

Civil Engineering (BS)

Degree Requirements

General Education Requirements (51 Hours)

Area I – Written Composition (2 Courses, 6 Hours)

- A. 3 hours: EH 101
- B. 3 hours: EH 102

Area II – Humanities & Fine Arts (3 Courses, 9 Hours)

- A. 3 hours from: EH 215, EH 216, EH 225, EH 226, EH 235, EH 236
- B. 3 hours from: ARH 100, ARH 103, ARH 123, ARS 101, DRA 110, MUL 101
- C. 3 hours CA 110

Area III – Natural Sciences & Mathematics (7 Courses & Labs, 16 Hours)

- A. 4 hours from: MA 125
- B. 12 hours from: CH 131 & CH 131L, CH 132 & CH 132L, PH 201 & PH 201L

Area IV – History, Social & Behavioral Sciences (3 Courses, 9 Hours)

- A. 3-6 hours from: HY 101, HY 102, HY 135, HY 136
- B. 3-6 hours from: AN 100, AN 101, CA 100, CA 211, ECO 215, ECO 216, GEO 114, GEO 115, GS 101, HY 101, HY 102, HY 135, HY 136, IS 100, IST 201, PSC 130, PSY 120, PSY 250, SY 109, SY 112

Area V (3 Courses & Labs, 11 Hours)

- A. 11 hours from: MA 126, MA 227, MA 238
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Major Requirements (80-81 Hours)

Civil Engineering Requirements (33 Courses & Labs, 80-81 Hours)

- A. 2 hours: EG 101 or EG 201
- B. 3 hours: ST 315
- C. 15 hours from: EG 231, EG 283, EG 284, EG 315, EG 360
- D. 5 hours: CE 102, CE 204, CE 205
- E. 25 hours: CE 314, CE 315, CE 340, CE 341, CE 352, *CE 353, CE 360, CE 367, CE 370, CE 374, CE 384, CE 385
- F. 16 hours: CE 431, CE 432, *CE 440, *CE 460, *CE 470, CE 471

Science Elective (1 Courses & Lab, 4 Hours)

- A. 4 hours: BLY 121 & BLY 121L, GY 111 & GY 111L, GEO 102 & GEO 102L

Civil Engineering Structural Design (1 Course & Lab, 4 Hours)

- A. 4 hours: *CE 480, CE 481 or *CE 485, CE 486

Civil Engineering Technical Electives** (2 Courses, 6-7 Hurs)

- A. 3 hours: CE 442, CE 474, CE 482, CE 490, CE 485/CE 486
- B. 3-4 hours: CE 410, CE 412, EG 450, GIT 460

Minor Requirements (0 Hours)

A minor is not required for this degree program

Notes:

*Students must complete all five terminal subdiscipline courses (CE 353, CE 440, CE 460, CE 470 and structural design course) with a “C” grade or better.

**Two technical electives are required, at least one of which must be a “design-oriented” course. Students can take 2 courses from List A (design oriented) or one course from List A and one course from List B (non-design oriented).

CA 110, Public Speaking is required for all Civil Engineering students.

Additional Information

It is important that students make adequate progress in the Civil Engineering program. Satisfactory completion of a set of fundamental courses is required before a student is allowed to take advanced courses. Professional Component Standing (PCS) is awarded by the chair of the department when the student completes the College of Engineering PCS requirements and the CCEE departmental PCS requirements.

