



Memo

To: Randy Smith, Vice Provost for Academic Programs, Office of Academic Affairs
From: Rosie Quinzon-Bonello, Assistant Dean for Curriculum and Assessment
Date: October 11, 2023

Re: Informational Item: Program Change to the Surveying and Mapping Minor in the Department of Civil, Environmental, and Geodetic Engineering.

On Monday, October 9, 2023, The College Committee for Academic Affairs met and unanimously approved the Department of Civil, Environmental, and Geodetic Engineering proposal to revise the minor in Surveying and Mapping.

The proposed changes include:

- A reduction in the credit hours of CivilEn 5411 from 4 to 3
- A reduction in the credit hours of CivilEn 5412 from 4 to 3
- Removal of CivilEn 2090 from the minor

This results in the overall reduction in the total number of credit hours required for the minor from 19-16 and the number of courses required from 6 to 5.

The proposal, which includes supporting documentation, is attached.

Yours sincerely,

Rosie Quinzon-Bonello



April 4, 2023

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To the Members of the College Committee on Academic Affairs:

The Department of Civil, Environmental, and Geodetic Engineering (CEGE) is submitting a revised curriculum for the Surveying and Mapping Minor. This change was motivated by a recent modification by the Ohio Board of Engineers and Surveyors in educational requirements needed to obtain Professional Surveying (PS) licensure (<https://peps.ohio.gov/education-and-verification/exams/fs-exam>). It also reflects an evaluation of content in our courses that comprise the minor based on Board requirements for coursework in Boundary Surveying, Control Surveying, Historical Development of Ohio Surveying, Route or Construction Surveying, and Laws and Ethics. This proposed curriculum was submitted to the Ohio Board and was approved (see attached). As the letter states, this minor allows students from our Civil Engineering program to directly pursue PS registration.

Rational for Change

The Ohio Board of Engineers and Surveyors recently changed the requirements needed to obtain a PS license that now provides a pathway for graduates from any bachelor's degree program. Previously, the requirements were either an ABET-accredited Civil Engineering degree or a Board-approved 4-yr surveying curriculum. This modification requires students pass 30 hours of surveying courses with a limit of 6 hours of geographic information systems on top of coursework in mathematics, general education, and natural science. With this change, it is now possible for students without an ABET-accredited Civil Engineering (CE) degree to take coursework that would allow for them to sit for the Fundamentals of Surveying exam with the ultimate goal of getting their PS license. For students at Ohio State, taking the revised Surveying and Mapping Minor would allow them to obtain 16 of the 30 required hours toward PS licensure.

In recognition of this change, CEGE evaluated the content of the minor in order to facilitate access to non-CE students. In doing this evaluation, we determined content required for CE students to satisfy requirements that could lead to PS licensure could be achieved by adjusting the content of courses within the minor, namely CivilEn 5411 and CivilEn 5412. With these changes, the number of credit hours to obtain the minor decreases from 19 to 16 and the number of courses decreases from 6 to 5.

Effective Date

Implementation of the revised minor curriculum is anticipated to be the Fall 2023 semester.

Changes to be Made

Table 1 describes the current curriculum for the minor and its correspondence to the specific Board requirements across six categories (<https://peps.ohio.gov/education-and-verification/exams/fs-exam>) as follows:

- C1 – Boundary Surveying
- C2 – Control Surveying
- C3 – Historical Development of Ohio Surveying
- C4 – Route or Construction Surveying
- C5 – Ohio Minimum Standards and Laws and Ethics
- C6 – Upper-Level Surveying Courses

Table 1. Existing Curriculum for the Surveying and Mapping Minor

Category	Course	Cr hrs	Prerequisite
C1	CE 5412 – Land Boundary and Development Principles	4	CE 5411
C2	CE 5441 – Introduction to GPS	3	
C3	CE 5411 – Legal Aspects of Surveying	4	CE 2410 – Introduction to Surveying
C4	CE 5410 – Engineering Surveying	3	CE 2410
C5	CE 2090 – Professional Aspects of Civil and Environmental Engineering	1	
C6	CE 5461 – Geospatial Numerical Analyses	4	

Our proposed changes to the minor include the following:

- A reduction in the credit hours of CivilEn 5411 from 4 to 3
- A reduction in the credit hours of CivilEn 5412 from 4 to 3
- Removal of CivilEn 2090 from the minor

These changes are described in Table 2 along with how the revised curriculum corresponds to the specific Board requirements.

