Colorado School of Mines

HLC Assurance Argument

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Core Assurance Argument Preparation Team:

Barbara Moskal (Chair)
Thomas Boyd (Associate Provost, Dean of Graduate Studies)
Tricia Douthit (Director of Institutional Research)
Derek Morgan (Associate Dean of Students)
Vicki Nichol (Director of Business Operations)
John Spear (Associate Vice President of Research and Technology Transfer)

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1 - Mission

The institution's mission is clear and articulated publicly; it guides the institution's operations.

Argument

The Colorado School of Mines (Mines) Mission statement is defined as part of the Colorado Revised Statutes, Section 23-41-105, available here. This Mission is discussed in greater detail in the sections that follow, is restated in both the Undergraduate Bulletin and Graduate Bulletin, and reads as follows:

The Colorado School of Mines shall be a specialized baccalaureate and graduate research institution with high admission standards. The Colorado School of Mines shall have a unique mission in energy, mineral, and materials science and engineering and associated engineering and science fields. The school shall be the primary institution of higher education offering energy, mineral and materials science and mineral engineering degrees at both the graduate and undergraduate levels.

Sources

- Graduate Bulletin 2012-2013
- Graduate Bulletin 2012-2013 (page number 2)
- Undergraduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013 (page number 3)
- Colorado Legal Resources

1.A - Core Component 1.A

The institution's mission is broadly understood within the institution and guides its operations.

1. The mission statement is developed through a process suited to the nature and culture of the institution and is adopted by the governing board.
2. The institution's academic programs, student support services, and enrollment profile are consistent with its stated mission.
3. The institution's planning and budgeting priorities align with and support the mission. (This sub-component may be addressed by reference to the response to Criterion 5.C.1.)

Argument

1. The mission statement is developed through a process suited to the nature and culture of the institution and adopted by the governing board.

As discussed in the previous section and mentioned in both the Undergraduate Bulletin and Graduate Bulletin, the role and mission of Mines is defined by the State legislature and as such is codified in State Statute. In addition to the formal statement on the role and mission of Mines, however, the Board of Trustees elaborated upon Mines' statutory mission in 2000, stating that:

Colorado School of Mines is dedicated to educating students and professionals in the applied sciences, engineering, and associated fields related to the discovery and recovery of the Earth's resources, their conversion to materials and energy, their utilization in advanced processes and products, and the economic and social systems necessary to ensure their prudent and provident use in a sustainable global society.

This mission will be achieved by the creation, integration, and exchange of knowledge in engineering, the natural sciences, the social sciences, the humanities, business and their union to create processes and products to enhance the quality of life of the world's inhabitants.

The Colorado School of Mines is consequently committed to serving the people of Colorado, the nation, and the global community by promoting stewardship of the Earth upon which all life and development depend.

In summary, the role and mission of Mines is consistent with its culture through its original development at a State level and its refinement by the Mines Board of Trustees.

2. The institution's academic programs, student support services, and enrollment profile are consistent with its stated mission.

Academic Programs: Prior to courses being offered at Mines, the State of Colorado through the Colorado Commission of Higher Education, reviews all proposed degree programs for consistency with Mines' statutory role and mission. Mines offers both undergraduate (Bachelor of Science) and graduate degrees (Masters and Doctoral) consistent with its *unique mission in energy, mineral, and materials science and engineering and associated engineering and science fields* and consistent with it being *a specialized baccalaureate and graduate research institution with high admission standards.*

Student Support Services: Students, both undergraduate and graduate, regardless of degree program are provided with numerous support services that are available free of charge to all enrolled students. These services are provided to support students' social, emotional and academic needs, while maintaining a focus on the Mines basic mission as

the *primary institution of higher education offering energy, mineral and materials science and mineral engineering degrees at both the graduate and undergraduate levels*. Samplings of these include the following:

- Admissions advising and counseling is available through the Undergraduate Admissions Office and the Graduate Admissions Office.
- Housing and dining support is available through the Office of Residence Life.
- Freshman-year success education is supported through the required course CSM101.
- Academic Services provides tutoring, academic workshops, coaching and mentoring.
- Personal, academic and career counseling is provided through the Mines Counseling Center.
- A Student Health Center provides basic health care services.
- Writing support services are available through the Mines' Writing Center.
- Study abroad advising and counseling is offered through the Office of International Programs.
- A faculty staffed Readmissions Committee which is defined in the Faculty Bylaws works with students in academic peril.
- Student activities organized through the Office of Student Activities.
- Numerous other support services and activities organized and managed through the Office of Student Life.
- Career counseling, career workshops and employment opportunities organized through the Career Center.

Enrollment Profile: For the fall 2012 semester, overall enrollment statistics are available as part of the Fall 2012 Census Enrollment Report. Based on its current Carnegie Classifications, Mines enrollment profile is consistent with the role and mission articulated above and as described here.

As measured within the State of Colorado, admission into an undergraduate degree program at Mines is consistent with the mission requirement of "high admission standards". Undergraduate admissions at Mines are the most highly selective of any state institution in the State of Colorado. Admissions requirements are codified by the State via an "index" score. The "index" has two components: 1) high school performance (GPA and/or class rank) and standardized test scores. The minimum "index" for admissions at Mines is 110 (Mines is allowed to provide a limited set of exceptions to this requirement). For comparison, the State required index at the University of Colorado Boulder is 103 and at Colorado State University it is 101.

As is indicated and supported in the previous sections, Mines academic programs, student support services, and enrollment profile are consistent with its stated mission.

3. The institution's planning and budgeting priorities align with and support the mission

Revenue is diversified with tuition, state, auxiliary and restricted funds contributing to campus functions. Restricted funds include revenue from research—federal, state, local, and private as well as private giving—scholarships, endowed chairs, etc. Mines' open communication concerning the state of our budget is maintained through a State of Mines Budget open website. The Board of Trustees also maintains a website with the Trustees approved budget for each fiscal year. The Trustee's approved budget narrative and summary for 2012-2013 is included here.

When submitting budget requests, campus constituents are required to demonstrate how the requests correlate with the institution's strategic goals (i.e. funding for a new initiative) or demonstrate a critical need. In other words, all new funding requests are reviewed for consistency with the Mines Strategic Plan. A university-wide Budget Committee, whose role and composition is defined in Section 12.3 in the Faculty Handbook, is responsible for gathering and analyzing appropriate data regarding the School's budget, preparing the School's annual budget, revising it as necessary, and advising the administration on budgetary matters and long-range fiscal planning. The committee is chaired by the Senior Vice President for Finance and Administration.

Financial management by Mines follows strict adherence to Mines fiscal policies. Financial status reports are part of each Board of Trustees meeting agenda, ensuring consistency with our mission and institutional priorities. The Board includes a Finance and Audit Committee that provides detailed review and oversight of the institution's

financial position. Five-year financial projections are provided to the committee on an annual basis to analyze the long-term impact of financial decisions and ensure future funding for the core mission and strategic goals.

Sources

- Mines-CarnegieClassifications
- Fall2012EnrollmentReport
- Academic Faculty Bylaws
- Academic Faculty Bylaws (page number 12)
- FY13 All Funds Budget
- FY13 Budget Narrative
- CSMstrategic_plan04
- Complete_Handbook
- Graduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013
- Graduate Bulletin 2012-2013 (page number 2)
- Undergraduate Bulletin 2012-2013 (page number 3)
- CSM 101
- FY13_Budget_Development_Template
- http-careers-mines-edup
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- http-counseling-mines-edu-counseling-htmlp
- http-hennebach-mines-edu-writing-center-mission-statementp
- http-inside-mines-edu-budget-informationp
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- http-miper-mines-edu-student-lifep
- http-oip-mines-edup
- http-recsports-mines-edu-student-health-centerp
- http-residence-life-mines-edu-student-lifep
- http-www-mines-edu-graduate-admissionsp
- http-www-mines-edu-undergraduate-admissionsp
- Enrollment Profile

1.B - Core Component 1.B

The mission is articulated publicly.

1. The institution clearly articulates its mission through one or more public documents, such as statements of purpose, vision, values, goals, plans, or institutional priorities.
2. The mission document or documents are current and explain the extent of the institution's emphasis on the various aspects of its mission, such as instruction, scholarship, research, application of research, creative works, clinical service, public service, economic development, and religious or cultural purpose.
3. The mission document or documents identify the nature, scope, and intended constituents of the higher education programs and services the institution provides.

Argument

1. The institution clearly articulates its mission through one or more public documents, such as statements of purpose, vision, values, goals, plans or institutional priorities.

Publicly available statements of mission: The following is a sampling of publicly available statements of the Mines' mission and/or the Board of Trustees elaboration on this mission.

- State Statute
- School of Mines Website
- Undergraduate Bulletin and Graduate Bulletin

Strategic Planning: A variety of documents relate to planning for the institution are publically available. A sampling of these includes the following.

- Strategic Plan: 2004-2014, available through the Mines Website and through the Alumni Magazine
- Campus Master Plan

Educational Vision, Values and Goals: At the undergraduate level, the Profile of a Mines Graduate which is available through the Undergraduate Bulletin further delineates the institutional vision of its graduates, as described here.

At the graduate level, the Graduate Bulletin articulates a set of institutional educational objectives and student learning outcomes for all graduate degrees. All doctoral programs are to meet the attached Institutional Educational Objectives and Institutional Student Outcomes.

All masters programs are to meet the attached Institutional Educational Objectives and Institutional Student Outcomes. These objectives and outcomes were vetted with the academic community at Mines in the fall of 2012.

Research and Technology Transfer Vision, Values and Goals: Mines articulates the vision, values and goals for its research activities through a variety of publicly available resources. As defined on the Mines website,

Our research spans many highly relevant areas with a specific focus on energy and environmental stewardship. Our first-rate facilities and partnerships with industry, national laboratories, other universities, funding agencies and international institutions enable us to maintain our cutting edge research and have a significant impact on real world problems. Research is a cooperative effort in the Mines community.

A sampling of materials publicly available which define the vision, values and goals of research efforts undertaken by Mines faculty include the following.

- Research at Mines Website
- Research Magazine

2. The mission document or documents are current and explain the extent of the institution's emphasis on the various aspects of its mission, such as instruction, scholarship, research, application of research, creative works, clinical service, public service, economic development and religious or cultural purpose.

Undergraduate Bulletins and Graduate Bulletins are updated annually to reflect changes in programs, program requirements and policy changes. A listing of these annual bulletins is available here. Materials posted to the Mines homepage are reviewed and updated as needed under the coordination of the Office of Public Relations and Marketing. Academic departments and programs update curricular requirements through an annual process, part of which includes the review and updating of department specific resources. Links to the various academic programs are available here. Administrative offices (e.g., Finance and Operations, Admissions, Office of Graduate Studies) regularly review existing materials and update as needed. Links to administrative webpages are available here.

The materials described here are current and directly describe how various components of the campus programs support the Mines' mission. This connection is described in greater detail in the sections that follow.

3. The mission document or documents identify the nature, scope and intended constituents of higher education programs and services the institution provides.

The Mines homepage provides an introduction to Mines, its programs and services to the general public and to potential applicants. This page directly links to Admissions, Academics, and Research, with additional links tailored by audience for Prospective Students, Parents, Alumni and Corporate Partners.

Educational Activities: The Undergraduate Bulletin and Graduate Bulletin provide detailed descriptions of all degree programs offered at Mines. In addition, these documents provide detailed descriptions of the services that are available to students.

The nature and scope of undergraduate education is defined in the Undergraduate Bulletin as follows.

We strive to fulfill this educational mission through our undergraduate curriculum and in an environment of commitment and partnership among students and faculty. The commitment is directed at learning, academic success and professional growth, it is achieved through persistent intellectual study and discourse, and it is enabled by professional courtesy, responsibility and conduct. The partnership invokes expectations for both students and faculty. Students should expect access to high quality faculty and to appropriate academic guidance and counseling; they should expect access to a high quality curriculum and instructional programs; they should expect to graduate within four years if they follow the prescribed programs successfully; and they should expect to be respected as individuals in all facets of campus activity and should expect responsive and tactful interaction in their learning endeavors. Faculty should expect participation and dedication from students, including attendance, attentiveness, punctuality and demonstrable contribution of effort in the learning process; and they should expect respectful interaction in a spirit of free inquiry and orderly discipline. We believe that these commitments and expectations establish the academic culture upon which all learning is founded.

The nature and scope of graduate education is defined in the Graduate Bulletin as follows.

The Colorado School of Mines is dedicated to serving the people of Colorado, the nation and the global community by providing high quality educational and research experiences to students in science, engineering and related areas that support the institutional mission. Recognizing the importance of responsible earth stewardship, Mines places particular emphasis on those fields related to the discovery, production and utilization of resources needed to

improve the quality of life of the world's inhabitants and to sustain the earth system upon which all life and development depend. To this end, Mines is devoted to creating a learning community that provides students with perspectives informed by the humanities and social sciences, perspectives that also enhance students' understanding of themselves and their role in contemporary society.

Additionally, each department has its own departmental website that provides up-to-date details of the services and programs supported. A complete listing of these sites is available here.

Research and Technology Transfer: Research and Technology Transfer materials are available here that clearly define the scope, bounds and intent of research and technology transfer activities conducted at Mines.

With regard to Research, the intent of research activities undertaken at Mines is defined on the website as follows.

Mines is a global leader in research and the advancement of technology. Lead by our world-class faculty, the research conducted at Mines enhances the educational experience of our graduates. Students have the opportunity to actively participate in research at every level of their education.

Our research spans many highly relevant areas with a specific focus on energy and environmental stewardship. Our first-rate facilities and partnerships with industry, national laboratories, other universities, funding agencies and international institutions enable us to maintain our cutting edge research and have a significant impact on real world problems. Research is a cooperative effort in the Mines community.

Additionally, there is a wide variety of separate research initiatives undertaken by faculty at Mines that is conducted through collaborative research centers. Often, these centers maintain a separate web presence defining that their activities are within the Mines' research portfolio. Access to these materials may be gained through the Research website.

With regard to Technology Transfer, the intent of activities supported is defined on the website as the following.

The Office of Technology Transfer (OTT) at Colorado School of Mines works to serve the citizens of Colorado and the United States by commercializing the inventions resulting from research in accordance with four main principles:

Enhance the Academic Mission - If structured and communicated properly, technology commercialization can be effective as well as adding to the academic standing of the university.

Provide a service to the inventors and internal and external partners - The OTT needs to communicate to the inventors about the steps in commercialization, convey what is needed from them to move their inventions to market and be flexible in addressing inventors' and other stakeholders needs.

Find the right partners - The OTT must make connections with key industry leaders, venture capitalists, entrepreneurs and others in the technology-based economic development community who are potential partners in moving the university's inventions to market.

Ensure fair return - As a steward of the taxpayers' and university's investment, the OTT must get fair market value for the inventions of the university, whatever the funding source.

Sources

- CSMstrategic_plan04
- Alumni Magazine
- Graduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013
- Graduate Bulletin 2012-2013 (page number 2)
- Undergraduate Bulletin 2012-2013 (page number 3)
- Undergraduate Bulletin 2012-2013 (page number 6)
- Graduate Bulletin 2012-2013 (page number 5)
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- https-www-mines-edu-missionp
- http-research-mines-edu-res-centers-institutesp
- http-research-mines-edu-res-technology-transferp
- http-www-mines-edup
- Educational Vision, Values and Goals
- Graduate Level - Institutional Educational Objectives
- Graduate Level - Institutional Student Outcomes
- Masters Program - Institutional Educational Objectives
- Masters Program - Institutional Student Outcomes

1.C - Core Component 1.C

The institution understands the relationship between its mission and the diversity of society.

1. The institution addresses its role in a multicultural society.
2. The institution's processes and activities reflect attention to human diversity as appropriate within its mission and for the constituencies it serves.

Argument

1. The institution addresses its role in a multicultural society.

Bulletin Statements: Both the Undergraduate Bulletin and Graduate Bulletin provide explicit reference to Mines' perspective of its role in a multicultural society.

The *Profile of the Colorado School of Mines Graduate*, from the Undergraduate Bulletin, acknowledges the following as an attribute that Mines aspires to impart on its undergraduate students:

Graduates should have the flexibility to adjust to the ever-changing professional environment and appreciate diverse approaches to understanding and solving society's problems. They should have the creativity, resourcefulness, receptivity and breadth of interests to think critically about a wide range of cross-disciplinary issues. They should be prepared to assume leadership roles and possess the skills and attitudes which promote teamwork and cooperation and to continue their own growth through life-long learning.

Graduates should be capable of working effectively in an international environment, and be able to succeed in an increasingly interdependent world where borders between cultures and economies are becoming less distinct. They should appreciate the traditions and languages of other cultures, and value diversity in their own society.

As part of its description of "Institutional Values and Principles" the Graduate Bulletin states:

…Mines is devoted to creating a learning community that provides students with perspectives informed by the humanities and social sciences, perspectives that also enhance students' understanding of themselves and their role in contemporary society. Mines therefore seeks to instill in all graduate students a broad class of developmental and educational attributes.

Strategic Plan: The Strategic Plan, 2004-2014 defines seven major strategies for Mines to pursue. The fifth strategy defined in this plan is titled "Realign the Geographic, Demographic and Programmatic Mix of Students." The narrative of the plan defines the overall objective of this strategy as follows:

The student body forms the nucleus of the learning community at Colorado School of Mines. To a great extent, the strength of the institution is derived from the quality and composition of its students. To realize many of the goals articulated in this plan, the School must realign the demographic profile of the student body. Specifically, these adjustments will include a stronger representation of national and international students at Mines, with recruiting efforts focused on strengthening and expanding enrollments in disciplines closely related to the focus areas, and in specific research-based and professional graduate degree programs.

Further, the Strategic Plan defines explicit goals to be achieved over the time frame of the plan. These goals and enrollment metrics supporting institutional commitment to enhancing the diversity of its student body are shown in the Table.

2. The institution's processes and activities reflect attention to human diversity as appropriate within its mission and for constituencies it serves.

Institution-Wide Activities: Mines has in place policies on both equal opportunity in employment and education. Mines is committed to providing equal access to educational courses and activities for students with disabilities in compliance with the ADA Amendments Act of 2008 (ADAAA) and Section 504 of the Rehabilitation Act of 1973. The goal of Student Disability Services is to provide students with disabilities equal access to University courses, programs, and activities by providing reasonable accommodations for qualified undergraduate, graduate, and professional students. Student Disability Services staff works with students to manage the impact of their disability on learning and living at Mines.

Mines has a number of programs that specifically target, and then support, enrollment of under-represented groups. These include the Multicultural Engineering Program whose focus is on undergraduate retention and graduation of ethnic minorities, and the Bridge to Doctorate Program that focuses on recruitment and retention of minority doctoral students. The Society of Women Engineers at Mines is the largest in the nation and provides a professional community for undergraduate women. In addition, Mines has an active program in Women in Science Engineering and Mathematics. There are also multiple organizations, which are listed here, available to diverse students including: American Indian Science and Engineering Society (AISES), National Society of Black Engineers (NSBE), Society of Asians Scientists & Engineers (SASE), and Society of Hispanic Professional Engineers (SHPE). In addition the Office of International Programs hosts international film events, a chapter of Phi Beta Delta, and international days featuring cuisine from around the world.

The goal of the Multicultural Engineering Program (MEP) at Mines is to graduate ethnic minorities in the areas of Mathematics, Science, and Engineering. Each year MEP offers a variety of activities and programs for our current and future students. We evaluate our programs on a yearly basis with the desire to create the best environment possible for success of our students.

The WISEM Program was established in 1997 through a generous grant from the Chevron Corp. to provide opportunities for women in science and engineering careers and to increase the retention of female students, faculty and staff through programming, training and mentoring. The mission of WISEM is to enhance opportunities for women in science and engineering careers and to increase the retention of female students, faculty and staff through programming, training and mentoring.

President Scoggins established the President's Diversity Committee. This committee promotes a welcoming educational and professional environment that cultivates and celebrates diversity in all of its facets, including the tolerance of different perspectives, thought, backgrounds and life experiences. The Diversity Committee actively supports university strategies and programs involving recruitment and retention of a diverse community of students, faculty and staff. It serves the campus community by fostering and promoting the ideals of mutual respect, teamwork, and appreciation for multiple perspectives in a safe and inclusive environment. The 2010-2011 President's Committee on Diversity Annual Report is available here.

As part of its celebration of Dr. Martin Luther King day, Mines hosts a weeklong event known as Delta Days. As can be seen from the Delta Days website, this event consists of a series of widely attended lectures, activities and workshops that not only celebrate the legacy of Dr. King but provide a forum for discussing broader issues of diversity.

Academic Program Requirements: In Fall, 2012, our undergraduate female enrollment was 27%; our graduate female enrollment was 25%. Minority undergraduate enrollment was 17%; minority graduate enrollment was 10%. As described below, Mines is committed to increasing participation from underrepresented populations.

All undergraduate students must complete a 19-credit-hour curriculum in the Humanities and Social Sciences, which includes freshman through senior-level course work. Courses fulfilling this requirement are offered by the Division of Liberal Arts and International Studies and by the Division of Economics and Business. At least three of these courses must be completed through the Division of Liberal Arts and International Studies. Two of the courses that

all undergraduate students are required to complete, are Nature and Human Values (LIAS100) and Human Systems (SYGN200). For a complete listing of these courses, as well as the other course offerings in this division is here.

Support for International Students: There are 617 international students from 80 countries attending Mines. Detailed statistics on international enrollment (degree level and countries from which students are attending) are available in the Fall 2012 Enrollment Report. Since 2004, enrollment of international students has increased 93%. Students come from 80 different countries, but students from China, India, Indonesia, Iran, Kazakhstan, Libya, Malaysia, Nigeria, Saudi Arabia, South Korea, Thailand, Turkey, U.A.E., and Venezuela dominate our international student population.

These students receive additional services to those offered to the broader population of Mines through the International Student and Scholar Services. To help international students better integrate into Mines, all international students are required to attend an international orientation session and Mines offers an elective course for international students titled Integrating into the Mines Community. The description for this course is as follows.

The purpose of this course is to assist international graduate students in acclimating to the Mines environment and to offer them transition tools designed to prepare them for success in their degree programs. The class materials and activities will facilitate more efficient navigation of this unique academic setting by helping them understand expectations, develop effective professional relationships within the campus community, and adapt to change. Another intent of the course is to provide a welcoming space for students to ask questions regarding the cultural and academic adjustments they are making, learn about available resources, and gradually build confidence in skills of collaboration.

Employment: As a federal contractor, Mines has a fully developed Affirmative Action Plan as well as its self-imposed ethical obligation to enhance its diversity. The results of our affirmative action activities are analyzed annually and provide the Mines executive team with reflection and recommendations for further action. Mines has a detailed, faculty recruitment process that includes training for each search committee. This training includes an emphasis on the responsibilities of the committee to further the diversity of the campus, to afford equal employment opportunity, and to apply the principles of affirmative action within the search.

Efforts to support and attract minority and women faculty occur for our searches. We contact minority and women's organizations for referrals such as Women in Higher Education, Society of Women Engineers, American Association of Women Geophysicists, Hispanic Outlook, National Society of Black Engineers, Society of Hispanic Professional Engineers, Women in Engineering Programs and Advocacy Network, and Historically Black Colleges and Universities. We purchase access to the Minority Faculty Applicant Database (MFAD), HigherEdJobs.com (which includes affirmative action targeted e-mailing), and AcademicCareers.com (which links to numerous diversity sites).

Colorado School of Mines has established family friendly policies that also help support diversity including parental leave policies (Faculty Handbook, section 5) designed to accommodate the needs of new parents and help keep employees from having to choose between family and career obligations, and Mines has established a process whereby the normal tenure track cycle can be interrupted. This can be particularly helpful to faculty who have family obligations that prevent them from completing the normal activities to attain tenure with the standard time frame.

A parental leave policy, detailed in the Graduate Bulletin, has also been established for Graduate Students who are employed by the institution as Research or Teaching assistants.

Mines provides for annual formal performance evaluations; employees who evaluate performance of other employees are trained in the use of the system and trained to assess performance based on job related characteristics. They are specifically trained to not include factors such as personality, disability, or other discriminatory factors.

In addition, the Provost takes an active role in furthering diversity among the faculty by funding several diversity oriented faculty hires when the opportunity arises and the hire is consistent with departmental faculty needs. One

part of this effort is the inclusion of a diversity enhancement component to the annual evaluation process for all academic Department Heads and Division Directors.

As a result of these efforts, Mines welcomed to campus one of its most diverse cohorts of new faculty members in Fall, 2012.

Sources

- Fall2012EnrollmentReport
- Fall2012EnrollmentReport (page number 4)
- Fall2012EnrollmentReport (page number 13)
- CSMstrategic_plan04
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- TitleIXStatement
- Graduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013 (page number 3)
- Graduate Bulletin 2012-2013 (page number 5)
- Diversity Report 2010-11
- SYGN503 Integrating into the Mines Community
- Graduate Bulletin 2012-2013 (page number 16)
- 2010 Affirmative Action Plan
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- 2012-13 New Faculty bios
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- http-mines-orgsync-com-org-csmswep
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- Strategic Plan

1.D - Core Component 1.D

The institution's mission demonstrates commitment to the public good.

