

Assurance Argument

Michigan Technological University - MI

11/9/2015

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1 - Mission

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

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

Michigan Technological University is a leading public research university that provides a distinctive and rigorous education at the undergraduate and graduate levels in a residential, technology-rich learning environment. From its inception as the Michigan Mining School in 1885, it has retained a strong STEM (Science, Technology, Engineering and Mathematics) emphasis. In support of its research mission, faculty hold advanced degrees from prestigious research universities around the world, and graduate students (both masters and doctoral) now compose [20%](#) of enrollment.

This profile is consistent with Michigan Tech's mission, vision and goals - collectively the [strategic plan](#) - that focus on people, programs, and research. The first goal - *people* - calls for an exceptional and diverse community of students, faculty and staff (see also **Criterion 3.C**). In Fall 2014, total [enrollment](#) was 7,104 students (Fall 2015 enrollment was just reported as 7,242); graduate students (both masters and doctoral) comprised 20% of enrollment. There were [404 faculty](#) (non-temporary, non-fixed term; [473](#) including temporary and fixed-term faculty) and [1,099 staff](#) to support this student population. Student quality is high: composite [ACT](#) scores for entering first-year students have increased from 25.6 to 27.0 since 2007. While [63.7%](#) of all students are Michigan residents, [57%](#) of graduate students are international. In 2014, 84% of Michigan Tech's [404 faculty](#) were tenure-track or tenured. 55% of tenured or tenure-track faculty have been [hired since 2005](#); 35 were hired through research-focused [strategic faculty hiring initiatives](#), while the remainder were primarily replacement for retiring faculty. New professional development initiatives, hiring processes, and review processes are strengthening staff qualifications.

The second goal - *programs* - establishes a distinctive and rigorous learning experience grounded in science, engineering, technology, sustainability, business, and understanding contemporary social and cultural contexts. Michigan Tech's [academic programs and enrollment profile](#) are consistent with its mission. In Fall 2014, [64.6%](#) percent of all students were enrolled in the College of Engineering ([64.5%](#) undergraduate); 84.8% of all students were enrolled in science, technology, engineering or math (STEM) programs (84.3% undergraduate). A wide array of student support services enable student success: [Dean of Students Office](#); [Waino Wahtera Center for Student Success](#); [learning centers](#) in a wide variety of programs including math, chemistry and multiliteracies; a robust [academic](#)

[advising](#) network; [Counseling Services](#); [Career Services](#); the [Center for Diversity and Inclusion](#); and the [Intensive English as a Second Language Program](#) for international students; . In addition, the [Graduate School](#) provides support services specific to graduate students, and [International Programs and Services](#) provides services for international students, currently [15%](#) of all students enrolled at Michigan Tech.

The third goal - *research* - emphasizes the role of research, scholarship, entrepreneurship, innovation and other creative work that promotes sustainable economic and social development. It reflects Michigan Tech's mission to create solutions for society's challenges and be measured by the impact of our research and scholarly activities. In 2014-15, the university had \$58,680,000 in [research awards](#). Michigan Tech supports a broad range of [research areas](#) from atmospheric sciences and ecology to human factors and transportation in a variety of [research centers](#) and institutes. Michigan Tech is a member of [ORAU](#), a consortium of 114 major PhD-granting academic institutions that cultivates collaborative partnerships to enhance the scientific research and education enterprise of the nation.

The strategic plan - mission, vision and goals - is reviewed every three years at all levels of the university. The review begins with collecting university-wide feedback on the current plan through a dedicated website. The Vice President for Research reviews this feedback in a series of meetings with deans, department chairs, the [executive team](#) (university president and vice-presidents), and [Undergraduate](#) and [Graduate Student Governments](#), who suggest changes. Proposed changes are discussed and re-posted for comment, and a final set of recommended changes go to the [Board of Trustees](#), the University's governing board. The latest review was completed and the revised strategic plan was approved by the governing board in May 2015. A [dashboard](#) tracks four strategic metrics critical to achieving the plan – incoming freshman ACT scores, PhD's awarded, sponsored programs awards, and endowment. See *Criterion 5.C* for additional information on planning and budgeting.

In 2012, the [Portrait of Michigan Tech 2035](#) was developed to give a conceptual understanding of the direction for the University and inform discussions of what the University should be doing in the next five years to realize the vision. Enrollment and revenue projections for state support, research, and gifts are deliberated and tracked quarterly against actual results to identify impacts on annual and longer term plans.

All university-wide, college, and school initiatives are expected to advance the goals of the strategic plan. Colleges and schools have mission statements that align with the strategic plan, track their performance on the four metrics, and align budget requests or reallocations with the strategic plan. External [advisory boards](#) and internal constituents such as the [University Senate](#), [Staff Council](#), [Undergraduate Student Government](#) and [Graduate Student Government](#) provide feedback to university leaders on priorities and direction.

Sources

- Academic Advising
- Advisory Boards
- Board of Trustees
- Career Services
- Center for Diversity and Inclusion

- Compendium
- Compendium (page number 208)
- Counseling and EIT
- Dean of Students
- Executive Team
- Fact Book 2014-15
- Fact Book 2014-15 (page number 4)
- Fact Book 2014-15 (page number 40)
- Fact Book 2014-15 (page number 47)
- Fact Book 2014-15 (page number 55)
- Fact Book 2014-15 (page number 62)
- Fact Book 2014-15 (page number 70)
- Faculty Profiles_Provost Update
- Graduate School
- Graduate School (page number 9)
- Graduate Student Government
- Intensive English as a Second Language Program (IESL)
- International Programs and Services
- Learning Centers
- Michigan Tech Dashboard
- ORAU
- Portrait 2035
- Research Areas
- Research Centers
- Research Data and Statistics
- Staff Council
- TechTalksResearch
- Undergraduate Student Government
- University Senate
- University Strategic Plan
- Wahtera Center for Student Success

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

Michigan Tech's mission, vision and goals - the strategic plan - are publicly articulated on its [dashboard](#), its [strategic planning webpage](#), and its [Fact Book](#), published annually. The president regularly addresses the Michigan Tech community in his Campus Forums (see, for example, [2014](#) and [2015](#)), in which he updates progress on the strategic plan. In September 2014, he announced the timeline for the most recent review of the plan; the plan was approved by the Board of Trustees in May 2015. Some units such as the [Graduate School](#), [Research](#), and [Career Services](#) publish annual reports that document their accomplishment of the mission and goals.

Michigan Tech's mission and goals clearly prioritize the university's commitment to undergraduate and graduate education (Goal 2), to research and scholarship (Goal 3), and to economic and social development (Goal 3b; see also *Criterion 1.A*). The [Fact Book](#) provides evidence of the mix of undergraduate and graduate students and their degree programs (ASC, BA, BS, MS and PhD) and the research funding that supports graduate education. A STEM institution, Michigan Tech was classified in 2014 in the Carnegie Classification of Institutions of Higher Education as RU/H (Research Universities: High Research Activity). Although it is primarily a residential ("[standard learning](#)") university, Michigan Tech is improving access to its graduate programs via non-traditional delivery methods, and promoting life-long learning through continuing education (Goal 2.3) to respond to the needs of the 21st century.

Sources

- Campus Forum_October 2015
- Campus Forum_September 2014
- Career Services Annual Report_Placement_2014
- Fact Book 2014-15
- Fact Book 2014-15 (page number 73)
- Graduate School_Annual Report_2013

- Michigan Tech Dashboard
- Research Magazine
- University Strategic Plan

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

Michigan Tech addresses the diversity of a multicultural society in its [mission](#) and goals in several ways. In Goal 1, the University recognizes the importance of recruiting and sustaining a diverse community of students, faculty and staff: "An exceptional and diverse community of students, faculty, and staff." Subgoal 1.2 is to develop a "diverse, inclusive, and collegial environment" through the following actions:

- promote inclusiveness and collegiality through openness, engagement, mutual respect, and understanding of diverse perspectives;
- provide a rich cultural environment and a welcoming campus;
- develop and implement initiatives to increase the diversity of students, faculty, and staff.
- pursue opportunities for dual-career faculty and staff; and
- enhance work-life blending for all members of our community.

As a STEM university, Michigan Tech attracts international faculty and students but is challenged with recruiting and retaining women and minorities. The university tracks [strategic diversity metrics](#) (women, minority, international) for enrollment, graduation rate, faculty and staff. Over the past five years, enrollment of minority students and women has increased somewhat to 6.9% and 26% respectively, while international enrollment has grown substantially to about 57% of the graduate student population. In 2015, an [Associate Dean for Special Initiatives](#) in the College of Science and Arts was established to focus on diversity, especially in the area of computer science and related fields. [Diversity facts](#) are published annually by Institutional Equity and Inclusion. Every academic department has a [diversity plan](#) which identifies objectives and strategies for increased diversity, as well as a more inclusive department that supports faculty, staff and student success. The colleges and schools incorporated diversity plans into their strategic plans to highlight their importance and ownership of diversity activities. In 2007 the diversity plans were revised in response to the [results](#) of the [2005 Climate Survey](#); in 2012 they were updated in response to an [AQIP Action Project](#) to increase gender diversity.

Michigan Tech was recognized nationally in 2012, 2013 and 2014 as a recipient of the [Higher Education Excellence in Diversity \(HEED\) award](#) from *INSIGHT into Diversity* magazine. Multiple efforts led to this award. In 2008 Michigan Tech was awarded an [NSF ADVANCE](#) grant to improve the recruitment, retention and promotion of women in STEM. Preparation for a [second ADVANCE grant](#) is underway that will focus on faculty retention. It will measure the results of current practices in order to identify the critical keys to career success at Michigan Tech, and then tailor evidence-based tools as resources for academic units to address specific career issues. The ADVANCE initiative was one component of an [AQIP Action Project](#) that Michigan Tech launched in 2010-12 to increase gender diversity of faculty and students. Two outcomes included the [Diversity Literacy](#) workshop that is now required for faculty, and [Human Resources training](#) for staff, that serve on

search committees and promotion and tenure committees, as well as a communication and recruitment plan to attract more women students. While the data showed some improvement in 2012-13, departures and retirements led a decline in female faculty to 26%. This continues to be an area for improvement.

Retaining diverse faculty, staff and students requires a diverse, inclusive and collegial environment (Goal 1.2). Multiple campus efforts support this goal: the president's [Diversity Council](#), the [Presidential Council of Alumnae](#) (PCA), the Office of [Institutional Equity and Inclusion](#), the [Center for Diversity and Inclusion](#), and the [International Programs and Services Office](#). The Office of Institutional Equity and Inclusion facilitates Michigan Tech's development of an environment that is free from prejudicial discrimination or harassment and that is conducive to learning and individual growth for all campus members and visitors. In 2016 it will implement Michigan Tech's third Climate Survey to assess improvement since the [2010 Climate Survey](#). In addition, Michigan Tech works with external partners such as the Women in Engineering Proactive Network (WEPAN), the Academic Alliance of the National Center for Women in Information Technology (NCWIT), and National Action Council for Minorities in Engineering (NACME) to realize University diversity goals. Michigan Tech is currently a dissemination partner in the NSF-funded [WEPAN](#) Faculty Professional Development Initiative "Engineering Inclusive Teaching."

In addition to addressing the diversity of its own faculty, staff and students, Michigan Tech's mission and goals recognize that the education it provides to students must be grounded in the social and cultural contexts of our contemporary world (Goal 2) and the research in which it engages should promote a sustainable, just and prosperous world (Goal 3). In 2010, Michigan Tech established eight university-wide student [learning goals](#), two of which support these strategic goals: Goal 3 Global Literacy, and Goal 8 Social Responsibility and Ethical Reasoning. Both goals will be assessed university-wide in all degree programs in 2017 and 2019 respectively and are assessed annually in the General Education Program. University [Goal Committees](#) composed of faculty from multiple disciplines develop strategies for meeting these goals and assess outcomes in General Education courses. See also ***Criterion 3.B***.

Sources

- ADVANCE_Phase 1_2012
- ADVANCE_Phase 2_2015
- AQIP Action Project_Gender_2012
- Center for Diversity and Inclusion
- Climate Study Report_2007
- Climate Survey_2005
- Climate Survey_2010
- Diversity Council
- Diversity Facts and Figures
- Diversity Initiatives_CSA
- Diversity Plans_Academic Units_2013
- Goal Committees
- Human Resources Training
- Institutional Equity and Inclusion
- International Programs and Services

- Michigan Tech HEED award_2013
- Presidential Council of Alumnae
- Strategic Diversity Metrics
- University Strategic Plan
- University Student Learning Goals and Rubrics
- WEPAN_Engineering Inclusive Teaching_2014

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

Michigan Tech is a public university established by the State of Michigan to provide the inhabitants of Michigan with the means of acquiring a thorough knowledge of the application of science to industry and to promote the industries of the state (see [Enabling Legislation](#)). Michigan Tech interprets this mandate as its [mission](#) to "create solutions for society's challenges through interdisciplinary education, research and engagement to advance sustainable economic prosperity, health and safety, ethical conduct, and responsible use of resources."

The wide array of academic programs at both the [undergraduate](#) and [graduate](#) (MS and PhD) level, and the 19 active [research centers](#) and institutes, all demonstrate Michigan Tech's commitment to the public good. Programs range from engineering to forestry to business, and research centers range from atmospheric science to ecology, health and energy. A few highlights of Michigan Tech's commitment to the public good include:

- Michigan Tech is in the top 15 percent of universities nationwide for its proportion of industry-sponsored research.
- The [Peace Corps Master's International Program](#) is the largest in the U.S.
- The new [Great Lakes Research Center](#) includes the Center for Science and Environmental Outreach and conducts teacher institutes.
- The [A.E. Seaman Mineral Museum](#) is the officially designated mineral museum of the State of Michigan; it educates people about minerals and their relevance to society.
- The Pre-College Innovative Outreach Institute coordinates support for engaging K-12 students through Michigan Tech's [Summer Youth Program](#) and [Mind Trekkers](#).
- The [Chemical Engineering Unit Operations Laboratory](#) is undergoing audiovisual enhancements for the public to see how engineering education benefits students and society.

The governor appoints Michigan Tech's autonomous governing board, the [Board of Trustees](#). In May 2015 the board changed its bylaws to allow it to refer to itself as a Board of Trustees; however, its constitutional designation remains Board of Control. The university engages with external constituencies through the Board of Trustees, external [advisory boards](#) to colleges and schools, regular interaction with government agencies such as NSF, the Office of [Innovation and Industry Engagement](#), Career Services' [Corporate Advisory Board](#) and Cooperative Programs, the [Presidential Council of Alumnae](#), the [Alumni Association](#), and other activities which connect Michigan Tech with its external constituencies.

It has no investors, parent organizations, or external interests that it supports.

Sources

- Advisory Boards
- Alumni Association
- Board of Trustees
- Career Services_Advisory Board
- Chemical Engineering Unit Operations Laboratory
- Graduate School
- Graduate School (page number 4)
- Great Lakes Research Center
- Innovation and Industry Engagement
- Michigan Tech Enabling Legislation
- MindTrekkers
- Peace Corps Master's
- Presidential Council of Alumnae
- Research Centers
- Seaman Mineral Museum
- Summer Youth Program
- Undergraduate Programs_2014
- University Strategic Plan

1.S - Criterion 1 - Summary

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

Summary

In summary, Michigan Tech's mission is clearly stated in its [strategic plan](#) that is articulated publicly on the University website and by the president in the Campus Forums. It guides the institution's operations in three domains and tracks progress on its [dashboard](#):

1. Attracting an exceptional and diverse community of students, faculty and staff.
2. Establishing a distinctive and rigorous learning experience grounded in science, engineering, technology, sustainability, business and an understanding of the contemporary social and cultural contexts.
3. Emphasizing the role of research, scholarship, entrepreneurship, innovation and other creative work that promotes sustainable, just and prosperous world.

By attracting and sustaining a diverse community and promoting innovation and sustainable development, Michigan Tech demonstrates its commitment to the diversity of society and the public good.

Sources

- Michigan Tech Dashboard
- University Strategic Plan

2 - Integrity: Ethical and Responsible Conduct

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

2.A - Core Component 2.A

The institution operates with integrity in its financial, academic, personnel, and auxiliary functions; it establishes and follows policies and processes for fair and ethical behavior on the part of its governing board, administration, faculty, and staff.

Argument

Michigan Tech has comprehensive policies and procedures to guide the fair and ethical conduct of its governing board, administration, faculty and staff. The [Board of Trustees Bylaws and Policies](#), [University Policies and Procedures](#) and the [Operating Procedures Manual](#) address a broad range of activities including business and financial functions, academic tenure and promotion, curriculum, FERPA, tuition and fees, financial aid, requirements for graduation, facilities management, and a range of human resources issues including employment, conflict of interest, discrimination, harassment and equal opportunity. Formal sessions of the Board of Trustees are open to the public ([1.7](#)) and [minutes](#) are posted on the university webpage. **Shared governance** is addressed in **Criterion 5.B**. [University Senate](#) policies and procedures and the [faculty handbook](#) and [staff](#) guide address a wide range of academic and professional concerns, including academic freedom ([Faculty Handbook](#), Chapter 1.7). Policies administered by the [Dean of Students Office](#) and the [Office of Academic and Community Conduct](#), including a [Student Code of Community Conduct](#), guide student behavior. All policies are publicly available online. (Michigan Tech no longer has a staff handbook or student handbook; policies referenced above constitute the policies that would typically go into such handbooks and are easily found online.)

Michigan Tech has multiple avenues for students, faculty, staff and visitors to file complaints if they believe the institution has not acted with integrity. Institutional Equity and Inclusion has a documented [complaint process](#) to follow and information to assist a complainant with identifying the appropriate office to file a complaint or grievance. The [Ombuds Office](#) is available for informal conflict mediation services and can inform complainants of the various options that are available to resolve concerns.

Operational responsibility for maintaining the university's **financial integrity** by following established policies and procedures is dispersed across organizational units; however, the President and Board of Trustees retain primary responsibility for the overall financial integrity of the university (see also **Criterion 5.A**). The Executive Director for Financial Services and Operations (who is also Treasurer for the Board of Trustees) is responsible for maintaining university financial information and overseeing all accounting functions of the university; as Treasurer for the Michigan Tech Fund (a legally separate tax-exempt component of the University that receives, invests and disburses gifts received on behalf of the University), the Executive Director is also responsible for accounting for gifts and donations to the university. The Vice President for Research is responsible for accounting for appropriate use of sponsored program funding. All units are responsible for monitoring their expenditures against budget and ensuring that the general fund, auxiliary funds,

sponsored programs and donor funds are used ethically. The Board of Trustees and its Finance and Audit Committee have oversight for the financial integrity of Michigan Tech; [Internal Audit](#) reports directly to the Board of Trustees. Independent auditors have consistently rendered their [opinion](#) that university financial statements (which include the Michigan Tech Fund) present fairly the position of the business-type activities of Michigan Tech. In 2014, to more appropriately manage short- and long-term funding needs with various financial strategies while preserving the university's A1-stable general revenue bond rating, a financial consultant was hired to work with the Executive Director for Financial Services and Operations to develop a financial plan to support the strategic plan, and to review current debt and liquidity guidelines to assist the administration and Board of Trustees.

