



## Memo

To: Randy Smith, Vice Provost for Academic Programs, Office of Academic Affairs

From: Rosie Quinzon-Bonello, Assistant Dean for Curriculum and Assessment

Date: November 6, 2024

Re: Informational Item – Change to the Environmental Engineering Minor

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On November 5, 2024, The College Committee for Academic Affairs approved the following program changes to the Environmental Engineering minor:

1. Expanding the list of elective options by:
  - moving the following required courses to the elective option list:
    - ENVENG 2100 (3) - *Environmental Engineering Analytical Methods* and
    - ENVENG 3210 - *Environmental Engineering Unit Operations*, and
  - adding fifteen courses to the optional elective list.
2. Adding as required courses
  - CIVILEN 3130 (3) – *Fluid Mechanics*
  - ENVENG 5170 (3) - *Sustainability and the Circular Economy*

The program plans to implement these changes starting Autumn 2025.

Yours sincerely,

Rosie Quinzon-Bonello



September 25, 2024

Dear Prof. Sandy Furterer,

The Department of Civil, Environmental, and Geodetic Engineering (CEGE) is submitting a revised curriculum for the Environmental Engineering minor. Based on discussions with the CEGE faculty, we are revising the Environmental Engineering Minor to better provide students with a solid foundation to apply environmental engineering concepts and fundamentals to their chosen major field of study.

### **Rationale for Change**

The requirements for the Environmental Engineering Minor have not been updated since Ohio State went from quarters to semesters. Since that time, environmental engineering practice has shifted to include greater emphasis on sustainability concepts and practice. To account for that, the updated minor now requires students to take ENVENG 5170 (Sustainability and Pollution Prevention Practices), which provides students with an introduction to sustainability concepts and the use of life cycle assessments. To allow for this addition, the minor no longer requires ENVENG 3210 (Environmental Engineering Unit Operations). In addition, ENVENG 2100 (Environmental Engineering Analytical Methods) is exchanged for CIVILEN 3130 (Fluid Mechanics). This change recognizes the increased emphasis on fundamental fluid mechanic principles in environmental engineering practice as it applies to storm water management and change mitigation.

### **Effective Date**

Implementation of the updated curriculum is anticipated to be the Autumn 2025 semester.

### **Timeline of Revision Process**

- Review of minor requirements by Environmental faculty in Fall 2023
- Approved in CEGE Undergraduate Studies Committee in Fall 2023
- Approval of the curricular structure by CEGE faculty in Fall 2023

### **Changes to be Made**

Removal of ENVENG 2100 - Environmental Engineering Analytical Methods and ENVENG 3210 - Environmental Engineering Unit Operations as required minor courses. These courses will be shifted to Elective Courses.

Adding CIVILEN 3130 – Fluid Mechanics and ENVENG 5170 - Sustainability and the Circular Economy as required minor courses.

CBE 2420, FABENG 2110, and MECHENG 3503 have been added as approved substitutes for CIVILEN 3130. This will allow students from a wider variety of majors pursue the minor.

The following courses will be added as Elective Options for the minor:

<b>Course Number</b>	<b>Title</b>	<b>Hours</b>
CIVILEN 3160	Water Resources Engineering	3
CIVILEN 4210	The Physics of Sustainable Buildings	3
CIVILEN 5220	Open Channel Hydraulics	3
CIVILEN 5610.01	Sustainable WaSH Infrastructure for Developing Rural Communities	3
CIVILEN 5610.02	Safe Water on Tap	3
ENVENG 2100	Environmental Engineering Analytical Methods	3
ENVENG 3210	Environmental Engineering Unit Operations	3
ENVENG 4218	Measurement and Modeling of Climate Change	3
ENVENG 4400	Int. Env. Chem. Fate and Transport	3
ENVENG 5120	Bioremediation in Groundwater and Soil	3
ENVENG 5140	Air Quality Engineering	3
ENVENG 5195	Engineering Design for Public Health	3
ENVENG 5600	Science, Technology, and Public Policy	3
ENVENG 5718	Aquatic Chemistry	3
ENVENG 5760	Design of Urban Stormwater Control Measures	3
FABENG 5520	Phytotechnology and Phytoremediation	3
MICROBIO 4000.0x	Microbiology	4

The following courses will be removed as Elective options for the minor:

<b>Course Number</b>	<b>Title</b>	<b>Hours</b>
ENR 5273	Fate of Pollutants in Soils and Natural Waters	3
ENVENG 4200	Environmental Engineering Unit Operations Lab	1
ENVENG 5170	Sustainability and the Circular Economy	3

There will be no net change to the credit hours for the minor.

