BSCiE in Civil Engineering

Degree Program Description

Civil engineers are responsible for design, construction, and operation of our public and private infrastructure, for protecting our natural resources, and for preserving the health and safety of the general public. Civil engineers are vital to our nation's economic vitality as they provide infrastructure for safe, efficient, and sustainable transportation of people and goods. The curriculum includes fundamental coursework in math and basic sciences, specialized coursework covering the subdisciplines of structural engineering, transportation engineering, geotechnical engineering, environmental engineering, and water resources engineering, as well as general education courses in the humanities and social sciences. Graduates are well prepared to become licensed Professional Engineers. Graduates are commonly employed by private firms that provide design and consulting services, by construction contractors that build our infrastructure, and by government agencies responsible for specific components of the nation's infrastructure. Some graduates opt to further specialize within the civil engineering profession by pursuing graduate degrees.

Civil engineering, considered one of the oldest engineering disciplines, encompasses many specialties. The specialties include construction, environmental, geotechnical, structural, transportation, and water resources engineering. Many civil engineers hold supervisory or administrative positions, from supervisor of a construction site to city engineer. Others may work in design, construction, regulatory, research, or teaching.

Major Program Requirements

Students are introduced to Civil Engineering and professional engineering design practices in the CV_ENG 1000 course. Additional engineering topics also include basic computer and graphics courses. These are followed with basic engineering science courses, which ground the students in the fundamentals necessary for future course work and a sophomore design experience.

Civil Engineering topics courses in the junior year provide students with the basic fundamentals in the areas of environmental engineering, geotechnical engineering, hydrology/water resources, structural engineering, and transportation/traffic engineering. Many of these courses contain elements of civil engineering design. Bachelor of Science in Civil Engineering (BS CiE) requires that students earn a C- or better in the Civil Engineering core classes (CV_ENG 3010, CV_ENG 3100, CV_ENG 3200, CV_ENG 3300, CV_ENG 3312/CV_ENG 3313 (C- only required in class that serves as core requirement), CV_ENG 3400, CV_ENG 3600, CV_ENG 3700, CV_ENG 3702, CV_ENG 4980).

Civil Engineering Elective courses in the senior year enable students to either begin to specialize within or to maintain a broad educational background across the civil engineering discipline.

Design and communication skills are integrated throughout the curriculum culminating in a capstone design project, which is usually supplied by consultants or governmental agencies. This "final" course requires working in teams, making oral and written presentations, and completing a final design report. Oversight, interaction, and evaluation are provided by practicing engineers from industry and governmental organizations.

Students earning a Bachelor of Science in Civil Engineering are required to complete all University general education (https://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/), University undergraduate requirements (https://catalog.missouri.edu/academicdegreerequirements/universityrequirements/), degree, and major requirements, including selected foundational courses, which may fulfill some University general education requirements. Over one-half of the course work for the degree is completed in engineering or professionally related courses.

Core Requirements		
Math		**16**
MATH 1500	Analytic Geometry and Calculus I	5
MATH 1700	Calculus II	5
MATH 2300	Calculus III	3
MATH 4100	Differential Equations	3
Basic Sciences		**17-18**
CHEM 1400 & CHEM 1401	College Chemistry I and College Chemistry I Laboratory	4
PHYSCS 2750	University Physics I	5
PHYSCS 2760	University Physics II	5-6
or CHEM 1410 & CHEM 1411 & CHEM 2100	College Chemistry II and College Chemistry II Laboratory and Organic Chemistry I	
Basic Science Elective		3
Engineering Topics-General		**17**
INFOTC 1040	Introduction to Problem Solving and Programming	3
ENGINR 1100	Engineering Graphics Fundamentals	2
ENGINR 1200	Statics and Elementary Strength of Materials	3
ENGINR 2200	Mechanics of Materials	3
Engineering topics elective		**3**
Select one of the following:		
BIOL_EN 4380	Applied Electronic Instrumentation	4
ENGINR 2300	Engineering Thermodynamics	3
or CH_ENG 3261	Chemical Engineering Thermodynamics I	
CV_ENG 2080	Dynamics	3
or ENGINR 2260	Dynamics	
Civil Engineering Topics		
CV_ENG 1000	Introduction to Civil Engineering	1
or ENGINR 1000	Introduction to Engineering	
CV_ENG 3010	Decision Methods for Civil Engineering Design	3
CV_ENG 3100	Fundamentals of Transportation Engineering	4
CV_ENG 3200	Fundamentals of Environmental Engineering	4
CV_ENG 3300	Structural Analysis I	4
CV_ENG 3312	Reinforced Concrete Design	3
or CV_ENG 3313	Structural Steel Design	
CV_ENG 3400	Fundamentals of Geotechnical Engineering	4
CV_ENG 3600	Civil Engineering Materials	4
CV_ENG 3700	Fluid Mechanics	3
CV_ENG 3702	Fundamentals of Water Resources Engineering	3
CV_ENG 4980	Civil Engineering Systems Design	3

