

CIVIL ENGINEERING, BS

Introduction

Please click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/civil-engineering/>) to see Civil Engineering department information.

The objectives of the bachelor of science in civil engineering program are to produce graduates who:

- are able to perform the technical analyses and design tasks of entry-level civil engineers
- can successfully work toward professional engineering licensure
- communicate effectively, both orally and in writing
- understand the importance of leadership skills, team building and ethical practice
- value lifelong learning and improvement through graduate degrees or professional study
- appreciate the importance of community involvement and social contribution civil engineers are dedicated to improving our living environment

Civil engineering offers an interesting and challenging career in the design, construction, and maintenance of buildings and urban infrastructure; in transportation systems, including highways, airports, rapid transit lines, railroads, and harbor facilities; in the development of water resources, including reservoirs for storage, canals for irrigation, dams for power generation, stormwater management for drainage, groundwater recharge for contamination prevention, wastewater treatment for environmental protection, and water purification for drinking purposes; in the construction industry; including foundations, bridges, concrete and steel structures, in problems concerned with environmental preservation; and in the sustainable development of cities. In preparing for work in such a broad field, the civil engineering student studies mathematics, basic science, communication, social science and humanities, engineering science and civil engineering design. CU Denver's civil engineering graduates usually find their first professional employment with consulting engineering firms, government agencies and various industries.

Program Delivery

- This is an on-campus program.

Declaring This Major

- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/#policiestext>) to go to information about declaring a major.

General Requirements

To earn a degree, students must satisfy all requirements in each of the areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/>)
- CU Denver Core Curriculum (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/#cudenvercorecurriculumtext>)

- College of Engineering, Design and Computing Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-engineering-design-computing/#graduationrequirements>)
- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>) for information about Academic Policies

Program Requirements

1. Students must maintain a minimum 2.0 GPA in all courses applying to major requirements.
2. Students must maintain a minimum 2.0 GPA in all CVEN and CEMT courses attempted.
3. Complete a minimum of 32 semester hours in math, chemistry, and physics
4. Complete a minimum of 18 semester hours of design courses

Code	Title	Hours
Civil Engineering		
CVEN 1025	Civil Engineering Graphics and Computer Aided Design	3
CVEN 1067	Introduction to Civil Engineering	1
ENGR 1100 or IWKS 2300	Fundamentals of Computational Innovation	3
CEMT 2100	Construction Management Fundamentals	3
CVEN 2121	Analytical Mechanics I	3
CVEN 2214 or CVEN 2212	Surveying for Engineering Surveying for Construction and Engineering	1-2
CVEN 3111	Analytical Mechanics II	3
CVEN 3121	Mechanics of Materials	3
CVEN 3141	Introduction to Structural Materials	2
CVEN 3200	Computational Methods for Civil Engineers	3
CVEN 3313	Fluid Mechanics	3
CVEN 3323	Hydrosystems Engineering	3
CVEN 3401	Introduction to Environmental Engineering	3
CVEN 3505	Structural Analysis	3
CVEN 3602	Transportation Engineering	3
CVEN 3718	Geotechnical Engineering I	3
CVEN 4000	Senior Seminar	0
Design Courses		18
Required:		
CVEN 4067	Senior Design Projects	
Select five of the following:		
ENGR 1200	Fundamentals of Engineering Design Innovation	
CVEN 4426	Pipe Network and Sewer Design	
CVEN 4427	Storm Water System Design	
CVEN 4565	Timber Structure Design	
CVEN 4575	Structural Steel Design	
CVEN 4585	Reinforced Concrete Design	
CVEN 4590	Design of Prestressed Concrete	
CVEN 4591	Design of Composite Structures	
CVEN 4602	Advanced Highway Design	
CVEN 4650	Urban Street Design	
CVEN 4738	Intermediate Foundation Engineering	

