

LEVEL II BOARD OF REGENTS ITEMS

Curriculum Proposals

1. Overview

Provide a one paragraph description of the proposed program. Be specific about what degree, major, minor or option is sought.

A Land Surveying Certificate at MSU is being sought

The goal of this certificate is to enhance Montana State University's educational mission by developing and implementing a Land Surveying Certificate at Montana State University in Bozeman for individuals already possessing a Bachelor of Science (B.S.) degree. The objective is to increase student enrollments at MSU in Bozeman, to streamline the application process at the Montana Board of Professional Engineers and Professional Land Surveyors level for the Fundamentals of Surveying (FS) Exam, and to make its graduates more attractive in the workforce marketplace.

2. Need

a. To what specific need is the institution responding in developing the proposed program?

If a student desired to start on the path of becoming a Professional Land Surveyor also, they had to take a series of informally Montana Board of Professional Engineers and Professional Land Surveyors approved courses in conjunction with their degree in order to become eligible to sit for the Fundamentals of Surveying Exam. As board members and class offerings changed over time, it became more difficult for students to become eligible to take the FS exam. The Montana Board of Professional Engineers and Professional Land Surveyors, The Montana Association of Registered Land Surveyors (MARLS), and the department of Civil Engineering wanted to formalize this process for satisfying the requirement to become eligible to take the FS exam as well as be able to formally recognize the extra effort in taking courses in the surveying related area. At the last in-state MARLS annual conference, a committee meeting was held regarding pursuing a Land Surveying Certificate at MSU in Bozeman. It was unanimously well received by the committee. Lastly, to be able to offer a Land Surveying Certificate at MSU in Bozeman would attract more students to the university. This is a very attractive option for the person who is looking to retrain for a different career and already has a Bachelor of Science (B.S.) degree.

b. How will students and any other affected constituencies be served by the proposed program?

This proposed certificate will formalize what was already in place since the early 1990s. Students who pursue this option will be served by this option because they will have formal recognition of their educational path as well as an easier path to licensure.

In a regional analysis, Flathead Community College located in Kalispell Montana offers a 2 year Associates Degree in Land Surveying. In discussions with David Dorsett, Department Head of the Surveying program at Flathead Community College, it was agreed that proposed minor will not interfere or eliminate the need for their program. There were no other surveying related programs in the state of Montana that the Montana Board of Professional Engineers and Professional Land Surveyors recognize mainly due to the lack of a registered land surveyor on the faculty. The status quo is basically maintained with the addition of making the certificate in Land Surveying at MSU in Bozeman formal. The proposed MSU Land Surveying Certificate fills both a geographical and strategic need.

c. What is the anticipated demand for the program? How was this determined?

No explicit analysis of the demand has been conducted. However, this certificate is long overdue at Montana State University. MSU has a substantial amount of courses and presence in surveying and closely related disciplines. Mature and new faculty have an extensive background in surveying and surveying related courses, and several courses are taught with an emphasis on surveying applications. Also, a Professional Land Surveyor licensed in Montana is part of the faculty at MSU in Bozeman.

3. Institutional and System Fit

a. What is the connection between the proposed program and existing programs at the institution?

There is no counterpart of this Land Surveying Certificate at MSU.

b. Will approval of the proposed program require changes to any existing programs at the institution? If so, please describe.

A feature of the proposed Land Surveying Certificate is that no new courses are needed to get it going. Implementing the new Land Surveying Certificate will require no new course development.

c. Describe what differentiates this program from other, closely related programs at the institution (if appropriate).

There is no other or closely related program to the proposed Land Surveying Certificate in Montana State University.

d. How does the proposed program serve to advance the strategic goals of the institution?

Students are already engaged in internships and opportunities in surveying or a closely related field. This gives them a more publicized and formalized career path that as a profession needs an influx of members.

Representatives from Professional Land Surveyors in general are very supportive of this idea.

Among the needs met (explicitly and/or implicitly) for MSU Bozeman Five Year Vision (<http://www.montana.edu/upba/vision/visiondocfy06-fy11.pdf> implemented 2006) by the Land Surveying Minor (*impact of Land Surveying Minor described in italics*):

I. Student Body

A. MSU Bozeman will enroll approximately 13,000 headcount students. The Fall 2005 enrollment was approximately 12,250. *Land Surveying Certificate is a recruiting tool.*

B. Approximately 27% of these students will be nonresidents, slightly higher than the current 25% nonresident rate (counting Western Undergraduate Exchange and international students). *Land Surveying Certificate is a recruiting tool for undergraduate students.*

II. Faculty and Staff

F. The University will increasingly attract a strong and diverse faculty. *Explicitly sanctions and enhances our ongoing and future activities in surveying.*

III. Curriculum

A. MSU Bozeman will be nationally recognized as a leader in the integration of learning and discovery at the undergraduate level. *Land Surveying Minor at MSU Bozeman fills a regional and national need.*

V. Partnerships and Outreach

I. We communicate with approximately 67,400 alumni. We will have 35% of these alumni actively engaged in the accomplishment of this five-year outlook. *More MSU students go to work in a surveying related field.*

e. Describe the relationship between the proposed program and any similar programs within the Montana University System. In cases of substantial duplication, explain the need for the proposed program at an additional institution. Describe any efforts that were made to collaborate with these similar programs; and if no efforts were made, explain why. If articulation or transfer agreements have been developed for the substantially duplicated programs, please include the agreement(s) as part of the documentation.

