Criterion Three. Teaching and Learning: Quality, Resources, and Support

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

Core Components

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 its 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

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

As of Fall 2017, Missouri S&T offers 35 undergraduate degree programs, 62 graduate degrees, and 67 graduate certificates. A detailed list of these offerings is available on the Registrar’s Office webpage.

Missouri S&T has multiple ways of ensuring that courses and programs are current and require levels of performance by students appropriate to the degree or certificate awarded.

- New courses, as well as changes to existing courses and degree programs, pass through a rigorous oversight system. All changes originate within departments and are subject to a departmental curricular review. After receiving departmental approval, the proposed changes go to a discipline-specific area curricular committee (engineering, sciences, social sciences, or arts and humanities). Upon receiving area-level approval, the proposal moves to the campus curriculum committee, which is comprised of members from each disciplinary area on campus. Approval from the campus curriculum committee leads to review and a vote by the faculty senate. New academic minors follow the same procedure with the same approval chain. New certificate programs require approval from the Dean, the Office of Graduate Studies or Office of Undergraduate Studies, a separate Review Committee, the Provost, and, finally, Missouri’s Coordinating Board of Higher Education. New degree programs require additional levels of approval and oversight. After receiving campus approval from the Dean, the Provost, and the Chancellor, they must also be reviewed and approved by the UM System, the Board of Curators, and
Missouri’s Coordinating Board of Higher Education. These multiple layers of review and approval help ensure the academic rigor and relevance of degree programs offered at S&T.

- Many S&T degree programs undergo accreditation by discipline-specific governing bodies that help ensure that courses and programs are current and require appropriate levels of performance by students. For example, all engineering and computer science degree programs are accredited by ABET; all chemistry degree programs are accredited by the American Chemical Society (ACS); and all business and information systems degree programs are accredited by the Association to Advance Collegiate Schools of Business (AACSB). Other programs not accredited by outside agencies undergo program reviews on a regular basis, on a schedule overseen by the Dean of the College of Arts, Sciences, and Business.

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

**Learning Outcomes**

Missouri S&T adopted the following university-wide student learning outcomes for undergraduate students:

1. Ability to communicate effectively both orally and in writing.
2. Ability to think critically and analyze effectively.
3. Ability to apply disciplinary knowledge and skills in solving critical problems.
4. Ability to function in diverse learning and working environments.
5. Ability to understand professional and ethical responsibility.
6. Awareness of national and global contemporary issues.
7. Recognition of the need for, and an ability to engage in, life-long learning.

Additionally, all degree programs have developed and adopted their own student learning outcomes that are pursued and contribute/support the seven university-wide student learning outcomes. Samples of these department-specific student learning outcomes can be found in Criterion 4-XX.

Missouri S&T adopted the following university-wide student learning outcomes for graduate students:

1. Ability to apply knowledge of subject matter within their field of study.
2. Ability to communicate effectively within their field of study.
3. Ability to engage in productive critical thinking within their field of study.
4. Ability to develop professionally within their field of study.

More information about how undergraduate and graduate student learning outcomes are assessed is available in Criterion 4-XX of this report.

In addition to undergraduate and graduate, this criterion 3-A asks for information about learning outcomes for these programs: “post-baccalaureate, post-graduate, and certificate programs[1].” I get that graduate students are post-baccalaureate, but what is “post-graduate”[2]? Post-docs? Do we have learning outcomes for them?

3.A.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).

Consistency across Modes of Delivery

The program quality and learning goals applied to each of Missouri S&T’s academic programs are consistent[3] regardless of the mode of delivery, as demonstrated in the assessment plans in Criterion 4.X.X.

Besides the main campus located in Rolla, Missouri S&T also offers academic programs at [insert other locations here and descriptions of what is offered at these places Saudi Arabi?]. Courses offered at these locations are [4]equivalent identical to those offered at the Rolla as reflected in the assessment plans in Criterion 4.x.x.

Missouri S&T offers a slate of degrees and courses that are available through the [Department of Distance and Continuing Education], administered through the [Office of Global Learning]. Live-streaming courses have the same learning outcomes and curricular rigor as face-to-face courses[5] (see Criterion 4.x.x). They are approved using the same process as all other courses, faculty are hired and assigned using the same standards that apply to all other Missouri S&T faculty.

Live-streaming courses[6] are offered synchronously, with students sitting in the classroom on campus while off-campus[7] students enrolled in live streaming courses participate in the same class using video, audio, and text chat to interact with both the instructor and with other students. Students who live-stream the course view and hear everything that the instructor and the other students view and hear. Students in these courses have the same syllabus and the same assignments as face-to-face students. Students who take live-streaming courses also have the recorded lectures for asynchronous viewing of the course, as their schedules necessitate.
Students enrolled in live-streaming courses are offered multiple ways to communicate with the instructor and with other students, including virtual office hours (using video conferencing tools), email, and online discussion boards in Canvas, the learning management system at Missouri S&T.

