

Revised 05/08/2009

PROPOSAL SUMMARY AND ROUTING FORM

Proposal Title: Create a Minor in Surveying and Mapping

Initiating Unit or Individual: Surveying Engineering

Contact Person's Name: Sayed R. Hashimi e-mail: hashimis@ferris.edu phone: 2632

Date or Term of Proposal Implementation: FALL 2010

- Group I - A – New degree/major or major, redirection of a current offering, or elimination of a degree, major or minor
- Group I - B – New minors or concentrations
- Group II - A – Minor curriculum clean-up and course changes
- Group II - B – New Course
- Group III - Certificates
- Group IV – Off-Campus Programs

Group/Individual	Signature	Date	Vote/Action *
Program Faculty	<i>Sayed Hashimi</i>	10/15/09	<u>6</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support
<i>School L</i> Department Faculty	<i>Thomas Halle</i>	11/25/09	<u>6</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support
Department Head / Chair	<i>Thomas Halle</i>	11/30/09	<u>X</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support
College Curriculum Committee	<i>Ron McKean</i>	12/14/09	<u>11</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support
Dean	<i>Steve Edgell</i>	1/5/10	<u>X</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support
University Curriculum Committee	<i>[Signature]</i>	1/25/10	<u>8-0</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support
Senate	<i>Richard Sufferin</i>	2/2/10	<u>1</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support
Academic Affairs	<i>Daniel [Signature]</i>	2/3/10	<u>1</u> Support <u>0</u> Support with Concerns <u>0</u> Not Support

* Support with Concerns or Not Support must include a list of specific concerns. Votes must be shown for faculty groups. Administrators check appropriate action taken.

To be completed by Academic Affairs

President (Date Approved)

Board of Trustees (Date Approved)

President's Council (Date Approved)

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PROVOST

1. Proposal Summary

(Summary is generally less than one page. Briefly: state what is proposed with a summary of rationale and highlights. Additional rationale may be attached.)

The purpose of this proposal is to create a minor in Surveying and Mapping. All the courses within the minor are existing courses which means that no new courses will be created.

Target date of implementation: The program's expected implementation date is Spring, or Fall 2010

Rationale: The targeted audiences for this program are students in the School of Built Environment, some programs in College of Arts and Sciences such as applied math, applied biology, and Criminal Justice program students in the College of Business. It could also serve as a catalyst to recruit undecided majors into surveying engineering.

While the minor will definitely help one in obtaining the Certified Surveying Technician title, it will NOT, however, make one eligible for licensure in the State of Michigan. Licensure as a professional surveyor in the State of Michigan requires a baccalaureate degree acceptable to Board of Licensing.

This proposal has been approved by the Surveying Engineering Advisory Committee.

The program does not require any additional resources in terms of faculty, facility, computers, and library material.

2. Summary of All Course Action Required*

a. Newly Created Courses to FSU:

Prefix Number Title

b. Courses to be Deleted From FSU Catalog:

Prefix Number Title

c. Existing Course(s) to be Modified:

Prefix Number Title

d. Addition of existing FSU courses to program

Prefix Number Title

To obtain a minor a student must complete the following core courses for a total of 12 credit hours:

SURE 110 – Fundamentals of Surveying	4 credits
SURE 115 – Intro. To Computer Mapping	1 credit

SURE 215 – Surveying Computations	3 credits
SURE 230 – Control Surveying	4 credits

In addition, the student must complete two courses (6 or 7 credits) from the following list of courses:

CENG 220 – Engineering Surveying	4 credits
SURE 340 – Photogrammetry	3 credits
SURE 365 – Legal Aspects of Surveying	3 credits
GIS 225 – Principles of Geographic Information Systems (GIS)	3 credits

e. Removal of existing FSU courses from program

Prefix Number Title

3. Summary of All Consultations

Form Sent (B or C) Date Sent Responding Dept. Date Received & by Whom

None needed

4. Will External Accreditation be Sought? (For new programs or certificates only)

_____ Yes _____X_____ No

If yes, name the organization involved with accreditation for this program.

