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College of Engineering

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Date: 12 October 2010

To: Randy Smith
Vice Provost, Office of Academic Affairs

From: Ed McCaul
Secretary, College of Engineering Committee on Academy Affairs (CCAA)

Subject: Semester Conversion Proposal for the Undergraduate Minor in Surveying and Mapping

Attached is a letter from Carolyn Merry, Department Chair of Civil and Environmental Engineering and Geodetic Science, as well as a semester conversion proposal for their Undergraduate Minor in Surveying and Mapping.

This proposal was reviewed by a subcommittee of CCAA. After reviewing the proposal and having some changes made to it the subcommittee recommended to the full committee that it be approved. After a discussion, CCAA unanimously approved the proposal on the 11th of October 2010 and requested that I forward the proposal to you for consideration by CAA. If you have any questions concerning this proposal please let me know.

THE OHIO STATE UNIVERSITY

Civil and Environmental Engineering and Geodetic Science

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To: Office of Academic Affairs

From: Carolyn Merry, Chair, Department of Civil and Environmental Engineering and Geodetic Science

Date: October 1, 2010

Re: Semester Proposal for Department of Civil and Environmental Engineering and Geodetic Science

Academic Programs and Approvals

The Department of Civil and Environmental Engineering and Geodetic Science submits semester conversion proposals for the academic programs listed below. All of the program proposals received strong support by the faculty (votes and date of vote provided in parentheses) and I, as Department Chair, support the approval of these semester conversion proposals as well.

B.S. Civil Engineering (11 yes, 1 no; 0 abstain; April 2, 2010)
B.S. Environmental Engineering (13 yes; 0 no; 0 abstain; April 2, 2010)
B.S. Geomatics Engineering (withdrawn-9 yes; 0 no; 1 abstain)
Minor Environmental Engineering (11 yes; 0 no; 0 abstain, April 16, 2010)
Minor Surveying and Mapping (15 yes; 0 no; 0 abstain, May 14, 2010)
M.S. Civil Engineering (15 yes; 0 no; 0 abstain, May 14, 2010)
Ph.D. Civil Engineering (13 yes; 2 no; 0 abstain, May 14, 2010)
Civil Engineer Degree (withdrawn; 8 yes; 1 no; 0 abstain, April 23, 2010)

Students pursuing a combined BS/MS program must follow all college and university rules. The department will allow up to 8 hours of independent research applied toward the BSCE or BS Environmental Engineering degree, provided at least 6 credit hours of courses normally applicable toward professional elective requirements are senior petitioned toward the MS degree.

The department is withdrawing the B.S. Geomatics Engineering degree. The B.S. Geomatics degree is currently in the process of being de-activated due to lack of enrollment. We expect the few remaining students in the program to matriculate through the program prior to Summer, 2012. The department is also withdrawing the "Civil Engineer" degree administered by the College of Engineering due to lack of enrollment. There are currently no students in this program.

Semester Proposal Process

The development of the semester conversion proposals for the academic programs in the Department of Civil and Environmental Engineering and Geodetic Science were carried out by the Undergraduate and Graduate Studies Committees in the Department. In revising the curriculum, the committees considered such things as: (a) the success of our graduates in their

professional careers, especially as indicated by the results on the Fundamentals of Engineering (FE) Exam, Principles and Practice (PE) exam, and job placement; (b) the need to continue to fulfill Accreditation Board for Engineering and Technology (ABET) general and program criteria for our undergraduate degree programs, and be responsive to comments made during recent accreditation visits by ABET; (c) various measures of achievement of educational outcomes and program objectives as part of the department's on-going efforts in outcomes assessment; (d) educational goals as expressed in: American Society of Civil Engineers (ASCE) Statement 465, ASCE Civil Engineering Body of Knowledge for the 21st Century, ASCE Code of Ethics, 2006 ASCE Summit on the Future of Civil Engineering, American Academy of Environmental Engineers Body of Knowledge, recent National Academy studies and publications, (e) The Ohio State University, College of Engineering, and Civil and Environmental Engineering and Geodetic Science strategic plans and budgetary constraints; (f) faculty and other resources; (g) and similar programs at other universities.