Missouri S&T’s live-streaming programs have been widely recognized for their quality and value. Here is a sample of the recognition our programs have received this year:

**US News & World Report (January 2018):**
- Missouri S&T’s online graduate program in the computer information technology category tied for 19th overall and 11th among public universities. S&T offers online graduate degrees in computer science and information science and technology.
- S&T’s online graduate engineering programs ranked 23rd overall and 18th among public universities. Missouri S&T offers online graduate degree programs in 12 engineering disciplines: aerospace engineering, civil engineering, computer engineering, electrical engineering, engineering management, environmental engineering, explosives engineering, geotechnics, manufacturing engineering, mechanical engineering, mining engineering and systems engineering.
- Missouri S&T’s online graduate business program in information science and technology tied for 16th overall and ranked 13th among public universities.
- The online MBA program tied for 51st overall and 40th among public universities.

**Contractual or Consortial Agreements**

Do we have anything like this?

**Dual Credit**

Missouri S&T does not currently offer dual credit.

**SOURCES:**

Insert a list of sources for this section here.
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**

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

Missouri S&T is committed to providing all its students with a strong educational foundation upon which they can develop essential skills, knowledge, and attitudes critical to becoming informed and responsible citizens and life-long learners. Missouri S&T graduates achieve an education that transcends their individual academic fields and allows them to understand and engage with complex issues within many contexts.

Every degree program at S&T is built on a solid foundation of broad liberal arts education that includes humanities, social sciences, natural sciences (including mathematics), communication skills, and experiential learning. Some common requirements exist for all students pursuing bachelor of arts degrees or bachelor of science degrees [provided in detail below], and then individual degree program determines its own specific graduation requirements. All students must earn an average grade of ‘C’ or better (two grade points) in courses that count toward a degree, and must earn a ‘C’ average or better in courses every class taken in their major department.
Missouri S&T is in the process of developing a formalized general education program in response to a state government mandate (SB 997), in partnership with Missouri’s Coordinating Board for Higher Education, requiring that all two-year and four-year public universities create a 42-credit-hour core set of courses (called CORE 42) that can transfer automatically, as a block, whenever a student transfers from one university to another. CORE 42 requires at least 9 credits in social and behavioral sciences; at least 9 credits in written and oral communication (including at least 3 credits in oral communication); at least 7 credits in natural sciences (with at least one lab); at least 3 credits in mathematical sciences; and at least 9 credits in humanities and fine arts from at least two separate disciplines. CORE 42 will be in place by the fall semester of 2018.

In 2003, the Academic Council at Missouri S&T (now called Faculty Senate) passed a statement of Seven Principles for Good Practice in Undergraduate Education, stating that faculty are urged to:

- Encourage student-faculty contact
- Encourage cooperation among students
- Encourage active learning
- Give prompt, frequent, informative feedback
- Emphasize time on task
- Communicate high expectations
- Respect and encompass diverse talents and learning styles

**Experiential Learning**

To amplify the effects of these seven best practices for undergraduate education, Missouri S&T has implemented a general education requirement of all undergraduate students involving experiential learning. Experiential learning, an essential aspect of Missouri S&T’s unique learning environment, refers to learning stimulated by a variety of structured activities that differ significantly from the traditional lecture format. Experiential learning activities require students to go beyond mastering basic skills and knowledge in the application of that material to problem solving challenges. These activities involve collaboration and reflective learning, and allow students to learn by doing in environments that align with their aptitudes. One hundred percent of the students who entered S&T in the fall of 2015 or after, as either first-time freshmen or transfer students, will graduate after having completed at least one experiential learning activity. Such experiences might include a faculty-led research project, a co-op experience in their field, a study abroad experience, a significant leadership role in an organization, or any number of other meaningful, relatively long-term experiences that create opportunities for students to apply their education to real-world situations. All students write reflective pieces on their experiential learning activity that describe the value of the experience. So far, approximately XXX students have graduated after having fulfilled the experiential learning requirement.
General Education Communications Requirements at Missouri S&T

Each department provides students with opportunities to enhance their writing and speaking skills (beyond the required classes) by requiring that they complete at least two communications intensive courses (CI), at least one of which should be in the student’s major. Communication intensive (CI) courses may be focused on writing, speaking, or combinations thereof. Two communications emphasized (CE) courses may be used at the equivalent of one CI course (for example, four CE courses would substitute for two CI courses). These requirements are formally tracked and monitored by the degree audit process (through the Registrar’s Office) to ensure that each graduating student meets the communications component of the general education requirement.

General Education (Curricular)

Beyond the experiential learning and communications requirements for all students, some general education requirements at Missouri S&T are defined based on the pursuit of either a Bachelor of Arts degree or a Bachelor of Science degree. For a Bachelor of Arts degree, which can be earned in biological sciences, chemistry, economics, English, history, multidisciplinary studies, philosophy, and psychology, the following curricular requirements for general education apply:

Requirements for Bachelor of Arts

Basic Skills and Concepts for BA

1. Composition (6 credits): ENGLISH 1120 and one additional three-hour composition course
2. Western Civilization (6 credits): (HISTORY 1100 and HISTORY 1200)
3. Foreign languages (12-16 credits): 12 hours of a single foreign language or 16 hours (8+8) of two foreign languages.

