

Civil Engineering, B.S.

Civil engineering is the oldest engineering discipline. The Bachelor of Science in Civil Engineering prepares graduates to apply mathematical and scientific principles to the design and supervision of infrastructure components including: buildings, roads, bridges, dams, tunnels, mass transit systems, and airports. Civil engineers are also involved in environmental studies and the design and supervision of municipal water supplies and sewage systems.

Matriculation Requirements

1. To be admitted to the BSCE program, a student must complete the foundation courses in Mathematics (MATH 1210, 1220, 2210, 2250); Physics and Chemistry (PHYS 2210 with 2215, CHEM 1210 with 1215, and PHYS 2220 with 2225 or CHEM 1220 with 1225); English (ENGL 1010 or ENGH 1005, ENGL 2010); Engineering (ENGR 1000, 2010, 2030, 2140, 2160; and CIVE 2130); Computer Aided Drafting (EGDT 1040), and Surveying Applications and Field Techniques I (EGDT 1400) with a minimum grade of C in these courses.
2. Must complete courses with a grade point average of 2.5 or above.
3. A student not meeting all of the admission requirements, may request in writing, a provisional admission status for a semester from the department. The provisional admission status must be approved by the civil engineering program coordinator.

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		126
General Education Requirements		38 Credits
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC Literacies and Composition Across Contexts CC	3
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1210	Calculus I QL	4
Complete one of the following:		3
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3)	
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE Fitness for Life TE	2
PHIL 205G or PHIL 2050	Ethics and Values IH GI Ethics and Values IH	3
Distribution Courses:		
Fine Arts		3
Biology		3
Humanities (COMM 1020 recommended)		3
Social/Behavioral Science (COMM 2110 recommended)		3
PHYS 2210	Physics for Scientists and Engineers I PP	4
CHEM 1210	Principles of Chemistry I PP	4
Discipline Core Requirements		88 Credits
CHEM 1215	Principles of Chemistry I Laboratory	1
EGDT 1040	Fundamentals of Technical Engineering Drawing	3
EGDT 1400	Surveying Applications and Field Techniques I	3
ENGR 1000	Introduction to Engineering WE	3
ENGR 2010	Engineering Statics	3
ENGR 2030	Engineering Dynamics	3

ENGR 2140	Mechanics of Materials	3
MATH 1220	Calculus II	4
MATH 2210	Calculus III	4
MATH 2250	Differential Equations and Linear Algebra	4
CIVE 2000	Introduction to Civil Engineering Seminar	1
CIVE 2130	Engineering Economics and Statistics	3
CIVE 2450	Numerical Methods with Excel and VBA	3
or ENGR 2450	Computational Methods for Engineering Analysis	
CIVE 3000	Civil Engineering Career Planning Seminar	1
CIVE 3010	Introduction to Transportation Engineering	3
CIVE 3130	Introduction to Structural Engineering	3
CIVE 3210	Introduction to Geotechnical Engineering	3
CIVE 3310	Civil Engineering Fluid Mechanics	3
CIVE 3320	Introduction to Water Resources	3
CIVE 3335	Hydrology and Hydraulics Lab WE	2
CIVE 3410	Introduction to Civil Engineering Materials	3
CIVE 3415	Civil Engineering Materials Lab WE	2
CIVE 4810	Civil Engineering Capstone I	3
CIVE 4820	Civil Engineering Capstone II	3
PHYS 2215	Physics for Scientists and Engineers I Lab	1
PHYS 2220	Physics for Scientists and Engineers II PP	4
or CHEM 1220	Principles of Chemistry II PP	
PHYS 2225	Physics for Scientists and Engineers II Lab	1
or CHEM 1225	Principles of Chemistry II Laboratory	
Elective Courses (15 credit hours are required; two courses may be taken from Technical Elective list; at least six credit hours must be at 4000 level)		
CIVE Elective Courses		15
CIVE 3140	Structural Steel Design I (3)	
CIVE 3150	Reinforced Concrete Design I (3)	
CIVE 3610	Environmental Engineering (3)	
CIVE 4010	Traffic Engineering (3)	
CIVE 4020	Highway Design (3)	
CIVE 4160	Timber and Masonry Design (3)	
CIVE 4210	Foundation Design (3)	
CIVE 4220	Ground Improvement Methods (3)	
CIVE 4310	Storm Water Management (3)	
CIVE 4320	Open Channel Flow (3)	
ME 4420	Finite Element Methods (3)	
CIVE 4610	Water and Wastewater (3)	
CIVE 490R	Advanced Current Topics in Civil Engineering (1-3)	
CIVE 491R	Independent Study in Civil Engineering (1-3)	
Technical Elective Courses		
CIVE 481R	Internship (1-3)	
ARC 4120	Active Environmental Systems (3)	
ARC 4220	Building Envelope and Science (3)	
AVSC 3120	Airport Management (3)	
CMGT 2025	Heavy Civil Plans and Specifications (3)	
CMGT 2060	Construction Job Site Management (3)	
CMGT 2080	Principles of Construction Scheduling (3)	
CMGT 3030	Principles of Construction Estimating (3)	
CMGT 3050	Construction Equipment/Planning and Logistics (3)	
CMGT 3160	Building Information Modeling (3)	