Table 2. Proposed Surveying and Mapping Minor Curriculum.

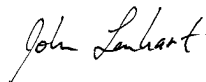
Category	Course	CR HR	Prerequisite
C1	CE 5412 – Land Boundary and Development Principles	3	CE 5411
C2	CE 5441 – Introduction to GPS	3	
C3 & C5	CE 5411 – Legal Aspects of Surveying	3	CE 2410 – Introduction to Surveying
C4	CE 5410 – Engineering Surveying	3	CE 2410
C6	CE 5461 – Geospatial Numerical Analyses	4	

As can be seen, the revised minor curriculum satisfies requirements for CE students to take the FS exam. It also does so with fewer required courses and credit hours.

Transition Policy

Students within the existing minor will continue to take the courses listed in Table 1, while those starting the minor will take those listed in Table 2. Discrepancies in credit hours for existing students will be reconciled on a case-by-case basis.

Sincerely,



John J. Lenhart, Ph.D.
Professor and Associate Chair
Department of Civil, Environmental and Geodetic Engineering
Ohio State University

The Ohio State University
College of Engineering
Department of Civil, Environmental and Geodetic Engineering
Surveying and Mapping Minor (SURVMAP-MN)

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Surveying is a crucial part of land development. Professional Surveyors must have a Bachelor of Science in Civil Engineering or Surveying and Mapping, and often work closely with architects and builders to produce precise surveys and maps of surface features of the earth. Surveyors can choose from many specialties and get involved at many stages of a project. Students who pursue a Surveying and Mapping minor will gain an understanding of global positioning; analyzing spatial data; digital map production and electronic data collection; survey software applications, boundary surveying and construction layout techniques. Students interested in pursuing a career in professional land surveying should consider completing the Surveying and Mapping minor. Completion of the minor, in combination with a BS-Civil Engineering degree, will enable students to sit for their Fundamentals of Surveying Exam in the State of Ohio and pursue licensure as a Professional Surveyor.

Prerequisites for Surveying and Mapping Minor

Must be completed prior to beginning the minor program:

- CIVILEN 2410 (3 hrs) – Introduction to Surveying

Requirements for Surveying and Mapping Minor

Credit hour requirement: 16 credit hours Required

Courses: *All courses below must be completed*

- CIVILEN 5410 (3 hrs) – Engineering Surveying
- CIVILEN 5411 (3 hrs) – Legal Aspects of Surveying
- CIVILEN 5412 (3 hrs) – Land Boundary & Development Principles
- CIVILEN 5441 (3 hrs) – Introduction to GPS: Theory and Application
- CIVILEN 5461 (4 hrs) – Geospatial Numerical Analysis

Details for the required minor courses are listed below. Many of the courses are only offered once per year.

Surveying and Mapping Minor Program Guidelines

Required for graduation: No

Credit hours required: A minimum of 16 credit hours is required to complete the Surveying and Mapping minor.

Transfer and EM credit hours allowed: No more than 6 (six) of the credit hours required for the minor can come from transfer or EM credit. Overlap with the major:

- The minor must be in a different subject than the major
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Civil Engineering Majors: The following courses will count as Area 2 Technical Electives for Civil Engineering:

- CIVILEN 5410 (3 hrs) – Engineering Surveying
- CIVILEN 5441 (3 hrs) – Introduction to GPS: Theory and Application
- CIVILEN 5461 (4 hrs) – Geospatial Numerical Analysis

Grades required:

- Minimum C- for a course to be listed in the minor program
- Minimum 2.0 cumulative point-hour ratio (CPHR) required for the minor
- Course work graded Pass/Non-Pass cannot count towards the minor

Minor approval/changing the minor: Any changes must be approved by the Department of Civil, Environmental and Geodetic Engineering

Filing the minor program form: If required by the students' respective department, the minor program form must be filed at least by the time the graduation application.