General Education Requirements for BA

1. Sciences (12 credits): At least one course taken in each of the biological (biological sciences), physical (chemistry, geology and geophysics, and physics), and mathematical (mathematics/statistics and computer science) sciences, but not to include MATH 1101 or COMP SCI 1010. A laboratory also may count – at the discretion of the student’s major department – toward the total requirement.
2. Humanities (12 credits): At least one course in each of the three areas of literature (English and American), philosophy, and fine arts (art, music and theater), but not to include studio and performance offerings. This requirement is exclusive of courses in the student’s major field.
3. Social Sciences (12 credits): Courses in at least two of the following areas: economics, political science, psychology, and sociology. This requirement is exclusive of courses in the student’s major field.

Requirements for Bachelor of Science
For a Bachelor of Science degree, which can be earned in aerospace engineering, architectural engineering, biological sciences, business and management systems, ceramic engineering, chemical engineering, chemistry, civil engineering, computer engineering, computer science, economics, history, information science and technology, electrical engineering, engineering management, environmental engineering, geological engineering, geology and geophysics, mathematics, mechanical engineering, metallurgical engineering, mining engineering, nuclear engineering, petroleum engineering, physics, psychology, and technical communication, the following general education requirements apply:

1. Communication
   1. ENGLISH 1120
   2. One writing intensive course in major OR two writing emphasized courses in major
   3. One writing intensive course out of major OR two writing emphasized courses out of major

2. Humanities plus Social Sciences
   1. 21 credit hours (must be content approved by the department and school)

3. Mathematics and Science
   1. Total of 18 credit hours
   2. College algebra or higher
   3. May include up to 3 credit hours of psychology

Engineering Degree Programs
Engineering degree programs consist of 128-132 credit hours. Additional hours may be required for specific choices of electives or emphasis areas. Courses that are at a lower level of coverage than the required courses in the curriculum (e.g. algebra, trigonometry, intro to physics, etc.) may not be counted toward the degree program credit hours. An average of at least two grade points per credit hour must be obtained for all credits counted toward the degree. In addition, an average of at least two grade points per credit hour must be obtained for all credits taken in the student’s major department.

The degree program shall include all courses in the common engineering freshman year, as listed in the current catalog under the Freshman Engineering Program.
The degree program shall include a minimum of 21 credit hours as follows:

- ENGLISH 1120
- HISTORY 1200 or HISTORY 1300 or HISTORY 1310 or POL SCI 1200
- ECON 1100 or ECON 1200
- Communication Elective: ENGL 1160 or ENGL/TCH COM 1600 or ENGL 3560 or SP&M 1185
- The remaining minimum of 9 additional credit hours must be chosen from disciplines in the humanities and social sciences. Humanities courses are defined as those in: Art, English and Technical Communication, Etymology, Foreign Languages, Music, Philosophy, Speech and Media Studies, and Theatre. Social Sciences courses are defined as those in: Economics, History, Political Science, and Psychology. Some curricula may require the completion of a specified number of upper-level Humanities/Social Sciences (H/SS) courses. Upper-level H/SS courses are defined as those at the 2000-level or above, and that require as a prerequisite the successful completion of a lower-level H/SS course. Study abroad courses may count as upper-level H/SS courses, even if they do not have a prerequisite. H/SS courses numbered 2001, 3001, and 4001 (experimental courses) may also be used to complete these elective requirements.

Courses in business, education, information science and technology, or any other discipline not listed above will not satisfy the humanities/social sciences elective requirement, although such courses may count toward general education requirements. Transfer credits from other universities in sociology and general humanities may count as humanities or social science electives.

3.B.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 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.

Missouri S&T’s learning outcomes are well-defined and clearly articulated. The program of general education, like all educational programs at S&T, is based on the university’s overall mission of integrating education, research and application to create and convey knowledge that serves our state and helps solve the world’s great challenges. More specifically, our general education requirements ensure that students can write and speak well, and that they acquire foundational knowledge in communications, humanities, social sciences, natural sciences, and mathematics. As a result, our students graduate academically prepared for life after college.
3.B.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. As described in 3.B.1, every degree program at Missouri S&T requires students to acquire critical foundational skills in communication, humanities, social sciences, mathematics, and natural sciences. Degree programs also require research methods courses that teach students to conduct ethical, responsible research, and capstone courses that provide soon-to-graduate students opportunities to apply their skills and knowledge to complicated research questions.

