

# **Graduate Program Assessment Report**

**Civil Engineering Department, Montana State University, Bozeman, MT**

Program Assessed: Masters of Science, Civil Engineering

Assessment Period: AY 2016-2017

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## **Background:**

The Civil Engineering Department at Montana State University offers graduate study leading to Master of Science degrees in Civil Engineering, Environmental Engineering, and an interdisciplinary Master of Science degree in Land Rehabilitation. The department also participates in the Doctor of Philosophy in Engineering degree program through the College of Engineering, specifically in the Civil Engineering, Applied Mechanics and Environmental Engineering options.

This Assessment Report specifically addresses the Civil Engineering Department's Master of Science in Civil Engineering (MSCE) degree program. This degree program offers major study in various combinations of the subject areas of transportation engineering, geotechnical engineering, fluid mechanics, hydraulic and hydrologic engineering, water resources engineering, structural engineering, engineering mechanics, and environmental engineering. Considerable support for the MSCE degree program is realized through two research centers at MSU that are closely affiliated with the Civil Engineering Department, namely, the Center for Biofilm Engineering and the Western Transportation Institute.

The Master of Science degree in Civil Engineering can be executed following either a Plan A (thesis) or Plan B (professional paper) program. Plan A includes significant research component conducted under the guidance of a faculty mentor and graduate committee. The Plan A program culminates with a publicly defended thesis. Plan B is coursework oriented, and includes a professional paper completed under the guidance of a faculty advisor. Both Plan A and Plan B programs require a minimum of 31 credits of work, and students must pass a written comprehensive exam at the conclusion of their program. Complete degree requirements for the MSCE degree program are available at:

<http://catalog.montana.edu/graduate/engineering/civil-engineering/ms-civil-engineering/>

The overarching objective of the MSCE degree program is to provide an increased depth of knowledge in their chosen area of specialization, and an enhanced appreciation for, and the ability to apply critical thinking and research skills in solving complex technical problems. Many (and probably the majority) of students with MSCE degrees do not pursue careers in research, per se. These individuals work directly in project design, management, and/or construction.

## Assessment Plan:

*(Adopted from MSU Standard Assessment Plan)*

### Program Learning Outcomes

Graduates of the MSCE degree program will:

- a. conduct research or produce some other form of creative work,
- b. demonstrate mastery of subject material, and
- c. be able to conduct scholarly or professional activities in an ethical manner.

*The program outcomes shown here reportedly were developed at Oregon State University.*

*Note: Item "c" is satisfied by ensuring that all graduate students have received training in the responsible conduct of research.*

### Identified Data Sources

The data sources used for assessment of graduate programs includes:

- Comprehensive examinations
- Thesis defenses

### Schedule of Assessment

Assessment reports for the MSCE program will be submitted in September of even-numbered years.

## Assessment Outcomes:

### Data

Presented in Table 1 is a summary of the MSCE degree candidates for Academic Years 2014-2015, 2015-2016 and 2016-2017. This table indicates their Program Plan (Plan A or Plan B) and the outcome of their Comprehensive Exam and/or Thesis Defense. Several years of student performance have been presented to provide broader context on general level of student enrollment in this degree program on their performance.

### Assessment

All MSCE degree candidates successfully completed either a thesis (Plan A students) or professional paper (Plan B students) as part of their degree requirements, thus meeting learning outcome (a) above - conduct research or produce some other form of creative work. All MSCE degree candidates successfully defended their thesis (Plan A students) and/or passed their comprehensive exam (Plan A and Plan B students), thus meeting learning outcome (b) above – demonstrate mastery of subject material.

Based on these observations, no program changes are necessary at this time to better prepare students to meet the program outcomes.

Table 1. Summary of MSCE Degree Candidates, AY 2014-15, AY 2015-16, AY 2016-17

<u>Number of candidates</u>	<u>Degree Program</u>	<u>Number Passing Comp Exam</u>	<u>Number Passing Thesis Defense</u>
<u>Fall 2014</u>			
0	MSCE - Plan A	0	0
1	MSCE - Plan B	1	n/a
<u>Spring 2015</u>			
1	MSCE - Plan A	1	1
5	MSCE - Plan B	5	n/a
<u>Fall 2015</u>			
0	MSCE - Plan A	0	n/a
3	MSCE - Plan B	3	n/a
<u>Spring 2016</u>			
3	MSCE - Plan A	3	3
5	MSCE - Plan B	5	n/a
<u>Fall 2016</u>			
0	MSCE - Plan A	0	n/a
4	MSCE - Plan B	4	n/a
<u>Spring 2017</u>			
1	MSCE - Plan A	1	1
5	MSCE - Plan B	5	n/a

n/a – not applicable