

MSU-Northern Mission Statement:

MSU-Northern provides higher education to students for professional and technical careers through an institution dedicated to teaching and the pursuit of knowledge.



MSU-Northern Core Themes

Provide liberal arts, professional and technical programs that serve a diverse student population.

Promote student centered and culturally enriched environment which fosters student success.

Partner with external entities to enhance and expand learning experiences.



CET Program Objectives

Graduates of civil engineering technology programs will have the technical and managerial skills necessary to enter careers in the planning, design, construction, operation or maintenance of the built environment and global infrastructure.



CET Program Outcomes

Students shall demonstrate an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;

Students shall demonstrate an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;

Students shall demonstrate an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;

Students shall demonstrate an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and

Students shall demonstrate an ability to function effectively as a member as well as a leader on technical teams.

MSU-Northern BS - Civil Engineering Technology Assessment Cycle 2018-2020

MSU-Northern's Mission Statement

MSU Northern provides higher education to students for professional and technical careers through an institution dedicated to teaching and the pursuit of knowledge.
Approved by the Board of Regents on May 20, 2016

Vision Statement

Montana State University-Northern will be known for its supportive, student-centered environment in which a unique mix of academic programs are responsive to local, regional, and state workforce needs, offered in an atmosphere that promotes student success.
as selected by the campus community on April 16, 2012

MSU Northern Core Themes

- 1 Provide liberal arts, professional and technical programs that serve a diverse student population.
- 2 Promote student centered and culturally enriched environment which fosters student success
- 3 Partner with external entities to enhance and expand learning experiences

CET Educational Objectives

- 1 Graduates of the Civil Engineering program will have the technical and managerial skills necessary to enter careers in planning, design, construction, operation or maintenance of the Built Environment and Global Infrastructure
- 2 Graduates will be prepared to analyze and design systems in support of Civil Engineering projects
- 3 Graduates will gain awareness of Professional community involvement, leadership, continuing education, and ethical responsibilities.
- 4 Graduates will gain awareness of Professional community involvement, leadership, continuing education, and ethical responsibilities.

ABET ETAC Commission Outcomes 2019-2020

- 1 an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
- 2 an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
- 3 an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature
- 4 an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes;
- 5 an ability to function effectively as a member as well as a leader on technical teams.

Performance Indicators

- A Provides design with a problem statement, drawing, calculations, and design standards used.
B Provides design with a problem statement, drawing, calculations, and design standards used.
- A Apply concept of bearing capacity to design a footing with Mathcad
B Design a concrete Retaining Wall with Mathcad and provides a CAD drawing
- A Prepares report and presentation for a design project to a non-engineer audience
B Gives Oral Presentation using graphs, calculations, and written report
- A Conducts lab test and Prepares Lab Report with Graphs or Drawings
B Prepares Lab Report showing standard Measurements with Graphs or Drawings
- A Participates in a Project Design as a Team member and Leader w/feedback from team members
B Participates in Lab project with other members with feedback from team members

Where Measured

- ETCC 411
ETCC 499
- ETCC 302
ETCC 411
- ETCC 489
ETCC 499
- ETCC 411
ETCC 302
- ETCC 489
SRVY 230

When Measured

- | Semester | Year |
|----------|------|
| SPRING | 2020 |
| SPRING | 2019 |
| SPRING | 2020 |
| SPRING | 2019 |
| FALL | 2018 |
| SPRING | 2019 |
| SPRING | 2019 |
| SPRING | 2019 |
| FALL | 2019 |
| SPRING | 2019 |

Assessed

- Recommendation
One Student did Hand Calculations - Need to Reinforce Assignment Requirements
- Recommendation
- Recommendation
Collected Audience Feedback on Group - Add Question about Individual performance
- Recommendation
- Recommendation

% Attainment

- 83.33%
- 87.50%
- 90.00%
- 83.33%
- 100.00%

Assessment is easier if instructor fills out rubric during the Lab or adds an online survey for students to complete after lab.

2018-2020 ABET ETAC Commission Outcome: 1		Students shall demonstrate an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline				
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured
ETCC 411 - Mathcad Design of Concrete Beams		Did not Complete	Completed But with Major Errors	Completed with Minor Errors or Poor Formatting	Completed with No Errors and Format Explains Solution	ETCC 411 Mathcad Lab
	Total					Semester Assessed
Students in Each Group	3	1		1	1	Spring 2020
Percent of Students meeting outcome		66.7%				
		<u>Comments for Continuous Improvements:</u> One Student did Hand Calculations - Need to Reinforce Assignment Requirements				
Performance Indicator:						
ETCC 499 Design Component		Basic or Incomplete CADD Design	CADD Design without Design Calculations or References	Complete CADD Design w/Calculations and References	CADD Design, Calcs., References, and Specifications	ETCC 499 Final Design
	Total					Semester Assessed
Students in Each Group	5			3	2	Spring 2019
Percent of Students meeting outcome		100.0%				
		<u>Comments for Continuous Improvements:</u> CADD Files Included, but due to size, Student Portfolios on File with Calculations				
		Average Percent Meeting Outcome 83.3%				

