

General Information

Graduate Catalog

Beginning in Fall 2024, the undergraduate catalog will incorporate course-level learning outcomes. While the learning outcomes presented in this edition of the catalog may be outdated, they will be revised and ensured for accuracy in subsequent updates.

Graduate Student Profile

Mines graduate students identify and address grand challenges of the twenty-first century using innovative applications of sound scientific and engineering principles. They act as contributors and leaders of multidisciplinary teams to deliver impactful results for the betterment of society.

Mines graduate students are skilled in the acquisition, interpretation, and analysis of data as well as communication of information to diverse audiences. They exemplify ethical behavior including academic and professional integrity, respect for diversity of all types, and recognition of the value of living and working in an interdependent world.

Institutional Values and Principles

Graduate Education

Colorado School of Mines has been powering industry, Colorado and the future since 1874. Our STEM-focused education and research produce the talent, knowledge and solutions to serve industry and benefit society – all to create a more prosperous future. It's the mission Mines was founded on 150 years ago and where we continue to excel today. We're a community of innovative leaders and resilient problem-solvers who revel in challenges and work together in order to engineer solutions on Earth and beyond.

Mines is a world-renowned institution that continually enhances its leadership in education and research to serve and advance industry, government agencies and communities around the world. By maximizing its top-ranked academic programs, close industry connections, cutting-edge research and a global alumni network, Mines is the go-to place for distinction and expertise in both established and emerging engineering and scientific fields.

Mines seeks to instill in all graduate students a broad class of developmental and educational attributes that are guided by a set of institutionally vetted educational objectives and student learning outcomes. For doctoral, master's and certificate programs, these are summarized below.

Doctoral Programs

Institutional Educational Objectives:

1. Advance the state of the art of their discipline (integrating existing knowledge and creating new knowledge) by conducting independent research that addresses relevant disciplinary issues and by disseminating their research results to appropriate target audiences.
2. Be scholars and international leaders who exhibit the highest standards of integrity.
3. Advance in their professions and assume leadership positions in industry, government, and academia.

Institutional Student Outcomes:

1. Demonstration of exemplary disciplinary expertise.
2. Demonstration of a set of skills and attitudes usually associated with our understanding of what it is to be an academic scholar (e.g., intellectual curiosity, intellectual integrity, intellectual independence, ability to think critically and argue persuasively, ability to direct, conduct, interpret, and disseminate research, a passion for lifelong learning, etc.).
3. Demonstration of a set of professional skills (e.g., oral and written communication, time-management, project planning, teaching, teamwork and team leadership, cross-cultural and diversity awareness, etc.) necessary to succeed in a student's chosen career path.

Master's Programs

Colorado School of Mines offers a wide variety of master's-level degree programs that include thesis and non-thesis Master of Science programs, Master of Engineering programs and professional master's programs. While the objectives and outcomes provided below document expectations of all master's-level programs, it is expected that, given the diversity of program types, different programs will emphasize some objectives and outcomes more than others.

Institutional Educational Objectives:

Master's graduates will

1. Contribute to the advancement of their chosen fields through adopting, applying and evaluating state-of-the-art practices.
2. Be viewed within their organizations as technologically advanced and abreast of the latest scholarship.
3. Exhibit the highest standards of integrity in applying scholarship.
4. Advance in their professions.

Institutional Student Outcomes:

Demonstration of

1. Exemplary disciplinary expertise.
2. The ability to conduct and direct research, the ability to assimilate and assess scholarship, and the ability to apply scholarship in new, creative and productive ways.
3. Professional skills (e.g., oral and written communication, time management, project planning, teamwork and team leadership, cross-cultural and diversity awareness, ethics, etc.) necessary to succeed in a student's chosen career path.

Certificate Programs

Colorado School of Mines offers a variety of certificate programs. While the objectives and outcomes provided below document expectations of all certificate programs, it is expected that given the diversity of program types, different programs will emphasize some objectives and outcomes more than others.

Institutional Educational Objectives:

Recipients will

1. Contribute to the advancement of their chosen fields through adopting, applying and evaluating state-of-the-art practices.

2. Be viewed within their organizations as technologically advanced and abreast of the latest developments in the field.
3. Exhibit the highest standards of integrity in applying their background to problems.
4. Advance in their professions.