The Provost and Vice President for Academic Affairs is responsible for the **integrity of academic programs and personnel**. Academic programs have multiple levels of [review](#) to ensure program integrity, starting with approval by faculty in the proposing department and ending with approval by the Academic Officers of the State of Michigan (see also *Criterion 3.A*). Faculty appointment and promotion processes are governed by Board of Trustees and Senate policies (see [Faculty Handbook](#), Chapter 2) and [academic department charters](#). The Provost assures the integrity of the process, which is monitored by [Academic Employment Services](#) (which reports to both the Provost and the Director of Human Resources; *see also Criterion 5.A*). Faculty denied tenure or reappointment have the right of appeal on procedural grounds to the Committee on Academic Tenure, Promotion, and Reappointment ([Faculty Handbook](#), Appendix 1). A STEM university, Michigan Tech hires many faculty and staff who are not U.S. citizens; assuring the integrity of visa and immigration processes is critical. The University has worked to clarify [visa and immigration policies and procedures](#), established a [coordinator](#) for routine processes, and retained an immigration law firm. The Office of International Programs and Services and the Graduate School also do visa and compliance work for students.

The Registrar's Office is responsible for ensuring compliance with academic and curricular policies and for the security and integrity of academic records. The office reviews the schedule of classes each semester and reviews [credit hour](#) assignments, which are set by the U.S. Department of Education, to ensure that students are meeting the required contact hours. Through appropriate procedures, the Registrar's Office also ensures compliance with applicable University, State, and Federal policies. Examples include [degree auditing](#) to ensure all requirements have been met, notifying students of reverse transfer opportunities, and serving as the compliance office for the Family Educational Rights and Privacy Act of 1974 ([FERPA](#)). Michigan Tech accords its students their full legal rights regarding the disclosure and release of education records and makes every effort to comply with FERPA as outlined in [University Policy on Disclosure and Release of Student Information](#). New faculty are informed about FERPA during new faculty orientation, and staff requiring access to student records in Banner must complete online FERPA training before access is granted.

The Vice President for Student Affairs and Advancement oversees issues of **academic integrity for students**. Academic integrity is discussed in *Criteria 2.C and 2.D*; **academic misconduct** is addressed in *Criterion 2.E*. [Student grievances](#) about faculty actions are evaluated using a published set of procedures; the Graduate School has a grievance policy for graduate students that allows for formal resolution of complaints that cannot be heard by another office.

Human Resources and Institutional Equity and Inclusion have responsibility for assuring integrity in personnel functions. Human Resources establishes and monitors fair and equitable [processes for hiring](#) (see *Criterion 5.A*), the [probationary period](#) for new employees, [performance management](#) for staff, and [complaints](#) and [grievances](#). New business processes now ensure that supervisors complete the appropriate probationary forms during a new employee's probationary period; as a result, completion of probation "by default" (without documentation of a supervisor's review) has

dramatically decreased over the last several years, from 48% of new employees in 2011 to 14% in 2015. Supervisors are completing the appropriate paperwork and having conversations with their employees to ensure success during their probationary period.

In 2014, Human Resources piloted a [Performance Management Process](#) for professional staff in the offices of the Vice President for Research and the Vice President for Administration. The Performance Management Process is now in place for the Vice President for Administration, Vice President for Research, Vice President for Student Affairs and Advancement as well as the Library and Information Technology.

An employee [grievance policy](#) provides a process for resolving complaints; employees are encouraged to bring complaints to supervisors for informal resolution before instituting a grievance. In addition, University [Conflict of Interest Policy and Procedures](#) are administered and monitored by the Conflict of Interest Coordinator. Employees who are uncomfortable discussing unethical, unsafe, or illegal activities with their supervisor can report such activities through [EthicsPoint](#), a reporting system that allows for anonymous reporting. All reports are reviewed and responded to appropriately. No retaliation will be taken against anyone for reporting potential misconduct.

[The Office of Institutional Equity and Inclusion](#) has responsibility for facilitating an environment that is free from prejudicial discrimination or harassment and that is conducive to learning and individual growth for all campus members and visitors. The director reports directly to the president. Michigan Tech has a policy of affording equal opportunity to all of its employees, students, applicants for employment, and applicants for admission without regard to race, religion, color, national origin, age, sex, sexual orientation, gender identity, height, weight, genetic information, marital status, disabled veteran status, veteran status, or disability. [Institutional Equity and Inclusion](#) is responsible for monitoring and oversight of implementation of [Title IX](#) compliance, including coordination of training, education, communications, and administration of grievance procedures for faculty, staff, students, and other members of the University community. It publishes an anti-harassment/anti-discrimination guide for the university community and has established complaint and grievance procedures specific to [discrimination and harassment](#).

[Auxiliary Services](#) has nine departments, including the campus bookstore, dining services, and public safety. These departments employ students, temporary and seasonal employees, and both represented and non-represented staff who work in a variety of capacities. The Department of Public Safety and Police Services at Michigan Tech is staffed by trained, certified state of Michigan police officers who have full law enforcement authority (including the power of arrest) throughout Houghton County; the department is staffed and operates twenty-four hours per day, seven days per week. In compliance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, it issues an annual [security and safety report](#). Auxiliary Services engages in competitive purchasing and transfers excess revenue to the general fund. The bookstore reports to the Board of Trustees annually pursuant to section 262a of Public Act 60 of 2013 on the actions taken to keep the cost of textbooks and course materials as affordable as possible for students. A Textbook Strategy Study Group created in 2012, including faculty and staff, has been addressing the migration of course material to digital formats and grappling with affordability issues.

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Sources

- Academic and Community Conduct
- Academic Department Charters
- Academic Integrity Policy and Resources
- Academic Personnel Guide
- Auxiliary Services
- Board of Trustees
- Board of Trustees Policies
- Board of Trustees Policies (page number 3)
- Board of Trustees Standing Committees
- Board of Trustees_Minutes 2014-15
- Complaint Processes
- Conflict of Interest Policy and Procedures
- Course Credit Hours
- Dean of Students
- Degree Audit Reporting System
- Degree Program Learning Goals (Undergraduate)
- Degree Programs, New_Senate Procedures 108.1.1
- Employee Grievance Policy
- Employee Probation
- EthicsPoint
- FERPA
- FERPA (page number 4)
- Financial Report_2014
- Financial Report_2014 (page number 23)
- Human Resources_Employment Services
- Human Resources_Performance Management Process_Staff
- Institutional Equity and Inclusion
- Institutional Equity_Discrimination and Harrassment
- Internal Audit
- Misconduct Policy in Research_Senate Policy 204.1
- Ombuds Office
- Operating Procedures Manual
- Organization Chart
- Research Integrity and Compliance
- Security and Fire Safety Report
- Student Code of Community Conduct
- Student Grievance Policies
- Title IX
- University Policies and Procedures
- University Senate
- Visa and Immigration Policies

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

Michigan Tech presents itself clearly to its students and the public through its [website](#), [catalog](#), promotional materials, and other university documents. At the bottom of the [university home page](#), a "Need to Know" prompt provides links to student disclosures for financial aid and governance, as well as a directory of offices and services. More specifically,

- Each academic department provides information about its degree programs and requirements, course offerings, faculty and staff on its own dedicated webpage (see for example [BS in Finance](#) in the School of Business and Economics and [BS in Electrical and Computer Engineering](#) in the College of Engineering).
- The directory function on the Michigan Tech webpage enables the public to search for faculty and staff; links are provided to access information.
- Regional and professional accreditation are described in the [Course Catalog](#) and on the [Academic Affairs](#) website, as well as the websites of the professionally accredited units.
- The Financial Aid website presents [cost of attendance](#) for all students as well as information about scholarships, grants, and a net price calculator
- University governance and control is described on the webpage of the Vice President for Governmental Relations/Secretary to the [Board of Trustees](#) as well as in the [Faculty Handbook](#) (see section 1.4).
- Budget and Performance Transparency Reporting ([Section 245](#)) can be accessed directly from the [university homepage](#).

Sources

- Accreditation
- Admissions_Cost of Attendance
- Board of Trustees
- College of Engineering_BS Electrical Engineering
- School of Business and Economics_Finance BS Degree
- Section 245
- University Home Page

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

The [Board of Trustees](#) is Michigan Tech's governing board. It is an independent board with eight members appointed by the Governor of Michigan for limited terms. In May 2015 the governing board changed its bylaws to allow it to refer to itself as a Board of Trustees; however, its constitutional designation remains Board of Control. It normally meets on campus five times a year, during which it confers with the university's executive team, academic deans, University Senate officers, and student government representatives; and conducts a public meeting. The [minutes](#) of its public meetings are posted on the University website.

Michigan Tech's [enabling legislation](#) vests the conduct of university affairs and control of university property with the Board of Trustees. Its [responsibilities](#) include creating bylaws for governing the institution, fixing tuition rates and other fees and charges, determining compensation, conferring degrees, managing gifts, entering agreements and acquiring and disposing of property. The bylaws contain a [conflict of interest policy](#) which includes conflicts of a pecuniary nature.

Three [standing committees](#) of the Board enable it to support these responsibilities and ensure that it reviews and considers the relevant interests of both internal and external constituencies. The [Leadership Committee](#) provides oversight for orientation and development of new Board members, oversight of periodic reviews of the university president and assessment of the Board, nominates Board officers and helps the Board determine desired composition of the Board in terms of influence, diversity and talents.

The [Academic Affairs Committee](#) provides oversight in the management of the Academic Plan and works with the Provost and Vice President for Academic Affairs to ensure that Michigan Tech's academic programs, student support services, and enrollment profile are consistent with its mission and strategic plan. It also ensures that academic priorities are clearly stated, widely understood and appropriately funded; and that academic programs are continually evaluated from productivity, quality and cost perspectives. The [Academic Affairs Committee](#) has established a mission and meeting structure and identified five key responsibilities and seven strategic questions to address. The Board nonetheless expects faculty to oversee matters of academic policy and procedure through the [University Senate](#) processes and procedures, consistent with the principles of academic freedom (see also *Criterion 2.D*)

The Audit and Finance Committee provides oversight for financial operations and audit responsibilities of the university. It works with the administration to develop an annual budget, conducts a quarterly review of budget and finances, and identifies long-term financial needs regarding academic programs, physical plant and equipment. It works with Internal Audit, Budget and Planning Office, and Executive Director of Financial Services and Operations to ensure Michigan Tech's financial planning and budgetary priorities support the mission and has oversight for regular audits of financial activities and compliance with donor restrictions on gifts. Internal Audit reports only to the Board: it conducts audits of any or all accounts of the institution in all departments and locations, including agency accounts, for the purpose of confirming the accuracy of accounts, the proper authorization of expenditures, the adequacy of business procedures, and all other matters related to the propriety of the institution's fiscal policies and operations.

Board members have attended programs of the Association of Governing Boards (AGB) to improve their understanding of a board's governance role. The Board delegates day-to-day management to University administration and holds the president accountable for achieving university mission and goals. The Board was instrumental in establishing the dashboard to track four strategic metrics.

Sources

- Board of Trustees
- Board of Trustees Policies
- Board of Trustees Policies (page number 4)
- Board of Trustees Standing Committees
- Board of Trustees Standing Committees (page number 3)
- Board of Trustees_Minutes 2014-15
- Internal Audit
- Michigan Tech Dashboard
- Michigan Tech Enabling Legislation
- University Senate_Bylaws

2.D - Core Component 2.D

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

Argument

As stated in [policy 6.2](#) of the Board of Trustees, Michigan Tech is committed to maintaining the University as an institution where both students and faculty are free to pursue scholarship in an open and creative environment. The rights of faculty members to undertake scholarly approaches to their disciplines in accordance with professional standards in the classroom, in the laboratory, and in publications are guaranteed. Likewise, the rights of students to question, without fear of reprisal, the positions and points of view espoused by faculty must be assured. This commitment to academic freedom is reaffirmed in the [Faculty Handbook](#) (Chapter 1.7).

Sources

- Academic Freedom_BOT policy 6.2

2.E - Core Component 2.E

The institution's policies and procedures call for responsible acquisition, discovery and application of knowledge by its faculty, students and staff.

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

Consistent with the assurance of academic freedom (see *Criterion 2.D*), faculty are expected to maintain the highest standard of **academic integrity** in research, scholarly, and creative endeavors. The Office of [Research Integrity and Compliance](#) supports an environment that fosters the responsible conduct of research (RCR). It provides training for new faculty during orientation, sponsors workshops throughout the year, offers the course UN0500 Effective Scholarship, and approves discipline-specific courses that also satisfy the advanced RCR training requirement. The Graduate School also provides [graduate student training](#) during its orientation program; in combination with an approved RCR training course and discipline-specific training from a mentor, this provides the RCR training expected by the National Science Foundation and National Institutes of Health.

Senate policy [204.1](#) "Misconduct Policy in Research, Scholarly and Creative Endeavors" identifies conduct inconsistent with research integrity and outlines due process procedures that take effect to investigate allegations of misconduct. A Senate-appointed Misconduct Inquiry Committee provides the initial review of misconduct allegations. Three regulatory committees - Human Subjects Committee (IRB), Institutional Animal Care and Use Committee (IACUC), and Institutional Biosafety Committee (IBC) - establish operating guidelines and maintain a program to ensure compliance with applicable federal and state laws. Michigan Tech contracts with [IRBNet](#) to manage review board requests and approvals.

In compliance with the American Recovery and Reinvestment and Act of 2009 (ARRA), the University has a confidential reporting service ([EthicsPoint](#)) that may be used to report [misconduct](#) ("whistleblower" protection). Moreover, since Michigan Tech conducts research for the Department of Defense, the University requires security clearances for individuals to have access to classified information; need for and access to [security clearances](#) are addressed in both a Board of Trustees policy and University Operating Procedures.

University [Conflict of Interest Policy and Procedures](#) are administered and monitored by the Conflict of Interest Coordinator. All investigators are required to submit annual disclosures and the coordinator submits [annual reports](#).

The [Academic Integrity Policy](#) (included in the [Faculty Handbook](#) - Appendix A) addresses academic integrity for all students (see also *Criterion 2.A*). The policy defines academic misconduct as plagiarism, cheating, fabrication and facilitating misconduct, and outlines sanctions for academic misconduct. The [Office of Academic and Community Conduct](#) oversees resolution of incidents of misconduct for both undergraduate and graduate students (see [Annual Reports](#) for additional information; academic integrity is also addressed in [Graduate School policies](#) and procedures).

Information about the importance of academic integrity is addressed in both undergraduate and graduate student orientations, the [Student Code of Community Conduct](#), and through ethical decision-making workshops and online seminars. Students are encouraged to educate themselves about academic integrity with a variety of on-campus and off-campus resources, and faculty are expected to reinforce and enforce academic integrity in courses.

Ethical use of information resources is an important component of information literacy. Information literacy is one of eight [University Student Learning Goals](#) and is assessed in General Education and degree programs. In 2014-15, [information literacy](#) was the focus of university-wide assessment. Two required General Education core courses introduce all undergraduate students to information literacy, including the ethical use of information resources. Departments are expected to offer guidance to students on ethical use of information in their disciplines. Graduate student orientation includes training in the ethical use of information. The Van Pelt and Opie Library provides information and workshops on [copyright](#) and introduces [information literacy](#) in many university courses.

Sources

- Academic and Community Conduct
- Academic and Community Conduct_Annual Reports_2011-15
- Academic Freedom_BOT policy 6.2
- Academic Integrity and Conduct Policies
- Academic Integrity Policy and Resources
- Conflict of Interest Policy and Procedures
- Conflict of Interest_Annual Reports
- EthicsPoint
- Graduate School
- Graduate School (page number 6)
- Graduate School (page number 10)
- Information Literacy
- IRBNet
- Misconduct Policy in Research_Senate Policy 204.1
- Research Integrity and Compliance
- Research Integrity and Compliance (page number 3)
- Security Clearance
- Student Code of Community Conduct
- University Student Learning Goals and Rubrics
- Van Pelt and Opie Library
- Van Pelt and Opie Library (page number 3)
- Van Pelt and Opie Library (page number 4)

2.S - Criterion 2 - Summary

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

Summary

Michigan Tech operates with integrity in its financial, academic, personnel and auxiliary functions. The [Board of Trustees](#), the [University Senate](#), the Office of [Research Integrity and Compliance](#), the Office of [Academic and Community Conduct](#), and the [Graduate School](#) all have policies, procedures, and training in place to promote ethical and responsible conduct by trustees, faculty, staff and students; these policies are enforced by the appropriate offices. The [Board of Trustees](#) is committed to the principles of academic freedom, which are affirmed in the [Faculty Handbook](#) (Chapter 1.7).

Sources

- Academic and Community Conduct
- Academic Freedom_BOT policy 6.2
- Academic Integrity Policy and Resources
- Board of Trustees Policies
- Graduate School
- Graduate School (page number 6)
- Misconduct Policy in Research_Senate Policy 204.1
- Research Integrity and Compliance

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

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

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

Degree Programs and Courses

Michigan Tech's second [strategic goal](#) emphasizes its academic programs:

"A distinctive and rigorous action-based learning experience grounded in science, engineering, technology, sustainability, business, and an understanding of the social and cultural contexts of our contemporary world."

Michigan Tech offers 57 bachelor's degrees (49 are Bachelor of Science degrees), 2 associate's degrees, 68 minors and 13 undergraduate certificates. At the graduate level, Michigan Tech offers 39 master's degrees (36 are Master of Science degrees), 27 doctoral degrees and 8 graduate certificates. Information about undergraduate degrees, including [degree audits](#) detailing courses required for graduation, are available in the [catalog](#), which includes both undergraduate and graduate programs.

The [Graduate School](#) also provides more comprehensive information about its programs and courses online, including [negotiated agreements](#) with domestic and international partners.

All undergraduate [degree programs](#) have clearly articulated requirements and appropriate levels of performance for awarding of degrees. The Registrar's Office oversees [degree audits](#) to ensure students have met degree requirements. Faculty engage in [curriculum mapping](#) to ensure that courses are appropriately sequenced and meet learning objectives. Requirements for [minors and certificates](#) are also clearly differentiated. In 2015, the University Senate changed the policies for undergraduate certificates, which will now only be awarded for post-baccalaureate work. The Graduate School clearly differentiates [requirements for graduate degrees](#) that exceed requirements for undergraduate programs. Graduate programs may set requirements that are higher than the Graduate School's standards.

New degree programs proposed by faculty undergo a rigorous review process ([University Senate Policy 108.1.1](#)) utilizing a format based on the reporting requirements for the Michigan Association of

State Universities ([MASU](#)). New programs must be approved by multiple university stakeholders, including the University Senate [Curricular Policy Committee](#), the [University Senate](#), [Graduate Faculty Council](#) (for graduate programs), Deans Council, the [Academic Affairs Committee](#) of Michigan Tech's Board of Trustees, the full [Board of Trustees](#), and finally the Academic Affairs Officers Committee of the Michigan Association of State Universities (MASU). Important components of these [reviews](#) include program learning goals, the rationale for delivering the program, a discussion of related programs at other institutions and the financial resources required to deliver the program.

