

# INDUSTRIALIZED CONSTRUCTION ENGINEERING

Industrialized construction engineering includes the use design expertise in bridges, structures, and other large infrastructure while applying prefabrication design and assembly, digitalization, automation and artificial intelligence, and robotics to assist and deliver construction projects.

## About this Program

- **College:** Herbert Wertheim College of Engineering (<https://catalog.ufl.edu/UGRD/colleges-schools/UGENG/>)
- **Degree:** Bachelor of Science in Industrialized Construction Engineering
- **Credits for Degree:** 128

*To graduate with this major, students must complete all university, college, and major requirements.*

## Department Information

**Website** (<https://www.essie.ufl.edu/civil-coastal-engineering/>)

### Curriculum

- Civil Engineering
- Combination Degrees
- Industrialized Construction Engineering

## Department Requirements

A minimum grade of C is required for all courses marked below. A minimum GPA of 2.0 is required for all civil engineering courses. Before graduating, all BS Industrialized Construction Engineering students must take the Fundamentals of Engineering exam.

The basic program provides the minimum education for practice. Beyond the bachelor's degree, advanced degrees are available in geosensing, transportation, water resources, structural engineering, geotechnical engineering, construction, public works, civil engineering materials, and coastal and oceanographic engineering.

## Educational Objectives

The undergraduate program in civil engineering will prepare graduates to

- Meet the needs and expectations of civil engineering employers and proceed toward the attainment of a Professional Engineering (P.E.) license
- Continue their education and pursue advanced degrees if they so desire.

## Goals

- To develop industrialized construction engineering professionals with proficiency in the fundamentals of science and engineering
- To develop an understanding of the planning, design, construction and operation of construction engineering projects
- To develop enhanced communication skills
- To develop an appreciation of professionalism and ethics in the practice of engineering.

## Mission

The department strives to build upon a leading program of exceptional teaching, innovative research and dedicated service by maintaining a strong curriculum, a highly qualified and committed faculty, outstanding facilities and essential funding.

### Critical Tracking

Critical Tracking records each student's progress in courses that are required for progress toward each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (<https://cpm.flvc.org/advance-search/>) may be used for transfer students.

## Semester 1

- Complete 1 of 7 critical-tracking courses with a minimum grade of C within two attempts: CHM 2045 or CHM 2095, MAC 2311, MAC 2312, MAC 2313, MAP 2302, PHY 2048, PHY 2049
- 2.5 GPA required for all critical-tracking courses (lower division)
- 2.0 UF GPA required

## Semester 2

- Complete 1 additional critical-tracking course with a minimum grade of C within two attempts
- 2.5 GPA required for all critical-tracking courses (lower division)
- 2.0 UF GPA required

## Semester 3

- Complete 2 additional critical-tracking courses with minimum grades of C within two attempts
- 2.5 GPA required for all critical-tracking courses (lower division)
- 2.0 UF GPA required

## Semester 4

- Complete 2 additional critical-tracking courses with minimum grades of C within two attempts
- 2.5 GPA required for all critical-tracking courses (lower division)
- 2.0 UF GPA required

## Semester 5

- Complete final lower division critical-tracking course and EIN 3354 with minimum grades of C
- Complete CGN 4160 with minimum grade of C
- 2.0 UF GPA required

## Semester 6

- Complete CGN 3501C with minimum grades of C
- 2.0 UF GPA required

## Semester 7

- Complete CCE 4521C
- 2.0 UF GPA required

## Semester 8

- Complete CCE 4811
- Complete all remaining Civil Engineering required courses
- 2.0 UF GPA required