CMGT 4010	Construction Contracts (3)
CMGT 4020	Construction Project Management (3)
CMGT 405G	Global Sustainability and the Built Environment GI WE (3)
EGDT 1020	3D Architectural Modeling (3)
EGDT 1060	MicroStation Infrastructure Design (3)
EGDT 1300	Structural Drafting and Design (3)
EGDT 2400	Surveying Applications and Field Techniques II (3)
EGDT 2500	3 Dimensional Modeling--Civil 3D (3)
EGDT 3500	Advanced Civil Drafting and Design (3)
ENVT 3280	Environmental Law (3)
ENVT 3290	Environmental Reporting WE (3)
ENVT 3330	Water Resources Management (3)
ENVT 3750	Land Use Planning (3)
ENVT 3850	Environmental Policy WE (3)
ESMG 445G	Human Factors in Emergency Management GI (3)
GEO 3000	Environmental Geochemistry (3)
LEGL 3000	Business Law (3)

Students may also take upper level computer, electrical, and mechanical engineering classes as technical electives in consultation with their faculty advisors and approval of the department offering the courses.

Graduation Requirements

1. Completion of a minimum of 126 semester credits, with a minimum of 40 upper-division credits.
2. Overall grade point average of 2.5 or above, with a minimum grade of C in all discipline core and elective requirements.
3. Residency hours - minimum of 30 credit hours through course attendance at UVU. Ten of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved CIVE courses.
4. All transfer credits must be approved in writing by UVU and the civil engineering program coordinator.
5. No more than 80 semester hours of transfer credit, with no more than 20 hours transfer credit of CIVE courses.
6. No more than 6 semester hours may be earned through independent study.
7. Successful completion of at least one Global/Intercultural course.
8. Have taken the NCEES Fundamentals of Engineering Exam.
9. Successful completion of at least two Writing Enriched (WE) courses.

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (<http://www.uvu.edu/wolverinetrack/>).

First Year

Semester 1		Credit Hours
MATH 1210	Calculus I QL	4
CHEM 1210	Principles of Chemistry I PP	4
CHEM 1215	Principles of Chemistry I Laboratory	1
ENGL 1010	Introduction to Academic Writing CC	3
ENGR 1000	Introduction to Engineering WE	3
Credit Hours		15

Semester 2

MATH 1220	Calculus II	4
PHYS 2210	Physics for Scientists and Engineers I PP	4
PHYS 2215	Physics for Scientists and Engineers I Lab	1
ENGL 2010	Intermediate Academic Writing CC	3
EGDT 1040	Fundamentals of Technical Engineering Drawing	3
Credit Hours		15

Second Year

Semester 3		
CIVE 2130	Engineering Economics and Statistics	3
MATH 2250	Differential Equations and Linear Algebra	4

ENGR 2010	Engineering Statics	3
Complete one:		5
PHYS 2220 & PHYS 2225	Physics for Scientists and Engineers II PP and Physics for Scientists and Engineers II Lab	
CHEM 1220 & CHEM 1225	Principles of Chemistry II PP and Principles of Chemistry II Laboratory	
Credit Hours		15
Semester 4		
CIVE 2000	Introduction to Civil Engineering Seminar	1
MATH 2210	Calculus III	4
ENGR 2030	Engineering Dynamics	3
ENGR 2140	Mechanics of Materials	3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE or Fitness for Life TE	2
EGDT 1400	Surveying Applications and Field Techniques I	3
Credit Hours		16
Third Year		
Semester 5		
Biology (Choose from the GE approved Biology list)		3
CIVE 2450 or ENGR 2450	Numerical Methods with Excel and VBA or Computational Methods for Engineering Analysis	3
CIVE 3000	Civil Engineering Career Planning Seminar	1
CIVE 3010	Introduction to Transportation Engineering	3
CIVE 3130	Introduction to Structural Engineering	3
CIVE 3310	Civil Engineering Fluid Mechanics	3
Credit Hours		16
Semester 6		
CIVE 3210	Introduction to Geotechnical Engineering	3
CIVE 3320	Introduction to Water Resources	3
CIVE 3335	Hydrology and Hydraulics Lab WE	2
CIVE XXXX (Civil Engineering Elective)		3
COMM 1020	Public Speaking HH	3
COMM 2110	Interpersonal Communication SS	3
Credit Hours		17
Fourth Year		
Semester 7		
CIVE 3410	Introduction to Civil Engineering Materials	3
CIVE 3415	Civil Engineering Materials Lab WE	2
CIVE 4810	Civil Engineering Capstone I	3
CIVE XXXX (Civil Engineering Elective)		3
Technical Elective		3
Fine Arts (Choose from the GE approved Fine Arts list)		3
Credit Hours		17
Semester 8		
CIVE 4820	Civil Engineering Capstone II	3
CIVE 4XXX (4000 level Engineering Elective)		3
CIVE 4XXX (4000 level Engineering Elective)		3
American Institution (Choose from the GE American institution list)		3
PHIL 205G	Ethics and Values IH GI	3
Credit Hours		15
Total Credit Hours		126

Program Learning 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.