The [Curricular Policy Committee](#) of the University Senate oversees all curricular matters, including establishment, dissolution, and changes in degree programs and requirements for minors, certificates and academic degrees. Annually, the faculty in each department review courses and curricula for currency as part of the [course and curriculum proposal process \(binder\)](#). Changes to existing programs and [courses](#) that will be removed, replaced or added are circulated to all departments via an email list. The process concludes with a university-wide review meeting that provides an opportunity to consider the impact of proposed changes on programs outside of the proposing department. The provost and deans conduct [periodic review of programs](#) for enrollment and relevance to current markets, which can lead to [shelving](#) (see [examples](#)) or revamping existing programs to be more competitive.

In addition to these policies and procedures, several important factors contribute to currency of courses and programs:

- faculty engagement in research and scholarship at national and international levels,
- input from advisory councils, alumni, and employers,
- feedback from professional accreditors (ABET, AACSB, SAF) for over 70% of our programs, and
- indirect measures such as employer surveys, the National Survey of Student Engagement (NSSE), student satisfaction surveys and graduate student exit surveys to identify areas for improvement.

Learning Goals

Michigan Tech has multiple processes for determining shared learning objectives. For undergraduate degrees, the General Education Council, Assessment Council, University Senate, and faculty in the colleges and schools define, plan and implement processes for determining shared learning objectives. For graduate education, the Graduate School, Graduate Faculty Council, University Senate, and faculty in the colleges and schools define, plan and implement processes for shared objectives. (Please note that university-level objectives are called "learning goals" while some programs refer to their program objectives as "learning outcomes.")

In 2010-11, Michigan Tech adopted eight [University Student Learning Goals](#) (USLGs) which exemplify knowledge, skills and attitudes that all undergraduate college students should possess:

1. Disciplinary Knowledge
2. Knowledge of the Physical and Natural world
3. Global Literacy
4. Critical and Creative Thinking
5. Communication
6. Information Literacy
7. Technology
8. Social Responsibility and Ethical Reasoning

The goals were developed in an iterative process with multiple stakeholders (faculty, staff, students, external advisory boards and the University governing board) that built on the University's strategic goals, the learning objectives of professionally accredited programs in business, engineering, technology, and forest resources and environmental science (AACSB, ABET, SAF), the American Association of College and Universities' [Essential Learning Goals](#), and Michigan Tech's [Student Affairs Learning Outcomes](#). [Goal Committees](#) led by faculty continue to fine-tune the goals and rubrics for assessing them. The USLGs provide a framework for integrating the learning experience across the general education curriculum and the degree programs, as well as a framework for regular, system-wide assessment of student learning that ensures that student achievement of learning outcomes is central to the awarding of a degree. All undergraduate degree programs are expected to contribute to achieving these goals. In 2015, all [new degree programs](#) were required to identify learning goals as part of the program approval process.

With respect to **program-level learning goals**, faculty determine learning goals/objectives for each [undergraduate degree program](#); these appear on webpages that describe the degree requirements. In the College of Engineering and School of Technology, all undergraduate ABET-accredited degree programs have adopted the program education objectives and student outcomes recommended by ABET (see [for example](#), Electrical Engineering Technology in the School of Technology and Civil and Environmental Engineering in the College of Engineering). These programs follow ABET protocols for assessment of these learning goals. The next ABET review is scheduled for 2017-18.

Accreditation in the School of Business and Economics (AACSB) and School of Forest Resources and Environmental Sciences (Society of American Foresters) is mission-driven: the schools develop learning goals appropriate to their mission. The School of Business and Economics has established and assessed learning goals and outcomes for both undergraduate and graduate programs (see, for example, [Management](#)). In its 2011 AACSB Team Visit Report for its Fifth Year Maintenance of Accreditation Review, the School was specifically commended for its

“well thought-out, well-implemented and effective” Assurance of Learning System - the “AOL protocol at MTU is clearly delineated for both graduate and undergraduate programs. The process for continuous improvement is currently working and has strong faculty buy-in. The system is well-developed and mature. There is clear evidence for 'closing the loop' in support of continuous improvement.”

AACSB completed another visit and review in fall 2015; results have not yet been reported. The School of Forest Resources and Environmental Sciences is in the process of reviewing its learning outcomes in preparation for a 2016-17 accreditation visit (see for example, [Applied Ecology and Environmental Sciences](#)). All programs in the College of Sciences & Arts developed learning goals in 2012 (see for example [Anthropology](#) and [Physics](#)) and have begun to assess them through the annual degree program assessment process.

The [General Education Program](#) (see *Criterion 3.B*) has adopted six of the eight goals (Goals 2, 3, 4, 5, 6 and 8) to be achieved in the General Education Program at the foundational level (Goal 1 Disciplinary Knowledge and Goal 7 Technology are best addressed in degree programs). Majors are expected to build on the General Education Program to help students achieve proficiency in their disciplinary context.

The Graduate School is currently engaged in developing learning goals for graduate programs. Currently, the Graduate School has developed a [template for learning goals](#) that has been reviewed by the Graduate Faculty Council. Each program will use this template as a baseline and develop

discipline specific learning goals.

No learning goals have yet been established for certificates and minors.

At the course level, University Senate policy requires instructors to provide students with a [syllabus](#) during the first week of instruction, so that students have the information necessary to prepare and perform well in courses. All syllabi state learning goals for the course and a set of university policies; courses in the General Education Program also state the University Student Learning Goal they will help students achieve.

The [Student Affairs Learning Outcomes](#) are complementary to the University Student Learning Goals. Assessment projects in Student Affairs are identified annually to provide evidence of student learning in the programs and experiences provided for students (see *Criterion 4.B*).

Consistent Quality across Delivery Modes

Rules governing assignment of [course credit hours](#) are set by the U.S. Department of Education. Each year, the Michigan Office of the Auditor General audits five Michigan universities to ensure their compliance and thus their eligibility to receive federal and state funding. For lecture and recitation courses, the rules are precise. One class meeting of 50 minutes per week is assigned one course credit.

In contrast, universities are allowed considerable latitude for laboratory and field courses. General practice is that one credit may be assigned to laboratory sections ranging from 50 to 170 minutes (one to three "hours"), two credits for sections ranging from 170 to 230 minutes (three to four "hours"), and three credits for those ranging from 170 to 290 minutes (three to five "hours"). The variation in time-to-credit ratio is intended to reflect both the intensity of the laboratory experience and the time required out of class to develop reports. Field classes typically carry the same or fewer credits per class hour compared to laboratory classes since time is often spent in transit and in other relatively low intensity learning activities.

Transcripts do not reflect the delivery method of a course; they reflect only the credit hours earned. [Online programs](#) and courses are taught by Michigan Tech faculty, have learning objectives and syllabi comparable to on-site programs and courses, and are assessed and evaluated in the same way as on-site programs and courses. All student evaluation of courses, regardless of delivery method, is conducted online. Michigan Tech does not offer undergraduate degrees online, but it does offer online courses toward a bachelor's degree. Michigan Tech does offer [graduate programs online](#).

The state of Michigan recently joined the National Council for State Authorization Reciprocity Agreements ([NC-SARA](#)). The State Authorization Reciprocity Agreement is an agreement among member states, districts and territories that establishes comparable national standards for interstate offering of postsecondary distance education courses and programs. Michigan Tech plans to join Michigan's SARA to allow Michigan Tech to deliver online classes in all member states. SARA criteria require centralized quality control and specific assessment of online vs. on-site courses. Michigan Tech has begun working toward a system that meets [SARA standards](#) for quality control and assessment.

Sources

- AAC&U ELO and VALUE rubrics
- Board of Trustees Standing Committees
- Board of Trustees Standing Committees (page number 3)
- Board of Trustees Standing Committees (page number 7)
- Board of Trustees_Minutes 2014-15
- Course and Curriculum Proposal Process (Binder)
- Course Credit Hours
- Course Proposals (Sample)_2014
- Curriculum Mapping_Selected Examples
- Degree Audit Reporting System
- Degree Program Learning Goals (Undergraduate)
- Degree Programs, New_Senate Procedures 108.1.1
- Degree Programs, New_Senate Procedures 108.1.1 (page number 5)
- Degree Programs_Catalog
- Degree Programs_Shelving and Eliminating_Senate Procedure 414.1.1
- General Education
- Goal Committees
- Graduate Faculty Council
- Graduate School
- Graduate School (page number 4)
- Graduate School (page number 5)
- Graduate School_Assessment Plan_2014
- Graduate School_Assessment Plan_2014 (page number 20)
- Graduate School_Negotiated Agreements
- Graduate School_Online Programs
- Graduate School_Requirements and Timeline
- Michigan Association of State Universities
- Michigan Association of State Universities (page number 5)
- Minors and Certificates, Undergraduate_Policies
- NC-SARA
- NC-SARA (page number 4)
- Online Learning
- Program Review_2010
- Student Affairs Learning Outcomes and Assessment
- Syllabus Requirements
- University Senate_Bylaws
- University Senate_Bylaws (page number 2)
- University Strategic Plan
- University Student Learning Goals and Rubrics

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

General Education and Undergraduate Degree Programs: Learning Goals

Goal 2 in the [Strategic Plan](#) and its subgoals emphasize intellectual inquiry and the acquisition, application and integration of broad learning and skills, as emphasized in italics below:

Goal 2: A distinctive and rigorous action-based learning experience grounded in science, engineering, technology, *sustainability*, business, and an understanding of the *social and cultural contexts* of our contemporary world.

- provide research, service-learning, project-based, entrepreneurial, and international opportunities for students (2.1)
- contribute to students' development and application of *critical thinking* skills, *creativity*, *leadership*, *collaborative skills*, and *ethical reasoning* (2.2)
- enhance students' *communication* skills as well as information, technology, and *global literacies* (2.2)
- encourage *social responsibility* and the understanding of public policy issues (2.2)
- education that responds to the needs and challenges of the 21st century (2.3)

Many of these strategic goals are captured in the [University Student Learning Goals](#) and achieved in both the general education and degree programs.

[General Education](#) is an important and required component of every Michigan Tech degree. It enables students to acquire broad knowledge and intellectual concepts and the development of skills and attitudes that Michigan Tech believes every college-educated person should possess. The program adopts six of the eight [University Student Learning Goals](#) (USLGs) and is designed to achieve competencies that will be reinforced and expanded in the students' major. These goals are

published in the [catalog](#) and on the General Education [webpage](#):

- Goal 2** Knowledge of the physical and natural world
- Goal 3** Global literacy
- Goal 4** Critical and creative thinking
- Goal 5** Communication
- Goal 6** Information literacy
- Goal 8** Social responsibility and ethical reasoning

From 2010 to 2014, the [General Education Council](#) designed a [new General Education program](#) that incorporates these six goals and that enables students to achieve them at a developing (level 2) to proficient (level 3) level as measured by Michigan Tech [rubrics](#). This program was also designed to assist with transfer credit under the [Michigan Transfer Agreement](#) (see *Criterion 4.A*). It was approved by the University Senate in two phases, and will be fully implemented in Fall 2015 for new students. All courses in the program must now meet designated learning goals at a specified level:

- 12-credit core component meets Goals 3, 4, 5, 6, and 8 at level 2 (developing),
- 12-credit Humanities, Arts and Social Sciences (HASS) component meets Goals 3, 4, 5, and 8 at level 2 (developing) or 3 (proficient) depending on the course level, and
- 15-credit STEM component meets Goal 2 at level 2 (developing) or 3 (proficient) depending on the course level.

For each General Education course, the selected [learning goal](#) is stated on the course syllabus and linked to the appropriate rubric for assessing the goal. Michigan Tech [rubrics](#) have been developed by interdisciplinary faculty [Goal Committees](#) based on the [VALUE](#) Rubrics of the American Association of Colleges and Universities (AAC&U).

In 2013-14, goals were specified for a short list of core courses students would complete in the first two years at Michigan Tech; combined with STEM requirements taken in the first two years, this would ensure all students would be introduced to all learning goals for General Education at the developing (2) level. In 2014-15 and 2015-16 all HASS courses underwent intensive review and approval by the General Education Council; departments delivering each course had to select one learning goal (3, 4, 5 or 8) and identify evidence in student work that could be used to demonstrate student achievement for assessment purposes; upper division courses are required to demonstrate level 3 (proficiency). In 2014-15 STEM courses were also identified and approved by the council.

All undergraduate degree programs are expected to build on the General Education program and continue to reinforce and develop student achievement in these six goals by giving students opportunities to practice them in the context of the major discipline. Since 2012, all degree programs have begun to address one designated University Student Learning Goal and one degree program goal (disciplinary) annually as part of their annual assessment reporting process (see *Criterion 4.B*). To date, the specified USLGs have been Goal 5 Communication (2013-14), Goal 6 Information Literacy (2014-15), and Goal 3 Global Literacy (2015-17).

Human and Cultural Diversity: Global Literacy

Michigan Tech recognizes that understanding human and cultural diversity is critically important to student long-term success. The first approach to understanding diversity is to provide opportunities to experience human diversity on campus, as articulated in the University's first [strategic goal](#): "An exceptional and diverse community of students, faculty, and staff." Michigan Tech's efforts to achieve this goal are discussed in *Criterion 1.C*.

Michigan Tech addresses what this means *in the curriculum* in [University Student Learning Goal 3 Global Literacy](#):

A globally literate student will demonstrate the ability to understand and analyze issues on multiple scales and from diverse perspectives, acknowledging interconnectivity and complexity. As globally literate, students should 1) become informed and open-minded people who are attentive to diversity across the spectrum of differences, 2) seek to understand how their actions affect the human and natural world on multiple scales, and 3) address the world's most pressing and enduring issues while considering context, complexity, and interconnectivity.

All first-year students begin their education at Michigan Tech with a new required General Education course, [UN1025 Global Issues](#), developed by a team of Social Science faculty to provide foundational learning for global literacy. Nearly 60 additional General Education [HASS courses](#) target Goal 3 Global Literacy. In 2015-16 all degree programs will be required to identify how they help students achieve Goal 3 Global Literacy in the major. The [Goal 3 Global Literacy Committee](#) is developing pathways that departments can consider to improve the global literacy of students. For example, the [College of Engineering](#) offers multiple opportunities to improve global literacy through International Senior Design and the D80 conference. These efforts are enhanced by the new [Pavlis Honors College's Global Path](#) that consolidates multiple opportunities for students to develop global literacy through study and service abroad.

Study and service abroad are two effective ways for students to achieve global literacy. A small percentage, about 4% of Michigan Tech graduating senior students, engage in [study abroad programs](#) through [International Programs and Services](#) during their college careers. Several initiatives have targeted internationalization over the past ten years. A Presidential Task Force on International Research, Teaching, and Service inventoried opportunities for students to engage in an international experience in 2008. In 2011 an [AQIP Project](#) recommended improving the options for a student international experience and increasing the number of faculty-led study abroad programs.

In response to these initiatives, Michigan Tech has taken several actions. The university recently signed the [Generation Study Abroad Challenge](#) to expand student involvement. Recognizing that faculty and academic advisors are key to encouraging students to study abroad, a Faculty Academic International Coordinator was appointed for two years to promote and develop budget models for faculty-led study abroad; programs have been conducted in France, England, Estonia and Spain with targeted scholarships to encourage participation. International Programs and Services partnered with USAC (a study abroad provider) to (1) identify USAC courses that engineering and technology students can take abroad and (2) fund two academic advisors to attend summer study abroad at USAC locations. In addition, a Global Literacy Award recommended by the AQIP project now awards scholarships to two to three students annually to support study abroad.

Students in Michigan Tech's graduate programs are predominantly international (57%). The Graduate School, International Programs and Services, and the Jackson Center for Teaching and Learning offer [programs](#) to help them adjust to living, studying, and teaching in the U.S. For domestic graduate students, Michigan Tech offers the largest [Peace Corps Master's International](#) program in the nation. Students complete coursework in their first year, do their Peace Corps service, and return to campus to complete a project conducted during their service.

Research, Scholarship and Creative Work

Michigan Tech is classified as RU/H: Research Universities (high research activity) in the Carnegie Classification of Institutions of Higher Education. Goal 3 in the [Strategic Plan](#) addresses research,

scholarship and creative work:

GOAL 3: Research, scholarship, entrepreneurship, innovation, and creative work that promotes a sustainable, just, and prosperous world.

3.1 Growth in research, scholarship, and creativity.

- increase external support for research, scholarly, and creative activities;
- recognize and reward our accomplishments and promote them both internally and externally;
- encourage and support interdisciplinary activities;
- cultivate a community of research inspiration, productivity, and excellence;
- increase development and optimize maintenance of shared research facilities, library resources, equipment, and infrastructure;
- facilitate coordination of research activities to address problems of social significance; and
- improve efficient management and administration of externally funded activities.

[Research](#) at Michigan Tech spans a vast range of expertise, from sustainable engineering and the Great Lakes ecosystem, to ionic space propulsion, 3D printing, and cancer-fighting rice. Faculty edit four [scholarly journals](#) hosted at Michigan Tech and one published by Elsevier: *IA Journal* (Journal of the Society for Industrial Archaeology), *PANK Magazine*, *Resources Policy* (The International Journal of Minerals Policy and Economics, Elsevier), *Surface Innovations*, and *Women and Language*. The Research Office regularly publishes a [Research Magazine](#) that showcases faculty research.

All tenure-track, tenured and research faculty are expected to contribute to research, scholarship and creative work. The Research Office sponsors a series of [internal awards for research](#) to support new faculty and provides assistance in applying for [externally supported research](#). In 2014, the Research Office started a [Faculty Fellow Program](#) to expand faculty familiarity with sponsored program administration and strategic planning and to develop faculty leadership capacity. The Vice-President for Research regularly communicates [research objectives and results](#), including external [awards](#) for research, to the Board of Trustees, deans, and University Senate; he chairs the Michigan Tech Research Advisory Council.

[Research Centers](#) and Institutes help to promote interdisciplinary work that involves faculty from multiple departments on and off campus. The importance of interdisciplinary work was recognized in a multi-year [Strategic Faculty Hiring Initiative](#) (2008-2013) that committed to creating seven to ten new faculty positions each year in areas that define the future: biotechnology, computational science, energy, health, sustainability, transportation, and water. Each initiative built on Michigan Tech's strengths and supported its vision that its faculty and students will be innovators in research and education. Faculty selected for these competitive positions conduct research that cuts across traditional academic lines and help to redefine graduate and undergraduate education at Michigan Tech.

Michigan Tech's research goal is also supported by Goal 2.3 in the [strategic plan](#): Expand PhD and master's enrollments, degrees awarded, and scholarly productivity (see also *Criterion 1.A*). Graduate students support a significant amount of research: The Dean of the Graduate School allocates graduate lines for teaching and research (240 in 2015-16); 7.3% of Master's students were internally supported in Fall 2014, with an additional 5.3% having external [support](#). For PhD students, 36.5% were internally supported, with 29% having external support. The Graduate School has 1,442 students and awarded 75 PhDs in 2014-15. The Dean of the [Graduate School](#) and the [Graduate Faculty Council](#) maintain rigorous academic standards through curriculum review and oversight of thesis and

dissertation faculty committees. Graduate students have the opportunity to showcase their research at the Graduate Research Colloquium.

Undergraduate students also have many opportunities to engage in research. All [engineering](#) students complete a [Senior Design](#) project or an [Enterprise](#) project; many other degree programs have capstone research-based projects. Students are encouraged to engage in independent research with faculty through a variety of mechanisms, including Summer Undergraduate Research Fellowships ([SURF](#); 74 students since 2013) and the [Research Scholars Program](#) (about 100 students annually since 2011).

