

MAJOR IN CONSTRUCTION ENGINEERING

CSU recognizes the industry's interest in developing a workforce pipeline of qualified construction engineers ready to make an immediate impact across the nation. This program prepares students to address the infrastructure complexities in our modern world with advanced construction solutions. The industry-centric curriculum provides a real-world design, construction, and safety foundation while also preparing students to become licensed professional engineers. Construction engineering bridges the technical expertise of civil engineering with the concrete application of construction principles across the spectrum of project delivery. The program is expected to be ABET accredited upon graduation of the first cohort of students in spring 2029.

The program achieves industry expectations and anticipated future needs by including three focus areas aligned with strengths of CSU faculty experts: heavy civil/infrastructure; structures and buildings; and water and environmental systems. The Construction Engineering degree also includes industry-informed curriculum in virtual design and construction and construction safety engineering.

The program includes an engaged industry advisory board with an active commitment to ensure the success of the program and students, and Enrichment Programming with Industry and Peer Mentorship.

Participation in student professional societies, other campus organizations, internships, and volunteer activities is highly recommended to foster personal growth and professional development. The Fundamentals of Engineering (FE) exam is the first step toward registration as a licensed Professional Engineer (PE), an important professional credential for construction engineers. Therefore, students are encouraged to take the FE exam prior to graduation. Additional information on this major is provided on the Department of Civil and Environmental Engineering website (<https://www.engr.colostate.edu/ce/undergraduate/construction-engineering/>).

Learning Objectives

The Major in Construction Engineering program strives to provide students with the knowledge, training, and opportunity to achieve the primary educational objective of rewarding careers in construction or

related fields. Upon successful completion of this program, students will be able to:

1. Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. 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. Communicate effectively with a range of audiences.
4. 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. Function effectively on a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives.
6. Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Acquire and apply new knowledge as needed, using appropriate learning strategies.

Potential Occupations

Construction engineers are employed across local, state, and federal governmental agencies, engineering and construction firms, telecommunications and utility companies, and industrial, commercial, and residential land developers. Some possible career paths for graduate with a Bachelor of Science degree in Construction Engineering include, but are not limited to:

- Project Manager for public infrastructure
- Design Engineer for integrated design and construction projects
- Construction Manager for heavy civil projects (roads, bridges, pipelines, airports, etc.)
- Resident Engineer for water and wastewater treatment projects

Requirements Effective Fall 2026

Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
ENGR 111	Fundamentals of Engineering		3
ENGR 114	Engineering for Grand Challenges		3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	3

Total Credits

30

Sophomore

CIVE 260	Engineering Mechanics-Statics		3
CIVE 261	Engineering Mechanics-Dynamics		2
CIVE 360	Mechanics of Solids		3
CON 101	Introduction to Construction Management		3
CONE 103	Virtual Design and Construction I		3
CONE 201	Construction Systems and Decision Analysis		3
CONE 203	Virtual Design and Construction II		3
GEOL 120	Geology and Society (GT-SC2)	3A	3
MATH 261	Calculus for Physical Scientists III		4
MATH 340	Intro to Ordinary Differential Equations		4
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			3

Total Credits**34****Junior**

CIVE 300	Fluid Mechanics		3
CIVE 302	Evaluation of Civil Engineering Materials		2
CIVE 303	Infrastructure and Transportation Systems		3
CIVE 367	Structural Analysis		3
CONE 301	Engineering Contracts		1
CONE 302	Preconstruction and Project Control Systems		5
CONE 401	Construction Safety Engineering		3
CONE 404	Production Planning of Construction Operation		3
CONE 487	Construction Engineering Internship		1
Design Focus Area Electives (select one course from one Focus Area):			3
Heavy Civil/Infrastructure:			
CIVE 401	Hydraulic Engineering		
CIVE 466	Design and Behavior of Steel Structures		
CIVE 467	Design of Reinforced Concrete Structures		
Structures/Buildings:			
CIVE 466	Design and Behavior of Steel Structures		
CIVE 467	Design of Reinforced Concrete Structures		
CONE 405	Virtual Design and Construction III		
Water/Environmental Facilities:			
CIVE 322	Basic Hydrology		
CIVE 330	Ecological Engineering		
CIVE 401	Hydraulic Engineering		
CIVE 405	Sustainable Civil/Environmental Engineering		
CIVE 423	Groundwater Engineering		
CIVE 437	Wastewater Treatment Facility Design		
CIVE 438	Fundamentals of Environmental Engr		
CIVE 440	Nonpoint Source Pollution		
CIVE 441	Water Quality Analysis and Treatment		
CONE 410	Environmental Systems in Construction		
CIVE 450	Geotechnical Engineering II		
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)			3