The department began serious discussions of the revised curricula in Spring of 2009 and continued through Spring of 2010. A department website was set up on Carmen as a storehouse for information and discussion topics on the semester conversion process and the department's various semester conversion proposals. The department also appointed a person (Chair of Undergraduate Studies) to serve as a point of contact for the semester conversion and to sit on the College of Engineering Quarters-to-Semesters (Q2S) Taskforce.

In addition to faculty input, the committees also solicited feedback from current students through the OSU student chapter of the American Society of Civil Engineers (ASCE), student chapter of the Water Environmental Federation (WEA), the Civil Engineering Honor Society (Chi Epsilon), the student chapter of the American Academy of Environmental Engineers, and targeted requests from specific students. Input from past graduates was obtained from the Civil Engineering Alumni Association, which serves as our "Industrial Advisory Committee." The Undergraduate and Graduate Studies Committees then developed academic program proposals and proposal revisions, based on the feedback received. Individual faculty were then charged with developing specific course syllabi. Syllabi were subsequently reviewed by the Undergraduate and Graduate Studies Committees, Department Chair, and College of Engineering Committee on Academic Affairs. The department had extensive discussions for each proposal that culminated in a faculty vote.

Once approved at the department level, proposals were submitted to the College of Engineering Committee on Academic Affairs (CCAA) for review and College-level approval. Our proposals were reviewed in CCAA subcommittee A. We then worked with the subcommittee to address all concerns and suggestions. Our proposals were then brought to the full committee (CCAA), with the recommendation of the subcommittee, for a vote.

Sincerely,

Carolyn Merry
Professor and Chair

Program Proposal: Surveying and Mapping, Minor

GENERAL PROGRAM INFORMATION

1. **Identify the name of the program (current and proposed names, if different)**

   Surveying and Mapping Minor

2. **Identify the degree title (current and proposed names, if different)**

   Surveying and Mapping Minor

3. **Identify the academic unit(s) responsible for administrating the program**

   Department of Civil and Environmental Engineering and Geodetic Science

4. **Specify the type of program**

   Minor

5. **Select the appropriate semester conversion designation**

   Converted with minimal changes to program goals and/or curricular requirements

PROGRAM REQUIREMENTS

6. **List program learning goals**

   - To prepare students in understanding fundamental concepts of surveying and spatial data measurement techniques important for surveying and mapping applications.
   - To prepare students in the understanding of intermediate and advanced surveying and spatial data measurement topics, such as boundary surveying, control surveying, historic development of Ohio surveying, route and/or construction surveying, and the Ohio minimum standards laws and ethics in the surveying profession.

7. List the semester courses (department, title, credit hours) that constitute the requirements and other components of the program.

Required courses (19 semester hours)

Department/Unit	Title	Credit Hours
Civil and Environmental Engineering and Geodetic Science	CE 2090 – Professional Aspects of Civil and Environmental Engineering	1
Civil and Environmental Engineering and Geodetic Science	CE 5411 – Legal Aspects of Surveying	4
Civil and Environmental Engineering and Geodetic Science	CE 5441 – Introduction to GPS: Theory and Applications	3
Civil and Environmental Engineering and Geodetic Science	CE 5412 – Land Boundary and Development Principles	4
Civil and Environmental Engineering and Geodetic Science	CE 5410 – Engineering Surveying	3
Civil and Environmental Engineering and Geodetic Science	CE 5431 – GIS and Cartographic Engineering *or* CE 5461 – Geospatial Numerical Analysis	4

8. Append a current (quarters-based) and proposed (semesters-based) curriculum advising sheet for the program, formatted to meet the unit's standards.

The current (quarters-based) advising sheet is provided in Appendix A.1 and the proposed (semesters-based) advising sheet is shown in Appendix B. The Ohio State Board of Registration for Professional Engineers and Surveyors recently changed the requirements for their *Surveying Courses Worksheet.* A revised worksheet was submitted to the Ohio State Board of Registration in December 2008 for their review. Course revisions were re-submitted in April, 2010. The Ohio State Board of Registration approved the proposed coursework in May, 2010. The revisions to the surveying and mapping minor were submitted to CCAA in June, 2010. These revisions to the surveying and mapping minor are shown in Appendix A.2.