1. Actions and decisions reflect an understanding that in its educational role the institution serves the public, not solely the institution, and thus entails a public obligation.
2. The institution's educational responsibilities take primacy over other purposes, such as generating financial returns for investors, contributing to a related or parent organization, or supporting external interests.
3. The institution engages with its identified external constituencies and communities of interest and responds to their needs as its mission and capacity allow.

Argument

1. Actions and decisions reflect an understanding that in its educational role the institution serves the public, not solely the institution and thus entails a public obligation.

As previously quoted, statements of the Mines' mission, values and principles explicitly include language such as, "to enhance the quality of life of the world's inhabitants" and "committed to serving the people of Colorado, the nation, and the global community", that are intended to convey the broad sense of commitment to public good that Mines believes is consistent with an institution of higher learning.

As an additional indication of this commitment, we note the lead quote included in the 2004-2014 Strategic Plan by then President Dr. Trefny.

"We are in the business of creating the very future in which we, our students, and all humankind will live and work."

Another means of assuring Mines commitment to promoting the public good is indicated by Mines commitment to maintaining open records as relates to its strategic decision making, and operating policies. All meetings of the Board of Trustees are open and publicized ahead of time. Board Minutes are also open records. Board policies are available through the Faculty Handbook and through the institutional policies web resource. Operating procedures for Academic Affairs are posted in the Academic Affairs Procedures Manual. The Faculty Senate Bylaws are readily available and the Senate posts minutes of its meetings on its website. These documents guide, direct and document the decisions that are made at Mines, at the various levels, and they acknowledge and reflect Mines' public obligation.

2. The institution's educational responsibilities take primacy over other purposes, such as generating financial returns for investors, contributing to related or parent organizations or supporting external interests.

Mines is a non-profit, state institution. Mines maintains and enforces strict policies on Conflict of Interest (Board, Research, Faculty). Faculty are required to report potential conflicts prior to participating in external activities. Faculty must review and sign-off on statements identifying potential conflicts of interest as part of the routine proposal submission process for acquiring external funding.

3. The institution engages with its identified external constituencies and communities of interest and responds to their needs as its mission and capacity allow.

As a public institution, Mines must make regular presentations to both the Colorado Commission on Higher Education (CCHE) and the legislature.

Mines keeps the broader public informed of its activities through a variety of materials, including an extensive website. A sampling of documents that are publicly available include:

- Undergraduate Bulletin and Graduate Bulletin
- Mines Magazine
- Colorado School of Mines Energy and Earth Magazine
- Graduation and persistence reports
- Enrollment reports
- Accreditation status
- Research activity summaries
- Board of Trustees meeting agendas and minutes
- Mines Foundation Annual Report
- Press Releases through Office of Public Relations and Marketing

As a formal process, all departments at the Colorado School of Mines are reviewed on a regular basis by external Visiting Committees. These committees are populated by academics, industry leaders and alumni and are charged with providing each department, and the institution, external input on the quality of the offerings provided and on future directions and opportunities available.

Informally, Mines engages and receives feedback from employers and industry partners through interactions at recruiting events, through the hiring and feedback received on interns and CO-OP, through industry-sponsor research consortia, and through informal industrial advisory boards.

Sources

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- MINESSUM2012.LoResSingles
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- FY 12 Annual report - Sponsored Research
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- Complete_Procedures_Manual
- Academic Faculty Bylaws
- BOT_Conflict_of_Interest_Policy
- Complete_Handbook
- Complete_Handbook (page number 105)
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- http-inside-mines-edu-research-administrationp
- http-magazine-mines-edu-about-htmlp
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- Colorado School of Mines _ Newsroom

1.S - Criterion 1 - Summary

The institution's mission is clear and articulated publicly; it guides the institution's operations.

Summary

The Mines' mission:

- Is codified in State statute (Colorado Revised Statutes, Section 23-41-105);
- Has been clearly delineated by the Board, and has been vetted through our academic process;
- Is publicly available through a variety of materials (Undergraduate Bulletin, Graduate Bulletin, websites, Alumni Magazine, Energy and Earth Research Magazine);
- Was used to guide the development of the 2004-2014 Strategic plan;
- Has guided the development and definition of our academic programs, as determined by the Colorado Commission of Higher Education;
- Is consistent with the articulation of our values and goals for educational programs (Profile of Mines Graduate and Graduate Program Objectives);
- Is consistent with our enrollment profile;
- Is supported through our academic programs and student support services;
- Explicitly recognizes our role in a diverse society;
- Explicitly defines diversity enrollment goals; And
- Acknowledges through language and action our obligation to serving the public interest.

Sources

- Graduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013
- Graduate Bulletin 2012-2013 (page number 6)
- Undergraduate Bulletin 2012-2013 (page number 5)
- CSMstrategic_plan04
- Fall2012EnrollmentReport
- Alumni Magazine
- 2012-13MinesResearchSingles
- Colorado Legal Resources

2 - Integrity: Ethical and Responsible Conduct

The institution acts with integrity; its conduct is ethical and responsible.

Argument

Mines has a selection of policies that are appropriate for our governing board (Board of Trustees), faculty and staff, and students. Statement of these policies can be found here. How these policies are used to guide institutional efforts are described in the sections that follow. As is reflected through these policies, Mines is committed to ethical and responsible conduct, and freedom of speech and expression throughout our academic community.

Sources

- http-miper-mines-edu-policiesp

2.A - Core Component 2.A

The institution operates with integrity in its financial, academic, personnel, and auxiliary functions; it estab-lishes and follows fair and ethical policies and processes for its governing board, administration, faculty, and staff.

Argument

2A. The institution operates with integrity in its financial, academic, personnel, and auxiliary functions; it establishes and follows fair and ethical policies and process for its governing board, administration, faculty and staff in its financial, academic, personnel and auxiliary functions.

Evidence of Establishment of Policies and Procedures: A primary link to the various policies at Mines can be found on the Mines website. This includes links to policies appropriate to the governing board (Board of Trustees), faculty and staff, and students. These policies cover financial, academic, personnel and auxiliary functions. All policies include processes, procedures and protocols as appropriate to the specific policy. Examples in the following:

- Board of Trustees: Includes Conflicts of Interest, Discrimination, Sexual Harassment
- Academic: Includes Faculty Handbook, Academic Procedures, Student Bulletins (Undergraduate and Graduate)
- Communications & Technologies: Includes E-Mail, Media, Data Access
- Facilities, Property & Safety: Includes Parking, Facilities Use, Firearms, Safety Policies
- Financial: Includes Travel, Disbursements, Cash Handling, Budget
- Human Resources: Includes Grievance Procedures (Classified Staff and Faculty), Relationship Policies, Personal Services Policy, etc.
- Research: Includes Intellectual Property, Budget Exception, Direct Charging
- Student: Includes Honor Code, Code of Conduct, Academic Integrity, Campus Housing
- Athletics: Includes Title IX compliance, NCAA regulations, RMAC regulations, Mines regulations

The Policies at Mines website also includes links to statements from the Colorado Independent Ethics Commission. Ethics Commission statements, like university policies, are intended to guide behavior. These are different from university policies in that an independent commission reporting to the State of Colorado writes them. A link is also available at the Policies at Mines to our Equal Opportunity and Equal Access to Educational Programs Policy.

Evidence of Following Established Policies and Procedures: The following activities are provided as evidence the Mines community embraces and follows established policies and procedures.

Individual Accountability: Mines engenders a strong sense of individual accountability amongst faculty, staff and students. As part of this process all faculty and staff undergo rigorous annual performance evaluations. All aspects of the evaluation of administrative faculty and classified staff may be found on the institution's Performance Management website. Academic faculty members are evaluated through the process defined in the Faculty Handbook and in the Academic Affairs Procedures Manual.

Formal Grievance Procedures: In the event appropriate policies or procedures have not been followed, Mines provides faculty, staff and students a variety of mechanisms by which to file formal grievances. Examples of these mechanisms include the following:

- Faculty Handbook Grievance Procedure
- Classified Employee Grievance Process
- Student Appeal Process (Conduct, Academic Dishonesty, Grade)

In any instance of formal corrective action, documents, or disciplinary decisions that affect state personnel system employees (classified), the employee is provided written information about his or her rights to the grievance process as well as how to file appeals to the State Personnel Board if the employee believes he or she is the victim of discriminatory employment decisions or practices. In addition, every annual performance review also contains information about how to appeal the evaluation rating and decisions if the employee does not agree with the evaluation.

Internal Auditing and Compliance Monitoring: The Office of Internal Audit was established by the Board of Trustees to assist members of the institution in effectively fulfilling their responsibilities. To provide this service, an internal auditor prepares independent and objective evaluations of the School's progress in accomplishing objectives, complying with policies and procedures and adopting sound business practices. In addition, the internal auditor investigates allegations of fraud or inappropriate use of School assets. The Director of Internal Audits manages the Internal Audit Process.

Over the past 7 years, internal audits have been undertaken in all areas of the university. The specific areas are determined by risk and potential benefit to the campus. Some of the audits are within departments, others (such as information systems) are campus wide and some are transaction specific (cash receipts, bond compliance).

In 2011, a Compliance Risk Assessment, which is publicly available through the Internal Audit website, was completed by Two Hills Accounting & Consulting. This analysis reviewed the compliance risks facing Mines, along with recommendations for improving the compliance infrastructure. This review included the functional areas listed in the attachment.

The recommendations suggested mitigation to minimize the risk of noncompliance. Some of these recommendations are in process: hiring a Director of Institutional Compliance and Audit who will oversee the campus compliance program and setting up a hotline where staff can anonymously report compliance, fraud and ethical concerns. Planning is underway to establish a campus database for compliance reporting requirements. In the future, there will be training on various compliance issues to assist the campus in meeting various requirements.

The Director of Institutional Compliance and Audit position has a two-fold purpose:

"...to take a 'hands-on' role in helping management assure that all compliance activities have been identified and are addressed, effective compliance policies and procedures are in place, responsibilities are monitored and enforced and corrective action is taken for non-compliance." And to "provide internal audit services including independent, objective assurance and consulting activities."

This position was filled with two half-time compliance and audit specialists in fall 2012.

Ethics Hotline: Mines has established a confidential reporting hotline where individuals can address concerns over ethical behaviors, fraud, policy violations, safety issues, and other misconduct. Mines has contracted with EthicsPoint, a leading national provider of enterprise risk awareness solutions, to provide the reporting hotline service. The hotline includes the ability to make and follow-up allegations and inquiries anonymously and to provide reports either via the web or via phone contact with EthicsPoint representatives. The EthicsPoint Mines portal is accessed here.

Employment Complaints and Outcome Status: The Office of Human Resources maintains records of employment complaints, how these were adjudicated and the outcome of the complaint. A summary of these records back to 2007 is provided.

Sources

- BOT_Conflict_of_Interest_Policy
- Complete_Handbook
- BPS_Unlawful_Discrimination_Policy_And_Complaint_Procedure
- BOT_Policy_Prohibiting_Sexual_Harassment
- Complete_Procedures_Manual
- CIT_Electronic_Mail_Policy
- CIT_Admin Data Access PolicyV5bFINAL
- PUB_Media_Policy
- BPS_University_Facilities_Use_Policy
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- FIN_Financial_Policies_Controller_June 20 2012
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- Complete_Handbook (page number 110)
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- Budget_exception_policy_2008-09
- RES_Direct_Charging_Policy
- STU_Student_Honor_Code
- STU_Code_of_Conduct
- Academic integrity June 2012
- CampusHousing
- PRS_Nondiscrimination_Statement
- Complete_Handbook (page number 55)
- Complete_Procedures_Manual (page number 40)
- STU_Appeal_Process
- STU_Appeal_Process_Academic_Misconduct
- InternalAuditCharter
- CSM Compliance Risk Assessment 2011
- HarrassementComplaintSummaryEmployee
- AthleticsPoliciesProcedures2011-12
- AthleticsPoliciesProcedures2011-12 (page number 10)
- AthleticsPoliciesProcedures2011-12 (page number 57)
- Graduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013 (page number 24)
- http-inside-mines-edu-internal-audit-and-compliancep
- http-inside-mines-edu-performance-managementp
- http-inside-mines-edu-policiesp
- http-inside-mines-edu-state-and-federal-policiesp
- https-secure-ethicspoint-com-domain-media-en-gui-33377-index-htmlp
- Functional Areas

2.B - Core Component 2.B

The institution presents itself clearly and completely to its students and to the public with regard to its programs, requirements, faculty and staff, costs to students, control, and accreditation relationships.

Argument

Educational Programs and Requirements: Complete and accurate information related to educational program availability, admissions requirements, and programmatic requirements are available to students and the public via the following resources:

- Admissions web resources: Both Undergraduate and Graduate websites, include program descriptions, admissions requirements and financial aid availability.
- Bulletins: Both Undergraduate and Graduate, include program requirements and academic policies related to maintenance of good academic standing and program completion.
- Departmental web resources: All departments have a separate web presence that provides detailed descriptions of programmatic requirements, faculty expertise, and programmatic processes and procedures.

Cost to Students: Complete and accurate information related to the cost of education is available to candidates and current students via the following resources:

- Cost of attendance web resources: Both Undergraduate and Graduate admissions websites include separate cost of attendance materials.
- Net Price Calculator: As required by the Higher Education Opportunity Act (HEOA), Mines provides a net price calculator.
- Approved budget: Upon approval of the Board of Trustees, the Office of Budget and Planning provide detailed information on tuition rates, mandatory fees, class fees and auxiliary costs (i.e., housing and dining).

Faculty and Staff: Information on Faculty and Staff is available through the following resources:

- Faculty qualifications: Both the Undergraduate and Graduate Bulletins list faculty by rank and include degree qualifications for each faculty member.
- Departmental associations: Departmental websites provide information (e.g., listings, research interests, etc.) of faculty and staff contributing to each program under departmental control. Often these listings point directly to individual faculty webpages.
- Faculty and staff lookup: Both the internal and external Mines webpages provide access to faculty and staff directories and a mechanism to lookup individual faculty and staff. The lookup provides title and contact information.

Control: Mines is recognized as a public institution through the following resources.

- External web resources: As defined through the Mines website and the web resources found at the Colorado Commission on Higher Education.
- Bulletins: Mines is described as a public institution in both the Undergraduate and Graduate bulletins.

Accreditation Relationships: Mines' current accreditation status can be found through the following resources:

- External web resources: Accreditation standing is available on the Mines accreditation web page.

- Bulletins: Mines accreditation standing is also defined in both the Undergraduate and Graduate bulletins.

Sources

- Graduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013
- FY13 Fees and Charges
- FY13 Tuition Schedule
- FY13 Fees and Charges (page number 4)
- FY13 Fees and Charges (page number 5)
- Graduate Bulletin 2012-2013 (page number 161)
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- http-inside-mines-edu-accreditationp
- http-inside-mines-edu-ir-npc-aboutp
- http-www-mines-edu-aboutminesp
- http-www-mines-edu-costandfinancialaidp
- http-www-mines-edu-costs-gsp
- http-www-mines-edu-directoriesp
- http-www-mines-edu-graduate-admissionsp
- http-www-mines-edu-undergraduate-admissionsp

2.C - Core Component 2.C

The governing board of the institution is sufficiently autonomous to make decisions in the best interest of the institution and to assure its integrity.

1. The governing board's deliberations reflect priorities to preserve and enhance the institution.
2. The governing board reviews and considers the reasonable and relevant interests of the institution's internal and external constituencies during its decision-making deliberations.
3. The governing board preserves its independence from undue influence on the part of donors, elected officials, ownership interests or other external parties when such influence would not be in the best interest of the institution.
4. The governing board delegates day-to-day management of the institution to the administration and expects the faculty to oversee academic matters.

Argument

1. The governing board's deliberations reflect priorities to preserve and enhance the institution.

Constitution of governing board: Mines is a public higher education institution with a nine-member governing Board of Trustees. Seven members of the Board are appointed to four-year terms by the governor of the State of Colorado pursuant to state statute (C.R.S. 23-41-102). By statute, the appointed Board membership must reflect: (1) balanced political party representation (no more than four members can be from the same political party); (2) at least four and not more than five Mines alumni; and (3) relevant professional background and expertise, and personal commitment to serving Mines. The Board also includes a non-voting, full-time student who is elected by the student body for a one-year term, and a non-voting, full-time academic faculty member who is elected by the academic faculty for a two-year term. This combination of members ensures that the appropriate voices are included to preserve and enhance the institution.

Open meetings: All meetings of the Board of Trustees (Trustees) are subject to the Colorado Open Meetings Law, C.R.S. 24-6-401, et seq. In addition, section VII of the Board of Trustees Bylaws states the following.

Regular meetings of the Board, which shall be open to the public, shall be held at least four times per calendar year in accordance with a public schedule that shall be revised and updated from time to time. Public notice of the time and place of such regular meetings shall be provided in accordance with applicable Colorado law.

The Board of Trustees currently meets six times per calendar year. Agendas and minutes to Trustees meetings are publicly available and all regular business meetings are open to the public, with the exception of the Board's executive sessions, which are held in compliance with state statute. Public availability of this information provides for open access, further enhancing communication and feedback which used to enhance the institution.

2. The governing board reviews and considers the reasonable and relevant interests of the institution's internal and external constituencies during decision-making deliberations.

As noted above, membership on the Board of Trustees is required to represent a diversity of viewpoints, and open meetings of the Board of Trustees are required by law to be accessible to the public. This ensures a balancing of internal, external, and political constituencies during decision-making deliberations. Further, open meetings help ensure all interested parties and constituencies are given an opportunity to provide input in the decision-making process.

Meetings of the Trustees, as documented through their meeting minutes, regularly include reports, both written and oral, from a wide variety of institutional constituencies. These include reports from Admissions (both undergraduate and graduate), CSM Foundation, Alumni Association, Faculty Senate, Student Representatives, Environmental Health and Safety, Finances, Research Activities and from the President. In summary, both internal and external constituencies are considered during the decision-making process.

3. The governing board preserves its independence from undue influence on the part of donors, elected officials, ownerships interests, or other external parties when such influence would not be in the best interest of the institution.

Members of the Trustees serve the public trust and have a clear obligation to fulfill their fiduciary role and statutory responsibilities in a manner consistent with this. The Trustees commonly have a wide range of professional and personal associations with and interests in other business and community entities and organizations. At times, these external activities and interests might create an apparent or actual conflict of interest situation. Although most such potential conflicts may be deemed inconsequential or manageable, the Trustees and the School are sensitive to conflict situations as they arise, and are prepared to effectively address these to assure the Trustees perform their duties to the School with the utmost integrity, free of bias that may inappropriately influence the Trustee's judgment in the conduct of School business.

Management of actual and apparent Board conflicts is guided by the Board of Trustees' Conflict of Interest Policy, which can be accessed through the Board of Trustees Policy website. As stated in this policy,

Individual members of the Board of Trustees owe a duty of care and a duty of loyalty to the School in the conduct of their role on the School's governing board. Trustees must perform their duties lawfully and rationally, in good faith and in a manner they reasonably believe to be in the best interest of the School.

In addition to their fiduciary duties as members of the School's governing board, Trustees must be aware of and ensure their compliance with applicable State law governing ethical conduct and conflicts of interest, including, but not limited to the statutory requirements codified in Code of Ethics, C.R.S., §§ 24-18-101, et seq., and Proscribed Acts Related to Contracts and Claims, C.R.S., §§ 24-18-201, et seq.

Accordingly, it is the policy of the School that Trustees shall act in a manner consistent with their responsibilities and duties to the School, and avoid circumstances that: (1) may lead to a Trustee advancing an initiative or taking action that may be incompatible with the Trustee's fiduciary duty to the School; or (2) that may permit a Trustee to utilize his or her association with the School to derive personal gain, or gain to family, friends or associates. When a Trustee becomes aware of a situation that may compromise or appear to compromise his or her independence or impartiality in matters of School Board business, or that otherwise impedes the Trustee's ability to fulfill his or her fiduciary duties and serve the best interest of the School, the Trustee should disclose such situations pursuant to the procedure outlined in Part 4.0 herein below so that any actual or potential conflicts can be promptly addressed as appropriate and necessary.

4. The governing board delegates day-to-day management of the institution to the administration and expects the faculty to oversee academic matters.

The Constitution of the State of Colorado specifically establishes Mines as a state institution of higher education. Article VIII, Section 5 (2) states that the governing boards of the state institutions of higher education "shall have the general supervision of their respective institutions and the exclusive control and direction of all funds of and appropriations to their respective institutions, unless otherwise provided by law." Further, the governing Board is conferred broad authority to control and manage Mines and its property by statute, C.R.S. 23-41-104.

Delegation of Administrative Authority: Through explicit policies promulgated by the Board of Trustees, the Board has conferred upon Mines' President and other, senior members of the administration the authority to execute on behalf of the Board and institution certain contracts (e.g., Contract Approval Policy and Real Estate Conveyance Policy). The Board has also delegated to the administration the authority to implement and enforce certain other

Board policies and develop appropriate administrative procedures to ensure compliance with these policies, e.g., the Policy Prohibiting Sexual Harassment, the Unlawful Discrimination Policy and Complaint Procedure, etc. Finally, through its employment contract with the President, the Board has vested in the President certain responsibilities and duties related to the day-to-day management of the institution. The President reports and is directly accountable to the Board.

Faculty Authority: The Faculty Handbook defines the relationship between the Board of Trustees and the Faculty at Mines. The nature of the relationship between the Board of Trustees and the Faculty is defined from the perspective of the Board of Trustees in the Preface to the Faculty Handbook. In particular, the preface clearly contemplates a vision of shared governance for the institution:

The Board desires to establish a collaborative environment in which all participants work together for the ultimate welfare of the institution, the students, and the faculty. To that end, the Board intends the faculty to be active participants in the operation of the university. To achieve this objective, this Handbook contains policies and procedures intended to encourage consultation with the faculty on issues of mutual concern, such as program changes, employment policies, and other issues related to institutional operation.

The Handbook Preface further states "the Board intends to consult with the faculty to the maximum extent practicable prior to implementing a significant change to any employment policy or procedure contained in the Handbook." While it is clear the Board does not intend to delegate any portion of its statutory management authority "which is not delegable by law," it explicitly recognizes "that Colorado law grants the instructional power of CSM to its faculty."

The role of the faculty is further defined in the Bylaws of the Faculty Senate. In particular, these bylaws define the responsibilities of the academic faculty as described here.

Further, under Colorado law, faculty are conferred the authority to determine which students are entitled to degrees awarded by the Colorado School of Mines. The Colorado courts have been clear on this point, as reflected in the attached rulings.

Sources

- BOT Bylaws
- BOT Bylaws (page number 3)
- BOT_Conflict_of_Interest_Policy
- BOT_Contract_Approval_Policy
- BPS_Real_Estate_Conveyance_Policy
- BPS_Unlawful_Discrimination_Policy_And_Complaint_Procedure
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- Complete_Handbook
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- Academic Faculty Bylaws
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- Bylaws
- Rulings

2.D - Core Component 2.D

The institution is committed to freedom of expression and the pursuit of truth in teaching and learning.

Argument

The institution has implemented and endorsed the following policy statements regarding freedom of expression and academic freedom.

Academic Freedom: Section 5.1 of the Faculty Handbook defines the right of academic freedom for faculty of Mines. Within this policy, Mines is referenced as CSM. This policy states that,

Within the limits imposed by State law and CSM policy, and subject to the adequate performance of other assigned duties, all CSM faculty members enjoy the freedom to discuss in the classroom matters relevant to the educational mission, engage in scholarly activity, conduct research, and publish or disseminate the results of such work. All CSM faculty members are free to speak and write on matters of public concern, as well as on matters related to professional duties and the functioning of the university. However, faculty members should be mindful that their position in the community imposes special responsibilities. Academic responsibility implies the faithful performance of professional duties and obligations, the recognition of the demands of the scholarly enterprise, and the candor to make it clear that when one is speaking on matters of public interest, one is not speaking for the institution, nor does one speak for CSM in his or her private capacity.

Any faculty member who feels his or her right to academic freedom has been abridged may appeal such action through the Exempt Employee Grievance Procedure provided in Section 11.3 of the Faculty Handbook.

Graduate Student Statement of Values and Responsibilities: In 2011, the Mines Graduate Student Association proposed and the Faculty Senate endorsed a statement of values and responsibilities for graduate students. In particular, this document defines the following as an expectation that graduate students should have at Mines:

Responsibility - We [graduate students] have the responsibility to take ownership of our experience and the direction of our educational program, to be familiar with and meet program requirements, and define our unique research path. We understand that while graduate advisors may guide students on our journey, it is our responsibility to create the most enriching graduate experience we can.