The new [Pavlis Honors College](#) will coordinate many of these opportunities going forward. Undergraduates have opportunities to showcase their research at the annual [design expo](#) and [undergraduate research expo](#). In addition to research with faculty, undergraduate students can get hands-on learning through a large number of [co-ops and internships](#) coordinated by Career Services. From 2011 to 2014, about 15% of graduating senior students participated in coops during their college career. Hands-on experiences in leadership happen throughout the co-curriculum as well (See *Criterion 3.E*).

Sources

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- General Education Proposals_Senate 2012_2014
- General Education_HASS and STEM courses
- General Education_HASS and STEM courses (page number 5)
- Generation Study Abroad
- Global Opportunities_COE
- Goal Committees
- Goal Committees (page number 3)
- Graduate School
- Graduate School (page number 10)
- Graduate School (page number 12)
- International Experience_AQIP_2011
- International Programs and Services
- Jackson Center for Teaching and Learning
- Jackson Center for Teaching and Learning (page number 6)
- Michigan Transfer Agreement_2014
- Pavlis Honors College
- Pavlis Honors College (page number 5)
- Pavlis Honors College (page number 7)

- Pavlis Honors College (page number 10)
- Peace Corps Master's
- Research Areas
- Research Awards
- Research Awards (page number 6)
- Research Awards (page number 12)
- Research Centers
- Research Data and Statistics
- Research Magazine
- Scholarly Journals
- Sponsored Programs
- Study Abroad Programs
- TechTalksResearch
- UN1025 Global Issues syllabus
- Undergraduate Research Expo
- Undergraduate Research_COE
- Undergraduate Research_COE (page number 4)
- Undergraduate Research_COE (page number 5)
- University Strategic Plan
- University Student Learning Goals and Rubrics

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 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

Faculty

Michigan Tech has [high-quality, appropriately-credentialed faculty](#) sufficient to carry out the university mission for teaching and research. In 2014-15, 83.9% of Tech's 404 faculty were tenure-track (26.5%) or tenured (57.4%; i.e., non-temporary, non-fixed term). 55% of tenured or tenure-track faculty have been [hired since 2005](#); 35 were hired through research-focused [strategic faculty hiring initiatives](#), while the remainder were primarily replacement for retiring faculty. An additional 69 temporary or fixed term faculty support the teaching and research mission of the university. Compared to other public research universities, Michigan Tech has significantly more tenure-track and tenured faculty and fewer part-time faculty (see [Faculty Profile 2015](#)). Tenure-track and tenured faculty are internationally competitive, receiving their [terminal degrees](#) primarily from research universities.

Departments follow [hiring processes](#) established by Human Resources and Institutional Equity and Inclusion. Requisite academic credentials depend upon the position and are outlined in the [Faculty Handbook](#) Chapter 1.5. Tenure-track and tenured faculty are expected to have the terminal degree in their field; non-tenure-track faculty are expected to have a masters degree, or bachelor's degree plus equivalent or significant professional experience. These requirements are consistent with *Assumed Practice B.2.* of the Higher Learning Commission. Since the university hires many international faculty, it recently engaged an external firm (HireRight) for degree validation; this firm will also conduct criminal background checks on all new hires. Michigan Tech has no contractual or consortial programs; Michigan Tech faculty teach all dual credit courses.

New faculty attend a 3-day [faculty orientation](#) that includes an introduction to the university, the tenure and promotion processes, teacher training, and the research office. Post-orientation the [Jackson Center for Teaching and Learning](#) offers a wide range of professional development

opportunities for faculty and graduate students to improve teaching, including workshops, luncheons, and grants (see **Criterion 3.D** for additional information). In addition, the Office of the Provost, the Office of Research, and the colleges, schools and departments support professional development by funding [start-up](#) awards (in 2013 and 2014 faculty expended a total of \$2.9 million in start-up funding), conference travel, workshops and guest lectures on campus. Michigan Tech's internal newspaper, [Tech Today](#), provides a daily list of opportunities on campus for professional development.

In 2014, the student-faculty ratio was 11.6:1 and average class size was 23. While class size varies by discipline and level (graduate classes and upper division undergraduate classes in the major are typically smaller than lower level courses), there is sufficient faculty capacity to offer Michigan Tech's curricula. [Teaching loads](#) vary by faculty position. The standard course load for full-time [instructional faculty](#) is 12 credits per semester. On average, tenure-track and tenured faculty engaged in research teach two courses per semester. New tenure-track faculty often teach a reduced load to enable them to establish their research programs. Course loads also vary by the number of graduate students and research grants and contracts a faculty member manages, or the significant administrative and service roles (University Senate president, University Standing Committees) a faculty member has.

Faculty in the departments have oversight for degree program curricula. This includes determining whether student work meets expectations for courses and degree fulfillment. University assessment processes as well as processes mandated by professional accreditors (ABET, AACSB, SAF) require faculty involvement. Departmental curriculum committees and/or assessment committees, as well as university committees and councils ([Assessment Council](#), [General Education Council](#), and [Goal Committees](#)) distribute responsibility for assessment across a broad number of faculty. See **Criterion 4** for additional information about assessment of student learning.

Each department is responsible for advising its majors and assisting in the advising of other students on matters relating to the department's subject area. Although various departments assign responsibility for advising in different ways, all faculty are expected to participate in the advising of students when appropriate. Faculty are expected to hold office hours during semesters when they are teaching. Faculty should post a notice about their [availability](#) outside their office, and should include a statement on availability in their class materials.

Faculty are evaluated regularly in accordance with the [Faculty Handbook](#) (see Chapter 2 for promotion and tenure review, and Chapter 3.2.13 for teaching evaluation). Faculty are evaluated on teaching, research and professional and university service. With respect to teaching, evaluation consists of two components: 1) student evaluation and 2) peer or colleague evaluation. Not more than 50 percent of any evaluation of teaching should rest on the student evaluation instrument. The evaluation of teaching provides information which individuals can use in improving skills and in course development. Some evaluation information will be used by academic administrators as partial support for and justification of personnel decisions (reappointment, promotion, tenure and salary adjustments). The evaluation of teaching is weighted in a manner which is commensurate with the assigned teaching responsibilities of each faculty member. The University Senate Instructional Policy Committee reviews proposed changes to the teaching evaluation. In Spring 2014, the university switched from a paper to an online student teaching evaluation. The evaluation survey was also modified, asking students to focus on seven traits generally associated with effective teaching in an effort to give instructors more actionable feedback. Response rates have ranged from 65%-72%, roughly unchanged from paper surveys, and results are returned to instructors immediately after grade submission (about 6 weeks sooner than with paper surveys), allowing instructors to make adjustments in the next semester. Overall measures on these surveys so far seem well correlated with historical

measures, and more discussion surrounding the results, and ways to improve them, is occurring. Starting Spring 2015, departments and/or instructors have the ability to add custom questions to the online survey, allowing a focus on specific areas of concern. Departments and faculty can add questions to the core evaluation instrument. Peer evaluation of teaching also enables assessment of whether faculty are current and adept in their teaching roles. Each department or school establishes an internal mechanism by which it evaluates the appropriateness of level, content, and currency of courses taught by individual faculty members and the quality of the instructor's contribution to the teaching mission of the university.

Research productivity or equivalent professional activities is a key measure to ensure that faculty are current in their discipline. Faculty report their activity in teaching, research and service annually through [Activity Insight](#), a platform of Digital Measures; this information is the basis for merit raises allocated by academic administrators, as well as tenure and promotion decisions. After receiving tenure, faculty are eligible for a sabbatical every seven years to maintain their currency and establish new research programs ([Faculty Handbook](#), Appendix E). Faculty can take a semester sabbatical at full compensation; in 2014, [compensation](#) for faculty taking two semesters was increased from 50% to 67% to encourage more faculty to take advantage of sabbaticals. In 2014-15 and 2015-16 the number of faculty electing one-year [sabbaticals](#) increased while those electing single-semester sabbaticals declined.

Overall, the [2010 climate study](#) showed a high level of faculty satisfaction (74%) with Michigan Tech; a new study will be conducted in 2016.

Staff

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

[Academic advising](#) is decentralized at Michigan Tech. In addition to faculty advisors, some large departments such as Mechanical Engineering-Engineering Mechanics and Civil and Environmental Engineering have professional staff to advise students. An advising workload survey conducted in 2013 and an Advising Council project concluded that advisors are called on to do a wide range of departmental activities, and some departments in the College of Sciences and Arts need additional staffing and/or funding for academic advising. All academic advisors have access to a variety of training and professional development opportunities on campus. New advisors receive formal training from the Registrar; in 2015 a new position, Academic Advising Support Coordinator, was created to support advising in the Registrar's Office. Ongoing training is provided by the Provost's Office and Advising Council; three annual [workshops](#) keep advisors updated on institutional policies and practices. An electronic mailing list delivers timely information to advisors, and a new AdvisingHUB Google Site was developed to organize advising information. Advisors are encouraged and funded to attend NACADA annual and regional meetings for professional development: 2-4 advisors have attend NACADA meetings or workshops annually since 2011. In 2014 and 2015, International Programs and Services and the Provost's Office supported two advisors to participate in a study abroad program through USAC in order to encourage advisors to support study abroad for their students. For additional information on academic advising, see ***Criterion 3.D***.

Michigan Tech's [learning centers](#) (see ***Criterion 3D***) are decentralized and managed independently by affiliated departments. Some have directors that are faculty or staff with credentials in the subject area; most are staffed by student coaches.

The professional staff of the Van Pelt and Opie Library, composed of librarians and archivists, all carry the terminal degree in library and information science and archivists have an additional archival certification. Information technology and metadata professionals hold at least a bachelors degree. To support their capacity to increase discovery, to steward or develop born-digital materials each staff member has attended at least one national conference annually; a significant portion of the library's budget has been allocated for building staff capacity to be successful in an environment devoted to digital materials. Due to Michigan Tech's remote geographic location, the library has also invested heavily in continuous training through virtual means. The library has made support for the university's education mission and student success its priority over the past three years. One-third of the librarians' effort is targeted to information literacy teaching and learning in alignment with the university's student learning goals. A cadre of STEM undergraduate and graduate student peers, trained to support students' assignments from General Education and the disciplines offer welcoming, first-line assistance at the library and online.

Michigan Tech's Athletic Department hires the varsity sport coaches that teach co-curricular PE courses. All coaches possess a bachelor's degree and some also hold masters degrees. Annual training in CPR, first aid, concussion management, the Clery Act, etc., are part of the National Collegiate Athletic Association (NCAA) requirements. Michigan Tech employee training for safety, sexual harassment, security, etc. is completed as required. Professional development is supported by annual conferences for the individual sports that are coached.

In the division of Student Affairs and Advancement, professional staff (not support staff) hold a minimum of bachelor's degrees and typically have advanced degrees in related areas; most have master's degrees and many senior staff have PhDs or equivalents. Four staff in the Wahtera Center for Student Success hold master's degrees in education or counseling.

Regular participation in professional development for staff is encouraged through involvement in professional organizations, attendance at regional and national conferences related to specific roles, and other opportunities. Reading groups, retreats, and guest presenters regularly enhance staff knowledge. [Professional Development Day](#) and Technology Day, offered by Student Affairs and Staff Council, offer additional professional development opportunities.

New [professional development initiatives](#), hiring processes and performance review processes developed by Human Resources, are strengthening staff qualifications.

Sources

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- Faculty Activity Reporting (Digital Measures)
- Faculty Credit Hours
- Faculty Orientation
- Faculty Profiles_Provost Update
- Faculty Qualifications

- Faculty Qualifications (page number 12)
- Faculty Start-up Awards
- General Education Council Annual Reports
- Goal Committees
- Hiring Processes
- IPEDS Data_2013-14
- IPEDS Data_2013-14 (page number 8)
- Jackson Center for Teaching and Learning
- Learning Centers
- Professional Development
- Sabbatical Leave Data
- Section 245
- Tech Today
- TechTalksResearch
- University Senate
- University Senate (page number 4)
- University Senate (page number 5)

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

Undergraduate Student Support

Michigan Tech provides a wide variety of support for student learning, including the [Waino Wahtera Center for Student Success](#), [academic advising](#), and [learning centers](#). Recent improvement in student support services and infrastructure are outcomes of three AQIP Action Projects and a Task Force on Blended Learning completed from 2008 to 2013:

- [Task Force on Blended Learning](#) (2012)
- [Improving Undergraduate Student Success](#) (2012)
- [Academic Advising Enhancement](#) (2010)
- Classroom and Facilities Upgrade Plan, aka [Learning Space Enhancement](#) (2008)

Support begins when students consider applying to Michigan Tech. Preparation required for programs at Michigan Tech is communicated on departmental websites and in person by admissions personnel who visit high schools and attend college fairs. When prospective students visit campus, they meet with academic advisors who discuss degree program requirements and program objectives and the preparation that will enable students to be successful. [Transfer Services](#) works with transfer students who can access transfer guides that provide students with an outline of classes that can be taken at a variety of community colleges and transferred to Michigan Tech.

New students enrolled at Michigan Tech attend an extensive one-week [orientation](#) conducted by Student Affairs in August. During orientation, students meet with academic advisors and have the opportunity to take [placement tests](#) for mathematics (ALEKS), English (for international students), and foreign languages. Many first-year students attend [Day Zero](#) courses that introduce them to their introductory courses and help them transition to the expectations of college. Students register for classes online through Banweb; staff in the Registrar's Office meet with students who need assistance. A half-day orientation program dedicated to new transfer students is also offered fall semester. Most new students arrive in the fall; new students arriving spring semester also attend an orientation program. During their first semester, students are also required to attend a "Pulse Session" that provides information on academic and financial aid expectations and requirements. As

students progress through their degree program, they can track their progress on the student portal, [MyMichiganTech](#).

Michigan Tech has a selective admissions process and does not accept students whose high school preparation and ACT/SAT scores suggest they are unprepared for its programs. Nonetheless, an increasing number of students are identified as at-risk and the University has developed several strategies to help students succeed. Based upon predictors identified by Noel-Levitz, students who are identified as at-risk upon matriculation are encouraged to enroll in a [student success course](#) that helps them develop study skills and time management and tracks their progress during their first semester. This program is tied to financial aid and engagement with Learning Centers. Students on probation after their first or second semester are automatically enrolled in Strategies for Success.

[Academic advising](#) is critical to student success. Academic advisors located in all departments help undergraduate students select programs that match their needs, interests, and abilities. Academic advisors use an [Advising Syllabus](#) to keep students on track for degree completion and graduation; it is now available as a course in Canvas (Michigan Tech's Learning Management System) to help advisors communicate with their students and develop a database for advising assessment. Students are also encouraged to monitor their progress in the [Degree Audit Reporting System \(DARS\)](#); a tutorial is available. Departments with small major enrollments have faculty advisors; departments with large enrollments tend to have full-time professional advisors. An Academic Advising Council, established in 2010 in response to an [AQIP Project on Academic Advising](#), meets biweekly to coordinate academic advising across campus. It offers three workshops annually to keep advisors updated on institutional policies and practices and manages an electronic mailing list to deliver timely information to advisors. In 2014-15 a team of advisors worked on a Lean project to better organize information available to all advisors on campus. Advisors work closely with the Registrar, which added an advising support staff person in spring 2015.

Most Michigan Tech undergraduates are admitted directly to a college or school and to a specific degree program, and meet with departmental advisors at least annually to discuss progress and determine whether they are in the right program for their interests and abilities. If students have not identified a specific program, they work with one of three [advisors who assist students who are undecided](#), two in the College of Engineering (Engineering Fundamentals) and one in the College of Sciences and Arts (Advisor for Exploring Students) who assists all other students. Students can enroll in a course, [Exploring Majors](#) at Michigan Tech, that helps them understand their options for a degree program and the potential careers available for those majors. Students who need more assistance are referred to [Career Services](#), which offers career counseling and a one-credit course, [Career Development Foundations](#), that helps students make choices about programs of study.

First-year courses introduce students to the level of learning expected for college. [General Education](#) requires all students to take two courses (UN1015 Composition and UN1025 Global Issues) in their first year. Students in the College of Engineering take a first-year curriculum offered by Engineering Fundamentals; some other programs also offer first-year seminars to introduce students to faculty, degree program options, and careers to assist students in making good choices. Students are encouraged to talk with faculty in disciplines that interest them.

Mathematics preparation poses a particular challenge for science and engineering programs. [Mathematics placement](#) using ALEKS identifies the appropriate first-year course based on a student's ability. ALEKS offers students the opportunity to study and work with the program to improve their score and placement level. [Modern Languages](#) also offers a placement test to determine student ability.

Michigan Tech offers a robust set of [Learning Centers](#) where students work with peer mentors to build competencies. Three core Learning Centers – [Chemistry](#), [Mathematics](#), and [Multiliteracies](#) (writing) – support students in many degree programs and are funded by the provost. Learning centers in specific disciplines such as Biological Sciences, Physics, and Electrical and Computer Engineering are supported by departments. These centers offer weekly appointments for long-term improvement, walk in hours for short term help, and team learning with peers.

Finally, the [Waino Wahtera Center](#) for Student Success provides staff and services to help students succeed at Michigan Tech. It offers a variety of courses designed to enhance academic and personal success and [workshops](#) designed to teach students how to be deeper and more effective learners. The [ExSEL program](#) identifies students using Noel-Levitz predictive modeling and offers them academic support through a required course, Frameworks for Success, that contains a peer mentoring component, staff outreach and professional development opportunities. ExSEL is a partnership between the Wahtera Center and all colleges and schools on campus, and is designed to increase student success and retention. The Wahtera Center also houses the [academic success coaches](#) that work with students who need direction in developing skills such as time management, organization, prioritizing, and accessing resources.

In addition to direct academic support, Student Affairs and Institutional Equity and Inclusion offer services to assist students with other needs. [Student Disability Services](#) at Michigan Tech provides support and resources for students with or without a documented disability. The number of students seeking support has grown substantially over the past decade, requiring increased services such as accommodation for additional time for tests. The new testing facility in the Jackson Center for Teaching and Learning has helped to meet that demand. [Counseling Services](#) helps students with stress and other issues that affect academic performance. [The Early Intervention Team](#) is charged to review and screen potential at-risk students, critical situations, and incidents that occur on campus. The team determines appropriate intervention strategies and outreach efforts.

Graduate Student Support

The Graduate School provides a wide variety of support for student learning. Preparation required for programs at Michigan Tech is communicated on departmental websites and in person by Graduate School staff who attend national and international college fairs. The Graduate School conducts an [orientation](#) that emphasizes expectations for graduate students, [academic integrity](#), advisor/advisee relationships, and responsible conduct for research (RCR; all graduate students are required to complete [RCR training](#)). In addition to the basic RCR training provided at orientation, all graduate students must complete advanced RCR training in their second or third academic semesters.

Students in research programs may select from a variety of courses, some of which are tailored to their specific academic needs. Students in coursework programs may complete an on-campus or online course. Graduate students' thesis or dissertation advisors and committees assist them with determining the particular program of study based on the student's background and research plan. Graduate students have access to the [Multiliteracies Center](#) and programs developed by the Graduate School for student support. Graduate students who will be teaching attend a [teaching workshop](#) conducted by the Jackson Center for Teaching and Learning.

