

# The University Senate of Michigan Technological University

## Proposal 3-14

(Voting Units: Academic)

### “Minor in Surveying”

Submitted by:  
Surveying Engineering Faculty  
School of Technology

#### 1. Introduction

The dean of The School of Technology and surveying engineering faculty recommend the establishment of a minor in surveying.

#### 2. Rationale

The construction of all land-based engineering projects starts with a survey to locate the structure(s) on the ground. This has been, and will continue to be, one of the traditional roles of a surveyor. Advances in GPS technology have led to improvements and increased utilization of Geographic Information Systems (GIS), which in turn has generated significant changes in cartography. There is a growing need for surveyors to help with the process of reconciling traditional surveying information with digital information contained in a GIS database in order to produce more comprehensive maps.

All U.S. states and territories license surveyors. Students who complete a minor in surveying may be eligible for licensure depending on the various state or territory licensing requirements.

#### 3. Details of Catalog Copy

##### a. Title of Minor

Surveying

##### b. Catalog Description

The minor in surveying will provide non-surveying engineering majors the opportunity to learn principles and practices of surveying. This minor is most suitable for students in civil engineering, environmental engineering, forestry, geological engineering and geology.

##### c. List of Courses

The Surveying minor consists of 18 credits, including a minimum of twelve (12) credits of required courses and an additional six (6) credits of electives. Four courses are required as shown in Table 1. Students are required to select two additional courses from the list shown in Table 2. All courses (except FW 3540) are taught by surveying engineering faculty and on a regular basis.

**Table 1: Required Courses (12 credits)**

Course	Credits	Title	Term	Prerequisites
SU 2000	2	Introduction to Surveying	Fall, Spring	none
SU 2050	3	Plane Surveying	Fall	SU 2000(C)
SU 3600	4	Surveying Computations and Adjustments	Fall	[(MA 2320 or MA 2321 or MA 2330) & {(MA 2710(C) or MA 2720(C) or MA 3710(C)} & MA 3160(C)]
SU 4060	3	Geodesy	Fall	SU 3600(C)

**Table 2: Elective Courses (6 credits)**

Course	Credits	Title	Term	Prerequisites
SU 2220	3	Route & Construction Surveying	Spring	SU 2050
SU 3110	4	Surveying Field Practice	Fall	SU 2220
SU 3180	3	Boundary Surveying Principles	Fall	SU 3600(C)
SU 3540 or FW 3540	4	Geospatial Information Technology with Elements of Field Cartography or An Introduction to GIS for Natural Resources Management	Spring  Spring	MA 2710(C) or MA 2720(C) or MA 3710(C)  MA 2710(C) or MA 2720(C) or MA 3710(C) or ENVE 3502(C)
SU 4010	3	Geospatial Concepts, Technologies & Data	Spring	permission of instructor
SU 4100	3	Geodetic Positioning	Fall	SU 4060(C)
SU 4140	3	Photogrammetry	Fall	SU 3600(C)
SU 4180	3	Land Subdivision Design	Spring	SU 3180 & (SU 3210 or CE 3620 or CE 3650)

**4. New Course Descriptions**

No new courses are required for this minor.

**5. Estimated Costs**

No additional costs will be associated with this minor. All required and elective courses are currently being taught on a regular basis and there is existing capacity for additional enrollment in terms of classroom seats, laboratory space, and available equipment. Based on inquiries, enrollment is estimated at 5-10 students per year with additional capacity in existing courses. There will be a negligible increase to advising workload.

**6. Planned Implementation Date**

This minor will be offered Fall 2014.

**Introduced to Senate: 06 November 2013**

**Approved by Senate: 20 November 2013**

**Approved by Administration: 26 November 2013**