2019-2020 ABET ETAC Commission Outcome: 2		Students shall demonstrate an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline				
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured
ETCC 302 Soils and Foundations Design and Soil Classification		Did Not Complete	Design incorrectly with major errors in methods.	Design with correct methods, but with minor errors.	Design with correct equations and methods w/o errors.	ETCC 302 Foundation Design
Total						Semester Assessed
Students in Each Group	4	1		2	1	Spring 2020
Percent of Students meeting outcome		75.0%				
<u>Comments for Continuous Improvements:</u>						
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured
ETCC 411 - Mix Design		Did Not Complete	Design Concrete mix incorrectly with major errors in methods.	Design Concrete mix with correct methods, but with minor errors.	Design Concrete mix with correct equations and methods w/o errors.	ETCC 411 Mix Design
Total						Semester Assessed
Students in Each Group	5				5	Spring 2019
Percent of Students meeting outcome		100.0%				
					Average Percent Meeting Outcome	87.5%
<u>Comments for Continuous Improvements:</u>						

2019-2020 ABET ETAC Commission Outcome: 3		Students shall demonstrate an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature				
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured
Oral - ETCC 489 Presentation and Report		Did not Present	Report or Presentation Lacking Technical Facts or Background	Correct Data and Interpretation but Little Participation in Presentation	Correct Technical Data and Correct Interpretation and Presentation	ETCC 489 Presentation and Report
Total						Semester Assessed
Students in Each Group	5			1	4	Fall 2018
Percent of Students meeting outcome		100.0%		Comments for Continuous Improvements: Collected Audience Feedback on Group - Add Question about Individual performance		
Performance Indicator:						
Graphical - ETCC 499 CADD Drawings		CADD Drawing very Basic or Incomplete without dimensions, materials, or location.	CADD Drawing does not convey design dimensions or concept of item.	CADD Drawing shows dimensional properties of Design object without errors.	CADD Drawing shows dimensional properties in more than one view.	ETCC 499 CADD Drawing
Total						Semester Assessed
Students in Each Group	5	1			4	Fall 2019
Percent of Students meeting outcome		80.0%		Average Percent Meeting Outcome		90.0%
		Comments for Continuous Improvements: Have Students turn in individual sheets in addition to Group Drawings				

2019-2020 ABET ETAC Commission Outcome: 4		Students shall demonstrate an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes					
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured	
ETCC 302 ASTM D698 Standard Proctor		Performed test incorrectly with major errors, or did not turn in report	Performed the test correctly but had errors in results.	Performed the test correctly but had errors in report	Performed test correctly and reported results that were correct	ETCC 302	
Total						3	
Students in Each Group	3			1	2	Semester Assessed	
Percent of Students meeting outcome		100.0%					Spring 2019
<u>Comments for Continuous Improvements:</u>							
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured	
ETCC 411 ASTM C138 Air Entrainment		Performed test incorrectly with major errors, or did not turn in report	Performed the test correctly but had errors in results.	Performed the test correctly but had errors in report	Performed test correctly and reported results that were correct	ETCC 411	
Total						3	
Students in Each Group	3		1	1	1	Semester Assessed	
Percent of Students meeting outcome		66.7%					Spring 2019
		Average Percent Meeting Outcome				83.3%	
<u>Comments for Continuous Improvements:</u>							

2019-2020 ABET ETAC Commission Outcome: 5		Students shall demonstrate an ability to function effectively as a member as well as a leader on technical teams				
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured
ETCC 489 - Team Leader/Group Feedback		Group rating for student averaged less than 50% effort	Group rating for student averaged between 51%-70% effort	Group rating for student averaged between 71%-85% effort	Group rating for student averaged between 86%-100% effort	ETCC 489
Total						Student Feedback Leader
Students in Each Group	5			1	4	Semester Assessed Fall 2019
Percent of Students meeting outcome		100.0%				
<u>Comments for Continuous Improvements:</u>						
Performance Indicator:		Unsatisfactory 1	Developing 2	Satisfactory 3	Exceeds Required 4	Where Measured
SRVY 230 Survey Crew Member on Pipelien Lab		Attended Lab unprepared and did not participate with Group.	Participated with group, but not involved on plan of how to perform lab.	Participated or Led Group, discussed planning and results with group members.	Previous + Helped other members complete their jobs.	SRVY 230
Total						Lab Exercise
Students in Each Group	7			7		Semester Assessed Spring 2019
Percent of Students meeting outcome		100.0%				
<u>Comments for Continuous Improvements:</u>						
				Average Percent Meeting Outcome		100.0%

Assessment is easier if Instructor fills out rubric during the Lab or adds an online survey for students to complete after lab.

Name of Program: Bachelor of Science in Engineering Technology: Civil Engineering Technology

	Academic Year	Enrollment Year					Total Undergrad	Total Grad	Degrees Awarded			
		1st	2nd	3rd	4th	5th			Associates	Bachelors	Masters	Doctorates
Current 2020-2021	FT	3	4	0	5		12	0		3		
	PT					1	1	0				
1 2019-2020	FT	4	2	4	4	2	16	0	1	5		
	PT				1		1	0				
2 2018-2019	FT	2	6	3	7	0	18	0	1	7		
	PT				1	1	2	0				
3 2017-2018	FT	3	3	6	11	0	23	0		7		
	PT	1		1			2	0				
4 2016-2017	FT	6	5	9	4	1	25	0	1	4		
	PT		1		2	1	4	0				

Give official fall term enrollment figures (head count) for the current and preceding four academic years and undergraduate and graduate degrees conferred during each of those years. The "current" year means the academic year preceding the on-site visit.

FT--full time

PT--part time