Students can view progress toward their degrees or timely notifications of items that are due for their degree on the student portal, [MyMichiganTech](#). This personalized web site provides students a checklist of items that they need to complete to make progress toward their degree, and a detailed checklist of all of the items needed to complete their degrees. In addition to these resources developed by the Graduate School, a wide variety of information and notifications important for students such as

course registration, student holds, and academic standing is available on MyMichiganTech.

The Graduate School maintains a library of professional development resources for graduate students, including books supporting language studies for Peace Corps Master's International students. The Pat Nelson Graduate Conference Center provides a flexible conference space for graduate student meetings. The Graduate Student Government holds its regular meetings there, and graduate students may schedule the room for oral examinations. The room has videoconferencing technology available so students have the ability to arrange an oral examination when a committee member is not available on campus.

International Student Support

In addition to support provided to all students, international students have access to support to improve language and cultural competence. Since 57% of Michigan Tech's graduate students are international students, the [International Graduate Student Communication and Cultural Center \(IGSC3\)](#) helps these students be better prepared and more confident communicators on campus, in the classroom and in the community. [International Programs and Services](#) provides a variety of tools, workshops and services for student success (*see Criterion 3.E*).

Students who demonstrate the potential to succeed academically in Michigan Tech programs but whose English language competence may hamper their success are enrolled in the [Intensive English as a Second Language Program \(IESL\)](#) concurrent with their admission to an academic program. Intensive English language instruction delivered by professional ESL educators is designed to move them into academic course work as soon as their proficiency is evaluated as appropriate for academic success. Michigan Tech's IESL program does not accept students who are beginners in terms of English skills or who are not admitted to a Michigan Tech academic program. The IESL program was accredited in 2015 by the [Commission on English Language Program Accreditation](#).

Academic Integrity, Information Literacy and Responsible Conduct of Research

Orientation for both undergraduate and graduate students emphasize academic integrity and introduce Michigan Tech's [Academic Integrity Policy](#). The [Office of Academic and Community Conduct](#) and the Van Pelt and Opie Library provide on- and off-campus resources on [copyright](#), plagiarism, and the appropriate use of citations and bibliography. The Van Pelt and Opie Library provides students guidance in the effective use of [research and information resources](#). Librarians work closely with faculty in many courses across campus to introduce students to effective research strategies for their discipline.

[Information Literacy](#) is one of Michigan Tech's University Student Learning Goals (Goal 6).

Undergraduates are introduced to and practice information literacy in both first-year required courses (UN1015 and UN1025). The Van Pelt and Opie Library provides professional support for [information literacy](#) to faculty and students across campus. In 2014-15 all degree programs assessed how students are educated in information literacy within the context of their discipline. Graduate students and undergraduate students engaged in research are also trained in [Responsible Conduct of Research](#).

Violations of academic integrity are dealt with by the University [Conduct Board](#) in the Office of Academic and Community Conduct. For additional information on academic integrity, see *Criterion 2.E*.

Infrastructure for Teaching and Learning

As a technological university, Michigan Tech strives to maintain and improve a technological

infrastructure and resources to support effective teaching and learning in the 21st century.

[Learning Management System](#). In 2012 Michigan Tech selected and rapidly implemented Canvas as its Learning Managing System (LMS). Faculty are encouraged to use Canvas for course delivery. Information Technology and the Jackson Center for Teaching and Learning work with Canvas to continuously improve applications that enhance teaching and learning.

[Information Technology \(IT\)](#) moved to a centralized system of computing in 2013 to provide more access to a broad suite of [software](#) and centrally-located [hardware](#) for all students and faculty. Although some specialty computing laboratories are maintained in some departments, student computing is [centralized in a few locations](#). A [2015 survey](#) suggests that concerns associated with this change are being resolved. IT collaborates with the Van Pelt and Opie Library to staff a Service Desk and has a dedicated Help Line.

- IT supports technology in 72 classrooms, [894 student computer workstations](#) (66 dedicated to graduate student labs), departmental and research spaces across campus. It recently added lecture capture to 16 University classrooms.
- The student/computer ratio is 8:1. A 2014 survey by IT reported that 91.8% of undergraduates and 92.5% of graduate students responded that they had a personal laptop.
- All University classrooms have wireless access. In July 2014, IT upgraded wireless coverage in all residence halls to attain 100% coverage in support of student learning and collaboration, and 100% coverage was achieved in the Library by January 2015.
- IT most recently helped to support
 - Library 244 Information Literacy Instruction and Learning Space
 - Doctoral of Physical Therapy remote classroom partnership with Central Michigan University.
 - The Active Learning Center, a 72-seat technology enhanced learning space.

[Jackson Center for Teaching and Learning](#). Thanks to a generous gift from a Michigan Tech alumnus, the Center was renamed and reorganized in 2012 to support teaching and learning with a significantly larger staff and set of services, including workshops, consultations, and instructional resources. In 2014-15 activities included:

- 300+ scheduled and walk-in instructor consultations on pedagogical techniques and technological tools. More than 80% of instructors now use Canvas.
- 2000+ accommodated exams proctored for over 20 instructors in the new testing center, which frees up instructor time for other instructional activities.
- 200+ sponsored/commercial exams (GRE, FE, etc.), saving travel time and expense for students.
- 6 luncheon events attended by 250 faculty and 7 Coffee Chats attended by 150 faculty on current pedagogical topics of interest, including international students, accommodated exams and new technologies/tools. These events also give faculty and GTAs opportunities to document needs and network.
- Monthly hands-on workshops on the LMS, video tools, class response systems, etc.
- Guest speakers on gamification, scientific teaching, group dynamics, and classroom student study skills.
- Broad and varied support for instructors/departments/committees working on course and program assessment, supported by 1 FTE staff.
- Online student evaluations (~33000 surveys per semester) improved with results returned rapidly to instructors and chairs to enable follow-up consultations. Currently working on customizing surveys for departments and instructors that will provide more targeted feedback.

- Pedagogical and technological tools now available for loan and trial use (Swivl, IF-AT forms, iPads, Chromebooks, Camtasia, student whiteboards, etc.)
- Consultation and support for multiple remodeled classrooms including the new Active Learning Center and the Library's Experimental Educational Environment.
- Revised "College Teaching" course/curriculum taken by 50+ graduate teaching assistants.
- Significantly expanded video capture of classes and in-class PCs for instructional use in Fisher Hall.

[Van Pelt and Opie Library](#). The Library supports teaching and learning with a professional staff that provides instruction and training in the classroom, virtually, and in a physical facility that was redesigned during 2013-15. Since 2011, the Van Pelt and Opie Library has strategically developed its support for the university's educational mission and the University Student Learning Goals with multiple initiatives that strengthen access and service:

- Hired and devoted 3 new instructional librarians (for a total of 8 librarian/archivists) to support information literacy (Goal #6) and the general education program, including copyright and patent information and skills;
- Reorganized staff to support access to the library's primarily online information and scholarly resources, including streaming video to support commitment to media
- Developed a cadre of highly trained peer consultants to assist students in-person and electronically
- Developed online tutorials and guides and delivered workshops to promote access to library resources
- Collaborated with Information Technology to staff a Service Center for one-stop assistance
- Extended staff hours and opened portions of the building for 24/7 access
- Increased available seating to 624 (37% increase) and the number of high performance workstations to 200 (450% increase), to create flexible, student-centered, technology-enhanced learning spaces
- Enhanced printing and scanning capability (3-D, poster) and other technologies
- Transformed instructional classrooms to facilitate pedagogical experimentation

Other specialized examples of infrastructure for teaching and learning across campus include:

- [Scientific Laboratories](#). A wide variety of [science and engineering laboratories](#) for both teaching and research are spread across campus. Some are designated as [Core Facilities](#) that support interdisciplinary and guest research by providing communal space, tools, and equipment. [Chemical Engineering's Unit Operations Lab](#) is one-of-a-kind learning laboratory of industrial equipment items (called unit operations) used by chemical engineers to change raw materials into marketable products. Kinesiology supports labs in electrophysiology, human neuromechanics, integrative physiology and molecular physiology for undergraduate and graduate research. Physics teaching laboratories are modeled after modern physics education research pedagogies to engage students in doing real, inquiry-based experiments in teams of three students. The department supports a special opportunity for some (eight or more) of its majors to become undergraduate teaching assistants, paired with graduate teaching assistants, for its numerous introductory physics laboratories. This practice has contributed to increased student satisfaction in course evaluations the department has seen over the past decade, and also gives our undergraduates valuable teaching experience.
- [Medical Laboratory Science program](#). This unique program allows students options in 3+1 or 4+1 programs in Medical Laboratory Science and 4+1 programs in Histology, Cytology and

Secondary Education. Students complete several years of training at Michigan Tech and then complete a hospital practicum program in an affiliated NAACLS (National Accreditation Agency of Clinical Laboratory Sciences) accredited hospital program or student teaching. The rigorous curriculum in biology, chemistry, physics, and math that is heavy in laboratory work. The main lab (MEEM 1103) was recently upgraded both in infrastructure (new floors, chairs and an upgraded teaching computer system) as well as a \$10,000 investment in key equipment (centrifuges, serofuges, heating blocks, immunohematology agglutination viewing mirror). Other labs including the microbiology lab in the Dow building and the general biology lab and anatomy and physiology lab in MEEM were also upgraded.

- The [Humanities Digital Media Zone \(HDMZ\)](#) is a computing, language-resource, and media-production facility located on the first floor of the Walker Arts and Humanities Center. The HDMZ features Macintosh and PC computers with an assortment of digital media software (including Adobe Creative Suite and Apple Logic Pro), DSLR cameras, HDV cameras, audio recorders, graphics tablets, and other video and photography equipment. A laptop classroom with 20 Macbook Airs is used for teaching courses in scientific and technical communication. The HDMZ is staffed 60 hours a week with student consultants who have specialties in one of the languages taught in the department (French, German, and Spanish) or an area of media production. These consultants are available to assist users in the lab either through individual tutorials, checkout services or technical support. In addition, a seminar room, support offices, a resource room for IESL reference materials, and two small recording rooms are available to students.
- **Performance spaces.** The [Visual and Performing Arts Department](#) has four majors that are fully integrated with the two theaters on campus, the McArdle Theatre (black-box) and the James and Margaret Black Performance Hall in the Rozsa Center for the Performing Arts (proscenium stage). Students are active in these spaces as production designers, backstage technicians, audio engineers, sound designers, actors and musicians. In these spaces students work hands-on with varied technologies in stage mechanics, rigging, lighting and sound.
- The [A.E. Seaman Mineral Museum](#) - the official “Mineral Museum of Michigan” and one of North America’s great mineral museums - conserves and develops its mineral collection to educate people about minerals and their relevance to society. The museum supports undergraduate education for geology, geological engineering, geophysics, civil and environmental engineering and mining engineering and mineral processing minors, as well as research support for students, faculty, and staff in the mineral sciences. In 2011 the museum was relocated to a 9,000 square foot dedicated facility that houses one of the largest academic public mineral exhibits and a collection of 30,000 specimens actively managed to enhance its quality, usefulness, and value through donations, purchase, and exchange. The recent donation of 2,000 specimens from the former curator of the Cleveland Museum of Natural History demonstrates the continuous improvement of the collection.

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- Wahtera Center for Student Success (page number 6)
- Wahtera Center for Student Success (page number 7)

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

Goal 2 of the [strategic plan](#) explicitly addresses the relationship of Michigan Tech's research mission to its student's educational experience. Subgoal 2.1 emphasizes that a Michigan Tech education will provide research, service-learning, project-based, entrepreneurial, and international opportunities for students. The role of the **curriculum** in providing these opportunities is discussed in detail in **Criterion 3.B**, as well as **Criterion 1.D**. Innovation and integration of research and the role of project-based learning are touchstones of a Michigan Tech education in many programs, such as Senior Design in [engineering](#), Applied Portfolio Management Program and The Project in [business](#), and university-wide programs such as Enterprise in the [Pavlis Honors College](#) and [entrepreneurship](#) competitions. [International opportunities](#) abound in countries around the globe for students in all majors.

Michigan Tech's robust **co-curriculum** provides an enriched educational environment that offers a variety of formal and informal experiential learning opportunities for our students. The [co-curricular requirements](#) of the General Education program and co-curricular programs in Student Affairs and Advancement support the achievement of the following goals in the university's [strategic plan](#):

1.1 Provide professional development and leadership opportunities for students.

1.2 Diverse, inclusive, and collegial environment.

- promote inclusiveness and collegiality through openness, engagement, mutual respect, and understanding of diverse perspectives.
- provide a rich cultural environment and a welcoming campus.
- develop and implement initiatives to increase the diversity of students.

2.1 Provide research, service-learning, project-based, entrepreneurial, and international opportunities for students.

2.2 Transformative educational experience grounded in a residential-based technologically-rich learning environment.

- encourage and support high quality, innovative, and effective instruction and experiences to enhance student learning.
- contribute to students' development and application of critical thinking skills, creativity, leadership, collaborative skills, and ethical reasoning.
- enhance student learning through activities that promote long-term physical and mental health.

- foster healthy relationships and the ability to productively manage conflicts.
- enhance students' communication skills as well as information, technology, and global literacies.

Students engaged in co-curricular programs, initiatives, and experiences offered by Student Affairs and Advancement also contribute to the achievement of [Student Affairs Learning Outcomes](#):

- Understand and act as ethically and civically engaged leaders.
- Develop communication skills necessary to adapt and engage effectively in groups.
- Acquire and demonstrate personal responsibility and accountability.
- Obtain and apply intercultural knowledge to thrive in our global society.
- Exhibit a sense of pride and affinity for Michigan Tech.

These in turn support achievement of the [University Student Learning Goals](#) - particularly Goal 3 *Global Literacy*, Goal 4 *Critical and Creative Thinking*, Goal 5 *Communication*, and Goal 8 *Social Responsibility and Ethical Reasoning*, and promote Michigan Tech's [values](#) of community, scholarship, possibilities, accountability, and tenacity.

While individual departments each work to support Michigan Tech students, there are four broad categories of the Student Affairs co-curriculum: Diversity and Inclusion; Athletics, Recreation and Wellness; Student Organizations, Leadership and Community Service; and Housing and Residence Life. General Education [co-curricular requirements](#) contribute to student wellness and physical health. Some programs are supported in part by the \$60 [Student Activities Fee](#) for on-campus students that is distributed by the Undergraduate and Graduate Student Governments. In addition, an [Experience Tech](#) Fee (\$90 for undergraduates, \$74 for graduate students) gives students complete access to recreational facilities and many sporting and performing arts events.

While student employment is not a co-curricular activity, many students are employed on campus in a variety of departments in ways that contribute to their educational experience. Many student jobs help teach both the technical skills and the interpersonal skills that students will need when they leave Michigan Tech.

Diversity and Inclusion

Michigan Tech's [Center for Diversity and Inclusion](#) (CDI) prepares and empowers socially conscious student leaders. The staff actively encourages the intellectual, social, and professional growth of all students while providing targeted programming for members of the LGBTQA community (lesbian, gay, bisexual, transgender, queer, questioning, asexual, and ally), students of color, and women. Programs focus on cultural awareness, community building, and student retention. Nine identity-based (race/ethnicity; gender; sexual orientation) [student organizations](#) supported by CDI work together to plan history and heritage programs and [events](#). In addition to providing opportunities for students to attend regional and national conferences, CDI hosts a biannual [Student Leaders Retreat](#) for current and prospective organization leaders and members. Attendees participate in team-building exercises and activities designed to help them develop effective leadership skills and manage successful student organizations. During 2014-2015, the retreat focused on cultural competence. Students explored their social identity, stereotypes, biases and prejudices, power and privilege of themselves and others, and conflict resolution, and developed lessons learned into action plans.

[International Programs and Services](#) (IPS) recruits and works with international students and also promotes global enrichment opportunities for domestic students. Michigan Tech has over 1,000

international students representing over 50 countries. For international students, IPS provides the appropriate tools and foundation for success at Michigan Tech. Specialized workshops and events, many in collaboration with campus departments, encourage transition and integration into American and local culture. For example,

- "Life at Michigan Tech," a two-part workshop, discusses the educational system, food, campus culture and student success strategies,
- "Report to IPS," a week-long event, allows students to process their immigration paperwork, meet face-to-face with local businesses and health care professionals, and
- International Ski Day, Hockey and Football 101, a boat cruise and waterfall tour, and a wide variety of [Outdoor Adventure Programs](#), introduce international students to opportunities for athletic and recreational events in the local community.

Michigan Tech's significant international student community affords global enrichment opportunities for all students on campus to develop global literacy. Several "[International Tech Traditions](#)" provide opportunities for international students to introduce their cultures, and for the campus and community to welcome these international ambassadors:

- Parade of Nations kicks off fall semester with a parade and multicultural festival that promotes the nations and cultures of our international students and faculty. Over 3000 people participate in this event that brings the world to Michigan's Upper Peninsula.
- Canterbury Conversations provide monthly forums for the Michigan Tech and local communities to exchange ideas and learn new things about each other and our cultures by discussing current global issues such as world hunger, women's equity, and sweatshop labor.
- Khana Khazana ("food treasures" in Hindi) is a collaboration begun in 2010 between Dining Services and international student chefs to bring two to three authentic ethnic dishes from a particular region to the university food court every Friday.

International Programs and Services also offers an enriching [study abroad program](#) in over 40 countries (150+ locations) that include year-long, semester, and summer programs by several third-party providers. In addition IPS also works strategically with faculty members to develop [faculty-led study abroad programs](#) conducted by Michigan Tech professors, which are shorter duration and more economical than traditional study abroad options. All of the study abroad programs are designed to meet the global literacy student learning goal.

See also ***Criterion 3.B: Human and Cultural Diversity.***

Recreation, Wellness and Athletics

Michigan Tech's [recreational programs and facilities](#) provide a wide range of recreation and fitness programs to not only keep students healthy and fit, but also enable them to develop personal responsibility for their long term physical and mental health and engage with others in diverse, inclusive and collegial environments. Michigan Tech students can take advantage of the following:

- [Student Development Complex](#) (SDC), a 235,000 square-foot complex, featuring a multipurpose room, gymnasium, ice arena for varsity hockey, natatorium with pool and dive tank, fitness center, etc. The SDC also offers community programs and summer sport camps.
- [Sherman Field](#) for football, soccer, and baseball; [Mont Ripley](#) for downhill skiing; and [Portage Lake Golf Course](#).
- [Tech Trails](#), a trail system on 675 acres for Nordic skiing, snowshoeing, biking, running,

hiking, and walking. The trails also support School of Forest Resources and Environmental Sciences' living-learning labs and ROTC training.

- [Intramural Programs](#) offer over 30 different activities. In 2014, 2,294 unique students, faculty, and staff participated in intramurals; 731 teams played more than 1,351 games.

[Wellness](#) programs at Michigan Tech are designed to educate students, make students well rounded and prepare them for a balanced life after graduation. Programs highlight mindfulness to target stress, connect with themselves and others to promote social wellness, maintain personal health and safety, advocate healthy use of technology, and contribute to society. Wellness programs are [well attended](#); a [campus recreation survey](#) revealed that maintaining a healthy lifestyle is important to students post-graduation - Michigan Tech's wellness programs prepare them to achieve this goal.