Expectation - We [graduate students] should have the opportunity to openly and respectfully express our views, and, to the level of our desire, participate in the university community. As graduate students, we may govern ourselves through a university-sanctioned organization, currently the Graduate Student Association.

Facilities Use: The Board has promulgated a University Facilities Use Policy, available through the Policies website, to guide how students, faculty, staff and the general public may use Mines facilities. In pertinent part, this policy affirms Mines' commitment to freedom of expression. In particular, the Section IV.A., "Protection of Free Speech," states the following (in this quote, Mines is referenced as CSM):

CSM acknowledges and respects the rights of students and others to freedom of expression and peaceful assembly. CSM further recognizes its obligation to support the University's educational mission and prevent disruptions of normal University functions. Therefore, CSM establishes the following regulations to preserve its facilities primarily for use by its students, faculty and staff for activities and programs directly related to its educational mission, and to prevent disruption of the normal conduct of University affairs, endangerment of the health and safety of persons, and damage to University property. Any approvals required under this policy shall be viewpoint neutral.

Library Supports Free Inquiry: The Arthur Lakes Library is the central repository and source for primary information related to all of the fields of study at Mines. Mines has developed a variety of policies related to Library access and use. In the context of this criterion, the Library has developed a Freedom of Intellectual Inquiry Policy which can be accessed from the Library Policies website. This policy provides:

It is the goal of the Arthur Lakes Library to support an atmosphere of free and unhindered intellectual inquiry. As members of the CSM faculty, librarians have a professional obligation to foster a climate of academic freedom by providing a range of materials which represent divergent points of view, not only for the subjects central to the curriculum, but also on a full range of topics and issues reflecting the human condition.

In addition, the Library has developed policies related to User Access of Library Resources, which is also available from the Library Policies website. This policy provides in pertinent part:

Colorado School of Mines is dedicated to education and research in science, engineering and related fields in earth, environment and energy. The Arthur Lakes Library, as an integral part of the academic process, is committed to excellence in supporting the information needs of the Mines community and of library users. In cooperation with the academic departments, the library staff provides services and develops collections that directly support Mines' academic and research programs. The library maintains cooperative agreements with other organizations to provide additional access to materials not available here.

Student Publications: Policies are also available to ensure freedom of speech among the students. The Student Publications Policy states the following:

Freedom of speech and freedom of the press are two of the most cherished liberties of the American people. Student publications are necessary in establishing and maintaining an atmosphere of free and responsible discussion on the campus. With this thought in mind, the Colorado School of Mines rests responsibility for the student publications and media–the newspaper, *the Oredigger*, literary magazine, the High Grade, the Prospector yearbook, and the Mines Internet Radio Station –in the hands of the student editors, writers, and photographers. However, freedom of press and speech on a college campus does not mean that a person can say or print anything. The editors are held accountable for abiding by the School Standards and Code of Conduct; the canons of responsible journalism, avoidance of libel, indecency, undocumented allegations, attacks on personal integrity, and the techniques of harassment and innuendo. Standards and penalties that prevail in society in general are not necessarily applicable to the Colorado School of Mines community.

Sources

- Complete_Handbook
- Complete_Handbook (page number 34)
- Graduate Student Values and Responsibilities
- BPS_University_Facilities_Use_Policy
- Freedom_of_Inquiry
- User_Access_Policy
- Student Publications
- http-inside-mines-edu-operational-policiesp
- http-library-mines-edu-library-policiesp
- http-library-mines-edup

2.E - Core Component 2.E

The institution ensures that faculty, students, and staff acquire, discover, and apply knowledge responsibly.

1. The institution provides effective oversight and support services to ensure the integrity of research and scholarly practice conducted by its faculty, staff, and students.
2. Students are offered guidance in the ethical use of information resources.
3. The institution has and enforces policies on academic honesty and integrity.

Argument

1. The institution provides effective oversight and support services to ensure the integrity of the research and scholarly practices conducted by its faculty, staff and students.

Mines provides oversight and support to its faculty that ensure integrity of the research and scholarly activity through the following mechanisms:

Annual Evaluation of Faculty Performance: As required by the Faculty Handbook (section 7), faculty – tenure/tenure track, teaching and research – are evaluated annually by his/her respective department head or division director. In addition, the direct supervisor of the department head/division director, either the Dean or the Provost, reviews these evaluations. As defined in the Academic Affairs Procedures Manual (section 5), the purpose of the annual evaluation activity is, in part, to achieve these outcomes.

As part of this evaluation process, each faculty member is annually required to complete a Faculty Data Report (FDR). The FDR is divided into four major sections: Teaching, Scholarship, Service and Activities mirroring the suggested criteria in the Academic Affairs Procedures Manual. Information provided by each faculty member under the category Scholarship allows the institution to evaluate activity presented in the archival literature as well as activities that do not result in archival materials being produced. Faculty are also required to disclose, and are subsequently evaluated on, the level and nature of support secured for conducting sponsored research through the FDR. Finally, the FDR allows faculty to officially notify the institution of any honors or awards he or she may have received during the past year.

Office of Research Administration: The Office of Research Administration (ORA) provides a suite of services to Mines faculty related to securing support for, and conducting research through the use of externally acquired research funding. Examples of the services provided by ORA that help to insure the integrity of research activities at Mines are attached.

Human Subjects Research Support: Mines faculty or students engaged in research involving human subjects, whether such work is conducted on or off campus, are required to comply with all controlling State of Colorado and federal regulations governing human subject research. All Mines researchers contemplating research involving human subjects, including those categories of research that may be eligible for exemption from Institutional Review Board (IRB) oversight, must make themselves familiar with applicable compliance requirements as specified by the United States Department of Health and Human Services, its Office of Human Research Protections, or other federal agency.

Conflict of Interest Disclosure: Mines maintains and enforces strict policies on Conflict of Interest Policy. Faculty are required to report potential conflicts prior to participating in external activities. Faculty must review and sign-off on statements identifying potential conflicts of interest as part of the routine proposal submission process for acquiring external funding.

Ethics Across Campus Initiative: Supported by the Boettcher Foundation, the Ethics Across Campus Initiative has the attached goals.

As part of its activities, the Ethics Across Campus Initiative promotes course offerings in ethics education, assists faculty in incorporating ethics components into regular course offerings, hosts and promotes a regular ethics lecture series, and helps to disseminate research and instructional materials related to ethics education.

2. Students are offered guidance in the ethical use of information resources.

Students are provided the opportunity to learn about the ethical use of information resources through a variety of mechanisms at Mines. A brief summary of these is provided below.

Policies, Bulletin and Other Statements: The following materials are available to students as defining expectations and as part of Mines' ongoing educational efforts directed toward young scholars:

- *Bulletin Statements:* Both the Undergraduate and Graduate Bulletins define as part of their descriptions of academic misconduct types of behavior to be avoided. Several of these (i.e., falsification/fabrication and tampering) are directly related to the ethical use of information resources.

- *Student Academic Integrity:* Students at Mines have adopted a Student Honor Code, which is available from the Student Policies webpage, which expects, and then enforces, students adhere to high ethical standards. All new undergraduate students are introduced to the Student Honor Code as part of new student orientation and as part of the required CSM101 course. The Code itself reads as follows:

Mines students believe it is our responsibility to promote and maintain high ethical standards in order to ensure our safety, welfare, and enjoyment of a successful learning environment. Each of us, under this Code, shall assume responsibility for our behavior in the area of academic integrity. As a Mines student, I am expected to adhere to the highest standards of academic excellence and personal integrity regarding my schoolwork, exams, academic projects, and research endeavors. I will act honestly, responsibly, and above all, with honor and integrity in all aspects of my academic endeavors at Mines. I will not misrepresent the work of others as my own, nor will I give or receive unauthorized assistance in the performance of academic coursework. I will conduct myself in an ethical manner in my use of the library, computing center, and all other school facilities and resources. By practicing these principles, I will strive to uphold the principles of integrity and academic excellence at Mines. I will not participate in or tolerate any form of discrimination or mistreatment of another individual.

- *Graduate Student Statement of Values and Responsibilities:* The Statement of Values and Responsibilities, which is available the Graduate Student Association Homepage, directly addresses graduate student responsibility for conducting and reporting research to the highest ethical standards. Quoting this document:

It is our [graduate students] responsibility to provide accurate and honest reporting of research results and to uphold the ethical norms promulgated by the institution and our professional societies in research methodology and scholarship. We acknowledge the importance that ethics plays in our professional careers, and as such, it is our responsibility to become educated on this topic.

Ethics Across Campus: Supported by the Boettcher Foundation, the Ethics Across Campus (EAC) initiative serves as an umbrella for ethics-related teaching, research and outreach activities. The EAC hosts regular campus-wide lectures related to teaching and research ethics and ethics education. The EAC also provides access to ready resources related to teaching, research and professional ethics.

Classroom Instruction: Significant components of classroom ethics instruction occur through two venues. At the undergraduate level, professional and research ethics are conveyed as part of the required core course LAIS100, Nature and Human Values. At the graduate level, all students supported by NSF funds must complete the

course SYGN502, Introduction to Research Ethics, or a suitable substitute as approved by the Ethics Across Campus committee.

3. The institution has and enforces policies on academic honesty and integrity.

Mines has the following policies related to academic honesty and integrity in place:

- *Student Academic Integrity:* Defined through the Student Honor Code which is available through the Student Policies website and enforced through policies and procedures defined in the Undergraduate and Graduate Bulletins.

- *Research Integrity Policy:* Defined through the Faculty Handbook which is available through the Academic Policies website.

- *Faculty Academic Integrity:* Enforced through the faculty misconduct policy and procedure defined in the Faculty Handbook which is available through the Academic Policies website.

Examples of processes used at the Colorado School of Mines to ensure equitable enforcement of these policies are provided in Criterion 2A.

Sources

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- Purpose of the Annual Evaluation

2.S - Criterion 2 - Summary

The institution acts with integrity; its conduct is ethical and responsible.

Summary

Assurance Argument Summary -

Mines has:

- Established a full suite of policies that guide the integrity and ethics of its governing board, administration, faculty, students, and staff;
- A recently established Ethics Hotline that allows employees and students to anonymously report potential ethics and integrity violations;
- A suite of grievance procedures allowing employees and students to report integrity or ethical violations;
- A suite of grievance procedures that guide the institution in responding to integrity and ethics violations;
- An Office of Internal Audit that regularly audits functional areas for compliance to institutional policy;
- Publically available documents (available via the web) that advertise Mines admissions requirements and processes, faculty and staff qualifications, educational costs, and control and accreditation status;
- A Board of Trustees that is appointed by the Governor (as is defined through State statute), holds public meetings, and maintains an open website with meeting agendas and minutes posted;
- Mechanisms to delegate day-to-day management of the institution to the appropriate administrative officials and to the faculty;
- Policies that Mines is committed to freedom of expression and intellectual pursuit; and
- Mechanisms that insure faculty, students and staff apply knowledge responsibly and ethically.

Sources

There are no sources.

3 - Teaching and Learning: Quality, Resources, and Support

The institution provides high quality education, wherever and however its offerings are delivered.

Argument

This section overviews and provides evidence to support that Mines provides a high quality education to its students, regardless of the mechanism that is used for delivery. This education is consistent with both the Mines Mission and the academic degrees which are sought by our students. All instructional programs are vetted through our faculty, who are recognized experts within their areas and who regularly participate in continuing professional development experiences. Over the last ten years, there has been a significant increase in the research that is being completed at Mines, as well as the research experiences that are available to our undergraduate and graduate students. In combination, these features of our institutions result in a high quality education for our students, which are evidenced via successful recruitment and placement in competitive professional positions. Additionally, Mines provides the appropriate resources and infrastructures (including laboratories, library, student support services etc.) to ensure a high quality learning experience at botht the undergraduate and graduate level.

Sources

There are no sources.

3.A - Core Component 3.A

The institution's degree programs are appropriate to higher education.

1. Courses and programs are current and require levels of performance by students appropriate to the degree or certificate awarded.
2. The institution articulates and differentiates learning goals for undergraduate, graduate, post-baccalaureate, post-graduate, and certificate programs.
3. The institution's program quality and learning goals are consistent across all modes of delivery and all locations (on the main campus, at additional locations, by distance delivery, as dual credit, through contractual or consortial arrangements, or any other modality).

Argument

1. Courses and programs are current and require levels of performance by students appropriate to the degree or certificate awarded.

Appropriateness of Programs: All degree programs at Mines have been vetted by the Colorado Commission of Higher Education as being consistent with its stated mission.

Currency of Curriculum, Courses and Performance Levels: Evidence of the currency of Mines curricula and courses is provided via the following means:

- ABET Accreditation: The Engineering Accreditation Commission of ABET accredits most undergraduate degree programs at Mines. Documentation of the current accreditation status of Mines ABET accredited degrees is available online here. Currently, degree programs in Chemical Engineering, Chemical and Biochemical Engineering, Engineering, Engineering Physics, Geological Engineering, Geophysical Engineering, Metallurgical and Materials Engineering, Mining Engineering and Petroleum Engineering are ABET accredited. The initial accreditation visit for new, in fall 2012, undergraduate degree programs in Mechanical Engineering, Electrical Engineering, Civil and Environmental Engineering will be scheduled for fall 2013.

- ACS Accreditation: Mines' undergraduate degree program in Chemistry is approved by the American Chemical Society.

- Core Curriculum Activities: The Core Curriculum Committee has reviewed the core curricula at peer and aspirant institutions, discussed the Engineer of 2020 report, and examined the FE exam content and results, to determine best practices in educating engineers. We developed an alumni survey, conducted focus groups of senior students, and administered a graduating senior survey in order to assess the effectiveness of the curriculum. Results of these assessment activities are available on Blackboard; public results are available here. These results are used by the Core Curriculum Committee to inform proposed program improvements within the core.

- Visiting Committee Input: All departments, and their curricular offerings, are reviewed on a regular basis by external Visiting Committees. Academics, industry leaders and alumni populate these committees. Visiting Committees report to the President and are charged as defined in the Academic Affairs Procedures Manual. These criteria are summarized here.

A table displaying the schedule for upcoming Visiting Committee activity is attached.

Faculty Oversight of Curriculum and Course Changes: Faculty, through Undergraduate and Graduate Councils and the Faculty Senate, review and approve all changes to curricula (both undergraduate and graduate) and course content. Minutes for all meetings of Councils and Senate are available here. Prior to making curriculum changes, the evidence that has been collected to support the necessity of the change is provided to the appropriate committees and senate for review (this includes the recommendations of accrediting boards, visiting committees and curriculum committees). Documentation of Visiting Committee concerns are provided to the participating departments, colleges, curriculum committees and the faculty senate. An example of input provided by a Visiting Committee is given by the Physics Visiting Committee Report.

Evidence supporting program effectiveness: Evidence that supports the effectiveness of Mines efforts to maintain a current curriculum and to produce highly desirable student outcomes is provided through the following:

- Outcome and Salary Statistics: Statistics on placement of Mines graduates are available on the Career Center website. Included as evidence for this document is the 2010-2011 Career Center Annual Report. A summary of this report is also provided in response to Criterion 3.E.2.

- Mines Career Fairs: The Mines Career Day events are held in February and September of each year and are attended by thousands of students, new grads, alumni, and faculty. Mines actively promotes and prepares students for "Career Days" each semester through multiple workshop, student association presentations, the Mines Career Manual and one-on-one advising sessions. The employer participation in this event is strong due, in part, to the desirability of the Mines graduate as an employee. A summary of corporate and student participation as well as selected feedback from corporate participants are available through the Mines Career Center.

- Fundamentals of Engineering Examination: Mines periodically reviews the performance of its graduates who complete the Fundamentals of Engineering examination. The Fundamentals of Engineering (FE) examination is the first step in the process leading to the P.E. license. It is designed for students who are nearing completion in an undergraduate engineering degree. A summary of the results of the last analysis of the FE examination is provided in response to Criterion 3.E.2. This information which this report provides supports that Mines is preparing students with the necessary skills to become effective engineers, as measured through the FE exam.

- National Rankings Metrics: The 2012 Best Colleges rankings of US News and World Report ranks Mines as the 31st top public university in its 2012 edition of Best Colleges. Two components of this ranking are important to this criterion. College Deans and High School Guidance Counselors were asked to rank the quality of program offerings on a scale of one to five, with one being marginal and five being outstanding. Deans at peer institutions ranked the quality of Mines offerings as 3.2 out of 5.0. Guidance Counselors ranked the quality of Mines offerings as 4.0 out of 5.0.

At the graduate level, the 2012 Best Graduate Schools rank has Mines ranked as the 64th best engineering graduate school in the nation. Again, two components of this ranking are important to this criterion. In the graduate case, Engineering Deans and Recruiters were asked to rank the quality of program offerings on a scale of one to five, again with one being marginal and five being outstanding. On this scale, assessment of our peers ranks the quality of Mines graduate programs as 2.9 out of 5.0. Recruiters ranked the quality of the programs higher, at 3.6 out of 5.0.

2. The institution articulates and differentiates learning goals for its undergraduate, graduate and post-baccalaureate, post-graduate, and certificate programs.

Institutional Learning Goals: As articulated in the appropriate Bulletins (Undergraduate or Graduate), Mines has defined distinct program objectives and student learning outcomes for each of its degree programs. At the undergraduate level, these are identified as part of the Profile of the Mines Graduate and were discussed in Criterion 1.B.1.

At the graduate level, institutional objectives and outcomes are being developed as part of the HLC Quality Initiative. At the Masters-level, institutional program objectives and outcomes are still being evaluated by the academic community (i.e., Graduate Council and the Faculty Senate). The draft being considered is modeled after Doctoral-level objectives and outcomes approved by the academic community in Spring 2012 and included in the Graduate Bulletin. The draft Masters objectives and outcomes are available for the Masters-Level Institutional Educational Objectives and Masters-Level Institutional Student Outcomes through these links.

As described above, Doctoral-level objectives and outcomes have been vetted by the academic community and are now codified in the Graduate Bulletin. These objectives and outcomes for the Institutional Educational Objectives and Institutional Student Outcomes are available through these links.

Program Learning Goals: In addition to the institutional objectives and student learning outcomes, program-specific objectives and outcomes have been developed and articulated through the following venues.

- ABET: All ABET accredited undergraduate degree programs have articulated program-specific objectives and student learning outcomes as defined through the required ABET Self Study documentation pointed to below.

BS - Chemical Engineering
BS - Chemical and Biochemical Engineering
BS - Engineering
BS - Engineering Physics
BS - Geological Engineering
BS - Geophysical Engineering
BS - Metallurgical and Materials Engineering
BS - Mining Engineering
BS - Petroleum Engineering

- Quality Initiative: Through the HLC Quality Initiative, Mines has proactively worked to develop an annual assessment report process, program specific objectives and student learning outcomes for all other degree programs at Mines. Samples of materials developed as part of this process for a non-ABET accredited degree program and feedback derived through the University Assessment Committee to these efforts is provided as evidence of these efforts.

- Departmental Websites and Bulletins: Program specific objectives and student learning outcomes are publically available through the web resources maintained by each department and through the Undergraduate and Graduate Bulletins.

In summary, Mines has defined different and appropriate learning goals for each of its programs. Although some overlap exists between the various levels, distinctions are clear based on the degree awarded.

3. The institution's program quality and learning goals are consistent across all modes of delivery and all locations (on the main campus, at additional locations, by distance delivery, as dual credit, through contractual or consortial arrangements, or any other modality.).

Delivery Mechanism: The vast majority of course offerings provided by Mines are offered only as credited hours delivered through on-campus course instruction. In this setting, courses offered at Mines are conducted in a traditional college setting, in which students attend a regularly scheduled campus-based class. Based on the judgment of the instructor, however, some of these classes may be enhanced through the use of technology, but this

is an enhancement to the course rather than a replacement for face-to-face interactions. Many instructors use Blackboard to distribute course materials and manage their courses as a supplement to in-class activities.

The primary exception to this is the requirement that all undergraduate students fulfill a 3 to 6 credit hour "field" requirement, usually completed in the summer between a student's junior and senior year. Field offerings occur both on, and off campus. All, however, are credited in the regular way and all are overseen by Mines faculty. The intent of the "field" requirement is to allow students dedicated, in-depth, practical experience directly related to the chosen field of study. Field session is unique to Mines and is offered in many of our undergraduate degree programs.

Lastly, faculty have experimented with offering some sections of classes to registered Mines students via distance learning techniques. In these isolated examples, the learning goals and content for course sections that are delivered both online and in-person are consistent. Additionally, exams are given in a classroom setting for both versions of the courses.

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- Institutional Student Outcomes
- Masters-Level Institutional Educational Objectives

- Masters-Level Institutional Student Outcomes
- Visiting Committee Criteria

3.B - Core Component 3.B

The institution demonstrates that the exercise of intellectual inquiry and the acquisition, application, and integration of broad learning and skills are integral to its educational programs.

1. The general education program is appropriate to the mission, educational offerings, and degree levels of the institution.
2. The institution articulates the purposes, content, and intended learning outcomes of its undergraduate general education requirements. The program of general education is grounded in a philosophy or framework developed by the institution or adopted from an established framework. It imparts broad knowledge and intellectual concepts to students and develops skills and attitudes that the institution believes every college-educated person should possess.
3. Every degree program offered by the institution engages students in collecting, analyzing, and communicating information; in mastering modes of inquiry or creative work; and in developing skills adaptable to changing environments.
4. The education offered by the institution recognizes the human and cultural diversity of the world in which students live and work.
5. The faculty and students contribute to scholarship, creative work, and the discovery of knowledge to the extent appropriate to their programs and the institution's mission.

Argument

1. The general education program is appropriate to the mission, educational offerings and degree levels of the institution.

All undergraduate programs are designed to fulfill the expectations of the Profile of the Colorado School of Mines Graduate in accordance with the mission of the School. To enable this, the curriculum is made up of a Common Core, a Distributed Core, and individualized Program Curricula for the twelve undergraduate degree granting programs. In addition, students may complete a variety of special programs, such as the McBride Honors Program, and minor programs, such as the Energy Minor.

The undergraduate curricula span four years or eight semesters of study, and most degrees include a summer "field" session. The field session is a full-time activity of between three and six weeks, respectively carrying academic credit of between three and six semester-hours.

The underlying theme in the design of the Mines' undergraduate curriculum is to create a systematized and cross-coupled curriculum that provides both vertical and horizontal connectivity. Vertical pathways develop knowledge and skills in the technical sciences, in engineering practices and design, and in the humanities and social sciences. Horizontal linkages provide the breadth of cumulative knowledge in the basic sciences, engineering sciences, social sciences and humanities in engineering practice and design, and they provide a venue to study the cause-and-effect interplay among engineering systems, natural systems and human systems.

The attached figure displays the superposition of the curriculum on three vertical stems: the technical sciences, engineering practices and design, and the humanities and social sciences. The figure illustrates the predominance of applied science and engineering topics in the junior and senior years within the scope of the technical sciences and engineering practices and design, and the predominance of the mathematical and basic sciences in the freshman and sophomore years and within the technical sciences. Note that the figure merely shows predominance, where in actuality engineering topics and the mathematical and basic sciences are not solely confined to the years indicated.

Within this framework, it is customary at Mines to recognize a separation between the *Core curriculum (i.e., general education)* and a *Program Curriculum*. This separation is not delineated by a fixed point in time within the

progression of semesters-of-study, but instead is a separation into all courses and topical areas that are required of all students at the School (the *Core Curriculum*), and those courses that are required of students majoring in a particular program (the *Program Curriculum*). In general, however, program curricula begin with one or two courses in the fourth semester.

The Core Curriculum is further divided into a *Common Core Curriculum* and a *Distributed Core Curriculum*. The nature of, and the individual components included in these two subdivisions of the *Core Curriculum* are defined below.

Common Core Curriculum – Students in all undergraduate degree programs are required to complete all Common Core Curriculum course requirements. The Mines Common Core consists of the courses linked here.

Distributed Core Curriculum – Students in all degree options must complete various components of the Distributed Core Curriculum through selection, by the student or by the program, of courses in various categories. The Distributed Core Curriculum is an organizational vehicle for sharing and distributing the fundamental engineering sciences (Distributed Engineering) among appropriate disciplines, for allowing greater flexibility to degree programs in tailoring science prerequisites (Distributed Science) to suit program needs, and for allowing students to pursue areas of individual interest in the Humanities and Social Sciences (Distributed Humanities and Social Sciences). Components of the Distributed Core Curriculum include the following:

- Distributed Humanities and Social Sciences Requirement, All students must complete 9 semester hours (3 courses) from an approved list of Humanities and Social Sciences courses. At least 3 of the 9 semester hours must be completed in a course at the 400-level. The Division of Liberal Arts and International Studies maintains and approves the list of courses that may be used to fulfill this requirement. The approved list is published in the Undergraduate Bulletin.

