

# **Assessment Report Land Surveying Minor Montana State University 2013 – 2014 Academic Year**

Department: Civil Engineering

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Date: Fall 2014, Reporting Period Academic Year 2013 – 2014

Program: Land Surveying Minor - offered in conjunction with  
BS Civil Engineering (CE)  
BS Civil Engineering, Bio-Resource (BREN) Option  
BS Construction Engineering Technology (CET)  
and open to all majors at MSU

## **Program Objectives:**

The objective of the Civil Engineering Department's Minor in Land Surveying is to provide students with the education necessary to readily satisfy the academic requirements of the of Montana Board of Professional Engineers and Professional Land Surveyors to sit for the Fundamentals of Surveying (FS) Exam. Currently, if a student desires to start on the path of becoming a Professional Land Surveyor, they have to take a series of Montana Board of Professional Engineers and Professional Land Surveyors approved courses to become eligible to sit for this exam. As board members and class offerings change over time, it is difficult for students to be judged eligible by the Board to take the FS exam because of the need for a course-by-course assessment. The Montana Board of Professional Engineers and Professional Land Surveyors, the Montana Association of Registered Land Surveyors (MARLS), and the Department of Civil Engineering want to facilitate this approval process by tying it to a formal curriculum accepted by the Board as satisfying their requirements. This minor will facilitate the path to professional registration in Montana and other states, as students that successfully complete the associated coursework will have an institutionally established Surveying Minor recognized as satisfying the educational requirements to sit for the FS exam.

## Program Structure:

The curricula requirements established by the Montana Board of Professional Engineers and Professional Land Surveyors to pursue licensing as a Professional Land Surveyor in the state of Montana are presented in the attachment at the end of this document. The Program of Study for the Land Surveying Minor developed to meet the surveying components of these requirements consists of 29 credit hours of coursework as follows:

### REQUIRED COURSES – 20 credits

SRVY 230 SURVEYING (formerly CE 201)**#	3 cr
SRVY 273 CONSTRUCTION SURVEYING AND EARTHWORK (formerly CET 202)**	3
OR ECIV 350 TRANSPORTATION ENGINEERING (formerly CE 350)#	
SRVY 355 ADVANCED SURVEYING COMPUTATIONS (formerly CE 363) ^^	3
SRVY 375 PHOTOGRAMMETRY (formerly CE 463) ^^	2
SRVY 361 LEGAL PRINCIPLES OF SURVEYING (formerly CE 361)^^	3
SRVY 362 U.S. PUBLIC LAND SURVEY SYSTEM (formerly CE 362)^^	3
SRVY 474 PROJECT DESIGN IN SURVEYING (formerly CE 464)^^	3

### ELECTIVE COURSES from the following choices - 9 Credits

ECIV 456 HIGHWAY GEOMETRIC DESIGN (formerly CE 456)^^	3
AGEC 337 AGRICULTURAL LAW	3
DDSN 245 CIVIL DRAFTING	3
GPHY 357 GPS FUNDAMENTALS & APPS IN MAPPING (formerly LRES 357)	3
GPHY 426 REMOTE SENSING AND DIGITAL IMAGE PROCESSING (formerly LRES 426)	3
LRES 457 ADVANCED GPS MAPPING FOR GIS	3
GPHY 284 INTRODUCTION TO GIS SCIENCE AND CARTOGRAPHY	3
GPHY 384 ADVANCED GIS AND SPATIAL ANALYSIS	3
GPHY 484R APPLIED GIS AND SPATIAL ANALYSIS	3

\*\* ALREADY IN CET CURRICULUM

# ALREADY IN CE/BREN CURRICULUM

^^ PROFESSIONAL ELECTIVE IN CET, CE, or BREN

## Outcomes Assessment:

The above Land Surveying Minor was approved as a curricula acceptable to the Montana Board of Professional Engineers and Land Surveyors in February 2012

([http://bsd.dli.mt.gov/license/bsd\\_boards/pel\\_board/pdf/LandSurveyingCurriculum.pdf](http://bsd.dli.mt.gov/license/bsd_boards/pel_board/pdf/LandSurveyingCurriculum.pdf)). With this action, the primary and direct objective of this Minor was achieved, i.e., establishment of a formal curricula available to MSU students that is recognized by the state licensing board as satisfying their academic requirements to permit pursuit of professional registration in land surveying (more specifically, to sit for the FS exam). From a program perspective, it is further desirable to assess the level demand for this minor, and the degree of success realized by students that pursue it. Therefore, the Department annually assesses the number of students that graduate with a Land Surveying Minor. Further and as possible, the progress of these students

following graduation is monitored specifically with respect to their surveying related activities. Metrics/information that are tracked as available include:

- student satisfaction with the minor, at and after graduation,
- percent of students with the minor that are employed in surveying related jobs,
- surveying employer satisfaction with students that obtained the minor,
- percent of students with the minor that take the FS exam,
- FS exam performance compared to national experience,
- percent of students with the minor that earn surveying intern status, and
- percent of students with the minor that earn professional surveying registration.

With the exception of the number of students that graduate with a Surveying Minor, the above metrics/information on student performance post-graduation are not automatically collected or necessarily available in university or other databases. Collection of this information relies significantly on the Civil Engineering Department's ability to maintain contact with this specific cohort of students after they graduate, and on their subsequent willingness to respond to this contact. The Department has had limited success in these regards.

In academic year 2013-2014, four students graduated with the Land Surveying Minor. Since the minor was adopted in 2011, nine students have completed the program (see Table 1).

Table 1. Land Surveying Minors Awarded at MSU

Academic Year	Surveying Minors Awarded
2011-2012*	4
2012-2013	1
2013-2014	4

\*Minor was approved in AY 2011 – 2012

Only one of the four graduates from this year, 2013-2014, was interviewed regarding the program, and he expressed great satisfaction with it. The employment status of all nine graduates of the program to-date is unknown. Based on information available on the Montana Board of Professional Engineers and Professional Land Surveyors website, four of the total of nine program graduates had achieved the status of Land Surveyor Intern (in Montana) as of Fall 2014. These graduates must have taken and passed the FS exam, In light of the on-the-job

experience required prior to being considered for professional registration (four years), it is unlikely that any of the program graduates are yet eligible for professional registration.