The [Outdoor Adventure Program](#) (OAP) capitalizes on the campus's unique location to attract students who engage in outdoor activities such as hiking, biking, and rock climbing. The epitome of action-based education, it delivered over 74 outdoor educational and recreational programs in fall 2014. In addition to building students' self-confidence and encouraging them to explore the outdoors as part of its wellness programs, OAP provides professional development and leadership opportunities. Activities are organized and led by well-trained student staff under the guidance of professional staff members to assist with risk management, skills coaching, and leadership development. The OAP finished second in the first competition hosted by Outdoor Nation to recognize the college or university that could get the most people outside and active.

OAP's collaboration with academic programs has also enriched the educational environment:

- made the [Challenge Course](#) available for courses building teamwork and leadership,
- established the [GEAR Enterprise \(Enterprise Program\)](#),
- designed a much needed [Trailhead Lodge](#) for the Michigan Tech Trails as a [Senior Design Project](#), and
- offered credit-based courses in [Wilderness First Responder Training](#) and [Adventure Spring Break](#). These courses allow students to pursue interests outside of their major, where they are challenged and encouraged to lead.

Finally, Michigan Tech has [14 Varsity athletic programs](#), including 's NCAA Division I men's ice hockey and NCAA Division II men's and women's basketball, and men's and women's Nordic skiing. In 2014-15, 365 students participated in sports programs. All incoming freshmen athletes are required to take the [Master Student Athlete class](#) to assist them in the transition from high school to college. The purpose of the class is to foster [personal responsibility and accountability](#) so that students are retained ([98-100%](#)), maintain good academic standing (2.0 GPA), and graduate ([84% academic success/6-year graduation rate](#)). The main focus is study skills, time management, nutrition, resume building, and developing interview skills. In addition, Athletics set a goal for Michigan Tech athletes to demonstrate oral [communications skills](#) in media interviews. Athletes—primarily in hockey and basketball—gave on-camera media interviews; individual feedback was provided using a rubric consistent with the university student learning goal for communications. This investment of effort provides these athletes with a skill they will use in many future settings. For additional information, see the [Athletics year-end report](#).

Student Organizations, Leadership, and Community Service

The staff in the Office of Student Activities assists 240 registered student organizations with the administrative requirements to run an effective organization, provide coaching to students in leadership roles, and assist in event planning. More than 5,000 students are in organizations that

encompass academics, arts and culture, awareness, club sports, faith-based clubs, governances, fraternities and sororities, honors organizations, housing and residential life, programming, service, social events, and student publications. Through these organizations (including nearly 50 academic organizations), education, entertainment, and enrichment is offered to the Michigan Tech community. At least 16 cultural organizations sponsor campus and community events including Chinese Night, Chinese New Year, Diwali Night, Holi Night, African Night, Persian New Year Celebration, Thai Night and “Come Dance with NOSOTROS” to provide a rich cultural environment. Michigan Tech is also home to 10 different faith-based student organizations, providing the spiritual community needed for students to succeed while also educating others on campus.

Michigan Tech’s Greek community includes 12 fraternities and 8 sororities that focus on their core values of scholarship, leadership, service, and community. The [2013-14 Greek Life Reports](#) highlight their community service hours and philanthropy dollars raised.

To further support student organizations, Student Activities also hosts [HuskyLEAD](#), a series of hour-long workshops that provides personal and professional development and leadership opportunities for students. These sessions, presented by faculty, staff, industry professionals, and students themselves, focus on the leadership competencies of self-awareness, teamwork, communication, ethical practices, and social responsibility. In addition, 60 students are selected to develop and enhance their leadership skills at the annual [LeaderShape](#) Institute, now in its 18th year. This intensive institute is designed to help participants have a healthy disregard for the impossible while also promoting interactive self-discovery to further these students as visionary leaders of integrity.

Student employment opportunities in the [Waino Wahtera Center for Student Success](#) and Housing and Residence Life provide unique opportunities for students to develop leadership skills and engage in experiences that support their peers. Eighty students serve as Orientation Team Leaders (OTLs) that lead teams of first-year students through the university’s weeklong orientation program. The Wahtera Center also hires peer teaching assistants for their success skills courses, peer mentors for the ExSEL program and Academic Success Coaches.

OTLs are required to participate in an extensive training that teaches them about campus resources, communication supporting new student transition, and being inclusive. Peer teaching assistants, peer mentors and Academic Success Coaches participate in similar, condensed training. Included as part of all of these trainings are cultural competency modules, to help students to be inclusive, regardless of a student’s background. Additionally, Academic Success Coaches have weekly meetings that combine a directed staff check in with training opportunities throughout the year.

Another opportunity for a strong student leadership experience is working for Housing and Residence Life. Resident Assistants (RAs) and Program Assistants (PAs) receive room and board in exchange for their commitment to supporting students in the residence halls. In this highly selective position, staff members commit to a comprehensive training program that includes procedural information but works to develop their communication and team building skills; this training also includes cultural competency modules. The housing staff, including RAs and PAs, are required to attend a monthly staff meeting that provides ongoing professional development and provides them with useful information to aid them in being more productive in their work.

Community service initiatives at Michigan Tech strive to provide students with opportunities that promote citizenship through service to the community. These initiatives enhance the educational experience and help foster civic responsibility. [Make a Difference Day](#), created by *USA Weekend* magazine, is a national day of service every October that celebrates neighbors helping neighbors. Michigan Tech’s [Mind Trekkers](#) STEM Road Show takes well-trained undergraduate and

graduate students to K-12 schools and communities around the country to explore the magic of STEM (science, technology, engineering, and mathematics) with young people. Pre- and post-survey data from the May 2014 Sheboygan Science and Engineering Festival reflects a positive impact and an increased interest in STEM.

Housing and Residence Life

The strength of Michigan Tech's Housing and Residential Life (HRL) program lies in its ability to create a strong and vibrant sense of community. HRL is committed to maintaining a safe, comfortable environment where friendships thrive and students can enjoy academic success. Using the university's values of community, scholarship, possibilities, accountability, and tenacity as the framework for programming in the residence halls, five educational outcomes serve to guide their work:

- Students gain a better understanding of the world around them living amongst individuals from other cultures and ways of life with differing opinions and perspectives. Students create a closer personal bond to the local community and people.
- Students gain a more profound understanding of their fields of study and have meaningful relationships with faculty and staff.
- Students are receptive to new experiences and are able to cultivate strong personal and social skills that are needed to excel in the college environment as well as life beyond the University.
- Students progressively develop and work towards mastering skills needed to make more mature decisions and to understand themselves in their environment and in relation to others.
- Students seek out opportunities to pursue, investigate, and overcome challenges that push them to exceed their own expectations.

An assessment of the [residential communities](#) is conducted between weeks 11 and 12 of the fall and spring semesters through an electronic evaluation that is sent to all residence hall students. These evaluations are shared with the resident assistant staff and used by the supervisor to further develop programmatic and community building goals.

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- Wahtera Center for Student Success

3.S - Criterion 3 - Summary

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

Summary

Michigan Tech provides high-quality undergraduate and graduate education in a residential learning environment and in selected online graduate programs. The student-faculty ratio is 11.6:1 and average class size is 23 students. Michigan Tech bachelor's, master's and PhD programs are guided by the University's [mission](#), eight [University Student Learning Goals](#), degree program learning goals, and the standards of its professional accreditors (ABET, AACSB, and SAF). Michigan Tech's General Education Program emphasizes intellectual inquiry and the application and integration of broad learning and skills by basing its program on foundational learning for six of the University Student Learning Goals - Knowledge of the Physical and Natural World, Global Literacy, Critical and Creative Thinking, Communication, Information Literacy, and Social Responsibility and Ethical Reasoning. Degree programs reinforce these goals and apply them in a disciplinary context.

As a research university (high research activity), Michigan Tech highly values scholarship, creative work and the discovery and application of new knowledge. Over 80% of its faculty are tenure-track or tenured, and over half of the faculty have been hired in the past ten years, many through research-focused [strategic faculty hiring initiatives](#). The faculty are internationally competitive, with terminal degrees primarily from research universities. Currently 20% of students are in graduate programs; the Graduate School awarded 75 PhDs in 2014-15. Undergraduate students have many opportunities to engage in research and creative endeavors, from Senior Design and Enterprise projects to undergraduate research, coops and internships. The new [Pavlis Honors College](#) will coordinate many of these opportunities going forward.

Support for student learning is wide-ranging, including academic advising, the [Wahtera Center for Student Success](#), [learning centers](#), the [Van Pelt and Opie Library](#), the [Jackson Center for Teaching and Learning](#), and computing access and [scientific laboratories](#) across campus. Graduate students and international students have additional support through the [Graduate School](#) and [International Programs and Services](#). In addition, a robust co-curricular environment guided by [Student Affairs Learning Outcomes](#) provide an enriched learning environment.

Sources

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- Pavlis Honors College
- Student Affairs Learning Outcomes and Assessment
- TechTalksResearch
- University Strategic Plan
- University Student Learning Goals and Rubrics

- Van Pelt and Opie Library
- Wahtera Center for Student Success

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.

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, or relies on the evaluation of responsible third parties.
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

Program Review and Specialized Accreditation

Degree programs that are professionally accredited are reviewed according to the schedule of the accrediting bodies:

- Engineering programs accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>) include Biomedical Engineering (BS), Chemical Engineering (BS), Civil Engineering (BS), Computer Engineering (BS), Electrical Engineering (BS), Engineering (BS), Environmental Engineering (BS), Geological Engineering (BS), Materials Science and Engineering (BS), Mechanical Engineering (BS), and Surveying Engineering (BS).
- Engineering technology programs accredited by the Engineering Technology Accreditation Commission of ABET are Electrical Engineering Technology (BS), and Mechanical Engineering Technology (BS).

- The computing program accredited by the Computing Accreditation Commission of ABET is Computer Network and System Administration (BS).
- The Construction Management Program is accredited by the American Council for Construction Education (ACCE).
- The Society of American Foresters accredits the University's forestry programs.
- The School of Business and Economics (SBE) is accredited by the Association to Advance Collegiate Schools of Business (AACSB) International. AACSB International is the professional organization for college and university management education and the premier accrediting agency for baccalaureate, master's, and doctoral degree programs in business administration and accounting.
- The BS in Chemistry is certified by the American Chemical Society (ACS).
- Fourth-year instruction in the Medical Laboratory Science (MLS) 3+1 option is carried out in hospitals accredited by the National Accrediting Agency for the Clinical Laboratory Sciences (NAACLS).
- The Teacher Preparation Program, within the Department of Cognitive and Learning Sciences, is accredited by the Teacher Education Accreditation Council (TEAC) within the Council for the Accreditation of Educator Preparation (CAEP).
- The IESL program was accredited by the Commission on English Language Accreditation (CEA) in spring 2015.

The schedule for upcoming professional accreditation reviews is as follows:

- AACSB review is being conducted in 2015-16. AACSB reviews are conducted every 5 years.
- SAF review will be conducted in 2016-17. SAF reviews are conducted every 10 years.
- ABET reviews for engineering, technology and computer science have been consolidated and will occur in 2017-18. ABET reviews are conducted every six years.
- NAACLS review is planned for 2015-16.

Internally, the Provost and Vice President for Academic Affairs and Deans Council review programs regularly to determine whether they should be retained or shelved. The College of Sciences and Arts is preparing to conduct external program reviews in 2016-17 of programs which are not professionally accredited.

Revising the General Education Program

The General Education Program consists of 1) a set of core courses, 2) Humanities, Arts and Social Science (HASS) courses, 3) Science, Technology, Engineering and Mathematics (STEM) courses and 4) co-curricular courses (see **Criterion 3.B**). As Michigan Tech was working to establish [University Student Learning Goals](#) in 2010-11 (see **Criterion 3.A**), the General Education Council began to review the General Education Program and assess the effectiveness of its four core courses using [VALUE rubrics](#) from the American Association of Colleges and Universities (AAC&U). [Results](#) demonstrated that the core courses were not consistently meeting objectives. The General Education Council proceeded to revise the entire General Education Program in order to provide a foundational level of learning for all students to achieve the University Student Learning Goals, as

well as be compatible with the new [Michigan Transfer Agreement](#). The Council first revised the [core](#), and then revised the [HASS and STEM](#) components, all of which were approved by the University Senate. [Assessment](#) of the new core courses began in 2013 and assessment of HASS courses began in 2015.

Integrity of Academic Records, Courses and Transfer Credit

The [Registrar's Office](#) is responsible for the integrity of academic records. It maintains the [course catalog](#) that lists all courses offered at Michigan Tech. Courses are approved by faculty in each department who review the appropriate level of rigor and establish prerequisites. Expectations for lower division courses (1000 and 2000 level) are different than expectations for upper division courses (3000 and 4000 level courses) and graduate courses (5000 and 6000 level courses). Course quality is maintained through assessment processes (see *Criterion 4.B*).

New courses are approved through the [course and curriculum proposal process](#), an annual review of all programs and curricula, managed by the Registrar. All course [syllabi](#) state learning goals at the course level. General education courses also state the [University Student Learning Goal](#) for that course. The Registrar exercises authority over prerequisites for courses. Prerequisites are stated in the [course catalog](#). Students registering for courses must have completed prerequisites in order to register for the course. In some cases, faculty teaching a course can petition to waive a prerequisite based on a student's record.

Michigan Tech evaluates all **undergraduate credit** that it transcripts, following the [policy](#) established by the University Senate in 2003. The university maintains a full-time [Transfer Services Office](#) for new, current, and readmitted students intending to transfer courses to Michigan Tech from other U.S. colleges and universities. Transfer credit is only accepted based on transcripts from other accredited institutions; departments are consulted regarding equivalent courses. A C (2.0) or better in the course is required for transfer credit. International Programs and Services evaluates [credits transferred from non-U.S. colleges](#) and universities. In 2014, Michigan Tech agreed to participate in the [Michigan Transfer Agreement](#) that defines a program of 30 credits that can be transferred between participating Michigan institutions; according to the agreement, only those students who have completed all 30 credits are eligible to transfer their courses. The new General Education Program, effective Fall 2015, carefully maps General Education requirements against the Michigan Transfer Agreement to ensure that students can easily transfer many credits to (and from) Michigan Tech. Credit for non-traditional experience is granted only by examination and military education; this is rarely done and only in collaboration with academic departments.

Students can earn credit through [Advanced Placement](#) (AP), [International Baccalaureate](#) (IB), and [College-Level Examination Program](#) (CLEP); scores required for specific Michigan Tech credits are available on the [Admissions webpage](#). Students can also earn college credit through Michigan Tech's [Dual Enrollment program](#); students take the same courses as Michigan Tech students and take them on Michigan Tech's campus. In [2014-15](#), 42 students from 8 school districts engaged in the Dual Enrollment Program.

The Graduate School evaluates [transfer credits for graduate students](#). Students may transfer in a maximum of 1/3 of the required non-research course credits, pending degree program approval. All credits must meet the scholastic standards of the Graduate School in order to be applied toward a degree. With approval from the graduate program and graduate advisor, students may take courses at any Michigan graduate school or Northland College (per an agreement with Michigan Tech) for transfer to Michigan Tech.

Access to learning resources for students and support services for faculty were discussed in *Criterion 3.D*. Faculty qualifications were discussed in *Criterion 3.C*.

Success of Graduates

Michigan Tech evaluates the success of its graduates in various ways. The primary metrics are employment and admission to advanced degree programs. This is reported in [Section 245](#): Michigan Tech's overall placement rate has been above 90% since 2011 - employment has consistently been above 70% and continuing education above 14% since 2011. Career Services conducts [annual placement surveys](#) of graduates to identify the percentages of respondents who are employed (including military service) or in graduate school by major and degree. The percent of respondents who are employed is above 80%; in 2013-14, 13% of undergraduates went on to graduate school. In addition, in 2013-14, 70% of graduate students found employment and 17% continued with graduate education. Career Services also tracks [co-ops](#). A Brookings Institution report, [Beyond College Rankings](#), scored institutions on a scale of 100 on three metrics: the mid-career salary of graduates, their repayment rate on loans and the earning power of alumni in their chosen occupations. When one adds those three scores together, Michigan Tech's combined score of 293 was the highest in the state of Michigan. Nationwide, Michigan Tech ranked fourth, tied with Georgia Institute of Technology.

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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

At the undergraduate level, Michigan Tech has clearly stated learning goals at multiple levels, as discussed in *Criterion 3.A*:

- [University Student Learning Goals](#) (USLGs) that all undergraduate students should achieve,
- Learning goals for the [General Education](#) Program, which are a subset of USLGs,
- [Learning goals for each undergraduate degree program](#) (sometimes called learning objectives or outcomes, depending on the program), and
- Learning outcomes for [co-curricular programs](#).

At the **graduate** level, the Graduate School is currently engaged in developing learning goals for graduate programs (see *Criterion 3.A*).

[Assessment processes and structure](#) for the university are managed by integrated activities of the [Assessment Council](#), [General Education Council](#), and [Goal Committees](#), and supported by the Jackson Center for Teaching and Learning. Assessment of graduate programs is conducted by the Graduate School and will be treated separately below.

In 2010, the University [Assessment Council](#) was reconstituted and tasked with developing and monitoring a common university-wide framework for regular, system-wide assessment of learning. Chaired by the Associate Provost, it includes associate deans and faculty from all colleges and schools, as well as key administrators from academic support units (Student Affairs and Advancement, the Van Pelt and Opie Library, and the Jackson Center for Teaching and Learning). In 2011 it drafted the University Student Learning Goals, which were reviewed by a wide variety of campus constituencies including the University Senate, Undergraduate Student Government, Deans Council, and the Board of Trustees, and approved by the university president.

The College of Engineering has an Associate Dean for Academic Affairs who provides oversight for assessment in the college, and the schools have associate deans, department chairs or tenured faculty with oversight for assessment. To support assessment activities in the College of Sciences and Arts, in 2013 the dean appointed an associate dean for undergraduate programs, with primary attention to supporting assessment activities in the ten academic departments within the college.

The Graduate School has developed a [template for learning goals](#) that has been reviewed by the

Graduate Faculty Council. Each program will use this template as a baseline and develop discipline specific learning goals.

Undergraduate Degree Program Assessment

In 2012 the Assessment Council established an [Annual Assessment Reporting Process](#) which requires undergraduate degree programs to report assessment of at least two learning goals annually and demonstrate how they are closing the loop on student achievement. Each program receives feedback from the Assessment Council using a [standard rubric](#); departments can revise their report based on the feedback. All reports are then published to the university community on the assessment website (samples are included here for [Chemical Engineering](#), [Forestry](#) and [Chemistry](#)). The Council summarizes [results](#) for academic administrators and they are discussed in an Academic Forum meeting. Exemplary processes are highlighted and areas for improvement identified. This process was developed with input from administrators and faculty who attended a variety of assessment conferences (at IUPUI, Virginia Tech, Drexel, HLC, AAC&U) to determine best practices.