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

Inclusion is one of the six values of Missouri S&T; the university’s statement explains that “We are an inclusive, welcoming community. We seek to build a creative learning environment marked by openness, understanding and valuing all people and perspectives.” To this end, multiple opportunities for students to explore the human and cultural diversity of the world have been created and supported by the university including minors, study abroad programs and co-curricular activities. Relevant academic minors, such as those in Global Studies; Humanitarian Engineering and Science; Multiculturalism and Diversity; and Science, Technology, and Humanity are curricular. Others, such as study abroad programs (including year-long study abroad, semester-long study abroad, and short course faculty-led study abroad), combine the curricular with the experiential. And still others, such as Miner Challenge Alternative Break and Engineers Without Borders, are co-curricular in nature. Brief details about a sample of these programs are provided here; more information about co-curricular offerings related to diversity is available in section 1C of this assurance argument.

Global Studies Minor: Global studies is a multidisciplinary undergraduate minor program designed to aid in the preparation of Missouri S&T students to be successful in an increasingly global workforce. Students who complete the global studies minor will have an increased awareness of the society, culture, technical issues, and/or language of at least one country other than the United States prior to the completion of their Missouri S&T undergraduate experience. Any Missouri S&T student enrolled in an undergraduate degree program is eligible for the Global Studies minor program, which consists of 12 credit hours from an approved list of classes and at least 2 weeks (14 days) of experience in a foreign country acquired during an approved Missouri S&T class or research project, Missouri S&T extracurricular activity, and/or Missouri S&T study abroad activity.
**Humanitarian Engineering and Science Minor:** Humanitarian engineering may be described as a multi-disciplinary approach to improve the well-being of underserved or developing communities and/or populations. The purpose of the minor is to provide the opportunity to all Missouri S&T students to:

- Potentially participate in activities designed to improve the well-being of underserved or developing communities/populations
- Address quality of life issues, local leadership partnerships, resource allocation, the natural world, and climate and risk
- Obtain a degree that explicitly requires experiential service learning

The Humanitarian Engineering and Science Minor requires the completion of a minimum of 15 hours of courses as described in the course catalog.

**Multiculturalism and Diversity Minor:** The Multiculturalism and Diversity Minor prepares students to function more effectively in a global society as well as enhances Missouri S&T graduates’ employment options by providing knowledge, skills, and strategies for appreciating and understanding diverse cultural practices. The minor requires 15 hours in a minimum of 3 of 4 humanities and social sciences (HSS) departments: the departments of arts, languages and philosophy; English and technical communication; history and political science; and psychological science. The academic home for this minor is the Department of Arts, Languages, and Philosophy.

**Science, Technology, and Humanity Minor:** The science, technology and humanity (STH) minor is designed for students who want to explore the relationship between history, political science, and science and technology. The minor is particularly useful for technologically oriented students, because it provides insight into humanities and social science disciplines. It also shows how these disciplines interact with science and technology, thereby broadening their horizon of thought and action and preparing them for an increasingly technologically oriented future. This minor requires a minimum of 15 credit hours in courses outlined in the catalog.

**Miner Challenge Alternative Break:** The Miner Challenge alternative break program offers students opportunities to engage in immersive service experiences over winter or spring break. The Miner Challenge program is designed to allow participants to gain exposure to new experiences, develop leadership skills, and gain awareness concerning social issues and the importance of social responsibility and civic engagement. Students apply to the program in the fall semester, engage in fundraising and teamwork activities throughout the fall and spring semesters, and travel with a small group to various locations over a school break to volunteer with local community organizations. This past year, the Miner Challenge program sent one international trip to Nicaragua over winter break and five domestic trips to Alabama, Colorado, Kentucky, Louisiana, and Tennessee over Spring Break.
Engineers Without Borders: Engineers Without Borders-USA partners with developing communities to improve their quality of life through the implementation of environmentally, equitable, and economically sustainable engineering projects while developing internationally responsible engineers and engineering students. EWB-Missouri S&T is a student based chapter, currently partnered with four communities in Honduras, Bolivia, and Guatemala. The main goal in all four of these communities is to provide clean water and sanitation.

3.B.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 a major research university, Missouri S&T supports students’ and faculty members’ active contributions to scholarship, creative work, and the discovery of knowledge in all disciplinary areas. S&T’s sponsored research expenditures were over $30M in FY 2016; these research projects contributed significant new knowledge in areas of engineering, science, social science, and humanities. While it would be impossible to capture the wide array of scholarly and creative work performed by S&T faculty and students in this brief document, here are just a few examples of recent significant research achievements:

- An S&T geologist led a $2.1M National Science Foundation research effort to study Earth’s greatest mass extinction;
- The Missouri S&T Mars Rover Design Team won the 2017 University Rover Challenge, an international design competition where 35 collegiate teams showcased potential next-generation Mars rovers;
- S&T researchers received a $1.4M University Transportation Centers (UTC) tier 1 grant to develop robotic tools to inspect and maintain bridges and portions of highway from the air or from the side of the structure.
- A professor of chemistry at S&T developed the “P-scan,” a fast, non-invasive, point-of-care test for identifying biomarkers of a protein that appears in urine samples from women with breast cancer.
- A professor of physics at S&T received a $1.6 million grant from the National Science Foundation to study the properties of amorphous oxide materials and to develop an open-access database for other researchers to use.