Total Credits**30**

Senior

CIVE 355	Geotechnical Engineering I		3
CIVE 356	Geotechnical Engineering Laboratory		1
CONE 402	Senior Project Design I	4A,4B	3
CONE 403	Senior Project Design II	4A,4C	3
Design Focus Area Electives (select two courses not previously taken from the same Focus Area as Junior year above):			6
Heavy/Civil Infrastructure:			
CIVE 401	Hydraulic Engineering		
CIVE 466	Design and Behavior of Steel Structures		
CIVE 467	Design of Reinforced Concrete Structures		
Structures/Buildings:			
CIVE 466	Design and Behavior of Steel Structures		
CIVE 467	Design of Reinforced Concrete Structures		
CONE 405	Virtual Design and Construction III		
Water/Environmental Facilities:			
CIVE 322	Basic Hydrology		
CIVE 330	Ecological Engineering		
CIVE 401	Hydraulic Engineering		
CIVE 405	Sustainable Civil/Environmental Engineering		
CIVE 423	Groundwater Engineering		
CIVE 437	Wastewater Treatment Facility Design		
CIVE 438	Fundamentals of Environmental Engr		
CIVE 440	Nonpoint Source Pollution		
CIVE 441	Water Quality Analysis and Treatment		
CONE 410	Environmental Systems in Construction		
CIVE 450	Geotechnical Engineering II		
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		1C	3
Advanced Writing (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)		2	3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		3C	3
Electives ¹			6
Total Credits			31
Program Total Credits:			125

¹ Select enough elective credits to bring the program total to a minimum of 125 credits, of which at least 42 credits must be upper-division (300-level or higher).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for this major assumes students enter college prepared to take calculus.

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	X		3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
ENGR 111	Fundamentals of Engineering	X			3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	X		1B	4
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			X	3B	3
Total Credits					15

Semester 2		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
ENGR 114	Engineering for Grand Challenges	X			3
MATH 161	Calculus for Physical Scientists II (GT-MA1)	X		1B	4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	X		3A	5
Total Credits					15
Sophomore					
Semester 3		Critical	Recommended	AUCC	Credits
CIVE 260	Engineering Mechanics-Statics	X			3
CON 101	Introduction to Construction Management	X			3
CONE 103	Virtual Design and Construction I	X			3
GEOL 120	Geology and Society (GT-SC2)		X	3A	3
MATH 261	Calculus for Physical Scientists III	X			4
Total Credits					16
Semester 4		Critical	Recommended	AUCC	Credits
CIVE 261	Engineering Mechanics-Dynamics	X			2
CIVE 360	Mechanics of Solids	X			3
CONE 201	Construction Systems and Decision Analysis	X			3
CONE 203	Virtual Design and Construction II	X			3
MATH 340	Intro to Ordinary Differential Equations				4
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
Total Credits					18
Junior					
Semester 5		Critical	Recommended	AUCC	Credits
CIVE 300	Fluid Mechanics	X			3
CIVE 302	Evaluation of Civil Engineering Materials	X			2
CIVE 367	Structural Analysis	X			3
CONE 301	Engineering Contracts	X			1
CONE 401	Construction Safety Engineering	X			3
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)				3D	3
Total Credits					15
Semester 6		Critical	Recommended	AUCC	Credits
CIVE 303	Infrastructure and Transportation Systems	X			3
CONE 302	Preconstruction and Project Control Systems	X			5
CONE 404	Production Planning of Construction Operation	X			3
CONE 487	Construction Engineering Internship	X			1
Design Focus Area Elective (see list on Program Requirements tab)			X		3
Total Credits					15
Senior					
Semester 7		Critical	Recommended	AUCC	Credits
CIVE 355	Geotechnical Engineering I	X			3
CIVE 356	Geotechnical Engineering Laboratory	X			1
CONE 402	Senior Project Design I	X		4A,4B	3
Design Focus Area Elective (see list on Program Requirements tab)		X			3
Advanced Writing (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)			X	2	3
Electives					3
Total Credits					16
Semester 8		Critical	Recommended	AUCC	Credits
CONE 403	Senior Project Design II	X		4A,4C	3

Major in Construction Engineering			5
Design Focus Area Elective (see list on Program Requirements tab)	X		3
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		1C	3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		X 3C	3
Electives	X		3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.			
Total Credits			15
Program Total Credits:			125