The Council emphasizes direct, embedded assessment of student work in required courses. In 2012-13 all programs selected two learning goals (program or university) to assess and received feedback. In 2013-14, the Council established a schedule of review for the University Student learning Goals (USLGs), so that annually all degree programs would assess one designated USLG and one additional goal, usually a program learning goal:

- 2013-14 Goal 5 Communication
- 2014-15 Goal 6 Information Literacy
- 2015-17 Goal 3 Global Literacy (two years are allocated for this goal, which coincides with ABET Self-Study),
- 2017-18 Goal 4 Critical and Creative Thinking
- 2018-19 Goal 8 Social Responsibility and Ethical Reasoning

Departments are responsible for Goal 1 Disciplinary (i.e., degree program learning goals) and Goal 7 Technology, which can be addressed as the second goal in each annual cycle of assessment. Goal 2 Knowledge of the Physical and Natural World (aka STEM) will be assessed in General Education and then in STEM departments. Degree programs that are professionally accredited are encouraged to use the processes and results for program accreditation for their annual reports. The council does request, however, that degree programs use the Michigan Tech [rubrics](#) for assessment of student work for USLGs so that results can be tracked across degree programs.

The Provost's Office supports the assessment process by disseminating information about best practices and resources through campus workshops, its [website](#), one-on-one meetings with the assessment specialist in the Jackson Center for Teaching and Learning, and Goal Committee members. It also funds assessment conference attendance to help faculty learn about best practices for learning goal development, curriculum mapping, and using rubrics for embedded, direct assessment.

Because it emphasizes direct assessment of student work, the Council has adopted a set of Michigan Tech rubrics (adapted from [AAC&U VALUE rubrics](#)) as the standard for assessing USLGs in both degree programs and the General Education program. Interdisciplinary faculty-led [Goal Committees](#) have been established for Goals 2, 3, 4, 5, 6 and 8. These committees ensure broad faculty involvement in the assessment process and provide support for goal assessment. For their designated goal, they

- adapt the VALUE rubrics and continuously improve them based on assessment activities,
- provide assistance for degree programs in the year their goal is designated for university-wide assessment,
- conduct two workshops prior to and during their goal year,
- identify pathways and opportunities for degree programs to incorporate and assess the USLG in degree programs,
- review degree program assessment results for their goal and make recommendations,
- assess student work from General Education courses tagged with their USLG, and
- maintain a Canvas (LMS) [help site](#).

While the Assessment Council emphasizes the use of direct, embedded measures of student learning, many departments also use field tests and licensing exams as direct measures of program goals, as well as indirect measures such as student satisfaction and alumni surveys.

The National Survey of Student Engagement ([NSSE](#)) and the Michigan Tech [Student Satisfaction Survey](#) are conducted regularly. NSSE was conducted spring 2012 and spring 2015. In 2012, the Council identified questions that aligned with USLGs to gather indirect evidence of student learning; in 2015, additional questions were added to the NSSE. After comparing Michigan Tech's 2012 NSSE results with benchmark institutions, the Assessment Council selected communication skills (Goal 5) and global literacy (Goal 3) for assessment in both the General Education and degree programs during the first three years of the new assessment program.

Similarly, in 2012, the Michigan Tech Student Satisfaction Survey asked students the extent to which their skills and abilities for each of the learning outcomes had increased. This survey is completed every other year, so there are [comparative results](#) from 2012 and 2014.

General Education Assessment

The Assessment Council has oversight for assessment of all degree programs, including the General Education Program. It recognizes that degree programs depend on the General Education program to lay a foundation for student learning in six of the eight USLGs (see [Process Diagram](#)). The General Education Council is responsible for conducting assessment of USLGs in all general education courses; this is accomplished through the [Goal Committees](#).

[Assessment](#) of student work in core courses in the General Education program led to the revision of the program, which was completed in 2014-15 and is being implemented in 2015-16 (see *Criterion 4.A*). [Assessment](#) of student work from the new core courses began in 2014, and assessment of student work from the Humanities, Arts and Social Sciences ([HASS](#)) component began in 2015. In 2014-15 and in 2015-16 every HASS course is being [reviewed](#) by the General Education Council: departments submitted a list of courses they would deliver and identified the appropriate learning goal for each; faculty teaching the course then submitted [evidence](#) of how the course would meet the goal, including an assignment (student work) that could be used for assessment. Assessment of student work in [STEM](#) courses will be piloted in 2015-16.

It is important to note that the courses themselves are not being assessed: a random sample of student work from each course is selected and batched with other samples from all courses with the same USLG. The samples are then assessed by the [Goal Committees](#) and faculty who teach the courses to determine the level of student achievement of a goal (faculty do not review student work from their own courses). This "blind peer review" is conducted to avoid bias. Results for each goal are then sorted by level - lower division and upper division - to determine whether students are improving as they move from lower to higher level courses. The Goal Committees conduct norming with the

faculty assessors prior to assessment, and meet post-assessment with faculty to debrief and make recommendations to improve student learning on the goal. It is through this process of participation in assessment that faculty can learn how to improve student learning in their courses. To date, recommendations include improving the design of assignments that will be used for assessment and setting expectations by reviewing learning goals and rubrics for assessment with students in the courses. This year, Michigan Tech is beginning to implement LiveText assessment technology to manage the collection and flow of samples of student work, a process which is now conducted manually by the Jackson Center for Teaching and Learning.

Co-Curricular Assessment

Since 2012, Student Affairs and Advancement have used [learning outcomes](#) as the basis for a variety of assessment projects. Thirteen departments have initiated 16 projects that encompassed the goals of oral and written communication and personal responsibility and accountability. Projects completed to date focused on several different communication initiatives:

- The Center for Diversity and Inclusion (CDI) led a learning outcomes project that involved mentoring. Through the Young Women Leaders Program student mentors were taught how to present oral information designed to increase knowledge, foster understanding, and promote positive change with middle school girls. A pre-survey and three post observation assessments were completed. Using the oral communication rubric, 70% of the mentors reached the proficient level and an additional 10% met the exemplary level. CDI met their learning outcome objective.
- Admissions worked with their student tour guides and telecounselors. The goal for the students was to be able to demonstrate oral communication skills that would accurately and positively convey the Michigan Tech experience to prospective students, parents, and campus visitors. Through an oral pre-test and oral post-test after training was completed, it was determined that all students met or exceeded the target goal of level 3 on the communication rubric. Admissions indicated that this intentional work led to significant improvement in oral presentation of the information; however, it notes that additional work now needs to be done to improve knowledge content.
- The Advancement area led a similar project. The learning goal was to teach student development staff the oral communication skills necessary to positively convey the need for private financial support via telephone. Advancement developed and observed mock phone calls in a pre-test situation, then provided training. After training was completed, they then repeated the mock calls. The first set of results did not meet the target goal, but after revising the training, the second set of results met the goal of all students at least reaching the level 3 scale on the oral communication rubric.
- Also with the Center for Diversity and Inclusion (CDI), the CDI Research Scholars Program participants were taught to be able to effectively communicate in writing a research proposal to be submitted to the [Summer Undergraduate Research Fellowship \(SURF\)](#) program. The students' written proposals were used to assess learning that involved feedback and revisions. In the end, 71% met the level 3 in the communications [rubric](#) with 28% exceeding that goal, thus meeting the learning goal objective. Two of these students were awarded SURF Fellowships.

American Association of Colleges and Universities' LEAP (Liberal Education and America's Promise) Program

Michigan Tech has adapted the American Association of Colleges and Universities (AAC&U) VALUE rubrics as a standard for assessment for University Student Learning Goals and the General Education Program. Michigan Tech belongs to the LEAP [Campus Action Network](#) and has worked with the other 15 Michigan public universities to make Michigan a LEAP state. Michigan became the 12th [LEAP state](#) in October 2015.

Graduate Program Assessment

Since 2004, the Graduate School and Graduate Faculty Council have worked together to develop a framework for [graduate program assessment](#) based on the best practices set by the National Research Council (NRC). The NRC collected data on over 20 characteristics of graduate programs for the 2005-06 academic year, including quantitative measures of characteristics of the faculty, students, and program. Over 5,000 doctoral programs across 212 universities participated in the survey, providing a rich data set to allow programs to compare their characteristics to those of their peers and aspirational peers. Absolute rankings of programs were not compiled, as each program sets individual goals and metrics for measuring progress toward them.

Overall goals of Michigan Tech's graduate programs include providing the following for graduate students:

1. Disciplinary expertise
2. Career preparation for academe and industry
3. Oral and written communication practice
4. Critical thinking practice
5. Teaching experience
6. Mentoring experience
7. Opportunities to mentor other students
8. Ways to contribute to their sense of belonging
9. Opportunities for breadth of learning

Based on these goals, a subset of the NRC data measures, along with a qualitative survey and program description, were selected as the basis for a program self-study. The self-study was to be evaluated by internal and external reviewers, with each program being evaluated approximately every six years. Due to budget limitations, no programs have conducted a self-study to date.

The Graduate School has nonetheless developed a [template for learning goals](#) that has been reviewed by the Graduate Faculty Council. Each program will use this template as a baseline and develop discipline specific learning goals.

Assessment has been conducted regularly through other mechanisms to shape policy and procedures in the Graduate School.

- Evaluation of graduate student teaching through course evaluations. Graduate programs whose teaching assistants have low teaching evaluations are notified each semester and asked to refer their students to appropriate resources, such as classes on teaching (e.g., ED5100 College Teaching) or mentoring with a more experienced instructor.
- [Exit surveys](#) of graduating students, which rate their educational experience and provide information about funding sources for their education. Survey results are tabulated and reviewed to suggest improvements to graduate education such as procedural changes to improve the student experience and simplify the process of obtaining a graduate degree. In 2014, for example, these surveys drove the formation of a Lean group to examine the process of

earning a graduate degree, and this resulted in a [new web page](#) to clearly outline the steps required to earn a graduate degree.

- Graduate student [satisfaction surveys](#) are conducted every two years.
- Faculty committees debate and propose policy changes that are voted on by the Graduate Faculty Council and University Senate.
- [Focus groups](#) are conducted with select groups of students to further assess their graduate experience at Michigan Tech.

In 2014, the Graduate School hired a new staff member to oversee [online graduate programs](#) and lead efforts in program assessment. This person has updated the self-study documents from 2004 with learning objectives and suggested outcomes. The Graduate School is currently investigating opportunities to collect assessment data about student achievement at important milestones in a graduate career, such as the Research Proposal Examination and Final Oral Examination (thesis or dissertation defense). These milestones map to specific learning objectives, such as communication skills, and provide a natural place to assess student outcomes.

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- University Student Learning Goals and Rubrics

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

[Institutional Analysis](#) is responsible for developing, maintaining, and transforming data into information critical to University planning, policy making and reporting. It compiles and publishes statistics related to attrition, retention and graduation rates annually as part of its [Fact Book](#) (specifically, six-year graduation rates and first-to-second year retention rates of bachelor's degree seeking, first-time freshmen by gender, residence status, and ethnicity). In addition, retention of underrepresented populations is documented and shared by [Institutional Equity and Inclusion](#). This information helps the university to identify programs, resources, and interventions that are appropriate to meeting Michigan Tech's goals.

Michigan Tech's goals for student retention and graduation are published on the [Quality Measures Dashboard](#). In 2011-12, Michigan Tech conducted an [AQIP Action Project](#) to improve undergraduate student success. The project committee was charged with assessing undergraduate student success using metrics for student retention, grade distributions, graduation rate, time to degree, placement and high-impact practices. Examination of retention data from 1995 through 2010 indicated that the average first- to second-year retention at Michigan Tech had been approximately 81%. The six-year graduation rate for 2013-14 was [65%](#). The project committee recommended the following university goals be achieved by fall 2017:

- first- to second-year retention: 85%
- six-year graduation rate: 70%

To achieve these goals, a collaboration between Academic and Student Affairs identified two key implementations: (1) non-credit bearing student success courses were eliminated, and (2) at-risk students were required to attend a credit-bearing student success course with additional required tutoring sessions in a learning center. Starting Fall 2013, Michigan Tech created consistent credit-bearing courses for student success (UN1000, UN1010, UN1011) and required students to attend additional tutoring sessions (UN1005); in addition a new student success course for international students (UN1012) was implemented.

Michigan Tech was extremely fortunate to receive a large gift from the estate of an alumnus, Waino Wahtera, that allowed the implementation of the new [Wahtera Center for Student Success](#). For three years, the gift will support additional tutors and coaches. In addition, the provost re-allocated \$54,000 from the General Fund from non-credit bearing to credit-bearing courses, \$24,000 for the new international course, and \$30,000 for wage increases for the learning center coaches.

Although not all data have been analyzed to establish a causal relation, a retention rate of 85% was attained in fall 2014, which suggests that this \$100,000 investment from the General Fund and the \$200,000 contribution from the Wahtera gift served their intended purpose successfully.

In addition to these efforts to support first-year retention goals, orientation programs help position students to be successful based on an understanding of expectations and knowledge of resources. The Wahtera Center coordinates midterm outreach to all students who are earning unsatisfactory grades, typically defined as below a C, in two or more classes, as indicated by course instructors.

While first-to-second year undergraduate retention rates are of primary importance, Michigan Tech has several measures in place to help increase overall retention. Support services in the [Wahtera Center for Student Success](#), the extensive network of [learning centers](#), the [Academic Intervention Team \(AIT\)](#), and the [Dean of Students Office](#) all play important roles in retaining students throughout their academic career and increasing the graduation rate.

[The Academic Intervention Team \(AIT\)](#), which was created in 2013-2014, provides coordinated support to students who are experiencing academic difficulty. AIT comprises representative staff from the Dean of Students Office, Waino Wahtera Center for Student Success, Counseling Services, Student Disability Services, Athletics, Housing and Residential Life, and the Center for Diversity and Inclusion. The team meets weekly to discuss students of concern and to connect those students with necessary support for their academic success. AIT begins each semester focusing on students who have earned less than 1.0 GPA and are not otherwise connected through programs and classes in the Wahtera Center for Student Success. Student concerns are also brought to AIT through reports received from faculty, academic advisors, and staff across campus. In 2014-2015, AIT members met 82 students for at least one individual meeting and directed these students toward resources, offered regular follow up meetings, or paired them with an academic success coach in the Wahtera Center. Of these students, 69 showed improvement in their next term's GPA.

The [Dean of Students Office](#) and the [Wahtera Center for Student Success](#) also coordinate efforts each semester to provide support for students who are academically suspended or reinstated (returning to Michigan Tech after being suspended for one or more terms). Students can appeal to be reinstated immediately. During the 2014-2015 academic year, 65 students were reinstated. These students present an opportunity to provide concentrated, intentional support to help them gain the skills necessary to persist toward graduation. Each semester reinstated and appeal students are assigned to a staff member in the Dean of Students Office or the Wahtera Center for individual intervention, including individual meetings with each returning student, referrals to campus resources, and recurring appointments throughout the semester. These students often need support from academic advisors or Career Services to choose a major that is more appropriate to their interests, in addition to improving study habits and creating class schedules that promote their success.

The [Center for Diversity and Inclusion \(CDI\)](#) assists in addressing the challenges of retention for underrepresented students. It provides a welcoming environment where students can meet, hosts student organizations that encourage engagement, provides access to in-house [tutoring](#) from graduate students and professional development opportunities, and hosts other [events](#) that encourage

student persistence, especially for underrepresented populations.

With respect to **graduate education**, the Graduate School has begun to develop goals for graduate student retention, attrition, and completion as well as other metrics including publications, funding, and placement. This framework will be utilized for regular [program review](#) on a five-year schedule.

The institution's **processes and methodologies** for collecting and analyzing information on student retention, persistence, and completion of programs reflect good practice. Michigan Tech has implemented sound, well established processes for the collection, validation, and reporting of all data. Data is collected at fixed times throughout the year, and is routinely checked and validated with other data sources before being uploaded to a secured data warehouse and used in any analysis. For example, completions data is always collected at the end of each semester and compared to the university's official Candidates for Degree list provided to the Board of Trustees for approval.

Since the university follows a standard semester calendar, it is required to report various metrics, like retention and graduation rates, to the National Center for Education Statistics/IPEDS based on a fall cohort. In doing so, the university is ensuring that its externally reported data is consistent and comparable with other institutions of higher education with similar calendar systems.

Internally, the university further utilizes these same processes and methodologies to produce similar statistics found in its online [Compendium](#). There, the current and historical retention, completion, and six-year graduation rates are reported by department, college/school, and at the university level for strategic planning purposes. Additionally this information may also be found in the University's [Fact Book](#) which is published annually. Requests for all non-standard metrics are done on an ad hoc basis by the University's Office of Institutional Analysis.

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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

Michigan Tech demonstrates its responsibility for the quality of its education programs through assessment, internal program reviews, specialized accreditation for many of its programs, and transfer credit policies for domestic and international credits. It regularly evaluates the success of its graduates as measured by employment and admission to advanced degree programs. Michigan Tech's overall placement rate has exceeded 90% since 2011.

Michigan Tech has clearly demonstrated [learning goals](#) at multiple levels and a structured [assessment program](#) that is organized and monitored by the [Assessment Council](#). All degree programs assess two learning goals annually; the General Education Program assesses student work from all General Education courses annually. Co-curricular programs are assessed by Student Affairs and Advancement. The [Graduate School](#) is developing a framework for assessment of graduate programs based on best practices of the National Research Council.

Michigan Tech has defined goals for first-to-second year retention of 85% and six-year graduation rate of 70%. In 2013-14 the rates were 82% and 64.5% respectively. Significant efforts are in place to improve them, including success strategies through the new [Wahtera Center for Student Success](#), the network of learning centers, and the work of the Academic Intervention Team. [Institutional Analysis](#) collects and reports information for student retention, persistence and graduation using IPEDs definitions. Results are analyzed by the university's Executive Team and Board of Trustees.

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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.

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

Fiscal Resources. Data in this section is based on Michigan Tech's 2014 [Financial Report](#); the 2015 Financial Report has not yet been released. Michigan Tech relies on [diversified sources of revenue](#) to support its educational programs: student tuition (36%), grants and contracts (19%), state appropriations (19%), auxiliary activities (11%), and gifts (11%; see also [IPEDS Data](#)). In 2014, net revenue (net increase in net position) was \$7.7 million and cash flow improved to \$12.5 million at year end. Its [net position](#) increased to \$329 million, including \$123 million from the Michigan Tech Fund, a legally separate tax-exempt component of the University that receives, invests and disburses gifts received on behalf of the University.

Tuition is set by the Board of Trustees. In 2013 the Board approved [plateau tuition](#) in part to improve its ability to project revenue. In May 2014, the Board approved a 5% increase in the operating budget for 2015 to \$168.2 million, based on expected increases in state appropriations and tuition and fees of \$5.7 million. Currently, the [Composite Financial Index](#) is 2.3, well above the 1.1 required for public institutions.

Tuition revenue depends on enrollment, which is a strategic priority. Although Michigan resident enrollment (currently 64%) is declining somewhat, non-resident enrollment is stable and international enrollment is growing, particularly at the graduate level, thanks to intensive recruitment and investment in new programs. To better allocate program expense and remove an enrollment barrier to less costly programs, in 2014 the Board of Control approved a new [differential tuition](#) rate based on students' majors; over time this will bring Michigan Tech's cost of attendance into line with other research universities in the state. Although tuition in 2014 increased by 2%, scholarship funds available to students increased by 8% to support enrollment. See also Budget Process (below) for

discussion of allocation of tuition revenues.

[Grants and contracts](#) are also a priority since they support the research mission of university departments and 19 research institutes and centers. In 2014, grant and contract revenue was \$45 million; 64% was from federal sources, the largest being the National Science Foundation and the Department of Defense. Industry contracts accounted for 29%.

State appropriations depend on Michigan's [performance funding model](#) for higher education. Under this model, Michigan Tech receives additional funding for research productivity, graduation rate and degrees awarded.

