

**PROGRESSIVE DEGREE PROGRAM  
COURSE PLAN TEMPLATE**

<b>USC SCHOOL</b>	Viterbi School of Engineering
<b>ACADEMIC DEPARTMENT</b>	Sonny Astani Department of Civil and Environmental Engineering
<b>GRADUATE PROGRAM</b>	Civil (Emerging Technologies in Construction)
<b>POST CODE</b>	1993
<b>TERM EFFECTIVE DATE</b>	Fall 2024

**PROGRAM DESCRIPTION**

A brief description of the graduate program.

Designers, architects, engineers and construction managers of the 21st century must be able to manage and harness the rapid pace of technological change. A highly interconnected world and complex projects require creative and technologically enabled solutions. In this program, technology is argued to be a catalyst for change, poised to reduce the industry’s fragmentation, improve its efficiency and effectiveness, and increase productivity, resilience and sustainability. The program emphasis is on understanding the capabilities of available and developing technologies so that the appropriate tools, systems, equipment, and methods can be implemented for a particular architectural, engineering and construction (AEC) function, project or challenge.

The Master of Science in Civil Engineering with an emphasis of Emerging Technologies in Construction is awarded in strict conformity with the general requirements of the USC Viterbi School of Engineering. Students can choose the option of completing a thesis and must include in their program 4 units of CE 594a and CE 594b.

**COMMON BACHELOR DEGREE PROGRAM PATHWAYS**

A list of common bachelor’s degrees that undergraduate students pursue in advance of pursuing a progressive degree option with this graduate program. Some programs are restricted to certain majors while others are open to all students.

BS Civil Engineering	

**PREPARATORY UNDERGRADUATE COURSES**

A list of courses at the undergraduate level that prepare students for the graduate program. Required coursework is listed first, followed by recommended courses. If not applicable, this section will be blank.

<b>Dept. Prefix - Course #</b>	<b>Course Title</b>	<b>Required or Recommended</b>	<b>Units</b>
CE 215	Statics and Dynamics	Required	4
CE 309	Fluid Mechanics	Required	4
CE 358	Elementary Theory of Structures I	Required	4
CE 470	Building Information Modeling: Project Visualization and Simulation	Required	4

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**UNDERGRADUATE COURSES USED TO REDUCE GRADUATE LEVEL UNITS**

A list of undergraduate level courses that may be used to reduce the number of graduate level units required for the graduate program. If there are none, that is specified instead.

Dept. Prefix - Course #	Course Title	Units

**CORE GRADUATE PROGRAM REQUIREMENTS (12 units required)**

A list of all required graduate courses for the graduate program. None of these courses may be used toward satisfying undergraduate degree requirements.

*If special exceptions for any of these courses are made by the academic department, the course # is marked with an asterisk (\*) and the exception is explained in the "Department Notes" section at the end of this course plan template.*

Dept. Prefix - Course #	Course Title	Units
CE 505	Data Management for Civil and Environmental Engineering	2
CE 568	Fundamental Concepts of Computing and Programming in Civil and Environmental Engineering	2
CE 573	Advanced Technologies in AEC Practices	4
CE 578	Technology-Enabled Architecture, Engineering and Construction (AEC) Projects	4

12	<b>TOTAL ELECTIVE UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE</b>
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7	<b>TOTAL ELECTIVE UNITS REQUIRED FOR THE PROGRESSIVE GRADUATE DEGREE</b>
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**TOTAL UNIT COUNTS AND REQUIRED GRADUATE UNITS**

28	<b>TOTAL UNITS REQUIRED FOR THE TRADITIONAL GRADUATE DEGREE</b>
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9	<b>TOTAL GRADUATE UNITS THAT MAY BE WAIVED (IF ANY)</b>
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19	<b>MINIMUM NUMBER OF GRADUATE UNITS THAT MUST BE AT THE 500 LEVEL OR ABOVE</b>
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**NOTES FROM THE DEPARTMENT**

This section highlights any unique considerations, exceptions, or requirements for the graduate program. If a program has specific restrictions (courses, majors, etc.), they are detailed below.

CE 568 and CE 505 are deigned to be taken the same semester. CE 568 runs for the first half of the semester and then CE 505 runs for the second half.

Approved Electives:

**CE 501:** Architecture, Engineering and Construction Practices (4 units)

**CE 502:** Construction Business (4 units)

**CE 526:** Engineering Mathematical Methods (4 units)

**CE 531:** Quantifying Uncertainty in Civil Environmental Engineering (2 units)

**CE 532:** Data Analytics in Civil Engineering (2 units)

**CE 534:** Design of Earth Structures (3 units)

**CE 564:** Construction Planning and Preconstruction (4 units)

**CE 569:** Project Controls (4 units)

**CE 574:** Construction Means and Methods (4 units)

**CE 575:** Sustainability, Well-Being and Innovation in the Built Environment (4 units)

**CE 576:** Invention and Technology Development (3 units)

**CE 583:** Design of Transportation Facilities (4 units)

**CE 584:** Intelligent Transportation Systems (4 units)

Other courses may be approved for the program as electives. These opportunities can be discussed during course plan advisement.

DocuSigned by:  
  
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**Authorizing Dean's Name**

Kelly Goulis

**Authorizing Dean's Title**

Senior Associate Dean

11/19/2024 | 10:07:39 PM PST

**Date Approved**