## Curricular “Bingo Sheets”

Visual representations comparing the differences in the curricula are provided below:

### Current Environmental Minor Curriculum

#### Required Courses

<u>Course Number</u>	<u>Title</u>	<u>Hours</u>
ENVENG 2100	Environmental Engineering Analytical Methods	3
ENVENG 3200	Fundamentals of Environmental Engineering	3
ENVENG 3210	Environmental Engineering Unit Operations	3

#### Elective Courses

<u>Course Number</u>	<u>Title</u>	<u>Hours</u>
CBE 5772	Principles of Sustainable Engineering	3
CIVILEN 5230	Transport Phenomenon in Water Resource Eng.	3
ENR 3000 and 3001	Soil Science	3/1
ENR 5273	Fate of Pollutants in Soils and Natural Waters	3
EARTHSC 5651	Hydrogeology	4
ENVENG 4200	Environmental Engineering Unit Operations Lab	1
ENVENG 5110	Environmental Engineering Bioprocesses	3
FABENG 5310	Ecological Engineering and Science	4
ENVENG 5170	Sustainability and the Circular Economy	3

## Proposed Environmental minor Curriculum with Mark-up

### Required Courses

<u>Course Number</u>	<u>Title</u>	<u>Hours</u>
<del>ENVENG 2100</del>		<del>3</del>
CIVILEN 3130	Fluid Mechanics	3
<del>ENVENG 3210</del>	<del>Environmental Engineering Unit Operations</del>	<del>3</del>
ENVENG 3200	Fundamentals of Environmental Engineering	3
ENVENG 5170	Sustainability and the Circular Economy	3

### Elective Courses

<u>Course Number</u>	<u>Title</u>	<u>Hours</u>
CBE 5772	Principles of Sustainable Engineering	3
CIVILEN 5230	Transport Phenomenon in Water Resource Eng.	3
ENR 3000 and 3001	Soil Science	3/1
<del>ENR 5273</del>	<del>Fate of Pollutants in Soils and Natural Waters</del>	<del>3</del>
EARTHSC 5651	Hydrogeology	4
<del>ENVENG 4200</del>	<del>Environmental Engineering Unit Operations Lab</del>	<del>4</del>
ENVENG 5110	Environmental Engineering Bioprocesses	3
<del>ENVENG 5170</del>	<del>Sustainability and the Circular Economy</del>	<del>3</del>
FABENG 5310	Ecological Engineering and Science	4
CIVILEN 3160	Water Resources Engineering	3
CIVILEN 4210	The Physics of Sustainable Buildings	3
CIVILEN 5220	Open Channel Hydraulics	3
CIVILEN 5610.01	Sustainable WaSH Infrastructure for Developing Rural Communities	3
CIVILEN 5610.02	Safe Water on Tap	3
ENVENG 2100	Environmental Engineering Analytical Methods	3
ENVENG 3210	Environmental Engineering Unit Operations	3
ENVENG 4218	Measurement and Modeling of Climate Change	3
ENVENG 4400	Int. Env. Chem. Fate and Transport	3
ENVENG 5120	Bioremediation in Groundwater and Soil	3
ENVENG 5140	Air Quality Engineering	3
ENVENG 5195	Engineering Design for Public Health	3
ENVENG 5600	Science, Technology, and Public Policy	3
ENVENG 5718	Aquatic Chemistry	3
ENVENG 5760	Design of Urban Stormwater Control Measures	3
FABENG 5520	Phytotechnology and Phytoremediation	3
MICROBIO 4000.0x	Microbiology	4

## Proposed Environmental Minor Curriculum

### Required Courses

<u>Course Number</u>	<u>Title</u>	<u>Hours</u>
CIVILEN 3130 <sup>1</sup>	Fluid Mechanics	3
ENVENG 3200	Fundamentals of Environmental Engineering	3
ENVENG 5170	Sustainability and the Circular Economy	3

<sup>1</sup> Approved substitutes include CBE 2420, FABENG 2110, and MECHENG 3503.

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CBE 5772	Principles of Sustainable Engineering	3
CIVILEN 3160	Water Resources Engineering	3
CIVILEN 4210	The Physics of Sustainable Buildings	3
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ENVENG 5718	Aquatic Chemistry	3
ENVENG 5760	Design of Urban Stormwater Control Measures	3
FABENG 5310	Ecological Engineering and Science	4
FABENG 5520	Phytotechnology and Phytoremediation	3
MICROBIO 4000.0x	Microbiology	4

### Transition Plan

Students currently enrolled in the minor will be given the option to pursue the new minor requirements, or their current requirements. Any new minor elective may also be included as an elective for the current minor requirements.

Sincerely,

A handwritten signature in black ink, reading "John J. Lenhart". The signature is written in a cursive style with a prominent initial "J".

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