More than 425 undergraduates take part in research projects every year at Missouri S&T. In order to facilitate and advance these efforts, S&T has developed some student-focused programs designed to help students learn to conduct sound, ethical research in order to make significant contributions to the research enterprise. A sample of these programs are outlined below; other examples of undergraduate research and creative work are highlighted in section 3E of this assurance document.
Opportunities for Undergraduate Research Experience (OURE)

The OURE program, administered out of the Office of Academic Support, allows undergraduate students to work with a faculty member over the course of an entire school year on a research project led by the faculty member. Students acquire valuable experience working on a real-world project, and receive a stipend of $1,000 for their efforts. OURE students present their work at the Undergraduate Research Conference (please see below).

First Year Research Experience (FYRE)

The FYRE program, administered out of the College of Arts, Sciences, and Business, pairs faculty mentors with first-year students in a one-semester research apprentice relationship. The students learn best practices for conducting meaningful, ethical research in their chosen field, and have the opportunity to showcase what they’ve learned at the Undergraduate Research Conference (please see below). Faculty mentors and FYRE students each receive a $500 stipend for participating in the program.

Undergraduate Research Conference

Missouri S&T encourages and celebrates the participation of undergraduates in research through a number of means, including an annual undergraduate research conference. This event provides an opportunity for Missouri S&T undergraduates to showcase their research efforts to the campus community and to the public. Students involved in OURE and FYRE projects participate in this conference, held each year in April, and students involved in other research projects may also present their work and compete for prizes, which are awarded by panels of volunteer faculty judges in the areas of engineering, science, social science, and arts and humanities.
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 qualified, 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:**

3.C.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.

Missouri S&T has sufficient qualified faculty needed to fulfill its teaching mission and provide effective student services. In Fall 2017, S&T had 364 full-time ranked faculty and 127 part-time faculty. Of the full-time ranked faculty, 307 are tenured or on the tenure track, and 98% of them have terminal degrees. Our student-faculty ratio is 19:1. All full-time faculty, categorized by department, are identified in the course catalog.

Missouri S&T has sufficient faculty not only to provide effective teaching for our students, but also to perform many critical services outside the classroom. S&T faculty are responsible for developing, maintaining, and evolving curricula, and for assessing student learning. Curriculum oversight is managed through the **Faculty Senate**, the **Graduate Faculty and Graduate Council**, and curriculum committees that function on departmental, disciplinary area, and **university** levels. Faculty also play an important role in university governance, through **Faculty Senate** and its 17 **standing campus committees**.

More here on “involvement in assessment of student learning”
3.C.2. All instructors are appropriately qualified, including those in dual credit, contractual, and consortial programs.

All instructors at Missouri S&T are appropriately qualified, according to the standards outlined by HLC [14]. In nearly all cases, faculty possess an academic degree directly relevant to the they are teaching and at least one level above the level at which they teach. In fact, XX% of tenure-track faculty have earned a Ph.D. in the discipline they now teach. Occasionally, instructors are hired who do not have an advanced degree in a field directly related to their teaching assignment. In these cases, hiring authorities follow processes established by the Provost to ensure that the instructor is qualified based on (1) possessing a master’s degree in another discipline plus 18 or more graduate credit hours in the discipline or subfield in which they teach; or (2) equivalent tested experience. Missouri S&T has encouraged specific disciplines and programs to develop tested experience qualifications that include skill sets, types of certifications or additional credentials, and experience.

S&T instructors who teach within contractual and consortial programs[15] are hired based on the same standards of qualifications as those hired in traditional programs on our campus.

Missouri S&T does not offer dual credit.

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

All full-time S&T faculty are reviewed and evaluated annually by their department chair; Collected Rules and Regulations 310.015 provides review policies for untenured faculty as well as post-tenure review procedures for tenured faculty. S&T, along with the other campuses in the UM System, has recently moved to a shared system of tracking faculty activities called myVITA. Faculty report their professional accomplishments; myVITA automatically populates fields related to teaching (course assignments, enrollments, etc.), grant funding, and publications indexed by large search engines such as Web of Science. Department chairs and other administrators can use myVITA to assess faculty productivity and effort applied to areas of research, teaching, and service.

3.C.4. The institution has processes and resources for assuring that instructors are current in their disciplines[16] and adept in their teaching [17] roles; it supports their professional development.
Because they are best able to assess the teaching and research potential of new faculty, existing faculty participate extensively in the hiring process. They generate advertisements, review dossiers, select finalists, conduct interviews, and make recommendations that are sent forward to the dean, provost, and the office of institutional equity, diversity, and inclusion.

The S&T promotion procedures also provide oversight that ensures the quality and effectiveness of faculty. External reviewers in a candidate’s area(s) of expertise are enlisted to review the candidate’s dossier and provide objective feedback. After these letters of review are collected, the candidate’s dossier is reviewed by a departmental faculty committee, the department chair, a discipline-specific faculty committee, the dean, the campus promotion committee, and the provost. All the recommendations that arise from these levels of review are considered independently, and all are advisory to the chancellor, who makes the final decision. This extensive review process results in thorough and objective evaluations of our faculty.