CVEN 5426	Pipe Network and Sewer Design	
CVEN 5427	Storm Water System Design	
CVEN 5540	Masonry Design	
CVEN 5550	Highway Bridge Design	
CVEN 5565	Advanced Timber Structure Design	
CVEN 5575	Advanced Topics in Structural Steel Design	
CVEN 5585	Advanced Topics in Reinforced Concrete	
CVEN 5682	Pavement Design	
CVEN 5590	Design of Prestressed Concrete	
CVEN 5602	Advanced Highway Design	
CVEN 5650	Urban Street Design	

Mathematics

MATH 1401	Calculus I	4
MATH 2411	Calculus II	4
MATH 2421	Calculus III	4
MATH 3191 & MATH 3200	Applied Linear Algebra and Elementary Differential Equations	4-6
or MATH 3195	Linear Algebra and Differential Equations	
CVEN 3611	Engineering Statistics	3
or MATH 3800	Probability and Statistics for Engineers	

Chemistry

CHEM 2031 & CHEM 2038	General Chemistry I and General Chemistry Laboratory I ¹	5
or ENGR 1130	Chemistry for Engineers	

Physics

PHYS 2311	General Physics I: Calculus-Based	4
PHYS 2321	Intro Experimental Phys Lab I	1
PHYS 2331	General Physics II: Calculus-Based	4

Other Courses

Select one of the following: 3

CVEN 4025	Autocad Civil 3d & Advanced Civil Engineering Graphics	
CVEN 4077	Engineering Economy	
CVEN 4087	Engineering Contracts	

Electives

Select three elective courses. Some examples are listed below. ² 9

CEMT 4231	Construction Materials and Methods	
CEMT 4232	Construction Planning and Control	
CEMT 4233	Construction Cost Estimating	
CEMT 4234	Sustainable Construction	
CEMT 4236	Project Management Systems	
CEMT 4240	Building Information Modeling (BIM)	
CEMT 4242	Construction Safety	
CVEN 4025	Autocad Civil 3d & Advanced Civil Engineering Graphics	
CVEN 4077	Engineering Economy	
CVEN 4087	Engineering Contracts	
CVEN 4612	Traffic Impact Assessment	
CVEN 4621	Highway Capacity Analysis	
CVEN 4800	Special Topics	
CVEN 5111	Structural Dynamics	
CVEN 5333	Surface Water Hydrology	
CVEN 5381	Introduction to Geographic Information Systems	

Electives from outside of Civil Engineering

BIOE 1020	Bioengineering Design and Prototyping II	
BIOL 2010	Organisms to Ecosystems (Gen Bio) ³	
CHEM 2061	General Chemistry II ³	
CSCI 1510	Logic Design ³	
CSCI 2132	Circuits and Electronics ³	
ELEC 1510	Digital Logic ³	
ELEC 2132	Circuit Analysis I ³	
ENVS 3082	Energy and the Environment	
ENVS 4740	Soil Science and Geography	
GEOL 1073	Physical Geology: Surface Processes ³	
IWKS 3100	3D Design, Computation and Prototyping	
MATH 4820	Introduction to Mathematical Statistics	
MECH 3012	Thermodynamics	
PHYS 2711	Vibrations and Waves ³	
PHYS 2811	Modern Physics I ³	
URPL 3000	Planning the Built Environment	
URPL 4000	Planning History and Theory	

CU Denver Core Curriculum

Select 24 Credits (<https://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/>) 24

Total Hours 130-133

¹ Students who take CHEM 2031 & CHEM 2038 to fulfill the chemistry requirement will need an additional semester hour to reach the 130 semester hours required for the degree.

² Any 4000-level or higher CVEN or CEMT courses. Other math, science or engineering courses may be allowed with advisor approval.

³ A maximum of one lower-division course (level 1000-2999) may be applied to electives.

Note

Up to two 5000-level CVEN courses taken at CU Denver for the bachelor of science in civil engineering can be applied to a CU Denver civil engineering master's degree if relevant to the student's master's degree emphasis as determined by the students master's degree advisor.

To review the Degree Map for this program, please visit our website (<https://www.ucdenver.edu/student/advising/undergraduate/degree-maps/cedc/>).