9. Provide a curriculum map that shows how, and at what level (e.g., beginning, intermediate, advanced), the program's courses facilitate students' attainment of program learning goals. A table format is recommended

Course		
	Learning Goal #1. Introduction to surveying concepts and techniques	Learning Goal #2. Preparation for understanding intermediate and advanced surveying topics
Professional Aspects of Civil and Environmental Engineering	Beginning	Beginning
Legal Aspects of Surveying	Intermediate	Intermediate
Introduction to GPS: Theory and Applications	Advanced	Advanced
Land Boundary and Development Principles	Intermediate	Intermediate
Engineering Surveying	Advanced	Advanced
GIS and Cartographic Engineering	Advanced	Advanced
Geospatial Numerical Analysis	Advanced	Advanced

10. Provide a rationale for proposed program changes (either significant or minimal) and a description of how the changes will benefit students and enhance program quality. Include date of last significant program revision. [Word limit: 750]

Minor changes are being made to the Surveying and Mapping minor program to conform to the Ohio's State Board of Registration for Professional Engineers and Surveyors *Surveying courses worksheet (PES 1012 – rev. 04/2009)*. The credit hours are essentially the same, from 17.34 semester equivalent hours (26 quarter hours/1.5 = 17.34) to 19 semester hours to be consistent with the majority of classes being 3 to 4 credit hours. The courses constituting the minor generally reflect the courses within the quarter version of the program to meet the requirements of the State Board.

11. Provide a table to aid the Council on Academic Affairs reviewers as they check for credit hour changes.

	Number of qtr-cr-hrs in current program		Calculated result for 2/3 of current qtr-cr-hrs		Number of sem-cr-hrs required for proposed program	
	2005*	2010#	2005	2010	2005	2010
Total cr-hrs required for completion of program	28	23 (or 24)	18.7	15.3 (or 16)	n/a	19
Pre-requisite cr-hrs required for admission to program which are not counted toward total hrs	7	9	4.7	6	n/a	6
Required cr-hrs offered by the unit	28	23 (or 24)	18.7	15.3 (or 16)	n/a	19
Required cr-hrs offered outside the unit	0	0	0	0	0	0
Double-counted cr-hrs that meet two or more requirements	0	0	0	0	0	0
Free elective credit hrs	0	0	0	0	0	0

*Courses approved by Ohio State Board of Registration for Professional Engineers and Surveyors in October, 2005. These courses for the surveying and mapping minor are shown in Appendix A.1.
#Courses approved by Ohio State Board of Registration for Professional Engineers and Surveyors in May, 2010. These courses for the surveying and mapping minor are shown in Appendix A.2. The proposed changes to the surveying and mapping minor were submitted to CCAA in June, 2010. We are still awaiting final approval of the changes to the minor.

There is no significant change in credit hours in the semester curriculum, as compared to the quarters-based curriculum.

12. Provide a rationale for a change in credit hours if the difference is more than 4 semester credit hours between the values listed in columns B and C for any row in the table above. [Word limit: 500]

There is no significant difference in credit hours.

TRANSITION POLICY

13. Include a policy statement from the chair of the department / unit that assures those students who began their degree under quarters that the transition to semesters will not delay their graduation nor disrupt progress toward a degree. This may include a description of how individual transition advising plans will be developed and possible use of bridge courses. It should address students in the program and students taking service courses offered by the department / unit.

No Surveying and Mapping minor student who began their minor program under quarters will be impeded by the transition to semesters. Every quarter-credit-hour that would have counted

toward the Surveying and Mapping minor under the quarter-based curriculum will count (as 2/3 of a semester-credit-hour) under the semester-based Surveying and Mapping minor curriculum. Additional advising support will be provided for the Surveying and Mapping minor to assist in planning course schedules for the last year of quarters (2011-2012) and for at least the first year of semesters (2012-2013). If it is determined that the "normal" conditions covered by the generic Surveying and Mapping minor transition worksheet would result in a particular student facing an unavoidable delay compared to quarters, due to circumstances related to the change to semesters rather than the student's failure to make satisfactory progress through the program, then a revision of specific requirements will be worked out for that student by the advising staff with approval by the Civil Engineering Undergraduate Studies Committee.