The Graduate Faculty and Graduate Council play important roles in ensuring high-quality graduate level instruction. Faculty members who serve on master’s and doctoral committees, and who teach graduate level courses, must be members of the graduate faculty. The Graduate Council, made up of representatives from the graduate faculty, establish and enforce the rules, and regulations that govern all graduate programs at S&T.

Missouri S&T faculty have multiple opportunities to pursue professional development, including the following:

- The University of Missouri System Research Board provides funding to support research projects, related travel, and course releases for faculty engaged in significant research in the areas of humanities, fine arts, and social and behavioral sciences.
- Missouri S&T’s Center for Educational Research and Teaching Innovation (CERTI) provides a variety of faculty resources for teaching and learning, such as professional development events, educational research assistance, and observation and feedback of classroom teaching. CERTI also serves as a clearinghouse for other teaching information and resources on campus. CERTI offer resources for new faculty, resources on academic integrity, and other kinds of teaching support including information regarding learning assessments, advice on starting a new semester, strategies for Student Success, the well-received Teaching Partner Programs, advice about Teaching students with disabilities, and helpful teaching tips for instructors.
- Missouri S&T’s Office of Educational Technology hosts an annual Teaching and Learning Technology Conference, which allows faculty from S&T and elsewhere to present information and attend sessions related to the intersections of teaching and technology. In 2018, XX registrants[19] from S&T attended this conference.
Both the College of Engineering and Computing and the College of Arts, Sciences, and Business provide faculty with opportunities to request funds to support professional development activities. Faculty submit forms to the dean’s offices that outline their goals (conference attendance, for example) and present their budget, including any matching funds that may be available. In addition, many departments provide funds to full-time faculty to allow them to travel to professional conferences to disseminate their research.

Faculty in both the College of Engineering and Computing and the College of Arts, Sciences, and Business have the opportunity to apply for one-semester or one-year sabbaticals in order to pursue an intensive research agenda.

The University of Missouri System offers several professional development programs that are available to faculty at all four campuses, including Missouri S&T. These programs include the Manuel T. Pacheco Leadership Development Program and the University of Missouri Faculty Scholars Program.

Missouri S&T’s Office of Institutional Equity, Diversity, and Inclusion provides professional development training related to diversity and inclusion for all faculty members serving on faculty search committees.

Professional development opportunities also exist for graduate teaching assistants:

- The Speech Communication Center at S&T hosts twice-yearly Graduate Teaching Assistant Communication Skills Workshops, which ensure that all GTAs are prepared to communicate effectively in the classrooms and labs in which they work.
- The Office of Graduate Studies supports the UM System’s Graduate Student Leadership Development Program, which invites eight high-performing graduate students each year to participate in this program designed to enhance and develop leadership skills among graduate students.

3.C.5. Instructors are accessible for student inquiry.

Missouri S&T faculty use multiple means to ensure that they are accessible to students outside of regularly scheduled class hours. Faculty keep regular office hours, correspond with students via email, and connect digitally through Canvas, our university’s learning management system. S&T also uses a Hobsons product called S&T Connect, which integrates into Canvas. This tool allows students to schedule appointment with advisors and follow up with other student success resources on campus. Faculty use S&T Connect to issue early academic-alert warnings, refer students to campus resources, and recognize students for exemplary work.
3.C.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.

Missouri S&T’s Human Resources Office has well-established processes for screening and hiring well-qualified staff members. This process includes screening based on both minimum and preferred qualifications, as well as a criminal background check.

S&T maintains extremely high standards for staff working in student services.

Student Financial Aid Office: The Student Financial Aid Office (SFA) is committed to providing high quality service to students. In addition to hiring well-qualified staff, the Student Financial Aid Office provides significant professional development opportunities for the staff. Each staff member has access to daily updates from the national association through NASFAA Today’s News. SFA staff members also serve in leadership roles at the state, regional, and national level and staff frequently present at each of the state, regional or national conferences. We encourage each member of our staff to attend trainings and conferences that are specific to their area of expertise. Two staff members (Director or Associate Director and the Compliance Officer) attend the Federal Student Aid (FSA) conference hosted by the US Department of Education every year. Over the last two years we have been able to send every member of our staff to our state financial aid conference.

Student Life: Student Life programmatic staff are hired with a bachelor’s degree required, with a preference for a master’s. In addition, one to two years professional experience may be required, some of which may be achieved through completion of graduate assistantships. Onboarding includes standard Human Resource training and in-depth discussions/trainings with team members within the department and across campus to ensure a strong understanding of the processes and procedures in place as well as to build strong relationships with, ideally, a mutually beneficial outcome.