There is no similar program in the MUS system to the proposed MSU Land Surveying Certificate. The closest is Flathead Community College's (FVCC) Associates Degree in Land Surveying. They do not offer BS degrees in engineering. The main correspondence with FVCC was to ensure that no harm would come to their program.

4. Program Details

a. Provide a detailed description of the proposed curriculum. Where possible, present the information in the form intended to appear in the catalog or other publications. NOTE: In the case of two-year degree programs and certificates of applied science, the curriculum should include enough detail to determine if the characteristics set out in Regents' Policy 301.12 have been met.

The Course of Study is uncomplicated, and all of the courses, facilities, and expertise are in place for the framework of a Land Surveying Certificate. In fact, the implementation of this certificate is overdue. The Course of Study for the Land Surveying Certificate is as follows:

Montana State University
 NON-DEGREE CERTIFICATE – DRAFT
 Must have a Bachelor of Science (B.S.) degree already
 to be eligible for Non-Degree Certificate

For Land Surveying Intern Exam Only

Total Credits Required – 29 Semester Credits

CE 201 CO-REQUISITE M 166 or M 172 and ME 116 CE 463 CO-REQUISITE CE 201 and PHYS 206 or PHYS 212 CE 464 PRE-REQUISITE I+ME 325, CE 201, and WRIT 201 or WRIT 221
 CE 363 PREREQUISITE CE 201 and STAT 216 OR I&ME 350 CE 361 and CE 362 CO-REQUISITE BUS 361

<u>REQUIRED COURSES</u>	CREDITS
• CE 201 SURVEYING ** #	3
• CET 202 CONSTRUCTION SURVEYING AND EARTHWORK **	3
OR	
CE 350 TRANSPORTATION ENGINEERING #	3
• CE 363 ADVANCED SURVEYING COMPUTATIONS ^	3
• CE 463 PHOTOGRAMMETRY ^	2
• CE 361 LEGAL PRINCIPLES OF SURVEYING ^	3
• CE 362 U.S. PUBLIC LAND SURVEY SYSTEM ^	3
• CE 464 PROJECT DESIGN IN SURVEYING ^	<u>3</u>
TOTAL	
20	

<u>ELECTIVE COURSES</u>	9 CREDITS REQUIRED
CE 456 HIGHWAY GEOMETRIC DESIGN ^	3
AGEC 337 AGRICULTURAL LAW	3
LRES 357 GPS FUNDAMENTALS & APPLICATIONS IN MAPPING	3
LRES 426 REMOTE SENSING AND DIGITAL IMAGE PROCESSING	3
LRES 457 ADVANCED GPS MAPPING FOR GIS	3
GPHY 284 INTRODUCTION TO GIS SCIENCE AND CARTOGRAPHY	3
GPHY 384 ADVANCED GEOGRAPHIC INFORMATION SCIENCE	3
GPHY 484 APPLIED GIS AND SPATIAL ANALYSIS	<u>3</u>
TOTAL	
29	

** ALREADY IN CET CURRICULUM
 # ALREADY IN CE/BREN CURRICULUM
 ^ PROFESSIONAL ELECTIVE IN CET, CE, or BREN

b. Describe the planned implementation of the proposed program, including estimates of numbers of students at each stage.

Implementation of the program will require little more than including the Land Surveying Certificate in the MSU COURSE BULLETIN and will not require a phasing-in. It can be available immediately.

An estimate of students involved in the Land Surveying Certificate would about 1-2 students based upon past data

5. Resources

a. Will additional faculty resources be required to implement this program? If yes, please describe the need and indicate the plan for meeting this need.

No additional faculty resources are needed at this time to implement the Land Surveying Certificate program.

b. Are other, additional resources required to ensure the success of the proposed program? If yes, please describe the need and indicate the plan for meeting this need.

There are no additional resources needed to implement the program.

6. Assessment.

How will the success of the program be measured?

CE has had in place for a number of years a comprehensive and successful assessment plan for all of its programs. (see <http://www.montana.edu/wwwprov/assessment/assessmentplans.htm>).

We continually assess objectives and outcomes at the program and course levels. These assessments are mandatory for our national accreditation (ABET), an accreditation we have held for many years. Our current assessment plan and assessment methods will be consistently applied to the Land Surveying Certificate.

However, we will provide specialized assessment that focuses on such issues as student, employer, and alumni satisfaction aimed specifically at the minor. Land Surveying Certificate student placement will be monitored. We will continue to monitor the progress of our students, with the specific emphasis on surveying related activities. Since our students are already engaged in surveying related activities, and have a long track record of successful careers in surveying, the Land Surveying Certificate has been needed for a long time to serve our students. This is a case where MSU has the responsibility to provide academic support for well-established demand.

7. Process Leading to Submission

Describe the process of developing and approving the proposed program. Indicate, where appropriate, involvement by faculty, students, community members, potential employers, accrediting agencies, etc.

The proposed curriculum was first presented to the CE Curriculum Committee and faculty for approval. Then the proposed curriculum was presented to the College of Engineering Curriculum for review and feedback. Lastly, the proposed Land Surveying Certificate was reviewed by the MSU Undergraduate Studies Committee.

Civil Engineering and the College of Engineering at MSU each have Industrial Advisory Boards with members from engineering, construction, and surveying related companies. The implementation and progress of the program will be periodical reviewed by these boards. We will engage these members for specific guidance and support for the Land Surveying Certificate.