- Distributed Science Requirement, All students are required to complete a minimum of three out of five courses (11 to 12.5 semester hours) from a list of Distributed Science courses. For some majors, the three required courses are prescribed by the major. Others allow the student to choose. The approved list is published in the Undergraduate Bulletin.

Distributed Engineering Requirement – These are additional requirements placed on students in Engineering undergraduate degree programs. Requirements are applicable to undergraduate students in engineering disciplines as specified by the major program. These include the requirements attached.

In summary, the combination of a Core Curriculum, a Distributed Curriculum and a Program Curriculum, results in an educational program that is appropriate to the Mines' Mission and which is adaptive to our educational offerings and degree levels.

2. The institution articulates the purposes, content, and intended learning outcomes of its undergraduate general education requirements. The program of general education is grounded in a philosophy or framework developed by the institution or adopted from an established framework. It imparts broad knowledge and intellectual concepts to students and develops skills and attitudes that the institution believes every college-educated person should possess.

The purposes, content and intended learning outcomes of the general education requirements are communicated to all prospective students and their families. It is, in part, these learning outcomes that prospective students and their parents find to be compelling reasons for seeking admission into a Mines' degree program. Programmatically, the intent of requiring a common core of courses is to provide all CSM undergraduate students with,

- a broad educational foundation—both content and experience—that is consistent with the educational objectives articulated in the Profile of the Colorado School of Mines Graduate;
- a requisite base of knowledge upon which discipline-specific curricula can be built; and,

- the opportunity to explore the wide variety of disciplines offered at CSM in order to choose the appropriate discipline in a knowledgeable fashion without adversely impacting a student's time-to-degree.

For all of our degree programs, it is the Mines Mission and the Profile of the Colorado School of Mines Graduate that has guided our philosophy and curriculum design; however, because Mines is a school of science and engineering, the ABET accreditation process has been used as an effective framework for articulating the Mines' purpose, learning outcomes and curriculum content. Learning outcomes for the core, both common and distributed, have been explicitly constructed as part of the ABET accreditation process under which the majority of our undergraduate degree programs are evaluated. These outcomes span beyond the ABET accredited departments to include all programs, with adaptations for programmatic needs. Mines has mapped the expectations of the Profile of the Colorado School of Mines Graduate to ABET student outcome criteria *a* through *k*. This mapping is provided as part of all ABET Self Study documents, and example of which is included here with the definition of ABET student outcome criteria *a* through *k* provided here.

In addition, Mines has mapped student outcomes for each course in the core curriculum to ABET student outcome criteria *a* through *k*. Again, this mapping is provided as part of all ABET Self Study documents, and example of which is provided here for common core curriculum and here for distributed core curriculum.

Thus, through this process Mines has directly mapped individual learning outcomes relevant to its Profile of the Colorado School of Mines Graduate to individual courses in the core curriculum using ABET criteria *a* through *k* as the crosswalk.

3. Every degree program offered by the institution engages students in collecting, analyzing and communicating information; in mastering modes of inquiry or creative work; and in developing skills adaptable to changing environments.

In addition to individual program outcomes that address these activities (e.g., as articulated in this ABET Self Study document), as defined in the ABET Criterion 3 *a* through *k* crosswalk given above, the institution insures that students engage in the following activities through both common core coursework and requirements within the majors. This section addresses the common coursework because every student completes these courses and listing the requirements for every major within the institution would be overwhelming. However, the requirements for each major are available in the Undergraduate Bulletin.

Analyzing and Interpreting Data: Principles of Chemistry (CHGN121), Principles of Economics (EBGN201), Human Systems (SYGN200), Calculus for Engineers I (MATH111), Calculus for Engineers II (MATH112), Calculus for Engineers III (MATH213), Differential Equations (MATH225), Physics I (PHGN100). Additionally, many courses have required laboratory components.

Communicating Effectively: Principles of Chemistry (CHGN121), Engineering Practices Introductory Course Sequence (EPIC151), Engineering Practices Introductory Course Sequence (EPIC251), Nature and Human Values (LAIS100), Human Systems (SYGN200), Calculus for Engineers I (MATH111), Calculus for Engineers II (MATH112), Calculus for Engineers III (MATH213), Differential Equations (MATH225), Physics I (PHGN100).

Additionally, Mines has a Writing Across the Curriculum program which has the purpose of accentuating the role effective communication plays in the professional lives of engineers, and applied scientists. Consistent with this program, every major within our curriculum contains at least three required, writing intensive courses.

Mastering Modes of Inquiry or Creative Work: This outcome is part of common core coursework for Principle of Chemistry (CHGN121), Engineering Practice Introductory Course Sequence (EPIC151), Engineering Practice Introductory Course Sequence (EPIC251), Calculus for Engineers I (MATH111), Calculus for Engineers II (MATH112), Calculus for Engineers III (MATH213), Differential Equations (MATH225), Physics I (PHGN100), LAIS100, Principles of Economics (EBGN201), and Human Systems (SYGN200). Additionally, many of our majors require a capstone course or Senior Design (course numbers vary by department and program). The mapping

of these courses to this outcome is also reflected through ABET criterion 3 *a, b(i), c, e, h*, and *k,* which is addressed throughout accredited departments.

Adaptable to Changing Environments: This outcome is part of common core coursework, Engineering Practices Introductory Course Sequence (EPIC151), Engineering Practices Introductory Course Sequence (EPIC251), Calculus for Engineers I (MATH111), Calculus for Engineers II (MATH112), Calculus for Engineers III (MATH213), Differential Equations (MATH225), Physics I (PHGN100). As defined by the Profile of the Mines Graduate crosswalk given above, Mines also maps flexibility to adjust to ABET criterion 3 *c, d, e, h, i* and *j*.

4. The education offered by the institution recognizes the human and cultural diversity of the world in which students live and work.

Courses in the common core that address these criteria include EPIC151, EPIC251, LAIS100, EBGN201, SYGN200, PHGN100. All degree programs require the common core courses be completed. Additionally, as defined in the ABET Criterion 3 *a* through *k* crosswalk to the Profile of the Mines Graduate, the institution insures that students are exposed to, and recognize human and cultural diversity in a context appropriate to science and technology users and innovators through ABET Criterion *d* and *h*.

Additionally, Mines encourages students to include an international experience to their undergraduate or graduate education. The Office of International Programs (OIP) helps students design and implement a study abroad component to their educational programs. In addition, OIP also assists international students to come to Mines as International Exchange students, thereby diversifying and enriching the educational components of a Mines education. Evidence of student participation in this opportunity is provided in response to Criterion 3.E.2.

5. The faculty and students contribute to scholarship, creative work, and the discovery of knowledge to the extent appropriate to their programs and the institution's mission.

As interpreted by the Board of Trustees, scholarship, broadly defined, is central to the mission of Mines. Selected scholarship accomplishments of faculty and students at Mines are highlighted in annual publication, Energy and the Earth Magazine. Evidence of broad faculty and student engagement in scholarship is provided through the following indicators.

Faculty Expectations: The Faculty Handbook defines expectations for all tenure/tenure-track faculty at Mines. Broadly, faculty responsibilities fall in three areas: teaching, scholarship and service. The expected distribution of effort between these three areas is defined as 40%, 40% and 20%, respectively. Faculty are evaluated annually by their respective Department Heads and Division Directors on their attainment of these expectations via the evaluation process described in the Academic Affairs Procedures Manual.

The Faculty Handbook also describes expectations for promotion and tenure. Scholarship accomplishments are highlighted as necessary requirements for both promotion and tenure. Additionally, the University Promotion and Tenure Committee has produced reporting guidelines for promotion and tenure candidates that ensure candidates highlight scholarship, external sponsorship of research activities and publication records in their promotion and tenure packages.

Faculty Research Awards: As evidence of faculty engagement in scholarship, the Office of Research Administration publishes an annual summary of sponsored research activity. In FY11-12, total sponsored research awards were $55.7M. Averaged over the number of tenure/tenure-track faculty at Mines, this award volume is about $298k/faculty/year. This is an increase in comparison to the last HLC report, at which time funded research was at $30M.

The distribution of awards is distinctive to Mines' mission as an institution emphasizing applied science and engineering. As can be seen in the graph below, roughly 38% of the awards received were provided through industrial partnerships. The remaining 62% was derived primarily from federal sources. This profile is distinctive to

Mines. Other engineering institutions/colleges typically derive over 90% of their externally sponsored research dollars from federal sources.

Student Research Opportunities Enabled by Faculty-Led Research Activities: Faculty engagement in research has led to significant educational opportunities for both graduate and undergraduate students.

- *Graduate:* As expected at an institution focusing on science and technology, the majority of students enrolled in graduate degree programs at Mines are enrolled in thesis- or dissertation-based degree programs, all under the direction of a Mines faculty member. A summary of the number of degrees being sought in the fall 2012 is provided in the attached table.

Mines faculty provide support to students engaged in research in the form of providing Research Assistantships. Research Assistantships provide financial support by paying tuition, fees, insurance and stipend so students may engage in an unfettered fashion in research activities that apply directly to their degree program. Students may also be engaged in research activities that do not lead toward meeting degree requirements. These students are hired as Graduate Student Hourly employees. While not needed for meeting degree requirements, these students nevertheless gain invaluable research experience. . Evidence of student participation in this opportunity is provided in response to Criterion 3.E.2.

- *Undergraduate:* Undergraduate students are engaged, and supported through faculty research activities in a variety of manners. Examples of undergraduate engagement in research are listed here.

Graduate Curriculum: All PhD programs require completion of no less than 24 research credits. Thesis-based master degrees require completion of 6 research credits. Professional Masters degrees often require 6 credit hours of independent project/engineering report/case study work. Evidence of student participation in this opportunity is provided in response to Criterion 3.E.2.

Undergraduate Curricular Components: As part of the Engineering Design Introductory Course Sequence (EPICS) all students are introduced to engineering design and problem solving in their freshman year. The course description of EPIC151 is as given below.

EPIC151 Design EPICS I (I,II,S). Design EPICS I introduces students to a design process that includes open-ended problem solving and teamwork integrated with the use of computer software as tools to solve engineering problems. Computer applications emphasize graphical visualization and production of clear and coherent graphical images, charts, and drawings. Teams assess engineering ethics, group dynamics and time management with respect to decision- making. The course emphasizes written technical communications and introduces oral presentations. 3 semester hours.

All ABET-accredited degree programs, representing 9 of 12 total undergraduate degree programs at Mines, are required to incorporate a capstone design experience – known at Mines as Senior Design. Course descriptions for Senior Design experiences may be found in the Undergraduate Bulletin. A typical description of this experience is provided by EGGN491, the design course required as part of the “Engineering” degree program.

EGGN491. SENIOR DESIGN I (I, II) (WI) This course is the first of a two-semester capstone course sequence giving the student experience in the engineering design process. Realistic open-ended design problems are addressed for real world clients at the conceptual, engineering analysis, and the synthesis stages and include economic and ethical considerations necessary to arrive at a final design. Students are assigned to interdisciplinary teams and exposed to processes in the areas of design methodology, project management, communications, and work place issues. Strong emphasis is placed on this being a process course versus a project course. This is a writing-across-the-curriculum course where students' written and oral communication skills are strengthened. The design projects are chosen to develop student creativity, use of design methodology and application of prior course work paralleled by individual study and research. Prerequisite: Field session appropriate to the student's specialty and EPIC251. For Mechanical Specialty students, concurrent enrollment or completion of EGGN 411. For Civil Specialty students,

concurrent enrollment or completion of any one of EGGN444, EGGN445, EGGN447, or EGGN464. 1-2 hour lecture; 6 hours lab; 3 semester hours.

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3.C - Core Component 3.C

The institution has the faculty and staff needed for effective, high-quality programs and student services.

1. The institution has sufficient numbers and continuity of faculty members to carry out both the classroom and the non-classroom roles of faculty, including oversight of the curriculum and expectations for student performance; establishment of academic credentials for instructional staff; involvement in assessment of student learning.
2. All instructors are appropriately credentialed, including those in dual credit, contractual, and consortial programs.
3. Instructors are evaluated regularly in accordance with established institutional policies and procedures.
4. The institution has processes and resources for assuring that instructors are current in their disciplines and adept in their teaching roles; it supports their professional development.
5. Instructors are accessible for student inquiry.
6. Staff members providing student support services, such as tutoring, financial aid advising, academic advising, and co-curricular activities, are appropriately qualified, trained, and supported in their professional development.

Argument

1. The institution has sufficient numbers and continuity of faculty members to carry out both the classroom and the non-classroom roles of faculty (oversight of the curriculum and expectations for student performance; establishment of academic credentials for instructional staff; involvement in assessment of student learning; etc.).

Adequacy of Faculty Numbers through Peer Comparison of Faculty-to-Student Ratios: As of fall 2011, Mines had 80 Professors, 70 Associate Professors, 45 Assistant Professors, 16 Teaching Professors, 28 Associate Teaching Professors, and 7 Assistant Teaching Professors. This results in a total of 246 members of the faculty who teach, serving a student body of 5,200. Approximately 3900 of these students were undergraduates; 1300 were graduate students.

The attached figures display the ratio of students per tenure/tenure-track faculty member compared to those of peer institutions as derived by data published by ASEE. For both undergraduate and graduate student head count, student per faculty ratios are comparable to those of peer institutions.

Faculty Hiring, Tenure and Promotion: Indicators of continuity of the faculty at Mines can be gleaned by observing the ranks at which faculty are initially hired and by examining the success rates of faculty progressing through the tenure and promotion process.

As shown in the attached table, the majority of tenure/tenure-track faculty hired at Mines are hired at the assistant professor level.

Many of these faculty matriculate to higher ranks through the tenure and promotion process. A summary of the success rate of faculty working through the tenure and promotion process is shown in the attached figure.

* Most requests included a decision to award tenure with promotion

Finally, as shown in the attached table, faculty – particularly those who have received tenure – remain at Mines for a significant fraction of their productive careers.

As these numbers indicate, Mines has sufficient numbers of faculty to carry out both the classroom and non-classroom roles of faculty. This is true across all programs and departments. For illustrative purposes, the paragraph's that follow provide specific examples that are drawn from our ABET accredited departments. These examples are illustrative, not exclusive.

ABET Criterion 6: All ABET accredited degree programs must satisfy detailed ABET review of Criterion 6 – Faculty. In particular, Criterion 6A requires programs to:

Describe the qualifications of the faculty and how they are adequate to cover all the curricular areas of the program. This description should include composition, size, credentials, and experience of the faculty

Criterion 6C requires programs to

Discuss the adequacy of the size of the faculty and describe the extent and quality of the faculty involvement in interactions with students, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners including employment of students.

Program responses that include activities and evidence associated with these criteria are available as part of the uploaded ABET Self Study documents. Two examples are provided here and here.

2. All instructors are appropriately credentialed, including those in dual credit, contractual, and consortial programs.

The Faculty Handbook, Section 4.2, lists the required credentials for each level of faculty appointment. A faculty hire is not considered unless the individual matches these minimal requirements.

3. Instructors are evaluated regularly in accordance with established institutional policies and procedures.

As required by the Faculty Handbook, faculty – tenure/tenure track, teaching and research – are evaluated annually by his/her respective department head or division director. In addition, the direct supervisor of the department head/division director, either the Dean or the Provost, reviews these evaluations. As defined in the Academic Affairs Procedures Manual, the purpose of the annual evaluation activity is, in part, to:

- Encourage professional development, enhancement, and/or renewal, and
- Encourage individual excellence and achievement within a framework of shared and accepted standards of equitable professional judgment.

As part of this evaluation process, each faculty member is annually required to complete a Faculty Data Report (FDR). The FDR is divided into three major sections: Teaching, Scholarship and Service. Information provided by each faculty member, under the category Scholarship, allows the institution to evaluate activity presented in the archival literature as well as activities that do not result in archival materials being produced. Faculty are also required to disclose, and are subsequently evaluated on, the level and nature of support secured for conducting sponsored research through the FDR. Finally, the FDR allows faculty to officially notify the institution of any honors or awards he or she may have received during the past year. Faculty are also evaluated by the students in their classes; the student evaluation is addressed in the next section.

4. The institution has processes and resources for assuring that instructors are current in their disciplines and adept in their teaching roles; it supports their professional development.

Student Evaluations: All faculty engaged in classroom instruction are evaluated by students every semester, in every class. Student evaluations of faculty instruction are freely available through the Arthur Lakes Library. These

evaluations are reviewed by the appropriate Department Head and integrated into the annual faculty evaluation process. In this way, student evaluations have an impact on both annual raises, and on promotion and tenure.

Professional Development: Through the Trefny Institute of Educational Innovation, Mines sponsors seminars and workshops on innovative teaching strategies and works with individual faculty to improve teaching. The Trefny Institute also houses both the Center for Engineering Education, whose focus is on innovative instruction within the engineering disciplines, as well as the Center for Assessment in Science, Technology, Engineering and Mathematics (STEM), whose focus is on the measurement of student outcomes in STEM. The Director of the Trefny Institute is also a senior editor for the *Journal of Engineering Education*, the premier international journal for engineering education research. Many of Mine's faculty attend conferences and annual meetings which focus on quality teaching and educational research, such as the American Society for Engineering Education, the Special Interest Group in Computer Science Education, Mathematics Association of America, Frontiers in Education Conference, Annual International Society for Information Technology and Teacher Education, Annual Technical Education Conference and Exposition, and National Education Computing Conference (NECC). All of these conferences focus on the high quality delivery of STEM content at an undergraduate and graduate level. Most faculty belong to multiple professional organizations and are active in them. Evidence of these faculty affiliations and activities are collected through the annual Faculty Data report and is considered when the Department Head completes the annual faculty evaluation.

In accordance with section 7.2.1 of the Faculty Handbook, all newly appointed tenure-track faculty prepare a Professional Growth Plan in consultation with his/her Department Head/Division Director. These plans are reviewed as part of faculty evaluation and feedback is provided for improvement purposes.

Faculty can also apply for sabbatical leave every seven years. They must submit a plan to be approved by the Office of Academic Affairs and the Board of Trustees. They must write a report about their activities at the conclusion of their sabbatical.

In summary, all of Mines faculty participate in professional development that contributes to their own knowledge development and to a high quality instructional experience for students. Further examples are provided in the paragraphs that follow which illustrate these activities in our ABET accredited departments.

ABET Criterion 6: All ABET accredited degrees must satisfy detailed ABET review of Criterion 6 – Faculty. In particular, Criterion 6A requires programs to

Describe the qualifications of the faculty and how they are adequate to cover all the curricular areas of the program. This description should include the composition, size, credentials, and experience of the faculty.

Criterion 6D requires programs to

Describe the professional development activities that are available to faculty members.

Examples of program responses that include activities and evidence associated with these criteria are provided here and here.

5. Instructors are accessible for student inquiry.

An expectation that faculty are accessible for student inquiry is defined in the following sources.

- Faculty Handbook, section 6.1.3 requires faculty to provide "students reasonable access through regular and clearly posted office hours, and email communications, personal consultations, etc."

- Graduate Student Statement of Values and Expectations provides that students should "expect to interact with those faculty who will enrich [their] graduate education" and that academic advisors "be available to

establish and maintain a mutually agreeable schedule of evaluation and supervisory meetings, either remotely or in person."

The student evaluations also include questions that address the responsiveness of the instructor in class and the availability of the instructor outside of class. As defined in the response to 3.C.4, student evaluations of instructors are included as part of the annual faculty evaluation process.

6. Staff members provide student support services, such as tutoring, financial aid advising, academic advising, and co-curricular activities, are appropriately qualified, trained, and supported in their professional development.

Academic Advising & Support: At the undergraduate level, all first-year and second-year students are advised and may receive tutoring support via the Center for Academic Services & Advising (CASA). CASA is staffed with full-time, professional Academic Advising Coordinators. The coordinators provide assistance and guidance until the spring semester of a student's sophomore year. At this time, students (with the assistance of the Coordinators) transition to faculty academic advisors within the student's chosen major/discipline/college. Faculty learn about the programs in their department through direct experience and department-wide meetings.

CASA also implements a Peer Advising model where advisees may receive peer to peer assistance, feedback, and guidance. These students work within the Center and are trained by the professional staff. While they have no signing power or authority, their unique knowledge of courses, policies, and faculty is a valued addition to CASA.

Finally, through CASA Mines offers tutoring services for all core courses, many of the upper division courses and Thermodynamics and Fluids (courses that are known to cause comprehension challenges for students). The expertise of a given tutor is posted online.

An annual summary of activities and student participation in services offered through CASA is available here.

Financial Aid Advising: The Office of Financial Aid provides advising on grants, scholarships, loans and student employment. All staff members in the Financial Aid Office are full-time financial aid administrators that are trained to answer financial aid questions and general questions related to functions outside the Financial Aid Office. The Mines Financial Aid Office develops and maintains policies and procedures for all functions related to the office and holds weekly staff meetings to discuss any changes to those procedures. Staff members also participate in local free trainings and webinars as well as travel to regional conferences when the focus is on their area of expertise.

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3.D - Core Component 3.D

The institution provides support for student learning and effective teaching.

1. The institution provides student support services suited to the needs of its student populations.
2. The institution provides for learning support and preparatory instruction to address the academic needs of its students. It has a process for directing entering students to courses and programs for which the students are adequately prepared.
3. The institution provides academic advising suited to its programs and the needs of its students.
4. The institution provides to students and instructors the infrastructure and resources necessary to support effective teaching and learning (technological infrastructure, scientific laboratories, libraries, performance spaces, clinical practice sites, museum collections, as appropriate to the institution's offerings).
5. The institution provides to students guidance in the effective use of research and information resources.

Argument

1. The institution provides students support services suited to the needs of its student population.

Through the Center for Academic Services & Advising (CASA) Mines offers a variety of academic support services. These include:

- *Tutoring*: Through the Academic Services office, Mines offers free, one-on-one tutoring in all core courses, many of the upper division courses and Thermodynamics and Fluids (courses that are known to cause comprehension challenges for students). The Academic Services office provides both regular hours for walk in support, as well as the opportunity to make an appointment.

- *Academic Workshops*: Academic Services also staffs the Academic Excellence Workshops. These workshops run for one hour each week, concurrent with freshman courses in Calculus, Physics, Chemistry and Statistics.

- *Academic Coaching*: Individualized academic coaching to help students develop the fundamental skills necessary to succeed at college.

- *Academic Advising*: Academic Advising is provided through CASA's professionally trained staff (see Criterion 3.D.3) until the spring semester of a student's sophomore year. After this, students are assigned an advisor within their major department.

Through the Counseling Center Mines offers a variety of student support services. These include:

- *Personal Counseling*: Individual counseling is provided to assist students in resolving issues that cause emotional distress and interfere with personal goals and academic success.

- *Drug and Alcohol Counseling:* Through the ECHO program, Mines provides students information related to the use and misuse of alcohol and other drugs.

- *Career Counseling: Career counseling* helps students understand the relationship between self-knowledge and career choice. This is accomplished through assessment of interests, competencies, values, experiences, personal characteristics and desired lifestyle. Individual career counseling is designed to assist those students who may be questioning whether engineering or science is the best career path for them.

Disability Services: Through the Office of Disability Services Mines provides students with disabilities equal access to courses, programs and activities by providing reasonable accommodations for qualified undergraduate, graduate and professional students.

Multicultural Engineering Program (MEP): Through the Multicultural Engineering Program, Mines provide support opportunities to our multicultural student body. Transition and bridging programs are described here.

Financial Aid Advising: The Office of Financial Aid provides advising on grants, scholarships, loans and student employment. The Office of Financial Aid has adopted the National Association of Student Financial Aid Administrators Statement of Ethical Principles and Code of Conduct. This Code of Conduct is posted online and as is stated explicitly on this website, Mines acknowledges students have the rights described here.

The Financial Aid Office responds to these rights by maintaining a knowledgeable and responsive staff that are available for consultation through appointment, and by maintaining a "frequently asked questions" for both new and current students.

2. The institution provides for learning support and preparation instruction to address the academic needs of its students. It has a process for placing entering students in courses and programs for which the students are adequately prepared.

Undergraduate Admissions Requirements: Detailed information on Mines admission requirements and procedures may be found in the Mines Undergraduate Bulletin. Mines admits students who are believed to have demonstrated they can do the required classroom and laboratory work and profit from the School's programs. The decision to admit a student is based on an assessment of his or her ability to earn a degree at Mines. Criteria considered in evaluating prospective students are included here.

No single criterion for admission is used; however, the most important factor is the academic record in high school or college. The minimum admission requirements for all high school graduates who have not attended a college or university are described here.

One unit, including laboratory, must be either chemistry or physics. Second and third units may be chemistry, physics, zoology, botany, geology, biology, etc. with laboratory. Both physics and chemistry are recommended for two of the three required units. General Science is not acceptable as a science unit; however it is acceptable as an academic elective unit.

- The two additional academic units (social studies, mathematics, English, science or foreign language) are required. These units must be acceptable to the applicant's high school to meet graduation requirements. For applicants submitting GED Equivalency Diplomas, these units may be completed by the GED test.