Academic Advising: Most of the academic advising at Missouri S&T is performed by ranked faculty members, who are closely connected both to their department’s curricula and to the professional expectations of their chosen discipline. A few larger departments, including Mechanical and Aerospace Engineering and Business and Information Technology, do employ professional staff advisors to serve their students. Students who have not declared a major or who are academically deficient are also served by professional advisors in the Undergraduate Advising Office. This office also offers a series of advising development sessions for Missouri S&T advisors to build their capacity to assist students in achieving their academic objectives. These local conferences provide critical insight on advising best practices and the relationship between advising and student academic success. Sample sessions offered during the spring 2018
semester include “Understanding and Engaging Today's Students,” “MyDegree: The New Degree Planning Tool,” and “Success for Calculus - It's Time for Data.”

**Tutoring:** All the academic tutoring that takes place at S&T is performed by students or by faculty members, not by professional tutors. The [Writing Center](#) and the [Student Success Center](#) are administered by professional staff members who manage budgets, scheduling, marketing, and other related tasks. The tutoring performed in these offices, however, is done entirely by well-trained undergraduate peer tutors. The Writing Center is certified by the College Reading and Learning Association (CRLA), which provides rigorous guidelines for training and certifying qualified peer writing consultants. The [Learning Enhancement Across Disciplines (LEAD) Program](#) is staffed by a combination of faculty and advanced undergraduate students; student tutors have received an A in the course they are tutoring, and participate in monthly meetings for training and pre-professional development.
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.

3.D.1. The institution provides student support services suited to the needs of its student populations.

Learning centers in res life; Honors Academy
Professional Development Center
Scholarships and Fellowships
Second Year Experience
Speech Communication Center
Student Design & EL Center

The Office of Counseling, Disability Services, and Wellness (CDSW)

The CDSW provides students and other members of the campus community with professional counseling services, as well as assistance for students with disabilities. Wellness programs are designed to offer health education, strengthen the well-being of students, and reduce the impact of high-risk behavior. The CDSW offers regular programs that are well advertised and well attended, and also offers walk-in assistance to students in crisis.

The Writing Center

The Missouri S&T Writing Center, established in 1999, employs more than twenty talented undergraduates who are rigorously trained under College Reading and Learning Association (CRLA) guidelines to become effective peer tutors. The Writing Center conducts, on average, more than 3,000 individual sessions per year with undergraduate students seeking to
improve their written communication skills. The Writing Center contributes in important ways not only to the education of undergraduate students, but also to S&T’s continuing accreditation through ABET, specifically General Criterion 3g: the ability [of students] to communicate effectively.

The Burns and McDonnell Student Success Center

The Burns and McDonnell Student Success Center serves as an important liaison between students and many resources on campus, including the Writing Center, LEAD, and the Math Learning Center. It also provides interested students with Student Success Coaches, who are successful undergraduates trained to help guide students in the areas of:

- self-management
- study skills
- goal setting
- accountability
- note taking
- motivation/procrastination
- learning styles

The LEAD Program

The Learning Enhancement Across Disciplines (LEAD) Program provides learning forums to students who wish to increase their understanding, improve their skills, and validate their mastery of concepts and content in a wide variety of foundational courses to achieve their full potential. Student-oriented Learning Centers are staffed by discipline-based faculty and accomplished undergraduate peer learning assistants who guide students in the learning process within an atmosphere of cooperative engagement and teamwork. Drop-in peer tutoring is also provided for students who are more responsive to individualized, small-group learning environments.

The Math Learning Center

The Math Learning Center provides drop-in mathematics assistance, Monday - Friday, for any currently enrolled student in one of the following courses: Math 1103, Math 1120, Math 1140, Math 1160, Math 1208, Math 1212, Math 1214, Math 1215, Math 1221 and Math 2222. Depending on staffing, assistance may be available, but is not guaranteed, in additional mathematics and statistics courses.

The Student Veterans Resource Center
The Student Veterans Resource Center was designed to be the nexus of any resources and support student veterans might need to succeed in their educational goals. Not only that, but the SVRC serves as a place to network, find and connect with veteran peers, and to study or relax during the school year.

Missouri S&T provides many other kinds of advising services beyond academic or curricular advising. The Financial Aid Office offers “Miner Money Management,” a popular workshop series on financial literacy for students; the Career Opportunities and Employer Relations Office provides dozens of sessions each semester for students focused on career readiness; the Student Veterans’ Office delivers programs focused on the needs of student veterans; and the Office of Counseling, Disability Support, and Student Wellness offer programs on bystander intervention, mental health and wellness, suicide prevention, Asperger’s support groups, and other resources that provide students with important extra-curricular advice and information.

3.D.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[22].

Missouri S&T is a selective institution, with clearly defined requirements for admission. Students who have completed the required core high school curriculum and have an ACT of 24 or higher are admitted to the university. Students who have completed the required core curriculum and have an ACT of 23 or lower may be admitted, depending on class rank. Details about our admission standards are posted on our website.

Because S&T is a selective university, no developmental or remedial courses are offered. As noted in Criterion 3.D.1, however, many programs that provide academic assistance and support are available to students.