College Of Engineering PCS Courses

Course Number	Course Title	Credit Hours	Minimum Grade
EH 101	English Composition I	3	C
EH 102	English Composition II	3	C
CH 131	General Chemistry I + Lab	4	C
MA 125	Calculus I	4	C
MA 126	Calculus II	4	C
PH 201	Calculus-Based Physics I + Lab	4	C

Civil Coastal, And Environmental Engineering PCS Courses

Course Number	Course Title	Credit Hours	Minimum Grade
CH 132	General Chemistry II + Lab	4	C
MA 227	Calculus III	3	C
EG 283	Statics	3	C
CE 102	Intro to Civil Engineering	2	C
CE 204/CE 205	Survey Fundamental + Lab	3	C
Science Elective	Biology, Geology, or Land Processes	4	C

Students who fail to maintain at least a 2.00 GPA overall at the University of South Alabama may be required to take or repeat appropriate courses as specified by the department chair to correct their deficiencies and may not be permitted to continue in 300- and 400-level engineering courses.

Graduation Plan

Engineering (BS): Civil Engineering (131 Total Hours)

First Year - Fall Semester

Course ID	Course Description	Hours
MA 125	Calculus I	4
CH 131/CH 131L	General Chemistry and Lab	4
EG 101	Intro to Engineering	2
EH 101	English Composition I	3
General Education	**Area II, Or IV	3
Total Hours		16

First Year - Spring Semester

Course ID	Course Description	Hours
MA 126	Calculus II	4
CH 132/CH 132L	General Chemistry and Lab	4
EH 102	English Composition II	3
CE 102	Intro to Civil Engineering	2
PH 201	Calculus Based Physics I and Lab	4
Total Hours		17

Second Year - Fall Semester

Course ID	Course Description	Hours
MA 227	Calculus III	4
Science Elective	BLY 121 or GY 111 or GEO 102 and Lab	4
CE 204	Surveying Fundamentals	2
CE 205	Surveying Fundamentals Lab	1
EG 283	Statics	3
General Education	**Area II or IV	3
Total Hours		17

Second Year - Spring Semester

Course ID	Course Description	Hours
MA 238	Applied Differential Equations I	3
ST 315	Applied Probability & Statistics	3
EG 284	Dynamics	3

EG 315	Mechanics of Materials	3
General Education	**Area II or IV	3
General Education	**Area II or IV	3
Total Hours		18

Third Year - Fall Semester

Course ID	Course Description	Hours
CE 314	CE Materials	3
CE 315	CE materials Lab	1
CE 352	Transportation Engineering	3
CE 384	Structural Analysis	3
CE 385	Structural Analysis Lab	1
EG 231	Intro to Ethics & Economics	3
EG 360	Fluid Mechanics	3
Total Hours		17

Third Year - Spring Semester

Course ID	Course Description	Hours
CE 340	Soil Mechanics	3
CE 341	Geotechnical Laboratory	1
CE 353	Transportation - Geometric Design	3
CE 360	Water Resources Engineering I	2
CE 367	Hydraulics Laboratory	1
CE 370	Introduction to Environmental Engineering	3
CE 374	Introduction to Environmental Engineering lab	1
General Education	**Area II or Area IV	3
Total Hours		17

Fourth Year - Fall Semester

Course ID	Course Description	Hours
CE 431	Civil Engineering Design I	2
CE 440	Intro to Geotech Engineering	3
CE 470	Water & Wastewater Treatment Design	3
CE 471	Water & Wastewater Treatment Design Lab	1
CE 480 or CE 485	Structural Design	3
CE 481 or CE 486	Structural Design Lab	1

CE 460	Water Resources Engineering II	3
Total Hours		16

Fourth Year - Spring Semester

Course ID	Course Description	Hours
CE 432	Civil Engineering Design II	4
Technical Elective	**Civil Engineering Electives	3
Technical Elective	**Civil Engineering Electives	3
General Education	**Area II or IV	3
Total Hours		13

Notes

**See Degree Requirements

Bold courses required for Professional Component Standing (PCS) with a "C" grade or better

Students must make a 2.0 GPA in CE Major courses to graduate.

Students must complete all 5 terminal subdiscipline courses (CE 353, CE 440, CE 460, CE 470, and Structural Design) with a "C" grade or better.