- Applicants from the United States and Canada are required to submit the scores of either the ACT or SAT.

Transfers: Students may also request transfer admission to undergraduate programs at Mines from another college or university. Typically, such students transfer as late freshman and sophomores, and occasionally as juniors, particularly in the case that one of our formal articulation agreements has been followed. This is discussed in detail in response to Criterion 4. To graduate, transfer students must meet the residency and upper division course requirements described below, with the result that upper division transfers are unusual. However, when these occur, they are handled on a case-by-case basis by faculty in the appropriate academic departments.

The minimum admission requirements for all students who have attended another college or university are attached here.

History of Admissions: A history of admission standards for incoming freshman is provided in the attached table.

Graduate Admissions Requirements: Institutional admission requirements and procedures for students seeking enrollment in graduate programs may be found in the Mines Graduate Bulletin. Institutional admissions requirements are included here.

Beyond these minimum requirements, faculty within each degree granting program evaluate and determine the suitability of candidate admission into a degree program based on a standard application package. The application package must include transcripts from previous degree programs, examination scores, letters of recommendation and a candidate-written statement of goals.

In addition to this rigorous screen process, students have the opportunity to participate in the support services described in Criterion 3D1.

3. The institution provides academic advising suited to its programs and the needs of its students.

Academic Advising: All first-year and second-year students are advised via the Center for Academic Services & Advising (CASA). CASA is staffed with full-time, professional Academic Advising Coordinators. The coordinators provide assistance and guidance until the spring semester of a student's sophomore year. At this time, students (with the assistance of the Coordinators) transition to faculty academic advisors within the student's chosen major/discipline/college.

Questions concerning work in a particular course are discussed directly with the appropriate course instructor. All students assigned a first-year academic advisor through CASA are issued an alternative PIN for priority registration and must meet individually with their academic advisor for academic advising prior to receiving this PIN. Each first-year academic advisor serves as the academic advisor until the student officially declares an academic major with the Registrar's Office. At that point, the departmental advisor assumes the role of registration advisement and alternative PIN assignment.

Upon declaration of a major, all students choose, or are assigned, an academic advisor who is a faculty member within the major field of study. As examples of programmatic advising approaches, all ABET accredited degree programs must satisfy detailed ABET review of Criterion 1 – Students. In particular, Criterion 6D requires programs to

Summarize the process for advising and providing career guidance to students. Include information on how often students are advised, and who provides the advising (program faculty, departmental, college or university advisor).

While specific to ABET accredited degree programs, advising practices described for first- and second-year students are common across all programs and the practices described for upper-division advising are commonly applied to all Mines' degree programs. Program responses that include activities and evidence associated with these criteria are available as part of the uploaded ABET Self Study documents. An example may be found here.

Academic Mentoring: At the undergraduate level, all first-year students are also mentored through the required course, CSM101. CSM101 is managed by CASA, with the intent that CSM101 mentors establish immediate contact with first-year students in order to achieve the skills described here.

Each first-year academic mentor, a member of the academic faculty, is assigned one section of CSM101 and advises approximately twenty-five students. Generally, half of the class instructors/mentors are academic faculty, with the remaining instructors being student life professional staff or administrative faculty. Transfer students who have successfully completed fewer than 30 semester hours (as reflected on an academic transcript) at an institution of higher education after high school graduation are automatically enrolled in the First-Year Mentoring Program in their first semester at Mines. The Admissions Office advises undecided transfer students, during their first year, who have successfully completed 30 or more semester hours.

Advising Resources: In addition to providing physical advisors, departments and academic programs provide a variety of resources to students to facilitate academic advising. Access to these resources is generally provided to current and prospective students through departmentally maintained websites. A typical example of a departmental website is that maintained by the Applied Mathematics and Statistics Department. Available for student use is advising information related to;

- core and distributed core curriculum requirements,
- course flow charts that include prerequisite information, and
- typical course schedules.

In cases where students are not academically successful (i.e., subject to academic probation or suspension), a faculty staffed Readmissions Committee works with students to construct possible paths forward for academic success. The criteria by which students are required to visit with the Readmissions Committee are defined in the Undergraduate Bulletin.

Graduate level Advising: At the graduate level, all incoming students are appointed interim faculty advisors. The role of the interim advisor is to help the incoming student matriculate into the degree program and establish a first-semester course schedule. As defined in the Graduate Bulletin, all graduate students are required to have chosen a permanent faculty advisor by the end of their second semester of study.

As part of the Quality Initiative, a variety of activities have been undertaken to assess and improve the quality of graduate advising. Assessment activities have included:

- a survey of student impressions on the importance of professional development and faculty engagement in facilitating the development of professional skills,
- a revised graduate student exit survey that asks students, amongst other things to rate the quality of faculty advising,
- a quantitative analysis of doctoral-level retention and completion rates, and
- a quantitative analysis of doctoral-level publication metrics.

In addition to these assessment activities, the Quality Initiative has focused on evaluating methods for improving the quality of graduate advising. Methods that are being evaluated in different departments include:

- a thesis committee, advisor, student reporting and progress tracking tool, and
- an oral presentation assessment tool.

4. The institution provides to students and instructors the infrastructure and resources necessary to support effective teaching and learning (e.g., technological infrastructure, scientific laboratories, libraries, performance spaces, clinical practice sites, museum collections).

Laboratory Facilities Related to Instruction: With the exception of the Chemistry program, all laboratory-intensive undergraduate degree programs are ABET accredited. As part of the ABET accreditation process, degree programs must satisfy detailed ABET review of Criterion 7 – Facilities. In particular, Criterion 7A requires programs to:

Summarize each of the program's facilities in terms of their ability to support the attainment of the program educational objectives and student learning outcomes and to provide an atmosphere conducive to learning.

Program responses that include activities and evidence associated with this criterion are available as part of the uploaded ABET Self Study documents. Examples of program responses are included here and here.

Mines' undergraduate degree program in Chemistry is accredited by the American Chemical Society (ACS). As part of the ACS accreditation requirements, the program (Criterion 4.1 – Physical Plant), "should have classroom, teaching laboratory, research, office and common space that is safe, well-equipped, modern, and properly maintained." In summary, Mines has provided both of these accrediting agencies (ABET and ACS) with the necessary evidence to support the availability and appropriateness of our laboratories.

Technological Infrastructure: All ABET accredited degree programs must satisfy detailed ABET review of Criterion 7 – Facilities. In particular, Criterion 7B requires programs to

Describe any computing resources (workstations, servers, storage, networks including software) in addition to those described in laboratories in Part A, which are used by the students in the program. Include a discussion of the accessibility of university-wide computing resources available to all students via various locations such as student housing, library, student union, off-campus, etc. State the hours the various computing facilities are open to students. Assess the adequacy of these facilities to support the scholarly and professional activities of the students and faculty in the program.

Program responses that include activities and evidence associated with these criteria are available as part of the uploaded ABET Self Study documents. We note that these program responses include institutional infrastructure that is available to *all* students, regardless of whether the programs are ABET accredited or not. Examples of responses provided ABET are included here and here.

Library: The Arthur Lakes Library is housed in a 77,000 square foot building located centrally on the Mines campus. This specialized technical library supports the education and research needs of the entire Mines community, and serves as a regional center for information in engineering and the applied sciences. In addition to book and journal collections, the Library maintains special collections in science and technology, is a selective U.S. government publications depository and a partial Colorado State publications depository.

The Library's collections are a combination of print and electronic formats. Print books comprise the majority of the collection, while most of our technical reference works and indexes are electronic. We currently hold more journals in electronic format than in print. Access to e-resources for the Mines community is available both on and off campus. The growth of our e-resources and the balance we maintain between print and electronic formats result in greater access to information.

Subject collections are categorized at the study level or higher (up to research level) for Mines undergraduate programs with the exception of biological engineering. The Library expects to complete installation of Primo, its new search interface, in 2011 to improve discovery of our resources. The Library participates in resource-sharing programs with other libraries regionally and nationwide to expand access to information. User-initiated interlibrary loan services improve convenience and response time in many cases.

The 2011-2012 library staff consists of 11 FTE library faculty, 9.5 FTE paraprofessional staff and 8 FTE student assistants. Since 2006 the Library building has undergone remodeling and re-purposing improvements. The Arthur Lakes Library's 2010-2011 annual report and planning documents are available for site review.

Technology Fee Committee: The Technology Fee Committee is charged with evaluating and funding proposals submitted by eligible members of the campus community. Funds are derived from the Technology Fee paid by students and matching funds budgeted by the Institution. The purpose of the Technology Fee overseen by the Committee is described here.

Since its inception, the Technology Fee has dispersed over $12M to campus constituencies to improve student access to technology. The distribution of awards over the past six years is provided in the attached table.

Museum Collections: The Colorado School of Mines Geology Museum, home to one of the state's two Goodwill moon rocks collected during the Apollo 17 mission, was started in 1874 and displays mineral, fossil, gemstone, meteorite and historic mining artifact exhibits on two floors.

The museum serves as the state repository for Colorado's mineral heritage and promotes its importance and understanding to the university community and the public. It aims to inspire scientific curiosity through education and research while encouraging appreciation of the earth and responsibility for its mineral, fossil, meteorite and historic mining treasures.

As described in this section, as well as throughout this document, Mines provides its students and faculty with the infrastructure and resources that are necessary to support effective teaching and learning.

5. The institution provides to students guidance in the effective use of research and information resources.

Library Efforts: The Arthur Lakes Library makes the following resources available for students, faculty and staff.

- Undergraduate research guides for core undergraduate coursework and case study opportunities.
- Graduate research guides, citation management recommendations and thesis writing information.
- Faculty research guides, citation management recommendations and journal ranking information.

In addition, Library staff offers a variety of hands-on instructional opportunities in the form of workshops and orientation sessions. These include sessions on research strategies and journal article basics. Lastly, Library staff offers a variety of on-line how to guides. These guides including materials related to research efforts by subject, obtaining appropriate journal articles, and use and organization of information.

Classroom Activities: As early as their freshman year, students begin to learn how to use research and information resources to guide their professional decisions. Three core curriculum courses provide this instruction in research and information services directly. These are:

- *EPICS151 and EPICS251 – Engineering Practices Introductory Course Sequence:* A major component of the Engineering Practice Course Sequence (EPICS), which includes the required core course (EPICS151), is solving a real-life engineering challenge using research and information sources to support the proposed solution. Students must then defend their solution in oral and written form for a grade. Given the research and information intensive nature of this sequence, the Library has provided specific web resources for students enrolled in EPICS.
- *LAIS100 – Nature and Human Values:* As part of the required course LAIS100, students must research and complete a paper related to issues surrounding earth, energy or environment. Given the research and information intensive nature of this course, the Library has provided specific web resources for students enrolled in Nature and Human Values.

At the graduate level, classroom exposure to the concepts of effective and appropriate use of research and information resources is provided through the following venues:

- *SYGN501 – The Art of Science:* The content of this course is designed to help students acquire the skills to be effective researchers. Topics include choice of research topic, constructing a work plan, executing this plan effectively, writing a publication, journal selection, proposal writing, and research ethics.

- *SYGN502 – Introduction to Research Ethics:* All students supported at any time in their graduate careers through the National Science Foundation are required to have training in research ethics. Most students fulfill this requirement by completing the course SYGN502. Others, in selected programs, complete this requirement by fulfilling activities approved by the Ethics Across the Campus Committee. In either case, fulfillment of this requirement introduces students to the various components of responsible research practices.

In summary, all of our students, both undergraduate and graduate, receive guidance in the effective use of research and information resources. The development to this skills base is monitored and guided through course work, classroom assignments and theses.

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[1] Departments listed as existed prior to academic reorganization in fall 2012.

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- Financial Aid Advising
- Graduate Admissions Requirements
- History of Admissions
- Multicultural Engineering Program
- Minimum Admissions Requirements
- Purpose of Technology Fee
- Technology Fee Funds Awarded
- Transfers
- Undergraduate Admissions Requirements

3.E - Core Component 3.E

The institution fulfills the claims it makes for an enriched educational environment.

1. Co-curricular programs are suited to the institution's mission and contribute to the educational experience of its students.
2. The institution demonstrates any claims it makes about contributions to its students' educational experience by virtue of aspects of its mission, such as research, community engagement, service learning, religious or spiritual purpose, and economic development.

Argument

1. The institution's co-curricular programs are suited to its mission and contribute to the educational experience of its students.

Complements Mission: The Office of Student Life oversees co-curricular activities at Mines. There are over a 100 organizations from which the students may select and become involved. Many of the professional organizations on campus directly complement the mission of Mines by focusing on energy, mineral, and materials science and engineering and associated engineering and science fields (these are discussed in the next section, "Complements to Education". Many of these organizations also complement the Board of Trustees elaboration on our mission, "The Colorado School of Mines is consequently committed to serving the people of Colorado, the nation, and the global community by promoting stewardship of the Earth upon which all life and development depend." For example, "Alpha Phi Omega is a national co-ed service fraternity. Based on the principles of leadership, friendship, and service, APO is an organization of fantastic individuals working to make the world a better place, and having a great time while doing so" and "The Student Chapter Program of AAPG is made up of collegiate groups of geoscience students and one of the world's foremost co-educational programs within the geoscience sector with over 145 chapters. It provides students the opportunity to develop leadership skills and serves as a focal point for developing a feeling of professionalism through meeting industry representatives."

There are nine service organizations on campus which directly support the stewardship component of our extended mission: Alpha Phi Omega, Clinton Global Initiative University, Collegiate Kiwanis International, Earth Works, Engineers Without Borders, Kappa Kappa Psi, Philanthropy Service Group, Up 'til Dawn, and Kitchen. Some of these organizations support local stewardship and other support national and international stewardship.

Complements Education: There are six organizations or clubs that directly complement and extend the material addressed through the students major course work. These are: Association of Geoscience Students, Hydrological Sciences and Engineering, Material Science and Engineering Club, Math Club, Minergy Club, and Space Society. All of these are consistent with our mission in energy, mineral, and materials science and engineering and associated engineering and science fields. There are also eight active honor societies on campus, which recognize and reward academic excellence in the fields that are consistent with our mission. These are: Beta Beta Beta, Blue Key Honor Society, Civil Engineering Honor Society, Order of Omega, Phi Beta Delta, Pi Epsilon Tau, Sigma Pi Sigma and Tau Beta Pi. There are also 25 Professional Societies on Campus, which span all of potential majors and most of our minors. Any of these co-curricular activities can be searched from the student activities website.

Extends to Physical Well-being: Mines' intercollegiate athletics program provides student-athletes with the opportunity to participate in 18 varsity sports. As one of 14 schools in the Rocky Mountain Athletic Conference, Mines provides an excellent opportunity and environment for both the scholar and the athlete. The RMAC is an NCAA Division II affiliate consisting of 10 institutions in Colorado, and two each in Nebraska and New Mexico. Additionally, Mines offers intramural and club sports programs, as well as physical activity classes for the recreational athlete. Additionally, students may participate in Themed Housing options. These activities contribute to the health and well-being of our students, beyond their academic needs.

Extends to Understanding of the Arts: Students have the option of participating in the Visual and Performing Arts programs at Mines. This group partners with the Creative Arts Club, the yearly High Grade art publication, and the Anonymous Right Brains Club. Options include attending local performances or workshops, and performing or creating for their own communities. Potential activities include: Performances at Denver Center for Performing Arts; On-campus performers or speakers; Student Art & Musical Showcases; Miner's Alley Playhouse; Art, Creative Writing, & Poetry Workshops. Music is another form of artistic expression available to students at Mines. The music program includes classes, band, Jazz Band and Strings, Choir, and Acappella Singers.

2. The institution demonstrates any claims it makes about contributions to its students' educational experience by virtue of aspects of its mission, such as research community engagement, service learning, religious or spiritual purpose, and economic development.

Mines actively recruits high-quality students whom it believes are adequately prepared to complete a rigorous degree program in engineering or the applied sciences. As shown by the admissions metrics table included in response to 3.D.2 the incoming classes are consistent with this aspiration.

A representative sample of materials used to recruit new students is provided by both reviewing materials on the Mines' Admission Website and the Mines' recruiting View Book. As seen in these samples, Mines makes – either explicitly or implicitly – the following assertions regarding a Mines education.

- *Mines is a focused institution with majors in engineering and the applied sciences:* This is consistent with current degree offerings provided by Mines.

- *Interdisciplinary approaches are emphasized and will help students address societally important issues:* This is consistent with current minor offerings provided by Mines (that includes minors in Energy (fossil, renewable, nuclear), economics and business, humanitarian engineering, and bioengineering and life sciences. In addition, Mines offers students the opportunity to participate in McBride Honors program, a program that blends science and engineering education with public policy.

- *Faculty are high-quality and current in their disciplines:* Over 90% of the instructional faculty at Mines have terminal degrees. Faculty generate annually over $50M of research awards annually, over $250k per tenure, tenure-track faculty member, and consistent with an expectation that faculty and their disciplinary portfolios are competitive with peers at other institutions.

- *Mines provides students opportunities to broaden their experiences:* Mines provides student opportunities to participate in Music and Theater programs, study abroad programs and athletic programs. Mines offers 18 NCAA Division II athletic programs and over 50 club and intramural programs. In total, over 70% of the undergraduate student body participates in athletic programs through one of these vehicles. As described below, 127 undergraduate students studied abroad during the 2011 academic year. The Music program at Mines incorporates classroom instruction, band, jazz band and strings, choir, and an acappella singers group.

- *Mines curriculum is innovative and emphasizes hands-on learning:* Mines curriculum incorporates a number of innovative features that emphasize hands-on learning. These include the EPICS program, studio physics, a required field experience and senior design, as described in prior sections of this criterion.

- *Campus infrastructure is being actively improved and transformed:* The attached table shows a summary of capital activities that have occurred since 2002.

- *Fundamentals of Engineering Exam: The last analysis of the results Fundamentals of Engineering (FE) examination was conducted in February, 2011 and presented as an internal report to the Associate Provost. Between 2005 and 2008, Mines achieved a pass rate of 84.9% which is well above the national average over the same time period of 73.4%.A Mines education prepares students for successful careers in*

engineering and applied sciences: A summary of graduation outcomes, for both undergraduate and graduate students, and average starting salaries for the 2011 academic year are provided here. This summary is consistent with high graduation placement rates in fields directly related to Mines' core mission areas. 90% of students receiving a BS degree had found employment or continued on to graduate school. Of those employed, the average starting salary was $64,405. Based on the 2010-2011 ranking of State Universities, Best Colleges, Mines was ranked as the top university, nationwide, based on median starting salary and mid-career salary. In 2011-2012, Mines ranked second across the nation.

- *Both undergraduate and graduate students have the opportunity to participate in research*: A summary of the number of graduate students supported through externally provided research contracts as both Research Assistants and Graduate Hourly Employees is provided in the attached table. Additionally, the total support provided to undergraduate students so that they may participate in faculty directed research projects is in excess of $600k. As one example, see attached website for REU site for Undergraduates in Renewable Energy

A recent study of doctoral publication metrics completed as part of the HLC Quality Initiative shows that the majority of recent doctoral graduates have published in the open literature as part of the completion of their degree requirements. Overall, 71% of recent PhD graduates have published in the open literature, 61% have produced archival publications. The rates of publication vary between departments, and represent the culture of archival publication by discipline. The Mines academic community, as part of our Quality Initiative, is actively engaged in evaluating these metrics and establishing institutional expectations for publication activities conducted by our students.

- *Supportive environment to students from under-represented groups:* Mines has the largest Society of Women Engineers of any university in the nation. Mines also has active Multicultural Engineering Program and a Women in Engineering, Science and Mathematics program.

- *Students have the Opportunity to Study Abroad*: An example of activities/participation in Mines study abroad and exchange programs is provided here for 2011.

- *Mines Facts:* Recruiting materials presented to perspective students contain a variety of “Mines Facts”. These include, for example, enrollment metrics, student-to-faculty ratios, average class sizes, retention metrics, etc. All of these statistics are produced and certified by the Office of Institutional Research.

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- Study Abroad

3.S - Criterion 3 - Summary

The institution provides high quality education, wherever and however its offerings are delivered.

Summary

As demonstrated through this section, Mines provides a high quality education, regardless of wherever and however it offerings are delivered. This is supported by the following activities:

- Student credentials for entering a Mines degree program are delineated and monitored at both the undergraduate and graduate level. Students who are unlikely to succeed in their degree program are not admitted.
- Academic advising is available through a professionally trained advising staff, as well as through direct interaction with faculty from major or minor department.
- All degree programs are vetted through the Colorado Commission of Higher Education to be consistent with our mission.
- Our programs are reviewed and accredited by the appropriate professional organizations, including ABET, ACS and HLC.
- Our curriculum programs are regularly evaluated and reviewed by faculty, students and visiting committees.
- Faculty have direct oversight over course development and improvement.
- Goals and outcomes are clearly stated for the various levels and degree programs and assessment and revision is ongoing.
- Goals, outcomes and measurement are clearly defined and consistent regardless of delivery mode of course or program.
- Faculty and students contribute scholarly and creative work through research and other professional experiences.
- Faculty and staff are regularly evaluated based on their institutional role.
- Instructor credentials are controlled through our employment process.
- Many organizations are available to support the multicultural, social, athletic and academic needs of our students. Programs support the ongoing interaction of faculty with students.
- Our programs are appropriately staffed and our staff receives regular professional development opportunities.
- An appropriate infrastructure, including laboratories, classrooms, electronic resources and library, is available to all of the Mines community.

Evidence to support the quality of the education that is provided at Mines is provided here.

- Mines has a high graduate placement statistic.
- Mines has high starting placement salaries.
- Mines engineering students consistently perform well on the FE exam.
- National rankings reflect that Mines provides a high quality education.

Sources

There are no sources.

4 - Teaching and Learning: Evaluation and Improvement

The institution demonstrates responsibility for the quality of its educational programs, learning environments, and support services, and it evaluates their effectiveness for student learning through processes designed to promote continuous improvement.

Argument

As is discussed in the sections that follow, Mines participates in an ongoing and rigorous review of its curriculum and programs. This includes a statement of program objectives and student outcomes for both curricular and non-curricular programs. These programs are regularly reviewed through a formalized assessment system. Support for assessment is provided by a Director of Assessment and an Assessment Committee. Additionally, several appropriate agencies review and accredit our efforts. Retention, persistency and completion rates are formally monitored by the university. Specific goals have been established in each of these areas and adjustments are regularly made within the university structure to improve retention, persistency and completion rates.

Sources

There are no sources.

4.A - Core Component 4.A

The institution demonstrates responsibility for the quality of its educational programs.

1. The institution maintains a practice of regular program reviews.
2. The institution evaluates all the credit that it transcripts, including what it awards for experiential learning or other forms of prior learning.
3. The institution has policies that assure the quality of the credit it accepts in transfer.
4. The institution maintains and exercises authority over the prerequisites for courses, rigor of courses, expectations for student learning, access to learning resources, and faculty qualifications for all its programs, including dual credit programs. It assures that its dual credit courses or programs for high school students are equivalent in learning outcomes and levels of achievement to its higher education curriculum.
5. The institution maintains specialized accreditation for its programs as appropriate to its educational purposes.
6. The institution evaluates the success of its graduates. The institution assures that the degree or certificate programs it represents as preparation for advanced study or employment accomplish these purposes. For all programs, the institution looks to indicators it deems appropriate to its mission, such as employment rates, admission rates to advanced degree programs, and participation rates in fellowships, internships, and special programs (e.g., Peace Corps and Americorps).

Argument

1. The institution maintains a practice of regular program reviews.

University Assessment Committee: The University Assessment Committee is responsible for guiding Mines in matters pertaining to assessment of the program educational objectives and student outcomes of its undergraduate and graduate programs. The committee also assesses related non-academic activities as needed. In fulfilling its role, the committee participates in the attached activities.

Visiting Committees: All departments, and their curricular offerings, are reviewed on a regular basis by external Visiting Committees. The schedule of recent and anticipated Visiting Committee activity was previously provided in response to Criterion 3.A.1. Academics, industry leaders and alumni populate these committees. Visiting Committees report to the President and are charged as defined in the Academic Affairs Procedures Manual. As defined, Visiting Committees are, in part, expected to complete the attached activities.

A sample of a recent Visiting Committee composition, committee report and formal institutional response is provided here.

Core Curriculum Committee: This committee is an *ad hoc* committee of the Provost. Membership includes the Assessment Director (committee chair), faculty representatives from departments that offer courses in the Core, and the Director of the Center for Academic Services and Advising. The charge of this committee is 1) To ascertain how well the Core Curriculum prepares students for upper-level coursework and 2) To assess the extent to which the Core supports the institutional mission. A summary of the activities of the Core Curriculum Committee during the 2011-2012 academic year is provided here. Based on the information acquired through these efforts, the committee is working with the appropriate academic units to refine and improve the Core Curriculum.

Faculty Senate: The Faculty Senate meets twice a month during the regular academic year. The Senate operates a number of councils and committees that are directly related to undergraduate academic programs. These committees include the attached.