Institutional Student Outcomes:

1. Demonstration of exemplary disciplinary expertise.

Research

The creation and dissemination of new knowledge are the primary responsibilities of all members of the university community and fundamental to the educational and societal missions of the institution. Public institutions have an additional responsibility to use that knowledge to contribute to the economic growth and public welfare of the society from which they receive their charter and support. As a public institution of higher education, a fundamental responsibility of Mines is to provide an environment that enables contribution to the public good by encouraging creative research and ensuring the free exchange of ideas, information, and results. To this end, the institution acknowledges the following responsibilities:

- To ensure that these activities are conducted in an environment of minimum influence and bias, it is essential that Mines protects the academic freedom of all members of its community.
- To provide the mechanisms for creation and dissemination of knowledge, the institution recognizes that access to information and information technology (e.g., library, computing, and internet resources) are part of the basic infrastructure support to which every member of the community is entitled.
- To promote the utilization and application of knowledge, it is incumbent upon Mines to define and protect the intellectual-property rights and responsibilities of faculty members, students, and staff as well as the institution.
- To ensure integration of research activities into its basic educational mission, its research policies and practices conform to the state non-competition law requiring all research projects have an educational component through the involvement of students and/or postdoctoral fellows.

Intellectual Property

The creation and dissemination of knowledge are the primary responsibilities of all members of the university community. As an institution of higher education, a fundamental mission of Mines is to provide an environment that motivates the faculty and promotes the creation, dissemination, and application of knowledge through the timely and free exchange of ideas, information, and research results for the public good. To ensure that these activities are conducted in an environment of minimum influence and bias, so as to benefit society and the people of Colorado, it is essential that Mines protects the academic freedom of all members of its community. It is incumbent upon Mines to help promote the utilization and application of knowledge by defining and protecting the rights and responsibilities of faculty members, students, and the institution, with respect to intellectual property which may be created while an individual is employed as a faculty member or enrolled as a student.

History of Colorado School of Mines

In 1865, only six years after gold and silver were discovered in the Colorado Territory, the fledgling mining industry was in trouble. The

nuggets had been picked out of streams and the rich veins had been worked, and new methods of exploration, mining, and recovery were needed.

Visionaries like W.A.H. Loveland, E.L. Berthoud, Arthur Lakes, George West and Episcopal Bishop George M. Randall proposed a school of mines. In 1874, the Territorial Legislature appropriated \$5,000 and commissioned Loveland and a Board of Trustees to found the Territorial School of Mines in or near Golden. Governor Routt signed the bill on February 9, 1874, and when Colorado became a state in 1876, Colorado School of Mines was constitutionally established. The first diploma was awarded in 1883.

As Mines grew, its mission expanded from the rather narrow initial focus on nonfuel minerals to programs in petroleum production and refining as well. New interdisciplinary initiatives focused on advanced manufacturing, underground construction and tunneling, nuclear science, earth science policy, aerospace systems, and data analytics are expanding Mines expertise and educational opportunities. Mines sees its mission as education and research in engineering and applied science with a special focus on the earth science disciplines in the context of responsible stewardship of the earth and its resources.

Mines long has had an international reputation. Students have come from nearly every nation, and alumni can be found in every corner of the globe.

Location

Golden, Colorado, has always been the home of Mines. Located in the foothills of the Rocky Mountains 20 minutes west of Denver, this community of 15,000 also serves as home to the Coors Brewing Company, the National Renewable Energy Laboratory, and a major U.S. Geological Survey facility that also contains the National Earthquake Information Center. The seat of government for Jefferson County, Golden once served as the territorial capital of Colorado. Skiing is an hour away to the west.

Administration

By state statute, the school is managed by a seven-member board of trustees appointed by the governor, and the student and faculty bodies elect one nonvoting board member each. The school is supported financially by student tuition and fees and by the State through annual appropriations. These funds are augmented by government and privately sponsored research, private gift support from alumni, corporations, foundations and other friends.

Colorado School of Mines Non-Discrimination Statement

In compliance with federal law, including the provisions of Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendment of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, the ADA Amendments Act of 2008, Executive Order 11246, the Uniformed Services Employment and Reemployment Rights Act, as amended, the Genetic Information Nondiscrimination Act of 2008, and Board of Trustees Policy 10.6, Colorado School of Mines does not discriminate against individuals on the basis of age, sex, sexual orientation, gender identity, gender expression, race, religion, ethnicity, national origin, disability, military service, or genetic information in its administration of educational policies, programs, or activities, admissions policies, scholarship and

loan programs, athletic or other school-administered programs, or employment.

Inquiries, concerns, or complaints should be directed by subject content as follows:

The EO, ADA Coordinator, and Section 504 Coordinator for employment:

Craig Hess, Director of Employee Relations
Human Resources Office
1500 Illinois Street
Golden, Colorado 80401
303-273-3390

The ADA Coordinator and the Section 504 Coordinator for students and academic educational programs:

Marla Draper, Director of Disability Support Services
1225 17th Street
Golden, Colorado 80401
303-273-3297
disabilitysupport@mines.edu

Title IX Complaints and Student Discrimination Complaints:

Carole Goddard, Title IX Coordinator
Golden, Colorado 80401
303-273-3206
titleix@mines.edu (kschmalz@mines.edu)

The ADA Facilities Access Coordinator:

Sam Crispin, Director of Facilities Management
1318 Maple Street
Golden, Colorado 80401
303-273-3330