To support its research mission and keep Michigan Tech affordable to students, the University launched a [capital campaign](#) in 2006 that focused on endowing chairs and professorships to attract and retain world-class faculty members and on providing scholarships for students. Completed in 2013, the "Generations of Discovery" campaign raised \$215 million in planned gifts from 28,000 donors.

In addition to diversifying revenues during years of decreased state support, Michigan Tech reduced expenditures and realigned noncore resources to strategic core functions and essential academic services. [Instruction](#), academic support, and student services constitute 41.5% of expenditures, and research expenditures 18.3%. Reductions in administrative personnel, outsourcing of information technology services, reorganization of units such as Facilities Management, and adoption of [Lean principles](#) have enabled the University to maintain faculty hiring for both replacement hires and strategic hires and award competitive start-up packages to attract research-intensive faculty. It has also attracted significant external support to expand academic support programming in the new [Jackson Center for Teaching and Learning](#) and [Experimental Education Environment](#), that contribute to an evolving Information and Learning Commons in the Van Pelt and Opie Library, as well as the [Wahtera Center for Student Success](#).

Human Resources. With [1,394 employees](#), Michigan Tech has sufficient human resources to support its operations and achieve its educational and research missions (see also [IPEDS Data](#)). The student-to-faculty ratio is 11.6 with average class size of 23 students. The core instructional faculty are tenure-track or tenured - 84% of the University's 404 full-time faculty. An additional 69 faculty are temporary or fixed term and graduate students teach about 11% of university credit hours. The Research Office is supported by 124 staff.

Explicit university [hiring processes](#) ensure that faculty and staff are appropriately qualified and trained. Job descriptions for new hires must state minimum qualifications and experience and are reviewed by Human Resources prior to posting. Search committee members must complete training - [diversity literacy certification](#) for faculty searches and comparable [training](#) for staff searches. Background checks including degree verification were implemented in August 2015, and Institutional Equity and Inclusion collects and reviews information on all applicants to ensure the quality and diversity of applicant pools. PeopleAdmin software enables following university processes and maintaining search documentation.

Post hire, rigorous systems are in place for faculty tenure and promotion as outlined in the [Faculty Handbook](#) and [academic department charters](#). For professional staff, a new [performance management system](#) is in place based on a competency model, and new business processes have improved probationary assessment.

In addition to hiring and evaluating performance, Michigan Tech works to retain qualified employees. Faculty and staff have many opportunities for education and training to maintain and enhance

professional qualifications. All new employees attend a one-day onboarding program that provides a welcoming introduction to Michigan Tech. New faculty attend a 3-day [faculty orientation](#) that includes an introduction to the university, the tenure and promotion processes, teacher training, and the research office. Additional training is offered throughout the year by the Jackson Center for Teaching and Learning and the Office of Research. In 2012, the Provost created a [Dual Career Program](#) to help attract and retain faculty with dual-career needs; the program coordinator assists primarily the spouse/partner of new faculty hires with their employment search and networking in the community.

Human Resources conducted [informational sessions](#) in spring 2015 for deans, department chairs, and directors on guidelines and processes in the offices of the Vice President for Administration, Vice President for Research, Financial Services & Operations, and the Office of Institutional Equity. A companion informational session for departmental coordinator and support employees took place in August/September 2015. New academic chairs and deans attend [faculty orientation](#) and often attend professional conferences for deans and chairs in their disciplines.

Faculty and staff are encouraged and supported to attend professional conferences and to continue their education. They can take courses at Michigan Tech at no cost. [Supervisor training](#) is available for professional staff. A [UAW Certification Program](#) provides professional development for UAW staff. Michigan Tech promotes [work-life integration](#) with resources such as flexible work options and information about family and community resources.

Efforts to hire and retain diverse employees are discussed in *Criterion 1.C*. Planning for a second [ADVANCE](#) grant is underway that will focus on faculty retention; the goal is to measure the results of current practices in order to identify the critical keys to career success at Michigan Tech, and then to tailor evidence-based tools as resources for academic units to address specific career issues.

Physical and Technological Resources. Michigan Tech has one residential campus and several offsite research facilities; only 1.1% of its credit hours are delivered online. With a campus size of [3 million gross square feet](#), it has the physical and technological infrastructure to support its operations at all locations. To support the growth of interdisciplinary research, a Shared Research Equipment and Core Facilities Task Force recently recommended, and Michigan Tech established, a [Core Facilities](#) budget (starting with \$175,000 in 2015) to share the purchase and maintenance of expensive instrumentation in five designated facilities; applications are reviewed annually. Nonetheless, as discussed in the [Capital Outlay Plan](#) and [Campus Master Plan - Fresh Look](#) report, the type of space available on campus does not always meet the needs of an expanding research and graduate focus, collaborative student learning styles, emerging digital technologies, or the distance-learning demands of industrial partners. Although significant improvements have been made to the [library](#), laboratories, student housing and student services, and new research facilities have come on line such as the [Great Lakes Research Center](#), significant improvements are still necessary to upgrade a mid-twentieth century campus. Michigan Tech's [strategy](#) is to fully depreciate facilities and replace them with major capital renewal projects through the general and auxiliary funds and [capital projects](#) funded by donors and the state. In addition, to extend the life of facilities, Michigan Tech has begun to designate \$1,000,000 annually in the general fund budget to support a maintenance fund.

[Information Technology](#) provides centralized IT support (it currently has 84 FTE) to faculty, staff and students, including [software support](#) and specialized support for [research computing](#). Michigan Tech uses Banner for its business software, Gmail for mtu.edu email, and Canvas as its Learning Management System; Michigan Tech is an I-Tunes University. IT is pursuing 100% wireless coverage in all university classrooms, upgraded the residence hall wireless system, and is working with Facilities and Housing to update IT equipment in Daniell Heights (graduate student housing). It

is upgrading 310 PCs in university classrooms and labs, adding lecture-capture PCs to classrooms, and recently renovated a 72-seat Active Learning Center in Mechanical Engineering-Engineering Mechanics. IT manages [Telecommunications](#) and has policies including [backup recovery](#) and an [information security plan](#). See also *Criterion 3.D*.

Budget Process and Monitoring. Michigan Tech's budget is readily available online ([Section 245](#)). Since the budget is a fiscal representation of the mission and strategic plan, the budget process is concentrated at the highest levels of the university: the Executive Team (the president and vice presidents) and the Board of Trustees. Michigan Tech practices centralized budgeting (*not* responsibility centered management), with incremental additions (or reductions) to historical base budgets. The vice presidents bring budget requests for their units to the Executive Team in the fall, and the budget is developed over the year with the Audit and Finance Committee of the Board of Trustees. [Metrics and five-year targets](#) are developed in alignment with the strategic plan, capital outlays are considered, and the Board approves a budget in the spring. The budget process is supported by the [Budget and Planning Office](#). It ensures that educational purposes are not adversely affected by resource allocations to non-educational purposes, and that the goals in the strategic plan guide the allocation of resources.

Expenditures are monitored at multiple levels. [Financial Services and Operations](#) provides reporting and query tools to all departments and provides regular reports to university administrators comparing budgeted to actual expenditures. The Controller's Office monitors expenditures on all university accounts. [Sponsored Programs Accounting](#) monitors all research expenditures and compliance with grants and contracts. [Internal Audit](#) reports directly to the Board of Trustees; its Audit and Finance Committee monitors university finances regularly.

Sources

- Academic Department Charters
- ADVANCE_Phase 2_2015
- Budget & Planning Office
- Campus Master Plan
- Campus Master Plan (page number 4)
- Capital Campaign
- Capital Outlay Plan_2017
- Capital Outlay Plan_2017 (page number 16)
- Capital Outlay Plan_2017 (page number 19)
- Capital Outlay Plan_2017 (page number 23)
- Compendium
- Compendium (page number 208)
- Composite Financial Index
- Continuous Improvement
- Core Facilities
- Diversity Literacy Certification
- Dual Career Program
- Faculty Orientation
- Financial Report_2014
- Financial Report_2014 (page number 13)

- Financial Report_2014 (page number 16)
- Financial Report_2014 (page number 17)
- Financial Report_2014 (page number 18)
- Financial Report_2014 (page number 22)
- Financial Report_2014 (page number 26)
- Financial Report_2014 (page number 51)
- Financial Services and Operations
- Great Lakes Research Center
- Hiring Processes
- Human Resources Training
- Human Resources_Performance Management Process_Staff
- Information Security Plan
- Information Technology
- Information Technology (page number 5)
- Information Technology (page number 7)
- Information Technology_Software
- Internal Audit
- IPEDS Data_2013-14
- IPEDS Data_2013-14 (page number 10)
- Jackson Center for Teaching and Learning
- Metrics and Five Year Targets
- Plateau tuition
- Research Computing
- Section 245
- Sponsored Programs
- State Performance Funding
- Training for Chairs, Deans and Directors
- UAW Certification Program
- Van Pelt and Opie Library
- Van Pelt and Opie Library (page number 7)
- Wahtera Center for Student Success
- WorkLife Programming

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 governing board is knowledgeable about the institution; it provides oversight of the institution's financial and academic policies and practices and meets its legal and fiduciary responsibilities.
2. 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.
3. Administration, faculty, staff, and students are involved in setting academic requirements, policy, and processes through effective structures for contribution and collaborative effort.

Argument

The [Board of Trustees](#) provides oversight of Michigan Tech's financial and academic policies (see *Criterion 2.C*). It works with the Vice President for Governmental Relations and Secretary of the Board of Trustees as well as the Executive Director of Financial Services and Operations and Treasurer of the Board of Trustees to meet its legal and fiduciary responsibilities. Board members attend programs of the Association of Governing Boards (AGB) to improve their understanding of a board's governance role. The Board's actions are documented publicly in its meeting [minutes](#).

At Michigan Tech, the faculty, staff, and administration participate cooperatively in developing policies for governance of the University. Effective governance is a product of trust and shared responsibility. Many internal constituencies of Michigan Tech engage in university [governance](#) and there are multiple policies and procedures that guide them. Academic departments and schools participate in university shared governance as defined by their [charters](#). The charter defines the responsibilities of the department chair or school dean and the faculty. Charters were instituted in 1992 by the approved Senate Proposal [16-92](#) and the policy governing charters was most recently amended in 2011 by the approved Senate Policy [5-11](#). Each academic department and school also elects a representative to the [University Senate](#), which is vested with the responsibility and authority to review and establish policy in a variety of areas, including matters of academic policy and procedures, as well as policies such as fringe benefits. In addition, faculty are guided by policies and procedures in the [Faculty Handbook](#).

Professional staff engage in shared governance through representatives elected to [Staff Council](#) and the [University Senate](#). Represented staff engage in [collective bargaining](#) with the university.

Students engage in governance through their elected representatives to the [Undergraduate](#) and [Graduate Student Governments](#) and they also participate in the [Student Commission](#) which advises the Vice President for Student Affairs. Students are guided by policies in the [Student Handbook](#).

Faculty, staff, students and administrators all work collaboratively to develop policies and procedures through a large number of [standing committees](#) as well as [task forces](#) developed to address specific issues and concerns.

Sources

- Academic Department Charters
- Board of Trustees
- Board of Trustees Policies
- Board of Trustees_Minutes 2014-15
- Governance
- Graduate Student Government
- Staff Council
- Standing Committees
- Student Commission
- Task Force Reports
- Undergraduate Student Government
- Union Resources
- University Senate
- University Senate_Departmental Charters

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

The [Board of Trustees](#), [Executive Team](#) and Deans Council engage in systematic and integrated planning throughout the year, guided by Michigan Tech's [strategic plan](#) (see *Criterion 1.A*), which guides resource allocation (see *Criterion 5.A*). A [dashboard](#) tracks four strategic metrics critical to achieving the plan – incoming freshman ACT scores, PhDs awarded, sponsored programs awards, and endowment. They are tracked quarterly to identify impacts on annual and longer term plans. The [Budget and Planning Office](#) prepares [historic metrics and five-year projections](#) for the dashboard metrics as well as for enrollment and revenue sources (tuition, state support, research, and gifts). These guide the Executive Team and Board's Audit and Finance Committee planning processes and decision making. In addition, the Board and Executive Team annually identify and rate [risks](#) that could impact strategic plan implementation. In 2015, the University developed new debt and liquidity policies and identified software that would enhance resource allocation and long-term planning.

The University's primary enrollment plan is based on the [Portrait 2035](#). This articulates an undergraduate student body of 5,750 and a graduate student body of 3,000. In addition, the Executive Team maintains a rolling five-year metric target document. This sets an undergraduate enrollment target of 5,750 by fiscal year 2017 (currently that figure is 5662) and holding that number through the year 2035. The five year metric target document also sets a graduate enrollment target of 1,723 by fiscal year 2019 (currently that figure is 1,442). Two other strategic metrics described in the Portrait that are associated with enrollment include maintaining the current freshmen ACT composite score average of 27 and growing the number of PhDs awarded per year from the current level of 75 to 84 by fiscal year 2019. Finally, the 2035 Portrait targets overall female enrollment to increase from the current 26% of the student body to 40%.

As a public university with significant state and federal funding, the President, Vice President for Governmental Relations and Vice President for Research maintain close contact with elected representatives and funding agencies in Michigan and Washington to anticipate emerging factors with federal and state funding. Institutional Analysis tracks Michigan's [Performance Funding Model](#) for higher education. The Associate Vice President for Enrollment, Marketing and Communications monitors the impact of regional and international demographic and economic trends on enrollment. Internal constituents such as the University Senate, Undergraduate Student

Government and Graduate Student Government also provide feedback to university leaders on priorities and direction.

In addition to executive-level planning, colleges and schools align their mission statements with the strategic plan, track their performance on the four metrics, and align budget requests or reallocations with the strategic plan. External [advisory boards](#) provide feedback on emerging factors to guide planning and curriculum development. Assessment of student learning provides evidence for areas to improve and are addressed in academic strategic planning. For example, assessment results led to budgeting new funding for centralized assessment support in the Jackson Center for Teaching and Learning.

Administrative units also have strategic plans that are updated regularly. Some administrative departments engage in planning for specific capacities that have campus-wide impact. An [IT Governance Group](#) was created in 2014 to advise the Provost and the Budget Office concerning strategic planning and spending related to Information Technology. Michigan Tech's [Campus Master Plan](#), [Core Facilities](#), and Capital Outlay Plan were discussed in *Criterion 5.A*. Facilities maintains a database of requests for capital outlay by facility that are reviewed by the executive team.

Sources

- Advisory Boards
- Board of Trustees
- Budget & Planning Office
- Campus Master Plan
- Core Facilities
- Executive Team
- IT Governance Group
- Metrics and Five Year Targets
- Michigan Tech Dashboard
- Portrait 2035
- Risk Management
- State Performance Funding
- State Performance Funding (page number 8)
- Training for Chairs, Deans and Directors
- University Strategic Plan

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

Michigan Tech documents evidence of performance in many aspects of its operations to support data-driven performance improvement. It tracks four key metrics on its [dashboard](#) - freshman ACT, sponsored programs awards, PhDs awarded and endowment value - at both the institutional and college/school levels. It also tracks [diversity metrics](#) for enrollment, graduation rate, and numbers of tenure-track faculty and staff, as well as [online learning](#) enrollment on its dashboard.

Institutional Analysis develops, maintains, and transforms data into information critical to the University planning, policy making and reporting process. It publishes the annual [Fact Book](#), which provides comprehensive quantitative data on the university. It maintains the [Compendium](#), a longitudinal database to support decision-making at the college and school level: for each unit, a wealth of data is provided, from enrollment, retention, and degrees awarded to publications, research expenditures, and general fund budgets. [ASPIRE](#), a database which integrates data on people, research expenditures, buildings, classrooms and equipment, enables the university to maximize space utilization.

Safety is taken seriously at Michigan Tech. Michigan Tech has had a formal environmental, health, and safety program and [Occupational Safety and Health Services Department](#) since 1980. Written policies, a procedures manual for general and laboratory safety, and a variety of written safety plans and guides address specific areas of compliance and concern. Injuries are investigated and [reported](#), and corrective actions identified. The effectiveness of the university safety program is monitored and evaluated by the Executive Team and Board of Trustees. Safety committees review specific areas of research, including the use of animals and human subjects, and an Advisory Council meets monthly and makes recommendations to the Executive Team for improvements to the program.

Data on assessment of student learning has been gathered and utilized by ABET- and AACSB-accredited programs for program improvement for well over a decade. In 2010 Michigan Tech created [University Student Learning Goals](#) and began to develop a systematic assessment of these goals in all degree programs and General Education; this data is reported to the Assessment and General Education Councils, published internally on a protected website, and utilized to improve curriculum and course design. See also *Criterion 4.B*.

[AQIP projects](#), [Lean](#) projects, and [task forces](#) have gathered data which led to improvements in many operations over the past decade, including academic advising, student success, classroom upgrades, blended learning, faculty and student gender diversity, the international experience, and campus sustainability. A few examples of improvements include

- creation of and external funding for the [Wahtera Student Success Center](#),
- expansion of the mission and funding for the [Jackson Center for Teaching and Learning](#), with a

- mandate to support [blended learning](#),
- creation of the [Pavlis Honors College](#) to unite and refocus "plus programs" for undergraduates,
- coordinated advising through an [Advising Council](#),
- [ASPIRE](#) space inventory and financial projections database, and
- [Lean](#) process improvements in the Van Pelt and Opie Library, Memorial Union, Financial Services and Operations, Sponsored Programs Office, Dining Services and others.

In summary, Michigan Tech supports data-driven performance improvement. It documents evidence of its performance and uses evidence and its experience to improve institutional effectiveness within and across institutional units.

Sources

- Academic Advising
- AQIP projects
- ASPIRE
- Compendium
- Continuous Improvement
- Employee Safety Statistics
- Fact Book 2014-15
- Jackson Center for Teaching and Learning
- Michigan Tech Dashboard
- Occupational Health and Safety
- Online Learning Dashboard
- Pavlis Honors College
- Strategic Diversity Metrics
- Task Force on Blended Learning_2012
- Task Force Reports
- University Student Learning Goals and Rubrics
- Wahtera Center for Student Success

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

Michigan Tech has the fiscal and human resources and physical and technological infrastructure sufficient to support its operations on its residential campus, as well as the 1.1% of credit hours delivered online. Its diversified revenue streams - tuition, grants and contracts, state appropriations, auxiliary activities, and gifts - generate a positive net revenue and cash flow. University processes ensure that faculty and staff are appropriately qualified and trained, educational offerings are continually reviewed and improved, budgets and expenditures are appropriately monitored, and governance and administrative structures promote effective leadership and shared governance to fulfill the University's mission.

Michigan Tech's Board of Trustees, Executive Team and Deans Council engage in systematic and integrated planning guided by the University [strategic plan](#), the [dashboard](#) of four key metrics and an enrollment plan, [Portrait 2035](#). The [Compendium](#), a longitudinal database, supports decision-making at the college and school level. Michigan Tech's assessment structure and processes grounded in [University Student Learning Goals](#), and professional accreditation for over 70% of its programs, ensure continual improvement of its educational offerings.

Sources

- Compendium
- Michigan Tech Dashboard
- Portrait 2035
- University Strategic Plan
- University Student Learning Goals and Rubrics