Major Milestones

CIVIL ENGINEERING SAMPLE 4-YEAR PLAN WITH MILESTONES

Term 1	Course Description	Pre-req	Cr Hrs	Milestone Notes
EH 101*	English Composition I		3	Must complete at least 12 hours with a 2.0 or higher GPA
MA 125	Calculus I	ACT Math 27	4	
CH 131/ CH 131L	General Chemistry I	ACT Math 24	4	
EG 101	Freshman Seminar	ACT Math 24	2	
Fine Arts Elective	General Education Course List		3	
			16	
Term 2	Course Description	Pre-req	Cr Hrs	Milestone Notes
EH 102	English Composition II	EH 101 or test score	3	MA 125

MA 126	Calculus II	MA 125	4	CH 131/131L
CH 132/ CH 132L	General Chemistry II	CH 131	4	EH 101 or EH 105*
PH 201/PH 201L	Physics I	MA 125 and MA 126 (cc)	4	
CE 102	Intro to Civil Engineering	ACT Math 24+ or MA 112	2	
			17	

Term 3	Course Description	Pre-req	Cr Hrs	Milestone Notes
MA 227	Calculus III	MA 227 (cc)	4	PH 201/201L
CE 204	Surveying Fundamentals	CE 102	2	MA 126
CE 205	Surveying Fundamentals Lab	CE 102	1	CH 132/132L
EG 283	Statics	MA 126 and PH 201	3	
Science Elective	See advisor for approved course list		4	
History (US or Western Civ.)	General Education Course List		3	
			17	

Term 4	Course Description	Pre-req	Cr Hrs	Milestone Notes
MA 238	Differential Equations	MA 227 (cc)	3	MA 227
EG 284	Dynamics	EG 283	3	EG 283
EG 315	Mechanics of Materials	EG 283 and MA 227	3	EH 102
ST 315	Apps Prob and Statistics	MA 125	3	Science Elective
CA 110	Public Speaking		3	CE 204
English Literature	General Education Course List		3	CE 205
			18	

Term 5	Course Description	Pre-req	Cr Hrs	Milestone Notes
CE 314	Civil Engineering Materials	EH 102, EG 315 and CE 315 (cc)	3	
CE 315	Civil Engineering Materials Lab	EH 102, EG 315 and CE 314 (cc)	1	
CE 384	Structural Analysis	EG 315	3	
CE 385	Structural Analysis Lab	EG 315	1	

EG 231	Engineering Economics and Ethics	MA 126	3
EG 360	Fluid Mechanics	MA 238 and EG 284	3
CE 352	Transportation	CE 204 and CE 205	3
			17

Term 6	Course Description	Pre-req	Cr Hrs	Milestone Notes
CE 340	Soil Mechanics	EG 315, EG 360, and CE 341 (cc)	3	Apply for graduation
CE 341 (W)	Geotechnical Lab	CE 340 (cc)	1	
CE 353	Transportation Geometric Design	CE 352	3	
CE 360	Water Resources Engineering I	EG 360 and CE 205	2	
CE 367 (W)	Hydraulics Lab	EG 360 and CE 360 (cc)	1	
CE 370	Intro to Environmental Engineering	CH 132 and MA 238	3	
CE 374	Environmental Engineering Lab	CH 132 and MA 238		
Social/ Behavioral Elective	General Education Course List		3	
			17	

Term 7	Course Description	Pre-req	Cr Hrs	Milestone Notes
CE 431	CE Design I		2	
CE 440	Geotechnical Engineering	CE 340/CE 341	3	
CE 460	Water Resources Engineering II	CE 360	3	
CE 470	Water/Wastewater	CE 360, CE 370, and CE 374	3	
CE 471	Water/Wastewater Lab	CE 360, CE 370, and CE 374	1	
Structural Design Elective	See advisor for approved course list		4	
			16	

Term 8	Course Description	Pre-req	Cr Hrs	Milestone Notes
CE 432	CE Design II		4	

Technical Elective	See advisor for approved course list	3
Technical Elective	See advisor for approved course list	3
Social/ Behavioral Elective	General Education Course List	3
		13
**TOTAL		131

All bolded courses meet general education requirements.