S&T directs entering students to courses and programs for which the students are adequately prepared in part by administering a comprehensive program of math placement. All incoming students take a math placement test during their Preview, Registration, and Orientation (PRO) day. The results of this test, which have been developed and tailored to S&T’s math sequence over many years, determine the math class most appropriate for the student. During the Opening Week experience, incoming students have the opportunity to take a weeklong math review workshop, after which they can retake the math placement test and, depending on the resulting score, be placed in a higher math course.

S&T also provides placement examinations for students taking foreign languages who are unsure which course would be most appropriate for them.
S&T accepts credit by examination, including Advanced Placement (AP) credit, College Level Examination Placement (CLEP) scores, Military Science Credit, and International Baccalaureate (IB) Programs.

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

Missouri S&T recognizes the critical role that academic advisors play in students’ success at the university. All students have access to faculty members who can answer questions about research, career options and opportunities, and other developmental advising issues. Some students majoring in disciplines housed in the College of Engineering and Computing, including Mechanical and Aerospace Engineering and Computer Science, also work with professional staff advisors who assist students in selecting courses, planning programs of study, and meeting existing academic requirements. First- and second-year students in the Freshmen Engineering Program work with professional staff advisors dedicated to that program. Students who are academically deficient work with professional advisors in the Undergraduate Advising Office, who are able to provide targeted assistance in helping these students recover from a period of low academic performance. All other students have faculty advisors in their major field of study who assist them with developmental advising, career advising, and curricular advising. Students are usually assigned an advisor, but have the opportunity to request a particular faculty member if they so choose.

Missouri S&T provides regular training and development workshops for faculty advisors through the Undergraduate Advising Office. Each fall semester, a series of open sessions provides information about such topics as academic integrity, working with student veterans, managing advising software, and other local issues that help advisors to become better informed and more responsive to their students’ needs.

3.D.4. The institution provides to students and instructors the infrastructure and resources necessary to support effective teaching and learning (technological infrastructure,[23] laboratories, libraries, performance spaces, clinical practice sites, museum collections, as appropriate to the institution’s offerings).
Missouri S&T has the infrastructure and resources necessary to support effective teaching and learning.

All teaching spaces used for lecture classrooms (i.e. not laboratories) are equipped with a computer, projector, and screen.

Many departments have specialized facilities appropriate to teaching their specific disciplines.

Examples from engineering go here.

The Department of Arts, Languages, and Philosophy has access to Leach Theatre (600 seats), the Black Box Theatre (xx seats); band and chorus rooms; practice rooms; an art studio for painting, drawing, and ceramics; a technology-rich foreign language teaching lab; what else?

The Department of Business and Information Technology has a technology rich teaching classroom with…

The Departments of Chemistry, Physics, and Biological Sciences all have teaching labs tailored to the specific needs of the courses taught within those units.

The Psychological Science Department and the Technical Communication Program share a technology-rich usability studies teaching lab, outfitted with eye-tracker hardware and multiple software programs and ancillary devices that help students learn how to run usability tests on software, websites, and other forms of electronic communication.

3.D.5. The institution provides to students guidance in the effective use of research and information resources[24].

Section 2-E of this assurance argument provides detailed information about how S&T provides support for students regarding the effective use of research and information resources[25].
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.

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:**

3.E.1. Co-curricular programs are suited to the institution’s mission and contribute to educational experience of its students.

Experiential learning -- an HLC quality initiative -- write a paragraph here about that.

Missouri S&T students have access to more than 200 recognized student organizations with a dizzying array of focus areas. Some of these organizations include: Student Design Teams, Alpha Psi Omega, BBQ Club, Eco Miners, Gaming Association and ToastMasters International.

Paragraph about SUB and other student organizations (?) that host activities and events for students. These events, which range from free movies to guest lectures to musical performances, are advertised widely across the campus. Examples?

Approximately XX% of S&T’s students join one of the XX Greek organizations on campus. Greek Life provides S&T students many opportunities for scholarship, leadership, service, and brotherhood/sisterhood.

The Office of Athletics organizes a wide variety of recreational opportunities for students, including 12 club sports (i.e. Archery, Lacrosse, Paintball, Wrestling, Ruby), 9 recreational clubs (i.e. Tennis, Cycling, Cricket) and 8 sportsmen clubs (i.e. Climbing, Equestrian). It also hosts a newly renovated exercise space [say more about the rec space here], basketball courts, racquetball courts, and what else?
3.E.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.

Mission:

Missouri S&T integrates education, research and application to create and convey knowledge that serves our state and helps solve the world’s great challenges.

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

Ask for help with this one: how does student affairs track quality and learning regarding co-curricular stuff. MU tracks: interpersonal development, humanitarianism and civic engagement, practical competence, intrapersonal development, knowledge acquisition and integration, and critical and reflective thinking. Write more about this here. Can include information about experiential learning; reflective statements, etc.

3.E.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.

Oh dear. What goes here?
3.S -- Criterion 3 -- Summary