Minutes of Faculty Senate meetings are publically available here.

External Program Accreditation: Nine of the institution's undergraduate degree programs maintain external accreditation through the ABET EAC. In addition, the undergraduate degree program in Chemistry is externally reviewed through the American Chemical Association. The university shares the feedback provided from these external sources with the broader institution through the Academic Affairs Office and uses this feedback to further improve its programs.

2. The institution evaluates all the credit that it transcripts, including what it awards for experiential learning or other forms of prior learning.

Mines offers course credit for Advanced Placement (AP) and International Baccalaureate (IB) examinations, and in limited circumstances to military veterans. AP and IB scores are used by the Registrar to place students in appropriate freshman courses. In some cases, departmental approval is required before credit is granted. Credit is shown as transfer credit on the Mines transcript; however, no grade is associated with the credits.

Advanced Placement: Most course work completed under the Advanced Placement Program in a high school is accepted for college credit provided that the Advanced Placement Program Test grade is either 5 (highest honors) or 4 (honors). In special cases, advanced placement may be granted for course work not completed under the College Entrance Examination Board Program. Students wishing such credit must demonstrate competence by writing the Advanced Placement Examination in the subject. The above noted required test results still apply in these cases.

International Baccalaureate: The International Baccalaureate Diploma Program (IB) is designed as an academically challenging and balanced program of education with final examinations that prepares students, normally aged 16 to 19, for success at college and life beyond. The program is normally taught over two years and has gained recognition and respect from the world's leading universities. Credit for the International Baccalaureate program is granted if students score a 5, 6 or 7 on selected standard and higher-level exams.

Military Veterans: Honorably or generally discharged military veterans providing a copy of their DD214s are awarded two credit hours to meet the physical education requirement at Mines. Additionally, veterans may request substitution of a technical elective for the institutions' core EPICS course requirement.

3. The institution has policies that assure the quality of the credit it accepts in transfer.

Transfer of Undergraduate Credits: Public institutions of higher education in Colorado are all engaged in transfer articulation agreements in accordance with Colorado State Law 23-1-108(7). This is intended to facilitate transfer within the state and especially between 2-year and 4-year colleges. Since Mines is a specialized institution of engineering and science, and since it has a custom-designed core curriculum that couples and emphasizes various areas in setting strong foundations for an engineering education, our transfer articulation agreements are more restrictive than those required by Colorado's other 4-year institutions.

Our approach has been to establish a model agreement with Red Rocks Community College (RRCC), a neighboring 2-year institution that provides most of our transfer students. Our procedure in developing this agreement has been to establish close faculty-to-faculty communications within all disciplines embedded in the core curriculum. Through these communications, and given a bilateral desire for a workable agreement, RRCC has been able to configure its offerings in accordance with our needs and to work with us in specialized areas like *Design - EPICS*. The net effect has been a healthy interaction between the two schools and the "trickle-down" curricular adaptations at RRCC in response to changes at Mines. The RRCC - Mines transfer articulation agreement has recently been used as a basis for developing an articulation agreement with Front Range Community College (FRCC), Community College of Aurora, and with Community College of Denver. The most recent initiatives have been to build additional agreements with Trinidad State Junior College, Colorado Mountain College, and Northeastern Junior College.

Transfer students who apply for admission to Mines interact with the School's Undergraduate Admissions Office to expedite their acceptance and the transfer of credit. Undergraduate admissions officers review the application package and give primary consideration to the attached criteria.

The need to validate transfer credit arises in two different sets of circumstances. These relate to the *newly enrolled transfer student*, accepted according to the procedures above, and the *continuing student*, who completes courses at a different institution and transfers the credits back to Mines. While the underlying validations are the same in the sense of assuring academic equivalences, the procedures encountered by the students are different.

Continuing Students Requesting Transfer Credit: Students who are currently enrolled at Mines may transfer credit in required courses only in extenuating circumstances, upon the advance approval of the Registrar, the department head of the appropriate course, and the department head of the student's option. Upon return, credit will be received subject to review by the Registrar. Physics courses are subject to post-approval from the department.

Graduate Level Transfers: Courses at the graduate level are considered on a case-by-case basis and must be approved by the students' faculty advisor, thesis committee, program director and the graduate dean. The Office of Graduate Studies insures that students provide documentation (i.e., official transcripts from accredited institutions) certifying completion of the appropriate courses at another institution. Transfer credits are regulated and limited as described in the Graduate Bulletin. At the graduate level, transfer courses do not appear on a students' final transcript. Rather, they are included as part of a student's institutional record via the Admission to Candidacy Form. If transfer credit is included as part of a student's graduate degree program, the Admission to Candidacy Form must be accompanied by an official copy of a transcript from the institution at which the work was completed. The Office of Graduate Studies reviews and formally certifies that a student has met all degree requirements and that the courses used meet all institutional requirements.

4. The institution maintains and exercises authority over the prerequisites for courses, rigor of courses, expectations for student learning, access to learning resources, and faculty qualifications for all of its programs, including dual credit programs. It assures that its dual credit courses or programs for high school students are equivalent in learning outcomes and levels of achievement to its higher education curriculum.

Pre-requisite Courses: The Undergraduate and the Graduate Councils are Faculty Senate appointed committees that are responsible for the review and improvement of Mines' educational programs. During registration, all prerequisites and co-requisites are enforced. If a student has not completed the appropriate prerequisite, he/she has two options: 1) wait until the pre- or co-requisite is complete, or 2) make a request to the instructional faculty of the course to be allowed into the course without the pre- or co-requisite.

Expectations of Student Learning: In Spring, 2011, Mines hired a Director of Assessment. The Director of Assessment is a new position to Mines charged with the attached activities. These activities provide the appropriate structure that insures that the university maintains authority over student learning.

An overview of activities led out of the office of the Director of Assessment is available online here.

As part of the HLC Quality Initiative, the Director of Assessment has consulted with all undergraduate and graduate programs to refine program objectives and student learning outcomes. These very specific, measurable, and achievable student learning outcome are aligned to classes in which they are addressed and measured. Most programs display these alignments as a curricular map.

The Assessment Committee developed a refined annual reporting process in summer 2011; all degree-granting undergraduate programs used this common format for reporting their assessment results in fall 2011. The University Assessment Committee reviewed these reports and provided written feedback to the departments. The Assessment Director then met with each department in person to discuss the feedback. Based on this written feedback and in-person consultations, departments made revisions to the objectives, outcomes, assessment plans, and implementation processes as needed. Additional details concerning each department's progress on implementing a comprehensive assessment plan is described in detail in the HLC Quality Initiative Report.

Access to Learning Resources: See response to criterion 3.D.4, which provides a list of learning resources available at Mines.

Faculty Qualifications: The qualifications for our faculty are delineated in the Faculty Handbook. If an applicant does not match the minimal qualifications for a position, that individual is not hired. All tenure/tenure track faculty within a department are expected to have a base knowledge within their subject area, allowing them to teach courses in their department. The head of the department reviews the background of the teaching faculty before assigning courses.

Dual Credit Programs: Mines has no dual credit programs.

Rigor of Courses: The rigor of courses is partially insured through the faculty hiring process. Faculty are highly qualified to teach basic undergraduate courses as well as the advanced and graduate level courses in their specialty areas. Within departments, the courses and programs are reviewed by undergraduate and graduate committees. As described above, at the institutional level, the Undergraduate and Graduate Councils have oversight of our undergraduate and graduate programs and courses.

All undergraduate engineering programs are accredited through ABET. Part of this accreditation process is external review of student learning outcomes, and how specific courses tie to these student learning outcomes. An example of documentation of these course ties to learning outcomes is provided in the attached ABET Self Study document.

Faculty who teach Core Curriculum courses have defined learning outcomes and assessment measures for these courses. Extensive documentation of how assessment results have led to course improvements are included in the attached ABET Self Study document. The ABET documents support that these core courses have been improved as a result of the ABET process; however, these courses support the entire curriculum and therefore, these improvements have benefited all programs. Faculty have mapped the Core courses to the Profile of the Mines Graduate; these courses effectively prepare students for success in upper level courses. In addition to assessment of individual Core courses, we implemented a variety of measures to assess the Core curriculum as a whole in 2011-12. Details of the assessment efforts related to the Core are here.

5. The institution maintains specialized accreditation for its programs as appropriate to its educational purposes.

ABET Accreditation: The Engineering Accreditation Commission of ABET accredits most undergraduate degree programs at Mines. Currently, degree programs in Chemical Engineering, Chemical and Biochemical Engineering, Engineering, Engineering Physics, Geological Engineering, Geophysical Engineering, Metallurgical and Materials Engineering, Mining Engineering and Petroleum Engineering are ABET accredited. The initial accreditation visit for new, in fall 2012, undergraduate degree programs in Mechanical Engineering, Electrical Engineering, Civil and Environmental Engineering will be scheduled for fall 2013. Core courses are also reviewed as part of this process.

American Chemical Society: Mines' undergraduate degree program in Chemistry is approved by the American Chemical Society (ACS).

6. The institution evaluates the success of its graduates. The institution assures that the degree or certificate programs it represents as preparation for advanced study or employment accomplish these purposes. For all programs, the institution looks to indicators it deems appropriate to its mission, such as employment rates, admissions rates to advance degree programs, and participation rates in fellowships, internships, and special programs (e.g., Peace Corps and AmeriCorps).

Placement and Salary Statistics: As described in the institutional response to Criterion 3, Mines takes as a central tenant of its educational mission the education of students who are readily employable (i.e., through private industry or through continued academic work) in the applied science and engineering fields. Detailed information concerning placement and salary statistics, as well as continuation in graduate school, can be found in the Career Center's Annual Report.

Fundamentals of Engineering Examination: Similarly, as defined in Criterion 3, Mines periodically reviews the performance of its graduates who complete the Fundamentals of Engineering examination. The Fundamentals of

Engineering examination is the first step in the process leading to the P.E. license. It is designed for students who are nearing completion of an undergraduate engineering degree. The last analysis of the results Fundamentals of Engineering (FE) examination was conducted in February, 2011, and presented as an internal report to the Associate Provost. Between 2005 and 2008, Mines achieved a pass rate of 84.9%. This pass rate is well above the national average of 73.4%.

Internships: An internship is any work experience relevant to the student's major. There are generally two types of internships: part-time during the academic year, and full or part-time in the summer. Internships are paid positions for which no academic credit is given at Mines. 84% of our students complete internships before the completion of their degrees. Mines is ranked No. 2 for undergraduate internships.

Visiting Committees: As described in response to Criteria 3.A.1 and 4.A.1 Industrial and academic representatives to programmatic visiting committees also provide insights into the preparedness of Mines' graduates for industry and academic positions.

Alumni Survey: In 2009, a survey of alumni was conducted. One question in the survey asked "What is your overall regard for the Colorado School of Mines?" 75% of respondents who were also members of the Alumni Association reported very positive regard, while 58% of non-members of the Alumni Association reported very positive regard. Top reasons given for very positive regard are listed in the attached table.

In addition, alumni were asked if they would recommend Mines to friends, someone's child, or someone's grandchild as a place to attend. 69% of the members of the Alumni Association said they would do so without reservations, while 60% of the non-members surveyed said they would recommend without reservations. Only 2% of Alumni Association members said they would not recommend Mines to others, and 4% of non-members said they would not recommend.

The Assessment Committee administered an alumni survey in 2011-2012. This survey focused on achievement of learning outcomes and objectives and not primarily on student satisfaction. Most respondents gave high ratings to the extent to which Mines contributed to their development of essential skills and abilities.

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4.B - Core Component 4.B

The institution demonstrates a commitment to educational achievement and improvement through ongoing assessment of student learning.

1. The institution has clearly stated goals for student learning and effective processes for assessment of student learning and achievement of learning goals.
2. The institution assesses achievement of the learning outcomes that it claims for its curricular and co-curricular programs.
3. The institution uses the information gained from assessment to improve student learning.
4. The institution's processes and methodologies to assess student learning reflect good practice, including the substantial participation of faculty and other instructional staff members.

Argument

1. The institution has clearly stated goals for student learning and effective processes for assessment of student learning and achievement of learning goals.

Institutional Program Objectives and Student Learning Outcomes: As articulated in the appropriate Bulletins (undergraduate and graduate), the institution has defined distinct program objectives and student learning outcomes for its degree programs. At the undergraduate level these are identified as part of the Profile of the Mines Graduate. Responsibility for assessment of institution-wide objectives and outcomes is shared among the Office of Assessment and the faculty. The Director of Assessment collaborates with faculty to measure attainment of program objectives and learning outcomes that are common to all programs. All academic programs (and several co-curricular programs) have developed outcomes and objectives, have implemented a variety of direct and indirect measures to assess these outcomes and objectives, and are using assessment information for continuous improvement.

Graduate level institutional objectives and outcomes are also being developed as part of the HLC Quality Initiative. At the Masters level, institutional program objectives and outcomes are being evaluated by the academic community (i.e., Graduate Council and the Faculty Senate), but these have been included in draft form in the current Graduate Bulletin. The draft being considered is modeled after Doctoral-level objectives and outcomes approved by the academic community in Spring 2012 and included in the Graduate Bulletin.

Degree Learning Objectives, Outcomes and Assessments: In addition to the institutional program objectives and student learning outcomes, all of the University's undergraduate degree programs have developed specific, measurable, and realistic program objectives and learning outcomes. A summary of these is provided as part of the HLC Quality Initiative.

Mines has adopted ABET definitions for campus-wide use, to reduce the potential confusion that could arise as a result of using varying terminology among programs. Below are the definitions that were adopted:

Program Educational Objectives: Program educational objectives are broad statements that describe what graduates are expected to attain within a few years of graduation. Program educational objectives are based on the needs of the program's constituencies.

Student Outcomes: Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.

Faculty collaborate with the Assessment Director to identify the best methods for measuring objectives and outcomes. Mines does not mandate use of particular assessment methods, so faculty utilize a wide variety of techniques to measure attainment of objectives and outcomes. For example, faculty directly assess student learning outcomes through the use of exams, peer reviews, portfolios, laboratory assignments, oral presentation, design competitions, and field session assignments. Faculty also implement indirect measures, such as senior surveys and interviews, focus groups and field session surveys, to assess student learning outcomes. Faculty primarily use direct measures to assess the outcomes and use indirect measures to measure objectives.

University Assessment Committee: The University Assessment Committee reviews undergraduate assessment plans annually and provides written feedback to each of the departments. This feedback highlights strengths of the assessment plan and includes suggestions for improvement. The committee typically meets twice per month; members develop and implement strategies to enhance the culture of assessment at Mines. The Assessment Director regularly consults with faculty regarding assessment plan implementation and provides resources, advice, funding, and expertise as needed to support departments' assessment efforts. An example of an annual assessment plan and feedback generated by the Assessment Committee is provided here.

2. The institution assesses achievement of the learning outcomes that it claims for its curricular and co-curricular programs.

Assessment Plans: All undergraduate programs at Mines have developed program objectives and student learning outcomes and have defined measures for assessing these outcomes. Faculty document examples of learning improvements that result from these measurements in the undergraduate assessment reports. Some departments meet annually or bi-annually through on-campus retreats to review assessment results and make recommendations for improvements. Others meet monthly to discuss student learning assessment. Assessment plans are reviewed by the University Assessment Committee.

Objectives and outcomes for the Ph.D. programs were presented to the academic community by the Dean of Graduate Studies in September, 2011. They were approved by the Graduate Council and Faculty Senate in spring 2012. To assess these outcomes and objectives, the committee implemented a pilot doctoral assessment project to achieve the following: 1.) Obtain baseline assessment information from which we could compare future programmatic progress. 2.) Implement a variety of assessment methods, get feedback from programs on the usefulness of these methods, and begin to build a suite of graduate assessment best practices that all programs could use. The pilot project initially focused on doctoral programs, with future efforts planned for the master's programs. The pilot project consisted of four assessment activities that were implemented in various Ph.D. granting departments during 2011-12. The assessment activities included the following:

- *Graduate Student Exit Survey:* This survey requests students' input on disciplinary aspects of the program and the cultural experiences of working toward degree. This assessment activity is directly aligned with the institutional objectives/outcomes and with the draft Graduate Student Bill of Rights and Responsibilities. While exit surveys had routinely been administered in the past, they did not provide information about achievement of objectives, outcomes, and the Bill of Rights and Responsibilities.

- *Thesis Committee Reporting Form:* This form provides systematic documentation of students' progress toward degree completion. It is intended to enable students and faculty members to address any concerns about the quality of students' work as the students progress through their programs.

- *Oral Presentation Assessment Rubric:* This rubric provides systematic documentation of students' oral presentation skills.

- *Research Impact Questionnaire and Publication Analysis:* This questionnaire is completed by Ph.D. advisors (who have had candidates who defended within the past three years) to determine the extent to which students' work advances the state of the art of their disciplines. In addition, the Office of Graduate Studies compiled publications statistics for these same candidates.

- *Ph.D. Retention and Completion Analysis:* The Office of Graduate studies completed a detailed review of retention and completion rates for all doctoral degree granting programs. This activity included time-to-degree analysis and comparison to national norms.

Masters level assessment plans are currently being developed (see HLC Quality Initiative Report).

There are more than 20 different assessment methods used to assess learning at the undergraduate level. We are working closely with faculty members, providing examples of best practice, and modifying the annual report template to support faculty in using assessment information for program improvement.

Most departments have defined performance criteria as standards for achievement of undergraduate objectives and learning outcomes. The establishment of the performance criteria enables faculty to determine the extent to which students are achieving the objectives and outcomes. For example, the Mining Engineering faculty have established the following performance criteria for the midterm and final exam for MGNG 414 (Mine Plant Design): "80% of students will achieve a score of 70% or better." The Mining faculty monitor achievement of these performance criteria annually (by assigning a "met" or "not met" indicator to each outcome for each undergraduate course) and include this information in the ABET self study report. If an outcome or objective is not met, the faculty discuss and implement plans for improvements. These improvements are also described in ABET self study report.

The Chemical Engineering faculty conduct extensive alumni and employer surveys to measure attainment of objectives. They have defined criteria (such as ">50% of employers indicate that graduates act ethically") to measure attainment of the objectives. The programmatic assessment committee meets to discuss attainment of the objectives and outcomes and to develop plans for addressing shortcomings. Many specific examples of changes that faculty have made in response to evidence that outcomes are not being met are included in the ABET self study reports and in the annual undergraduate assessment reports.

The Quality Initiative report describes our progress in assessing learning experiences including the attached.

Assessment of co-curricular programs is ongoing. The Division of Student Life has developed outcomes for their programs and is collaborating with the Assessment Director to develop mechanisms for measuring achievement of these outcomes. In addition, the Assessment Director is assisting administrators in Residence Life and the new student orientation program to assess outcomes of these programs. Details are provided in 4.C.3.

3. The institution uses the information gained from assessment to improve student learning.

Improvement of Student Learning: The annual undergraduate assessment report asks departments to "Describe how you have shared assessment results with faculty and explain how the faculty have used assessment results to improve student learning. Describe the specific actions you have taken or will take to facilitate students' attainment of the program objectives and student outcomes." These reports support the historical documentation of improvements made in support of student learning. The Core Curriculum committee and the school's ABET program coordinator collaborate with faculty to compile lists of improvements to the Core Curriculum. Detailed examples are included in the ABET Self Study reports and in the annual undergraduate assessment reports. An example is provided here and here.

Departments/divisions also use a variety of assessment methods to assess Master's and Ph.D. students. In summer 2011, the Dean of Graduate Studies formed a committee to develop plans to assess student learning at the graduate level. The committee contacted peers at other institutions, conducted a literature review, and reviewed numerous resources to gain insights regarding best practices at the graduate level. The Dean engaged the faculty in the development of educational objectives and student outcomes. The Quality Initiative report describes these outcomes and objectives, as well as the five assessment and evaluation methods that were pilot tested at the graduate level in 2011-12.

4. The institution's processes and methodologies to assess student learning reflect good practice, including the substantial participation of faculty and other instructional staff members.

Assessment Process: Mines has a uniform assessment process that guides our efforts regardless of program or program level. We have developed newsletters, websites, and partnerships with entities such as Mines' Center for Engineering Education to communicate the steps in this process to the campus community.

Faculty Participation in Assessment Activities: Institutional assessment activities are overseen and coordinated by the University Assessment Committee, the Director of Assessment, and the Core Curriculum Committee. Membership on both the University Assessment Committee and the Core Curriculum Committee is dominated by academic faculty. Faculty who teach Core Curriculum courses have been particularly attentive to the importance of students' achievement of learning outcomes as preparation for subsequent Core and major courses**.** In addition, voting membership on Undergraduate and Graduate Council, as well as the Faculty Senate, is exclusively composed of academic faculty. Their role in program/course review and approval is defined in Criterion 4.A.1. In summer 2012, the Graduate Dean approved changes to the Graduate new course proposal form so that it focuses on student learning outcomes to a greater extent than in the past. A similar proposal for changes will be reviewed by Undergraduate Council in fall 2012.

Within departments and programs, faculty-led assessment committees are generally charged with implementing the assessment process for the program. As examples of programmatic assessment efforts, consider the following programmatic processes as defined in recent ABET Self Study documents.

The departments of Metallurgical and Materials Engineering have developed visual aids to communicate their assessment processes. These are presented in their ABET Self Study documents here and here.

Assessment results have led to faculty collaborations that have resulted in substantial curriculum revisions (adding free electives, changing co-requisites, and changing pre-requisites). Examples of these collaborations and the resulting course improvements are included in the annual undergraduate assessment reports and in the ABET Self Study reports. Attached are selected examples of changes made to improve student learning.

Good Practice: In order to guide the development of the assessment of best practices within the programs, the University Assessment Committee developed a checklist of best practices. This checklist is used by departmental assessment committees to review and refine their assessment efforts. The University Assessment Committee uses this checklist to guide the programs on the ongoing development and improvement of their assessment plans. Best practices are also described in the rubric that the UAC uses to review and respond to the undergraduate assessment reports. The Assessment Director regularly consults with faculty to discuss strategies for refining their assessment efforts.

The Assessment Director maintains a website of resources that includes frequently asked questions, examples of best practices from other institutions, sample rubrics, etc. The Director also publishes a monthly newsletter, which includes examples of best practices (from within and external to Mines), examples of classroom assessment techniques, excerpts from national literature regarding assessment, and links to resources related to best practices in teaching and learning.

Sources

- Graduate Bulletin 2012-2013
- Undergraduate Bulletin 2012-2013
- Graduate Bulletin 2012-2013 (page number 5)
- Undergraduate Bulletin 2012-2013 (page number 6)
- Annual Assessment Documents BS Econ and Business

- Annual Assessment Reporting Form
- ExitSurvey2011
- GSCommitteeReportingForm
- Thesisdefenseassessment
- PhDCompletionRetentionReport2012
- PhDPublicationMetrics
- AdvisorQuestionaireV2
- EngPhysicsFinal
- EngPhysicsFinal (page number 69)
- Programmatic Assessment of Student Learning Process
- Complete_Handbook
- Complete_Handbook (page number 128)
- CoreCurriculumCommitteeMembership2012
- Academic Faculty Bylaws
- Academic Faculty Bylaws (page number 9)
- Academic Faculty Bylaws (page number 11)
- Graduate Council Course Change Approval Form
- MetAndMaterialsEngFinal
- MetAndMaterialsEngFinal (page number 26)
- EngineeringFinal
- EngineeringFinal (page number 52)
- QI Report Colorado School of Mines
- http-inside-mines-edu-assessment-best-practices-1p
- http-inside-mines-edu-assessmentp
- Assessment Results
- Improvement of Student Learning
- Quality Initiative

4.C - Core Component 4.C

The institution demonstrates a commitment to educational improvement through ongoing attention to retention, persistence, and completion rates in its degree and certificate programs.

1. The institution has defined goals for student retention, persistence, and completion that are ambitious but attainable and appropriate to its mission, student populations, and educational offerings.
2. The institution collects and analyzes information on student retention, persistence, and completion of its programs.
3. The institution uses information on student retention, persistence, and completion of programs to make improvements as warranted by the data.
4. The institution's processes and methodologies for collecting and analyzing information on student retention, persistence, and completion of programs reflect good practice. (Institutions are not required to use IPEDS definitions in their determination of persistence or completion rates. Institutions are encouraged to choose measures that are suitable to their student populations, but institutions are accountable for the validity of their measures.)

Argument

1. The institution has defined goals for student retention, persistence, and completion that are ambitious but attainable and appropriate to its mission, student populations and educational offerings.

Based on the strategic plan, which was established through the Office of the President, Mines has the goal of increasing the retention and graduate rates to compete with national peer institutions, which include private institutions. After a review of national institutions, this has been translated into the establishment of a freshman retention goal of 93% and of a four year graduation rate of 43% and a 6 year graduation rate of 72%. In order to attain this graduation rate, attention is paid to persistence and retention throughout the Mines educational experience. Information concerning progression toward this goal can be found in the attached report, Graduation and Persistency.