Courses listed as Milestones are required to obtain the Professional Component Standing (PCS).

Prerequisite courses denoted (cc) may be taken concurrently.

*Students who earn an English ACT score of 27, or a written SAT score of 610, can opt out of EH 101.

****Students not Term 1 - Calculus I ready will exceed the 131 hours required for this degree. If math is not started prior to Fall -Year 1, you are likely extending your four-year graduation time table. Students with ACT Math scores 21 and below should begin math courses in the summer before Fall - Year 1.**

Two designated writing (W) courses are required with at least one course chosen from offerings in the student's major or minor. Courses carrying this required credit are identified in the University Bulletin by a (W) after the course title.

The Sample 4-year plan is designed as a guide for students preparing for their course selections. This information provides only a suggested schedule. Actual course selections should be made in consultation with an advisor.

Department Information

Department of Civil, Coastal, and Environmental Engineering Staff		(251) 460-6174
Interim Chair		John Cleary
Professors		Webb
Associate Professors		Islam, Steward, Cleary, Kang
Assistant Professors		Macdonald, Patch, Smyl, Venkiteswaran, Wu

Department of Civil, Coastal, and Environmental Engineering website
<https://www.southalabama.edu/colleges/engineering/ce/index.html>

Civil Engineering involves the design and construction of systems necessary for our modern society to function. It encompasses many technical specialties whose focus is the design of large, normally one-of-a-kind, facilities such as bridges, buildings, tunnels, highways, dams, waterways, airports, flood control systems, coastal protection systems, water supply networks, and waste treatment plants. As our society expands, challenging opportunities will continue to be available for Civil Engineers practicing in their own private firms, in large companies, or in governmental agencies.

BSCE Program Educational Objectives:

The educational objectives of the Civil Engineering undergraduate program are that, within a few years of program completion, graduates will have used the knowledge and skills gain through academic preparation and post-graduation experience so they have:

1. Advanced in the civil engineering profession, obtained professional licensure, and applied engineering knowledge and problem-solving skills to multi-disciplinary projects.

2. Incorporated economic, environmental, social, regulatory, constructability, and sustainability considerations into the practice of civil engineering.
3. Exhibited effective communication, teamwork, leadership, initiative, project management, and professional and ethical behavior as complements to technical competence.
4. Continued their technical and professional development, which may include graduate level education, continuing education, and participation in professional organizations.

BSCE Student Outcomes:

By the time of graduation from the BSCE Program, students should attain the following outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The Bachelor of Science in Civil Engineering program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>.

The curriculum builds on a strong base in mathematics, physical sciences, engineering sciences, and humanities developed primarily during the freshman and sophomore years. During the junior year, students develop an understanding of the fundamentals of each area of Civil Engineering. The specialty areas include:

- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Water Resources/Coastal Engineering

The senior year focuses on design, construction practices, and the integration of more advanced knowledge in civil engineering. A comprehensive project with students participating in a design team prepares them to enter professional practice.

Satisfactory completion of the program outlined in this Bulletin leads to a degree of Bachelor of Science in Civil Engineering. Students must also comply with the College of Engineering Requirements for a Degree which are covered in this Bulletin under College of Engineering.

BSCE Accelerated Bachelor's To Master's (ABM) Degree Option

The Department of Civil, Coastal, & Environmental Engineering allows well-qualified undergraduates in the program to follow an "Accelerated Bachelor's to Master's" study plan. This plan permits up to six credit hours of graduate coursework to count towards both the Bachelor's (as Technical Electives) and the Master's degrees, so that the Master's degree is earned faster than usual. (The coursework concerned must individually satisfy the requirements of both degrees.) See a departmental advisor for specific details.