### Model Semester Plan

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

*This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.*

Course	Title	Credits
<b>Semester One</b>		
Quest 1 (Gen Ed Humanities) <sup>1</sup>		3
BCN 2314	Fundamentals of Industrialized Construction	3
CHM 2045 or CHM 2095	General Chemistry 1 ( <b>Critical Tracking</b> ; Gen Ed Physical Sciences) <sup>1</sup> or Applied General Chemistry 1	3
CHM 2045L	General Chemistry Laboratory (Gen Ed Physical Sciences)	1
ENC 1101	Expository and Argumentative Writing (State Core Gen Ed Composition ( <a href="https://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext">https://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext</a> ); Writing Requirement: 6,000 words) <sup>1</sup>	3
MAC 2311	Analytic Geometry and Calculus 1 ( <b>Critical Tracking</b> ; Gen Ed Mathematics)	4
	<b>Credits</b>	<b>17</b>
<b>Semester Two</b>		
ENC 2256	Writing in the Disciplines (Gen Ed Composition; Writing Requirement: 6,000 words) <sup>1</sup>	3
MAC 2312	Analytic Geometry and Calculus 2 ( <b>Critical Tracking</b> ; State Core Gen Ed Mathematics) <sup>1</sup>	4
PHY 2048	Physics with Calculus 1 ( <b>Critical Tracking</b> ; State Core Gen Ed Physical Sciences)	3

PHY 2048L	Laboratory for PHY 2048 (Gen Ed Physical Sciences)	1
CGN 2328	Technical Drawing and Visualization	3
<b>Credits</b>		<b>14</b>
<b>Semester Three</b>		
Quest 2 <sup>2</sup>		3
BCN 2750	Integrated Construction Planning, Scheduling, and Estimating	3
MAC 2313	Analytic Geometry and Calculus 3 ( <b>Critical Tracking</b> ; Gen Ed Mathematics) <sup>1</sup>	4
PHY 2049	Physics with Calculus 2 ( <b>Critical Tracking</b> ; Gen Ed Physical Sciences) <sup>1</sup>	3
STA 3032 or STA 2023	Engineering Statistics or Introduction to Statistics 1	3
<b>Credits</b>		<b>16</b>
<b>Semester Four</b>		
COP 2273	Python Programming for Engineers	3
EGM 2511	Engineering Mechanics: Statics <sup>1</sup>	3
MAP 2302	Elementary Differential Equations ( <b>Critical Tracking</b> ; Gen Ed Mathematics) <sup>1</sup>	3
State Core Gen Ed Humanities <sup>1</sup>		3
Gen Ed Social and Behavioral Sciences with International; Writing Requirement: 6,000 words		3
<b>Credits</b>		<b>15</b>
<b>Semester Five</b>		
CGN 3421	Computer Methods in Civil Engineering	3
CGN 4160	Civil Engineering Practice <sup>1</sup>	4
EIN 3354	Engineering Economy <sup>1</sup>	3
EGM 3520	Mechanics of Materials	3
EGM 3400	Elements of Dynamics	2
<b>Credits</b>		<b>15</b>
<b>Semester Six</b>		
BCN 4300	Reality Computing and the Built Environment	3
CEG 4011	Soil Mechanics	4
CES 3102	Mechanics of Engineering Structures	4
CGN 3501C	Civil Engineering Materials ( <b>Critical Tracking</b> ; Upper Division) <sup>1</sup>	4
<b>Credits</b>		<b>15</b>
<b>Semester Seven</b>		
CES 4702	Analysis and Design in Reinforced Concrete	3
CCE 4521C	Engineering and Construction Analytics using BIM ( <b>Critical Tracking</b> ; Upper Division)	3
EEL 3872	Artificial Intelligence Fundamentals	3
Approved electives		7
<b>Credits</b>		<b>16</b>
<b>Semester Eight</b>		
BCN 3240C	Equipment and Methods for Heavy/Highway Construction	3
BCN 4753	Construction Finance	3
CCE 4811	Construction Engineering Design ( <b>Critical Tracking</b> ; Upper Division)	3
Approved elective		3
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>120</b>

<sup>1</sup> Minimum grade of C required.

<sup>2</sup> Choose a course that fulfills either the Gen Ed Physical/Biological Science or Civil Engineering Science Elective, while also meeting any International or Writing requirements.

<sup>3</sup> Science Elective Requirement: Upper-division transfer students with 60 credit hours or an approved AA degree are exempt from the Quest 2 course requirement.