5. Program Check sheets affected by this proposal.

Additional Information

The proposed minor is unique within Ferris and within the State of Michigan, however, there are several such programs in other States. The following is a list of some of the Minor programs in surveying throughout the United States:

- Purdue University, Land Surveying Minor, 31 semester hours
- The Ohio State University, Minor in Surveying and mapping, 28 semester hours
- University of Arkansas, Minor in Surveying, 18-19 semester hours
- New Mexico State University, Minor in Surveying, 20 semester hours
- Western Kentucky University, Minor in Surveying, 21 semester hours
- University of Maine, Minor in Surveying, 18 semester hours
- Louisiana State University, Minor in Surveying
- St. Cloud State University, Minor in Surveying, 24 semester hours
- Old Dominion University, Minor in Surveying

Some of the institutions listed above, offer the Minor as the only educational path to licensure as a professional surveyor in their respective States, while others offer the Minor in conjunction with the BS degree in surveying, like the one proposed here.

Because the program does not require any additional resources, gaining any number of students would be a positive development. As students realize the challenge of securing employment, particularly in Michigan, they might consider pursuing the surveying and mapping minor to broaden their potential for employment. According to the US Department of Labor Statistics (DLS), the surveying and mapping technician will receive 21% growth in employment. In short, the DLS forecast states that "... employment of surveyors, cartographers, photogrammetrists, and **surveying technicians** is expected to grow much faster than the average for all occupations through the year 2016".

End-of-Program Outcomes

The objective of the Minor program in surveying and mapping is to give the Program completers a general understanding of how surveying measurements are performed and to gain familiarity of knowing how to use the field surveying instruments. This knowledge gained through this Minor will enable the student who completes the Program to function as a surveying technician within an organization. The students completing this Program should be able to:

- Perform basic differential leveling in the field
- Reduce differential leveling observations
- Understand the concept of field data collection using conventional and modern electronic data collection instruments such as an electronic total station
- Understand the concept of field data collection using global positioning system (GPS) instruments
- Understand the basic concept of how to prepare a topographic map from actual survey data
- Perform traverse computations and simple traverse adjustment
- Develop an appreciation for establishing horizontal and vertical control for a small to medium size surveying project
- Have a basic understanding of State Plane Coordinates, Lambert conic projection in particular

Depending upon the student's selection of the optional courses the student completing this minor will demonstrate:

- Performing simple circular curve calculations
- Performing the field layout of a basic circular curve
- An appreciation for the basic photogrammetric concepts such as photo scale, flying height, overlap, side lap
- An understanding of the public land surveying systems
- An appreciation for the basic concepts of Geographic Information Systems (GIS)

End-of-Program Assessment Plan

The assessment plan utilized for this program will include:

- Pre and post assessment in surveying coordinate geometry computations
- Standardized examinations in the courses taken by the student
- Preparation and examination of student portfolios
- Student surveys

College of Engineering Technology
Surveying Engineering

FORM D

Surveying and Mapping Minor

Proposed Check Sheet

Total credits required = 18 – 19 depending upon the options chosen

Required Core Courses

SURE 110 – Fundamentals of Surveying (MATH 120)	4 credits
SURE 115 – Intro. To Computer Mapping	1 credit
SURE 215 – Surveying Computations (SURE 110)	3 credits
SURE 230 – Control Surveying (SURE 110)	4 credits

Two courses (6 to 7 credits) from any of the following:

CENG 220 – Engineering Surveying (SURE 110)	4 credits
SURE 340 – Photogrammetry (SURE 110)	3 credits
SURE 365 – Legal Aspects of Surveying** (SURE 215, ENG 250)	3 credits
GISC 225 – Principles of Geographic Information Systems (GIS)	3 credits

**** Writing Intensive**

The courses in parentheses indicate pre-requisites