The overarching objective of our transition policy is to ensure that student progress toward completing the Surveying and Mapping minor will not be impeded by the conversion process. As in all previous curriculum changes, transition issues will be anticipated and planned for as a part of the conversion process. Our transition policy is based on the following principles:

- All students who graduate under semesters, even during the first semester, will do so by meeting the requirements of the semester program.
- Each semester program requirement may be met either by taking an appropriate semester course (or sequence), or by substituting a substantially equivalent quarter course (or sequence) for the corresponding semester course (or sequence).

Course (or Sequence) Equivalence

The worksheet in Appendix C provides a listing of quarters-based courses and the semester program requirement they will fulfill. The worksheet will be used be each student affected by the transition in order to identify their semester course requirements. The worksheet will be used to: (1) determine the semester course requirements satisfied by quarter-based offerings taken by the student, and (2) to determine the excess credit hours obtained by taking the quarters-based version of some courses. The excess credit hours will be used to adjust the required number of hours in the student's minor program to ensure that the student takes an equivalent number of credit hours in the semester curriculum.

ASSESSMENT CONVERSION

14. Summarize how the program's current quarter-based assessment practices will be modified, if necessary, to fit the semester calendar [Word limit: 150]. ***(Note: For example, if there are embedded assessments in selected courses, a modified assessment plan may identify the new semester courses which will include testing student attainment of program goals.)*** **All undergraduate degrees and majors should have an assessment plan on file with the Office of Academic Affairs; preliminary assessment planning (item #15.b. i through iii) is encouraged for all other programs.**

We do not anticipate needing to significantly modify our quarters-based assessment practices to fit the semester calendar.

15. Indicate, for an undergraduate degree program or major proposal, whether the program has a plan on file with the Office of Academic Affairs

We are not required to have a plan on file for a minor program. Our assessment plan consists of the following elements:

i. Program learning goals

- To prepare students in understanding fundamental concepts of surveying and spatial data measurement techniques important for surveying and mapping applications.
- To prepare students in understanding intermediate and advanced surveying topics, such as boundary surveying, control surveying, historic development of Ohio surveying, route and/or construction surveying, and the Ohio minimum standards laws and ethics in the surveying profession.

ii. The means the program uses or will use to evaluate how well students are attaining program goals. For some examples, please refer to the following list of Means to Evaluate Achievement of program Goals (page 6 of template).

We use the following means to evaluate how well students are attaining the program goals:

- The undergraduate studies committee evaluates and updates the curriculum on a yearly basis.
- Course questionnaires to assess student perceptions of outcomes achievement: We have developed questionnaires to elicit student impressions of how courses relate to program outcomes. We are pretesting these questionnaires in selected courses with the intention to move to administering the questionnaires in all undergraduate courses.
- Student evaluation of instruction (SEI): University-wide SEIs are administered in all courses.
- Periodic review of state licensing requirements compared to minor requirements and electives.

iii. How the program uses or will use the evaluation data to make evidence-based improvements to the program periodically. For some examples, please refer to the following list of Uses of Assessment Data (page 7 of template).

We will utilize the assessment data to modify or update the curriculum requirements, as well as to make recommendations with respect to updating specific course content.

iv. Projected quarter by which the program will submit a full assessment plan using the survey form, to be submitted no later than Summer 2012.

We are not required to submit an assessment report for an undergraduate minor.

Appendix A.1
Current (quarters-based) Advising Sheet

The Ohio State University
College of Engineering

Surveying and Mapping Minor

Department of Civil and Environmental Engineering and Geodetic Science, 470 Hitchcock Hall, 2070 Neil Avenue, Columbus, OH 43210-1275; 614-292-6753; http://www.ceegs.ohio-state.edu

The minor in surveying and mapping consists of a minimum of 28 credit hours distributed in the following manner.