2. The institution collects and analyzes information on student retention, persistence, and completion of its programs.

The Office of Institutional Research collects information on retention, persistence and completion rates through the Integrated Postsecondary Education Data System (IPEDS) system. This information is available on the reports website and through the Graduation and Persistency Report.

3. The institution uses information on student retention, persistence, and completion of programs to make improvements as warranted by the data.

Faculty members recently formed the Faculty Administration Collaboration to Improve Retention (FACTIR) working group, which includes faculty and administrators from many academic and administrative departments, such as assessment and the Division of Student Life. The Provost and Vice President of Student Life/Dean of Students are members of this group, which speaks to the importance that the School places on this initiative. FACTIR analyzes retention data, reviews the literature regarding why students leave, analyzes the impacts of current Mines' initiatives, and brainstorms ideas for new approaches to improving persistence. The long-term goal for this group is to guide the institution on the creation of programs and allocation of resources, which are most likely to improve student retention and success. Additionally, the Diversity Committee, Women in Science, Engineering and Mathematics Office, Multicultural Engineering Program, and the Admissions Office utilize the information provided through persistency, retention and graduation rates for improvement purposes designed to serve various subpopulations, i.e., women and underrepresented minorities.

The institution created a task force to review both the freshmen and sophomore college experiences on campus. As part of this process, retention rates were examined. Cohorts were developed and followed that include populations such as; athletics, commuters, living and attending the same courses as a cohort, etc. Although our retention is high compared to our peers, it was discovered that the students living on campus had a higher retention and performance rate than the other populations. Through this discovery, Mines has started requiring freshman students to live on campus their first year. The data was also informed the decision to establish a professional advising center for the first two years for our students.

4. The institution's processes and methodologies for collecting and analyzing information on student retention, persistence, and completion of the programs reflect good practice. (Institutions are not required to use IPEDS definitions in their determination of persistence or completion rates. Institutions are encouraged to choose measures that are suitable to their student populations, but institutions are accountable for the validity of their measures.)

Institutional Research creates an annual report Graduation and Persistence Report. The definitions and practices that are used in the development of this report are consistent with that which is used by the Colorado Department of Higher Education and IPEDs. Additionally, as was discussed in the previous criteria, the information acquired from these efforts is used to inform the refinement of University policies, practices and programs. The use of standard definition as well as using the information acquired from these reports to improve programs is consistent with best practices with respect to improving retention, persistence and completion. Additionally, the information provided in this report as well as the definitions used in this report are consistent across years, allowing for the formal evaluation of advancement toward our retention and graduation goals.

Sources

- CSMstrategic_plan04
- 2011GraduationPersistenceRpt
- http-inside-mines-edu-mines-factsp

4.S - Criterion 4 - Summary

The institution demonstrates responsibility for the quality of its educational programs, learning environments, and support services, and it evaluates their effectiveness for student learning through processes designed to promote continuous improvement.

Summary

Mines regularly participates in activities that are designed to improve our educational programs. These include:

- The production and revision of clear statements of expectations for student learning, through availability of a Graduate Student Profile, Program Objectives and Student Outcomes.
- Guidance in assessment provided by a Director of Assessment and a University Assessment Committee, which provides program reviews.
- Formal Visiting Committees that provide feedback to departments and programs.
- An active and engaged Faculty Senate.
- Accreditation through the Higher Learning Commission, ABET and the American Chemical Association.
- A clear process for the evaluation of all credits that are transcribed (this includes transfer credits).
- Faculty qualifications controlled through a defined and enforced set of minimum employment criteria.
- Rigorous courses designed by a highly qualified faculty.
- Review of placement and salary statistics, internship placement statistics and student performances on the Fundamentals of Engineering Exam.
- Review of alumni feedback.
- Review and response to pre-defined targets for retention, persistency and completion rates.
- Continuous review and revision of curricular and co-curricular programs based on assessment, feedback, and statistical reviews.

Sources

There are no sources.

5 - Resources, Planning, and Institutional Effectiveness

The institution’s resources, structures, and processes are sufficient to fulfill its mission, improve the quality of its educational offerings, and respond to future challenges and opportunities. The institution plans for the future.

Argument

Through careful planning and despite reduced State support, Mines has insured its' financial position through strategic resource allocation, planning and fund raising. Decisions concerning financial planning are directly linked to the institution's mission and are informed by a broad range of appropriate constituencies, who are both internal and external to the university. Additionally, funding decisions are aligned with institutional priorities, our mission and the assessment process. Various models have been used with the purpose of preparing and responding to our financial future and documentation of our operations is readily available. What has been learned through our prior experiences is continually utilized to inform improvement. These aspects of Mines are discussed in the sections that follow.

Sources

There are no sources.

5.A - Core Component 5.A

The institution's resource base supports its current educational programs and its plans for maintaining and strengthening their quality in the future.

1. The institution has the fiscal and human resources and physical and technological infrastructure sufficient to support its operations wherever and however programs are delivered.
2. The institution's resource allocation process ensures that its educational purposes are not adversely affected by elective resource allocations to other areas or disbursement of revenue to a superordinate entity.
3. The goals incorporated into mission statements or elaborations of mission statements are realistic in light of the institution's organization, resources, and opportunities.
4. The institution's staff in all areas are appropriately qualified and trained.
5. The institution has a well-developed process in place for budgeting and for monitoring expense.

Argument

1. The institution has the fiscal and human resources and physical and technological infrastructure sufficient to support its operations wherever and however programs are delivered.

Fiscal Resources: Over the past several years, Mines has strengthened its' financial position by increasing operating reserves and reducing its' reliance on State funding. These reserves support current operations and new initiatives and programs. Mines' operations are funded primarily through tuition and fees, state support, auxiliary activity, research and foundation funds. The Board Approved Budget overviews funding sources and their use.

State funding has decreased by 27% from fiscal year 2008 to 2013, and additional decreases are anticipated. Given this, Mines has proactively worked with the legislature to pass a bill which increases tuition flexibility and ensures full tuition authority by fiscal 2017 (C.R.S.23-41-104.6(5)(c)). The university has taken several steps to increase revenues and minimize expenses. Examples include:

- Maximizing tuition revenues using a market analysis to determine rate increases; closing tuition window from 12 to 15 credit hours; changing enrollment mix to increase the proportion of nonresident students; and developing new financial aid allocation models.

- Increasing continuing education programs and collaborative partnerships which include the K-12 Outreach Program, Energy and Minerals Field Institute and International Institute for Professional Advancement. Additional course and program descriptions are available here.

- Initiating a significant fund raising campaign to provide financial support for financial aid, capital, departmental support and research.

- Minimizing expenses by approving only budget requests demonstrating critical need, or compliance with an institutional strategic initiative.

These steps resulted in significant increases in unrestricted net assets over the last few years with no reduction in quality or implementation in our educational programs. The Statement of Net Assets is included in the institution's financial statements.

Moving forward, the fiscal year 2013 budget includes additional increases in reserves of $2.5 million. Furthermore, the institution continues to invest in new initiatives to improve the support of our mission and goals, including

budget increases for faculty lines, a new student advisory center and the reorganization of thirteen academic departments into three colleges. The Budget Narrative details these increases.

Human Resources: As in prior years, the budget for fiscal year 2013 includes new positions to address growth, strategic initiatives, and support of new facilities.

Mines focus on providing high quality education requires a strong faculty base. Given this, Mines set a goal to increase teaching and tenure/tenure track positions by approximately 40% from fiscal year 2007 to 2014. Fiscal year 2013 budget includes 11 new faculty positions; 9 such positions are planned for fiscal year 2014.

New initiatives include a restructuring of Mines' academic organization. This began in fiscal year 2012 and will be fully implemented by the conclusion of fiscal year 2013. When complete, fourteen academic departments will be organized under three colleges. To support the new structure, three new positions for Deans were approved. In addition, the school is increasing administrative support for the colleges with the approval of three new fiscal officer positions. These changes are being completed while maintaining an aggressive faculty hiring program and a continuing operating reserve.

The school is also focused on strengthening student support services. The budget includes increases for five positions to create a new student advisory center (CASA – referred to in Criteria 3.C.6, 3.D.1 and 3.D.3), eight positions to support a new residence hall, three student support positions, and an athletics coach.

The remaining new positions were created specifically to support the growth in research and continuing education programs. A full list of new positions is outlined in Appendix A of the Budget Narrative.

Physical Infrastructure: Mines' Master Plan was updated in 2004 and again in 2010. Capital goals include mitigating a space deficit of 300,000 square feet, creating a residential campus with a goal of 60% of students living on campus with a pedestrian core, and expanding research programs.

- *Controlled Maintenance/Renovations:* While the need for space increases, state funding for capital projects has declined significantly. The school has received limited state funding for infrastructure projects that demonstrate health and safety risk. To backfill the drop in state support, the institution has developed an annual budget of $3.7 million in 2012 ($4.3 million in 2013) for other controlled maintenance and small renovation projects across campus and a separate budget of $140,000 specifically to address the utility infrastructure needs. Small capital requests are vetted through the Vice Presidents and final projects are approved by the President. Such projects include renovations of laboratories, classrooms, office space, capital equipment and administrative Information Technology purchases. The Controlled Maintenance/Renovation/Capital Equipment Table for 2012 highlights recent projects funded within this budget.

- *Capital Projects:* In order to grow Mines' facilities with larger debt funded projects, the university has used a mixture of auxiliary revenues, student fees and gift funds. For example, to support the demands of an increasing student body, Student Life used housing revenues to build a new residence hall with 305 beds during the fiscal year 2012.

The increase of academic and research space is typically funded with a student academic facility fee and gift funds. In 2007, the students approved a $175/semester academic construction fee. A portion of this revenue is being used for classroom improvements; the remainder is being used to pay the debt on buildings that are primarily used for instruction and teaching laboratories. Most recently, this revenue was used to fund classroom wings for Marquez Hall and Brown Hall, increasing instructional and research space by over 101,000 square feet.

In conjunction with the Mines Foundation, the university has kicked off a fund raising campaign in fiscal year 2011 with a target for capital gifts of $70 million of which $8.8 million has been raised to date. Proceeds are expected to fund a new academic building, athletics complex, library improvements and other capital projects. Mines faculty

have also been successful in raising funds for their departments. For example, Petroleum engineering raised $25 million to build 63,800 of additional research and teaching space in Marquez Hall.

For more information, the Capital Improvements Table provides a comprehensive analysis of large projects and the growth in facilities since 2002 with the programs they benefit.

Technological Infrastructure: Technical infrastructure and support includes the following components.

- *Resources Available to All Programs:* Academic Computing & Networking, Information Services, and Telecommunications were merged into a single organization called Computing, Communications, and Information Technologies (CCIT) in 2007. CCIT consists of four units: Computing & Networking Infrastructure (CNI), Client & Web Services (CWS), High Performance & Research Computing (HPC), and Enterprise Systems (ES).

There are approximately 1,200 computer systems available across the campus in open and teaching laboratories for student use. Most teaching laboratories are open outside of classroom times. Approximately 320 of these systems are in public areas of the campus that are not primarily allocated for use to a specific academic unit or program.

Various servers, which are primarily managed by CCIT, provide the infrastructure that supports computer labs, shared storage, computational platforms, and a variety of services and applications such as websites, learning management, email, license administration, and others. Students are issued credentials that allow them to access the campus network and internet and to activate accounts on a Windows domain, Linux server, the campus portal, the Learning Management System (Blackboard), and other available services.

All public and department Windows computer laboratories (with the exception of Petroleum Engineering) are centrally managed by CCIT staff and have been consolidated into a central Windows domain known as ADIT to provide a more robust and flexible environment for students and faculty. Login profiles are set up as "roaming profiles", so students and faculty have the same desktop environment no matter what laboratory computer, personal computer or instructor station they may be using. Storage is centralized so students can access their files from any laboratory or from their personal computers. Up-to-date campus-based laboratories, together with extremely high rates of student-owned computers and communication devices, software application availability, and growing cloud-based resources have proven adequate to support the needs of students and academic programs.

All student housing units have at least one wired network port available for each resident as well as ports available in public and shared spaces. Wireless access is available throughout campus buildings, student housing, and most outside areas near buildings. Wireless use continues to grow significantly with most recent statistics showing a 30% increase from spring semester 2011 to fall 2011 semester, with current averages of 2,200 to 2,500 simultaneous connections to the wireless network during daytime hours. Students who live off campus can acquire high-speed cable, DSL, or wireless internet access from Comcast, CenturyLink, and several other providers that serve the area. Off-campus residents and those needing to access restricted services (such as licensed library databases, software downloads, and shared file access) can do so through the Mines Virtual Private Network (VPN), which is available to all registered students, faculty, and staff.

- *Classroom Technology Fee:* Students passed a resolution in 1996 for a Technology Fee to improve and enhance technological resources on campus. The Technology fee is $60 per semester and funds are used to purchase computer equipment and other technology resources that can be directly used by students in their educational programs. Technology fees have funded resources such as central and department computer laboratory equipment, microscopes, drilling simulators, application software, data acquisition equipment, high performance computing nodes, servers, wireless network expansion, classroom A/V, tablet pilot projects, 3D and large format printers, components to build robots, laptops for checkout, bioreactor control units, spectroscopy instrumentation, and other types of laboratory equipment and resources. Technology fees cannot be used to hire staff (except occasionally for student help) or administrative computing systems. The technology fee process is managed through a committee consisting of 3 undergraduate

students, 2 graduate students, 4 faculty members, one department head, and the campus CIO. Detailed information about technology fee guidelines and processes is available at the website.

- *Institutional Support of Research Instrumentation:* In addition to providing support for campus research activities (research space and facilities), the campus has made significant investments in providing major research instrumentation. Since 2007, Mines has invested over $7.2M of institutional funds to expand and enhance research infrastructure through major instrumentation acquisition. A summary table of investments made is shown below.

Acquisition of Major Research Instrumentation				
Year	Instrument	**Total Cost**	**Sponsor**	**CSM Investment**
2007	High Performance Computer	$2,450,000	National Science Foundation	$1,300,000
2007	QEMSCAN Scanning Electron Microscope	$1,700,000	Industry	$600,000
2008	Atomic-Force Confocal Raman Microscope	$300,000	Army Research Office	$125,000
2008	Intelligent Geosystems Data Acquisition Network	$300,000	National Science Foundation	$150,000
2009	High-Field Nuclear Magnetic Resonance	$940,000	National Science Foundation	$389,000
2009	Nuclear Engineering Instrumentation	$600,000	Nuclear Regulatory Commission	$150,000
2009	Mine Safety and Rescue Sensing and Robotics	$242,000	National Institute of Occupational Health and Safety	$80,000
2010	Gleeble Themomechanical Processing Simulator	$680,000	National Science Foundation	$80,000
2010	Atom Probe Tomography	$3,330,000	National Science Foundation	$1,010,000
2011	Deepwater Well Blowout Simulator	$286,000	National Science Foundation	$86,000
2012	MALDI Time-of-Flight Mass Spectrometer	$462,000	National Science Foundation	$323,000
2012	2nd Generation High-Performance Computer	$3,000,000	Self Funded	$3,000,000
	Total	**$14,915,000**		**$7,293,000**

A brief description of many of the instruments referred to in the table is provided here.

- *Banner Financial and Administrative System:* The institution completed a major Enterprise Resource Planning (ERP) implementation in 2006, replacing the administrative and financial systems with the integrated Banner system. This system includes Student, Finance, and Human Resources modules. Data management is provided with an Operational Data Store (ODS) system using Discoverer software to build queries and support ad hoc reporting.

2. The institution's educational purposes do not suffer as a result of elective resource allocations to other areas or disbursement of revenue to any super ordinate entity.

All funds received by Mines are under the control of the Board and are not returned to the State's General Fund or redirected to any super ordinate entity (Colorado Revised Statute 23-41-103.5). Within the institution, funds are not

typically diverted from educational programs to support other areas. Auxiliaries such as Housing and the Recreation Center are self-supporting and charge fees to fund the activity. The institution separately accounts for auxiliary activity to ensure the fees and charges cover the cost of the programs.

Research activity is primarily supported through research grants, which are secured by the Mines' faculty. Administrative support to research is funded through Indirect Cost recoveries from secured research grants. In other words, research is supported through a separate revenue stream than is instruction.

3. The goals incorporated into mission statements or elaborations of mission statements are realistic in light of the institution's organization, resources, and opportunities.

The school is focused on meeting the strategic goals and mission identified in Criterion 1.A. In order to fulfill its mission, the institution developed a ten year strategic plan in 2004, with recalibration in 2008. From this plan, the Recalibration Committee developed six strategic initiatives that remain the corner stone of organizational and funding decisions. Examples of steps completed to implement these initiatives demonstrate the feasibility of accomplishing our goals:

- Enhance Distinction of Baccalaureate Programs
    - Ensure a high quality undergraduate student body through increased selectivity in the admissions process. In the past 10 years, the percentage of accepted applicants has decreased from an estimated 79% acceptance in the fall 2003, to a rate of 37% for the fall 2012. This decrease has occurred due to the planned and strategic expansion of our recruiting efforts both regionally and nationally. In that same period, the number of submitted applications has quadrupled and the average academic indicators, such as SAT of admitted students, have increased. The average admitted student SAT in 2003 was 1265, and, in the fall 2012, it was 1325. The enrolling student metrics reflect these increased admitted student averages. In the fall 2003, the average SAT of our enrolling freshmen was a 1230, and the fall 2012, the enrolling class had an average SAT of 1300.
    - With an expanding applicant base and a desire to diversify our student population by drawing on an increasing number of highly qualified out-of-state applicants, Mines contracted the services of Scannell and Kurz, Inc. to review Mines' financial aid policies and recommend alternative awarding strategies for new student enrollment. We adopted their recommendations for the entering class of 2010. The awarding model is driven by a merit-based scholarship structure. In 2010-2012, we have enrolled a more diverse student population with an increase in academic quality.
    - The university recently reorganized its' academic departments into three colleges, and developed an organized reporting structure that fairly represents the diverse needs of the various colleges. Collecting departments and programs with similar intellectual underpinnings into three colleges is expected to provide more effective program management, resource management and allocation, and ultimately program advocacy.
- Transform Residential Learning Community
    - The completion of a new residence hall in the fall of 2011 allowed the school to require all freshmen to live on campus their first year. An additional residence hall with a new dining facility is expected to be completed in 2014.
    - Mines has provided funding for a new advising center to be fully staffed in fiscal year 2013.
    - Several roads have been closed and a Pedestrian Plaza has been created through campus.

- There has been an evaluation of dining services and meal plans have been changed to better serve the needs of students.

- Three new Residence Life Coordinators have been hired.

- There are several new student enrichment programs including Theme Housing, Weekends at Mines, and Mines Activities Council.

- Grow Research Programs and Increase Reputation as Premier Global Research University

  - The Research reporting structure was reorganized under a new Vice President for Research and Technology Transfer which includes five support staff: Director of the Colorado Energy Research Institute; Director of Technology Transfer; Associate Vice President for Research; and a second part-time Associate Vice President for Research.

  - The Office of Technology Transfer Office was created to commercialize the inventions resulting from research.

  - The Office of Research Administration was reorganized under a new Director and new positions have been created to support proposal preparation and post-award management.

  - A Human Subject Administrator has been appointed, and Institutional Review Board processes have been implemented to expand research in the bio-science and bio-engineering fields.

  - Mines has developed significant relationships with research partners including becoming a member of the National Renewable Energy Laboratory (NREL) and creating an MOU with the United States Geological Survey (USGS) to promote stronger research interactions.

  - Total research awards have grown from $30,300,000 in 2002 to $55,400,070 in 2012. With this increase Indirect Cost Recoveries from research has also grown from $5,153,031 in fiscal year 2002 to $10,797,392 in fiscal year 2012. Mines has been able to use these funds for additional research support (listed above) and by increasing faculty startup commitments, research matching, and graduate research assistance.

- Expand Campus Infrastructure

  - The Master Planning process described above (Criterion 5.A.1) outlines the specific space and infrastructure needs for campus and how the institution is allocating resources to meet those needs.

- Re-defined Relationship with the State

  - As discussed in response to Criterion 5.A.1, the School has worked with the legislature to pass bills that grant greater operational flexibility from the State, including tuition authority. Many of these extend to all of public higher education institutions, such as the ability to establish own procurement and fiscal rules, establish or discontinue academic programs, and ability to seek services from private contractors outside of the state.

  - The State Legislature continues to recognize Mines' excellence and has granted the Mines Board with authority in setting tuition that is far greater than the other institutions. In 2001 through what is known as the "Exemplary Institution Statute" the State authorized Mines to operate through a performance contract; Mines was the first public institution in Colorado to do so. This statute also

granted the Mines Board the sole authority to set tuition rates so long as the rates were within two times the rate of the metro Denver consumer price index.

- In 2010, the state legislature expanded this authority through SB10-003. This bill authorized governing boards of all institutions with the ability to set tuition rates up to 9 percent through 2015-16. As part of this bill, Mines negotiated that its Board's sole authority to set tuition rates will not be limited beginning in 2016-17.

- Strengthen Institutional Efficiency and Financial Flexibility

  - Criterion 5.A.1. details the increased flexibility in the financial position of the institution.

  - Mines is also creating efficiencies through the organization of the three colleges. This structure will allow for administrative support at the college level, which will be more efficient and cost-effective than the prior structure that provided individual administrators to academic departments. Additionally, colleges will have fiscal officers by fiscal year 2013 and are expected to have the ability to hire research account specialists in the fiscal year 2014. In addition, the new organization will allow for a more decentralized budget and capital request process as Deans will have greater authority over budget allocations to specific departments

4. The institution's staff in all areas are appropriately qualified and trained

Mines employs several policies and procedures regarding hiring, performance planning and evaluations and professional development for faculty and staff.

Selection/ Hiring: There are several sources of guidance for the selection and hiring of both Academic Faculty and Administrative Faculty (professional exempt staff) to ensure candidates meet the requirements of the position:

- Faculty Handbook Chapter 4.
- Academic Affairs Procedures Manual.
- Search, Screening and Hiring Process for Academic and Administrative Faculty Positions.

The hiring of Classified Staff (employees within the State Classified System) is governed by State rules and procedures which are linked on the Mines website and may be found here. Job descriptions and minimum qualifications are proved on the State website.

Performance Evaluations: For Academic and Administrative Faculty, guidance and procedures for performance evaluation may be found in the following documents:

- Faculty Handbook Chapter 7.
- Academic Affairs Procedures Manual.
- Administrative Faculty Performance Evaluation and Instructions.

Performance Evaluations for Classified Staff are governed by State rules and procedures. Instructions, Forms and the Performance Management User's Guide may be found on the Mines HR performance and evaluation website.

Training and Professional Development: Mines provides several sources for both guidance and opportunities regarding training and professional development:

- Faculty Handbook addresses professional growth.

- Professional development funds are provided for new faculty. Procedures regarding these funds are outlined in the Academic Affairs Procedures Manual.
- Vice Presidents and Department Heads may provide funding for individual professional development opportunities for faculty and staff.
- Various campus wide training programs are provided from administrative departments including sexual harassment, hazardous materials storage/use, procurement card, AED and fire suppressant training.

5. The institution has a well-developed process in place for budgeting and monitoring expense.

The institution's budget process comprised of three major components:

- The Budget Office develops projections of anticipated mandated cost increases (e.g. health benefits, utilities, financial aid etc.).

- The President and Executive Staff provide discretionary campus wide increases (e.g. salary increases, new programs, large capital projects, etc.).

- Vice Presidents, first individually and then as a group, review and submit departmental requests that demonstrate critical need or align with the strategic goals of the institution (departmental support staff, large software purchases, new faculty etc).

The Budget Committee (discussed in Criteria 1.A.3 and below in 5.B.1) meets monthly from September through May and is updated and provides feedback on the budget requests. The committee prepares the final budget recommendation for the President's review and initial approval. The President submits the recommendation to the Board for review and approval at the May Board of Trustees Meeting.

During the fiscal year, there are several processes used to monitor expenses and manage the current budget:

- Budget to Actual financial statements with material variance explanations are prepared and presented at monthly Board of Trustee meetings.

- Detailed departmental budget to actual reports are prepared and monitored by the Budget Office.

- Cash deficits are reviewed and corrected by the Controller's Office.

- Forecast requests/ and adjustments to the budget are processed quarterly to address unanticipated increases and decreases to expenses during the year.

- Position budgeting and policies have been implemented to track and account for all salaried positions.

The Budget Office posts the Board approved budget as well as the budget process update on their website.

Sources

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- 2011-03-01-CSM-MasterPlan
- MajorInstrumentsInvestmentsDescriptions
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- AdminFacEvalInstructions
- Residence Life Theme Housing Update
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5.B - Core Component 5.B

The institution's governance and administrative structures promote effective leadership and support collaborative processes that enable the institution to fulfill its mission.

