four (4) weeks prior to the deadlines established by the Graduate School.

2. It is the responsibility of the major advisor to assure that the thesis is of sufficient quality before it is forwarded to the committee. At least two weeks prior to the defense, all theses must be made available for examination by all department faculty.

3. An Examination Schedule Request form must be completed by the student, signed by the committee, and submitted to the Office of Graduate Education no less than five working days before the scheduled time of the defense. The title and abstract of the thesis must be emailed to the Office of Graduate Education at the same time the Examination Schedule Request form is submitted. This is the responsibility of the student.

OTHER IMPORTANT INFORMATION

1. MEM faculty expect graduate students to maintain the following:
   - Be professional – Act professionally and speak in a professional fashion. Consider all fellow students as work colleagues, and treat them, faculty, and undergraduates with courtesy and respect at all times. Homework and lab assignments should be completed in as professional a manner as possible.
   - Learn – Do not just pass exams, know the subject. Ask questions during class and spend time on your own learning more about the subject.
   - Consult literature regularly – Use the journals and books in the Library. The Library also has many online resources, and each student should be familiar with these. Professional organizations, such as the Society for Mining, Metallurgy and Exploration, also have large digital libraries that are accessible with membership in the organization.
   - Attend seminars – They will be posted in the MI Building and announced via email. Students are encouraged to attend seminars given by other departments as well.
   - Participate in professional organizations – National and regional chapters of the Society for Mining, Metallurgy and Exploration (SME) and the International Society of Explosives Engineers (ISEE); along with student chapters of SME, ISEE, Mine Rescue, or other organizations appropriate for your specialty. Many memberships for students are free or significantly reduced, so take advantage of this and begin to interact with other members at local, regional, and national meetings.
   - Participate in field trips when they are offered.
   - Attend professional meetings in your specialty. Thesis-seeking graduate students should submit abstracts on their research and prepare and present either a poster, journal paper or conference paper including an oral presentation at the conference.
   - Apply for financial assistance from professional societies as well as those available within the department. These funds may be used to offset field and meeting travel expenses.

2. Awarding of GTA and GRA:
    - The MEM Department awards GTAs to qualified thesis students that are needed to support instructional activities of the department.
    - GRA support is provided by the major advisor pending project funding.

3. Subsequent semester registration – This should occur as early in a semester as possible. Within the first two weeks of the fall term, registration for spring term should occur. In the first two weeks of the spring term, registration for the following fall term should occur. This becomes most effective after the POS has been completed.

4. Jobs – The bulletin board on the second floor of the MI Building outside the MEM Department office will have job announcements posted. Plan to attend the Career Fairs in the fall and spring. Visit company websites to apply for internships and full-time jobs.

5. Participation in external training opportunities such as those provided by software companies, consultants, equipment or instrumentation manufacturers, etc. are encouraged. Many of these opportunities are free of charge for students.

6. Primary source of advising is your major advisor. If specialized advice is needed from other faculty, be conscientious of faculty time.

FERPA

Family Educational Rights and Privacy Act of 1974

What does it do? Protects a student from the indiscriminate collection, maintenance, disclosure and release of personal information—especially information about status, academic performance, and grades.

Who is covered? Any student now or previously enrolled at the School of Mines whether student attended via distance education or as a student participating in a coop, internship, field camp, etc.

How can scores or grades be posted to protect the student's right to privacy? A method that uses a code that *completely disguises* identity—NOT social security numbers or student ID numbers. Hardcopies of tests, quizzes, homework, etc. cannot be returned in any manner that gives students knowledge of other students' performance. *Under no circumstances is performance information to be shared with more than one student via email, texts, or social media.*

Can I cite or refer to Directory information? At the School of Mines "directory information" includes the following: student's name; grade level or academic status (undergraduate, graduate or professional school); graduation date; diploma or degree; major field of study; and dates of attendance. This data can be disclosed unless a student has evoked privacy (see below)

> Check Colleague to see if the student has an "E" (for privacy EVOKED) in the "privacy field" of the BIO screen. You can also check the privacy column in the "student list" sent out by RAS or just remember that any line entirely in RED PRINT means that the student has evoked privacy.

What access do parents or guardians have to education records? Records are released only under the following circumstances: 1) student signs consent form, 2) to comply with a court subpoena, 3) if the parent or guardian proves the student is a dependent by providing a current Federal Income Tax return and requests access to records. "Releasing records" includes discussing a student's performance on the phone, in person, or via any media.

What about FERPA and student workers? Student workers are held to the same standards as university employees. Make sure any student worker understands FERPA basics and signs a form (available online and through RAS) to indicate understanding and acceptance of FERPA protections.

For more information about FERPA, visit: U.S. Department of Education Protecting Student Privacy