Course	Title	Term	Hrs	Prerequisites
CIVILEN 2410	Introduction to Surveying	AU/SP	3	CIVILEN 2050 (concur); and enrollment in CIVILEN or ENVENG major
CIVILEN 5410	Engineering Surveying	AU	3	CIVILEN 2410
CIVILEN 5411	Legal Aspects of Surveying	AU	3	CIVILEN 2410
CIVILEN 5412	Land Boundary and Development Principles	SP	3	CIVILEN 5411
CIVILEN 5441	Introduction to GPS: Theory and Application	SP	3	MATH 1172 or 2153 and Jr. standing or above
CIVILEN 5461	Geospatial Numerical Analysis	AU	4	CIVILEN 2410

Surveying and Mapping Minor

Transition Plan

- Since the proposed changes will result in a reduction of credit hours, students currently enrolled in the minor will simply complete the corresponding courses for the minor.
- If the credit hours for CIVILEN 5411 or 5412 are reduced after a student has started the sequence, an exception will be granted in their degree audit respective to the overall credit hours for the minor.
- Students starting the minor in AU23 or later will not be required to complete CIVILEN 2090. This will allow students who are not enrolled in Civil Engineering to pursue the minor.
- Students pursuing the minor outside of Civil Engineering will be permitted to complete CIVILEN 2410 as space permits. Students with comparable experience or coursework to CIVILEN 2410 will be encouraged to contact the CEGE advisors for permission to enroll in Minor coursework.



April 17, 2023

Lei Wang, Ph.D.
The Ohio State University
College of Engineering
Department of Civil, Environmental and Geodetic Engineering
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Re: Board Approved Surveying Courses

Mr. Wang:

As we discussed, at its meeting on October 11, 2022 the Board reviewed the information you provided related to The Ohio State University’s modifications to its surveying minor curriculum and its Board approved surveying courses. Based on the information you provided the Board has approved the proposed changes that would replace the courses currently approved. The proposed courses as modified would meet the Board’s approved 16 hours of surveying courses required for EAC/ABET Civil Engineering graduates pursuing registration as a professional surveyor pursuant to R.C. 4733.11 (B)(2)(a) and (b).

Here is a summary of the approved changes to the courses:


CATEGORY	COURSE	CREDIT HOURS	BOUNDARY CREDIT
BOUNDARY SURVEYING	CE 5412 – Land Boundary and Development Principles	3	3
CONTROL SURVEYING	CE 5441 – Introduction to GPS	3	
HISTORICAL DEVELOPMENT OF OHIO SURVEYING	CE 5411 – Legal Aspects of Surveying	2	2
ROUTE OR CONSTRUCTION SURVEYING	CE 5410- Engineering Surveying	3	
OHIO MINIMUM STANDARDS & LAWS AND ETHICS	CE 5411 – Legal Aspects of Surveying	1	1
UPPER-LEVEL SURVEYING COURSES	CE 5461 – Geospatial Numerical Analysis	4	
CREDIT HOUR TOTALS		16	6

After the university has formally approved the final curriculum changes to the surveying minor let me know and we will update the courses on our list of Board-approved surveying courses that is available to applicants.

Thank you for your work in developing courses that will offer opportunities for students to pursue the surveying profession. If I can be of further assistance, please contact me.

Sincerely,

STATE BOARD OF REGISTRATION FOR
PROFESSIONAL ENGINEERS AND SURVEYORS

A handwritten signature in blue ink that reads "John Greenhalge". The signature is written in a cursive style with a large initial "J" and "G".

John Greenhalge
Executive Director