1. The institution has and employs policies and procedures to engage its internal constituencies—including its governing board, administration, faculty, staff, and students—in the institution's governance.
2. The governing board is knowledgeable about the institution; it provides oversight for the institution's financial and academic policies and practices and meets its legal and fiduciary responsibilities.
3. The institution enables the involvement of its administration, faculty, staff, and students in setting academic requirements, policy, and processes through effective structures for contribution and collaborative effort.

Argument

1. The institution has and employs policies and procedures to engage its internal constituencies – including its governing board, administration, faculty, staff and students – in the institution's governance.

Examples of institutional policies and procedures that recognize and encourage shared governance include the following.

- *Broad Articulation of Board Authority and Delegation of Administrative Authority and Faculty Authority by the Board of Trustees:* These authorities and policies have previously been described as part of Criterion 2.C.4 and support broad delegation of administrative and academic authority to faculty and staff at Mines.

- *Faulty Handbook Modification Procedure:* The Faculty Handbook defines the relationship between the Board of Trustees and the Faculty. The procedure for modifying the Faculty Handbook is published as part of the Faculty Handbook and requires deliberation by broadly constituted Faculty Handbook Committee, the Faculty Senate, Administrative Faculty Council, a public comment period and finally approval by the Board of Trustees.

- *Undergraduate and Graduate Student Association Representation:* Students are broadly represented, by policy, in the institution's governance process. As defined in Criterion 2.C.1, student representatives are included in meetings of the Board of Trustees, the Faculty Senate and its subcommittees, Student Conduct Appeals Board, Calendar Committee, etc.

- *Academic Program Approval Process:* New degree programs, or modifications to existing degree programs, are first vetted by subcommittees of the Faculty Senate. Following this, they are reviewed by Undergraduate or Graduate Councils, as appropriate. Representation on each Council includes broad faculty representation, staff representation from supporting units, and representatives from the appropriate Student Association. These councils' formal role is to provide a recommendation to Faculty Senate. Faculty Senate then provides a recommendation to the Provost. Once approved by the Provost, new degree programs are vetted by the Colorado Department of Higher Education for compliance to statutory role and mission of the institution. Finally, they are reviewed for approval by the Board of Trustees.

- *Budget Process:* When submitting budget requests, campus constituents are required to demonstrate how the requests correlate with the institution's strategic goals (i.e. funding for a new initiative) or demonstrate a critical need. All new funding requests are reviewed for consistency with the Strategic Plan, which itself was developed through a collaborative process. A university-wide Budget Committee is responsible for gathering and analyzing appropriate data regarding the School's budget, preparing the School's annual budget, revising it as necessary, and advising the administration on budgetary matters and long-range fiscal

planning. The committee is chaired by the Senior Vice President for Finance and Administration. The appointed membership of the Budget Committee consists of two academic department heads, three full-time academic faculty members, and one full-time administrative faculty member. One of the academic faculty members must be a Faculty Senator and serves as a representative of the Faculty Senate. Additionally, the Provost, the Vice President for Student Life and Dean of Students, the Vice President for Research and Technology Transfer, and the Senior Vice President for Strategic Enterprises serve as voting, ex officio committee members. The Executive Director of the Mines Foundation serves as a non-voting, ex officio committee member.

Financial management by Mines follows strict adherence to Mines fiscal policies. Financial status reports are part of each Board of Trustees meeting agenda, ensuring consistency with our mission and institutional priorities. The Board includes a Finance and Audit Committee that provides detailed review and oversight of the institution's financial position. Five-year financial projections are provided to the committee on an annual basis to analyze the long-term impact of financial decisions and ensure future funding for the core mission and strategic goals.

- *Classroom and Technology Improvement:* The Classroom Equipment Committee meets annual to approve projects related to improvement of general-use and departmental classrooms. The Committee has broad representation. Chaired by the Registrar, the Committee has authority to use budget derived both from the general fund and from student fees to improve the quality of classrooms across campus. For the fiscal year 2013, Classroom Equipment Committee budget is $237,000. Samples of improvement requests considered by the Committee are provided here.

As defined in response to Criteria 3.D.4 and 5.A.1, Mines manages improvement of its technical infrastructure through a Technology Fee Committee. The Committee has authority to disperse budget derived from the general fund and from a Technology Fee paid by students to improve the technology resources available to students, both undergraduate and graduate. In the fiscal year 2012, the Committee dispersed $1,474,813 in budget for technology improvement. Technology Fee Committee makeup is broadly representative as defined by the published Technology Fee Guidelines. Sample technology fee proposals that were funded are provided here and here.

- *Graduate Student Association:* The institution has fostered the development of an active and collaborative Graduate Student Association that represents the requests and concerns of graduate students at Mines. Examples of efforts led by the Graduate Student Association include:

    - *Graduate Student Statement of Values and Principles:* During the 2010-2012 academic years, the Graduate Student Association led an effort to develop and obtain institutional support for a Graduate Student Statement of Values and Principles. Collaborating with Graduate Council, Faculty Senate, and the Dean of Graduate Studies this statement was vetted, revised and endorsed by all interested constituencies. It is now a foundational document that defines expectations graduate students have of the institution and the institution of graduate students.

    - *Family Leave Policy:* During the 2010-2011 academic year, working with the Dean of Graduate Studies the Graduate Student Association developed a formal family leave policy for graduate students.

    - *Conference on Earth and Energy Research:* Working with faculty, the Office of Graduate Studies and the Office of the Vice President for Research and Technology Transfer, the Graduate Student Association hosts an annual conference on the Mines campus. This conference is known as the Conference on Earth Energy Research. Last year the conference hosted over 160 graduate research presentations. Faculty and alumni attend the conference to provide students timely and effective feedback on both their research activities and their presentation efforts.

- *Student Life Engagement Activities:* The institution's development of residential campus activities and facilities has provided numerous opportunities for students to work with faculty and administrators to make decisions and create plans for Mines. As the Division of Student Life advances this residential initiative, it

is continually reaching out to students and seeking their input and involvement. Examples of student engagement and participation within the institution include:

- Theme Housing Program
- Parking Services Committee
- Dinning Services Advisory Board
- Serving on faculty and staff search committees
- Serving on residence hall design committees

2. The governing board is knowledgeable about the institution; it provides oversight for the institution's financial and academic policies and practices and meets its legal and fiduciary responsibility.

Knowledge of Institution: As described in Criterion 2.C.1, membership to the Governing Board is appointed by the Governor of Colorado and its composition is defined in State Statute. The Governing Board is required to have representation from alumni and others with "relevant professional background and expertise".

Board Member Orientation: All new Board members participate in a new board member orientation. Orientation includes presentations from the President and Vice Presidents and introduce board members to the institution's finances, programs and facilities. Attached are samples of the Reference Book provided to the new members of the Board and the new Board member orientation presentation.

Oversight of Financial and Academic Policies and Procedures: As indicated by Board agendas and minutes, each meeting of the Board of Trustees includes: 1) a Presidential report, 2) a financial report presented by the Vice President of Finance and Administration, 3) a report from Academic Affairs, and 4) a report from the President of the Faculty Senate. Annually, the Board approves modifications of the Faculty Handbook, and the institutional budget for the upcoming year.

Standing Reports: At each of the six annual Board meetings, standing reports are provided as relates to the institution's finances, admissions (both undergraduate and graduate), research activities, foundation and university advancement, and alumni. The most recent Board agenda may be found here.

3. The institution enables involvement of its administration, faculty, staff, and students in setting academic requirements, policy, and processes through effective structures for contribution and collaborative effort.

Processes, policies and mechanisms for engaging various constituencies in activities fundamental to shared governance are defined above. In practice, the University Committees fundamental to supporting shared governance are regularly populated by all constituencies as required by the approved Committee structure as codified in the Faculty Handbook. Membership in each Committee is selected through organizations recognized by the institution as representing the interests of each constituency. These are as defined below.

- *Instructional and Research Faculty:* Faculty Senate, as defined in the Faculty Handbook and constituted through the Faculty Senate Bylaws, represents the interests of Tenure/Tenure-Track, Teaching and Research Faculty. Nominations for University Committee representation for these faculty positions are provided by the Faculty Senate. In addition, as defined in the Faculty Handbook, faculty are evaluated annually in three areas Teaching, Scholarship and Service. The institutional expectation is that faculty, on average, allocate 20% effort toward professional and institutional service.

- *Administrative Faculty:* Administrative Faculty are represented campus wide through the Administrative Faculty Council. The Administrative Faculty Council is provided an annual operating budget by the institution and is the vehicle through which administrative faculty are selected for service on University Committees.

- *Classified Staff:* Classified Staff are represented campus wide through the Association of Classified Employees. The Association of Classified Employees is provided an annual operating budget by the institution and is the vehicle through which classified staff are selected for service on University Committees.

- *Students:* Students are represented by the Associated Students of Colorado School of Mines (ASCSM). The ASCSM is composed of the Undergraduate Student Government and the Graduate Student Association. Budget for the ASCSM is derived through the Student Activity Fee. Through the ASCSM, students are selected for service on University Committees.

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- Graduate Student Values and Responsibilities
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- CSM Board of Trustees Reference Book 2010
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5.C - Core Component 5.C

The institution engages in systematic and integrated planning.

1. The institution allocates its resources in alignment with its mission and priorities.
2. The institution links its processes for assessment of student learning, evaluation of operations, planning, and budgeting.
3. The planning process encompasses the institution as a whole and considers the perspectives of internal and external constituent groups.
4. The institution plans on the basis of a sound understanding of its current capacity. Institutional plans anticipate the possible impact of fluctuations in the institution's sources of revenue, such as enrollment, the economy, and state support.
5. Institutional planning anticipates emerging factors, such as technology, demographic shifts, and globalization.

Argument

1. The institution allocates its resources in alignment with its mission and priorities

As outlined in the budget process (discussed in Criterion 5.A.5), Mines allocates resources for discretionary or departmental requests for new initiatives and programs that align with institutional goals or those that demonstrate critical needs.

New requests may be provided by the Executive Committee (includes the President and Vice Presidents) or submitted by individual departments. The Executive Committee participates in strategic meetings as well as weekly meetings to discuss various institutional issues which may include new strategic initiatives. Once a new program or initiative is finalized, the activity is incorporated into the budget request. Individual departments submit requests via a budget request form, through their respective Vice President and are required to align their requests to strategic initiatives if applicable.

All new funding requests are prioritized by the Vice Presidents and presented to the Budget Committee for feedback and then forwarded to the President for review. This process requires collaboration and general approval of new requests across all functions of the institution providing assurances that new funding initiatives support Mines' goals and mission.

The results of this process are demonstrated above in Criterion 5.A.3 which identifies various new programs that have been implemented to support the institution's strategic initiatives.

2. The institution links its processes for assessment of student learning, evaluation of operations, planning and budgeting

As described in response to Criterion 5.A.5, the Vice Presidents (in the case of Academic Affairs, the Provost) are charged with vetting, both individually and as a group, proposing budgets – and therefore proposed development plans – as part of Mines' normal budget process. As all Vice Presidents are involved in this process, all areas of the institution (i.e., Academic Affairs, Student Life, Capital Planning, Finance and Administration, etc.) are represented, and integrated, as part of the budget and planning processes.

Within Academic Affairs, all new budget requests are reviewed and approved by the Provost prior to being vetted by the other Vice Presidents and the Budget Committee. The Assessment Director reports directly to the Provost and provides regular updates on activities related to assessment of student learning. Thus, linkage between assessment of

student learning and the planning and budgeting processes is provided by the Provost. Additionally, as described in response to Criterion 5.B.1, the Classroom Equipment Committee is directly responsible for dispersing funds for the improvement of the campus classroom infrastructure. The Committee includes broad representation from Academic Affairs, Capital Planning and Construction, and the student body. The linkage between assessment of student learning and classroom improvement is provided by Academic Affairs representation on this Committee.

3. The planning process encompasses the institution as a whole and considers the perspectives of internal and external constituent groups.

The planning processes used by the institution are informed by broad institutional objectives and are broadly inclusive of appropriate internal and external constituencies. Examples of campus planning processes are provided in this section.

Budget Planning: As described in response to Criteria 1.A.3, 5.A.5 and 5.B.1, the Budget Planning process is directly linked to the institution's Strategic Plan, through the budget request template, and through activities of the Budget Committee which the is informed by input from a variety of internal constituencies.

Master Planning: As described in response to Criterion 5.A.1, Mines has in place a campus Master Plan that has been updated most recently in 2010. The Master Plan is directly informed by the Strategic Plan, and is developed and updated through a process managed by the Office of Capital Planning and Construction. This process includes internal and external constituencies. For example, Mines hosts public forums at which community constituencies (campus neighbors, representatives of the city of Golden, etc.) are invited to attend, review and critique proposed updates to the Master Plan. In addition, the Master Plan is publicly available on the campus website.

Strategic Planning: As described in response to numerous other Criteria (e.g., 1.C.1, 1.D.1, 4.C.1 and 5.D.1, Mines undertook the development of a ten-year Strategic Plan in 2002. This plan was established in 2004, and metrics recalibrated in 2008 (see response to Criterion 5.D.1). The process by which the plan was developed was broadly inclusive and included internal constituencies such as faculty, staff, and administration and external constituencies such as alumni and employers.

4. The institution plans on the basis of a sound understanding of its current capacity. Institutional plans anticipate the possible impact of fluctuations in the institution's sources of revenue, such as enrollment, the economy, and state support.

The Budget Office collaborates with other administrative departments to prepare five year projections using various revenue and expense scenarios. These scenarios are used to analyze the financial impact of institutional decisions as well as external fluctuations. Projections utilize data provided in various budget models. Descriptions for some of the modeling are listed below:

- Enrollment Model – provides a trend analysis for undergraduate enrollment and applies those trends five years out. Data used for this model includes retention rates, enrollment mix (resident and nonresident) and target enrollment goals.

- Tuition Revenue Model – applies the current enrollment modeling trends to various tuition increases and calculates the compounding financial impact from year to year.

- Financial Aid Allocation Model – provides the estimated level of award required for resident and nonresident students to maximize revenue and class quality.

- Institutional Financial Aid Expense Model – provides a trend analysis using the results from the allocation model (above). It is used to project total aid expense five years out using various tuition rates.

- Utility projections – provide a trend analysis used in estimating future increases based on usage by building.

- Salary projections – uses calculated fringe benefit increases and various salary increase scenarios and new hires to project future costs and the compounding financial impact from year to year.

The projections also provide mandated cost increases which include estimates for health benefits, operations for new buildings, debt payments and graduate support. Revenue projections include anticipated cuts to state support, student fee increases and estimated increases of Indirect Cost Recoveries for research activity.

The projection model is flexible and can be updated as new information becomes available. When a strategic decision is under consideration and potential costs have been calculated, it can be added to the model and the five year financial impact may be assessed. All prioritized budget requests (outlined in Criterion 5.A.5) are incorporated into the projection model. This becomes the basis for the campus wide budget request for the next fiscal year.

5. Institutional planning anticipates emerging factors, such as technology, demographic shifts, and globalization.

As described in response to Criterion 5.D.1 the institution engages in systematic and integrated planning. Evidence that this planning anticipates emerging factors, such as technology, demographic shifts and globalization is provided by the following examples of actions produced by this process.

- *Electronic Services Upgrades for Sustainability and Efficiency:* As described in response to Criterion 5.D.2 the institution has significantly upgraded its administrative processes and services to embrace revised technologies. These include outsourcing of student email, installation of Banner enterprise software, and migration of a number of formerly paper-based processes to electronic processes.

- *Upgraded Student Services and Educational Facilities:* In recognition of 1) changing student demographics, 2) changing expectations of both internal and external constituencies on services provided to students, and 3) changing demands for classroom technology, Mines has established a number of new initiatives that include: CASA (see Criterion 3.C.6), MEP (see Criterion 3.D.1), construction of a Student Recreation Center, upgraded on-campus living facilities, upgraded student Wellness Center, establishment of a Technology Fee program for upgrading classroom technology (see Criterion 3.D.4), construction of new classroom facilities including CTLM, Brown Hall and Marquez Hall.

- *Reorganization:* As described in response to Criterion 5.D.2, the institution has undergone major administrative and academic reorganization. These changes are intended to facility long-term sustainability of the institution, its processes and its degree programs, and enhancement of its global market brand via enhance of the development and support of degree programs of highest academic distinction across all programs supported by Mines.

- *Senior Vice President for Strategic Enterprises:* In 2009, the President created the position of Senior Vice President for Strategic Enterprises. The Senior Vice President sits on the President's executive team and oversees activities of the Office of Special Programs and Continuing Education. Activities of the Vice President include the development of international partnerships and programs (including Mines' long-term relationship with the Petroleum Institute in Abu Dhabi); and development of outreach, short course and other training programs.

Sources

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5.D - Core Component 5.D

The institution works systematically to improve its performance.

1. The institution develops and documents evidence of performance in its operations.
2. The institution learns from its operational experience and applies that learning to improve its institutional effectiveness, capabilities, and sustainability, overall and in its component parts.

Argument

1. The institution develops and documents evidence of performance in its operations.

Performance Contract: In 2001, through C.R.S. §23-41-104.6, the State authorized Mines to operate through a performance contract. The contract established standards and benchmarks in three broad areas: student enrollment and success, quality of academic programs, and financial/capital issues. The School documented and reported its progress to the State in 2006 and 2010. In both reports, the school demonstrated that it was on track with meeting the goals of the performance contract. The current contract was originally intended to cover the time period from 2002 through 2007, but has undergone several extensions. In 2013, the contract will be replaced by a new agreement including similar benchmarks in four areas: degree completion, student success, closing progress and achievement gaps, and financial stewardship. As part of the new agreement, the school will be required to monitor, document and report its progress in meeting its goals annually.

Strategic Plan: As the 2002 performance contract was being implemented, Mines began developing a 10-year strategic plan. The school engaged an external consulting firm, which with broad campus input, assisted in the creation of the plan. The Plan was published in 2004.

In 2008, a strategic plan "recalibration" committee was established to evaluate progress, identify pressure points, and recommend appropriate changes to President and the Board of Trustees. Specifically, student enrollment, capacity issues, and costs/revenues were evaluated and revised benchmarks set. This process resulted in affirmation of the broad goals, but with readjusted goal metrics with respect to increases in faculty hiring and the graduate student population. Since then, the current president has fine-tuned the strategic goals of the institution. The school has been tracking metrics and engaging the Board of Trustees annually in review of its progress toward meeting these goals.

2. The institution learns from its operational experience and applies that learning to improve its institutional effectiveness, capabilities, and sustainability, overall and its core components.

Following are examples of organizational and operational changes that have been made over the past several years; each aimed at improving the overall effectiveness and sustainability of the organization.

Reorganization: On September 6, 2006 President Scoggins charged an *ad hoc* Committee to investigate the pros and cons of both administrative and academic reorganization. Committee membership was broadly representative of campus constituencies, as was appropriate given the broad charge to the Committee.

Over the course of a year, the Committee met, gathered information from a wide variety of constituencies, made peer comparisons, and reported its findings and recommendations to the President via two separate documents: one related to administrative reorganization, the other related to academic reorganization. As of fall 2012, actions taken as a direct result of these efforts are as defined below. Examples of changes made to the administrative structures recommended by the Committee and adopted by the institution are provided below.

- *Creation of a Provost:* Adopting what the Committee referred to as a "weak Provost" model for the President's Executive team in which the chief academic officer, at the time working under the title VPAA, becomes the first among equals at the VP level with the title Provost.

- *Elimination of facilities management duplication:* At the time of its writing facilities management was done through two separate organizations, one more closely tied to academic operations, and one tied to auxiliary operations. In 2008, these two management operations were merged and are now operated as a single entity.

- *Elimination of technology service redundancy and establishment of a chief technology officer:* Prior to this report technology was management through two separate entities, one dedicated to serving the needs of the academic community, the other serving the institution's administrative needs. The result was duplication of services (e.g., email and basic web services were duplicated by two separate organizations), and lack of any centralized technology authority. In 2008, these two organizations were combined into Computing, Communications and Information Technology group that is now led by the institution's Chief Technology Officer.

- *Academic Reorganization:* Prior to fall 2011, Academic Affairs was organized via a flat structure with thirteen separate department heads and division directors reporting directly to the Provost, the chief academic officer at Mines. The *ad hoc* Committee recommended that College structure led by Deans be considered in place of the flat departmental structure. Beginning spring 2011, Academic Affairs began reorganizing its operational structure. This effort was directed at addressing the following organizational challenges identified by the ad hoc reorganization committee:

    - Support for degrees and degree structures that were hampered by departmental barriers,

    - Organizational imbalance in a fiscally constrained environment,

    - Long-term capacity to behave strategically at an operational level that promotes strong collaborations across units and builds degree programs of distinction.

As part of this effort, the Provost has articulated objectives by which academic reorganization would be deemed successful.

At the direction of the Provost, the leadership and faculty in the Divisions of Engineering, Environmental Sciences and Mathematical and Computer Sciences began discussing the need for, and advantages in realigning their administrative structures. With faculty input, the Division directors developed an initial reorganizational plan. The revised organizational structure created four new academic units: a combined Civil Engineering and Environmental Science and Engineering unit, a combined Electrical Engineering and Computer Science unit, a Mechanical Engineering unit, and an Applied Mathematics unit. Oversight of these new units was provided by a newly created Dean of the College of Engineering and Computational Sciences.

The creation of the new College insures consistent management of degrees and continued maintenance of the cooperative efforts across the Civil, Electrical, and Mechanical Engineering departments for the shared Engineer degree program. The faculty from the affected units generally agreed that a strategic realignment would likely create departments of academic distinction at Mines and nationally, and that this realignment would address structural imbalances that had previously existed.

Following the lead of the Engineering Division, over the next academic year, the remaining departmental units were reorganized into two additional Colleges. The revised organizational structure, which took effect fall 2012, is attached.

Paperless Processes: Numerous examples exist of campus processes and procedures that are being made more efficient through the adaptation of paperless processing. Several of these include:

- *Graduate Student Applications:* Starting spring 2012, the Office of Graduate Studies moved to distributing graduate applications to programs for review and admission decisions electronically. Prior to this, the Office copied and distributed hardcopies of all applications materials to departments. Additionally, starting spring 2013, the Office will encourage applicants to submit all application materials electronically, saving the Office significant staff time in scanning hardcopy materials, and increasing throughput of application materials from the Office out to the departments, thereby allowing faster turn-around time from application submission to candidate notification of decision.

- *Electronic Theses and Dissertations:* Starting fall 2012, the Office of Graduate Studies began requiring electronic submission of all graduate student theses and dissertations. Students are no longer required to submit hardcopy versions of their work for format review and approval or for institutional archiving. The Graduate Office uses an external vendor, UMI ProQuest, to 1) manage and track electronic submissions, 2) allow students to manage publication options and personal hardcopy orders and 3) distribute Mines theses and dissertations.

- *Banner Workflow:* Starting spring 2012, Campus Computing and Information Technology will begin installing Banner workflow software into its central administrative computer systems. Banner Workflow is an open, flexible tool that automates, simplifies, and directs the flow of information across the institution. Activities that currently require manual approvals and workflow processing (e.g., travel documentation, purchase requests, graduation applications, etc.) will be approved electronically through workflow notification and processing that is predefined and automatic. It is hoped that this will allow for the elimination of numerous paper processes and increase the efficient and accuracy with which these processes are handled.

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5.S - Criterion 5 - Summary

The institution’s resources, structures, and processes are sufficient to fulfill its mission, improve the quality of its educational offerings, and respond to future challenges and opportunities. The institution plans for the future.

Summary

Mines has policies and procedures in place that insure the inclusion of the governing board, administration, faculty, staff and students in the governing process. Additionally, the university links its processes to the assessment of student learning, evaluation of operations, and planning. The policies of Mines are well documented and publically available.

Recently, Mines has strengthened its' financial position by:

- increasing operating reserves
- reducing its' reliance on State funding
- maximizing tuition revenues by applying what was learned from a market analysis
- implementing a fund raising campaign
- minimizing expenses by applying the budget to critical need areas
- institutional reorganization into three colleges, reducing cost of overhead expenses
- having a student technology fee to improve use of technology in academic setting
- self supported student housing and recreation fee

Additionally, all funds received by Mines are controlled by the Board and are not returned to the State's General fund. Academic and research funds are allocated and tracked separately and a plan is in place for monitoring the use of these funds and assuring the alignment of fund allocation with the Mines' Mission.

Mines has strengthened its' physical infrastructure by:

- building new academic infrastructure
- creating a new student advising center
- building of a new residence hall
- development of a pedestrian campus
- on-going capital projects
- controlled maintenance and renovations that align with mission and strategic plan
- increases and improvements in academic research space
- development of a campus infrastructure Master Plan

Mines has strengthened its' technological infrastructure by:

- reorganization of computing and networking services
- improved computing and networking services
- improved computing and networking support services
- implementation of a new financial and administrative system, i.e. Banner

Sources

There are no sources.