Prerequisites
Mathematics 254 (5)
GS/CE 400.01 (2)

Required courses (28 credit hours)
GS 400.02 (2), 410 (4), 560 (3), 561 (4), 562 (3), 625 (4)
C&RP 310 (4)
BusFin 775 (4)

Once the Minor Program Form has been approved by the coordinating adviser in the Department of Civil and Environmental Engineering and Geodetic Science, the student must file the form with a college/school counselor. For further information about the minor program, contact the department.

Appendix A.2
Current (quarters-based) Advising Sheet

The Ohio State University
College of Engineering

Surveying and Mapping Minor

Department of Civil and Environmental Engineering and Geodetic Science, 470 Hitchcock Hall, 2070 Neil Avenue, Columbus, OH 43210-1275; 614-292-6753; http://www.ceegs.ohio-state.edu

The minor in surveying and mapping consists of a minimum of 28 credit hours distributed in the following manner.

Prerequisites
Mathematics 254 (5)
GS/CE 400 (4)

Required courses (23 (or 24) credit hours)
GS 410 (4), 460 (1), 502 (4), 521 (4), 560 (3), 561 (4);
562 (3) *or* 625 (4)

Once the Minor Program Form has been approved by the coordinating adviser in the Department of Civil and Environmental Engineering and Geodetic Science, the student must file the form with a college/school counselor. For further information about the minor program, contact the department.

Appendix B
Proposed (semesters-based) Advising Sheet

UNDERGRADUATE MINOR IN SURVEYING AND MAPPING

The Ohio State University
College of Engineering

Surveying and Mapping Minor

Department of Civil and Environmental Engineering and Geodetic Science, 470 Hitchcock Hall, 2070 Neil Avenue, Columbus, OH 43210-1275; 614-292-6753; http://www.ceegs.ohio-state.edu

The minor in surveying and mapping is principally designed for civil engineering students that would like to sit for the Fundamentals of Surveying (FS) exam. The coursework consists of a minimum of 17 credit hours distributed in the following manner.

Prerequisites
MATH XXXX Differential Equations (3)
CE 2410 Introduction to Geomatics (3)

Required courses (19 credit hours minimum)
CE 2090 Professional Aspects of Civil and Environmental Engineering (1)
CE 5411 Legal Aspects of Surveying (4)
CE 5441 Introduction to GPS: Theory and Applications (3)
CE 5412 Land Boundary & Development Principles (4)
CE 5410 Engineering Surveying (3)
CE 5431 GIS and Cartographic Engineering (4) *or* CE 5461 Geospatial Numerical Analysis (4)

Once the Minor Program Form has been approved by the coordinating adviser in the Department of Civil and Environmental Engineering and Geodetic Science, the student must file the form with a college/school counselor. For further information about the minor program, contact the department.

Appendix C

Quarters to Semesters Transition Worksheet

Surveying and Mapping Minor
Quarters-to-Semesters Equivalency Worksheet

Courses Completed	Quarters-Based Course	Qtr Cr-hr	Sem Cr-hr	Semesters-Based Equivalent	Sem Cr-hr	cr-hr diff	cr-hr excess
	Required Courses						
	CE 460	1	0.67	CE 2090 Professional aspects of civil and environmental engineering	1		+0.33
	GS 410, GS 560, GS 561	7 (or 8)	3.33	CE 5411 Legal aspects of surveying	4		+0.67
	GS 521, GS 608	4	4.67	CE 5441 Introduction to GPS: Theory and Applications	3		-1.67
	GS 502	4	2.67	CE 5410 Engineering surveying	3		+0.33
	GS 561, GS 562	3	3.33	CE 5412 Land boundary and development principles	4		+0.67
	GS 630 or GS 636 or GS 625	4	2.67	CE5431 GIS and cartographic engineering *or* CE 5461 Geospatial numerical analysis	4		+1.33
	Total =	23 (or 24)	15.3 (or 16)	Total =	19		+1.66