CV_ENG Electives	**15**
Advisor-approved electives	**5**
Select ENGINR 1050 or advisor approved elective	2
Advisor Approved Elective	3

Accelerated BSCiE to MS

Students pursing a degree in BSCiE in Civil Engineering have the option of accelerating into the MS in Civil Engineering. This will give students the opportunity to complete the BS and MS degree within a shorter amount of time versus completing each degree separately.

Students in the MS program, traditional or accelerated, are required to take a minimum of 30 hours (transportation area) or 31 hours of graduate credit beyond the bachelor's degree; in the accelerated program, up to 12 credit hours can be taken as part of their undergraduate degree and also counted towards the MS, requiring only an additional 18 or 19 credit hours after the bachelor's degree.

The requirements for the MS degree are the same as the traditional MS degree program (https://catalog.missouri.edu/collegeofengineering/civilengineering/ms-civil-engineering/). Core Courses required to complete MS (at least 15 must be 8000 level or above).

Program structure

Total Credits Required for Graduation

- Total Undergraduate Credits: 125
- Total of Dual Credits: 12
- Total Graduate Credits: 30-31

Residency Requirements: one academic year as full time graduate student.

Admissions

The application deadline for the MS accelerated program will be March 1st for fall admission and October 1st for spring admission. Undergraduate seniors will be considered for the program, but depending on the number and level of courses taken, the length of their program may be extended. An individual plan of study will be developed for students applying later than the second semester of their junior year.

In order for a student to participate in the accelerated program they must:

- Have completed at least 90 credit hours towards a bachelor's degree.
- Maintain a minimum GPA of 3.0 by the end of their junior year.
- Identify a faculty member in the area of interest that can serve as graduate advisor.
- Meet admission criteria for the MS set by each program area within the department.

Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year			
Fall	**CR**	**Spring**	**CR**
MATH 1500	5	MATH 1700	5
ENGINR 1100	2	PHYSCS 2750	5
CHEM 1400 & CHEM 1401	4	INFOTC 1040	3
ENGLSH 1000	3	ENGINR 1050 (or Advisor Approved Elective)	2
CV_ENG 1000	1		
	15		**15**
Second Year			
Fall	**CR**	**Spring**	**CR**
MATH 2300	3	MATH 4100	3
ENGINR 1200	3	PHYSCS 2760	5
CV_ENG 3010	3	ENGINR 2200	3
CV_ENG 3200	4	CV_ENG 3100	4
S BS or HS FA**	3		
	16		**15**
Third Year			
Fall	**CR**	**Spring**	**CR**
CV_ENG 3300	4	CV_ENG 3400	4
CV_ENG 3600	4	CV_ENG 3702	4
CV_ENG 3700	3	CV_ENG 3312 or 3313	3
S BS or HS FA**	3	Engineering Topics Elective	3
Basic Science Elective	3	S BS or HS FA **	3
	17		**17**
Fourth Year			
Fall	**CR**	**Spring**	**CR**
Advisor Approved Elective	3	CV_ENG 4980	3
Civil Engineering Elective	9	Civil Engineering Electives	6
S BS or HS FA **	3	S BS or HS FA**	6
	15		**15**

Total Credits: 125

* Denotes General Education Requirements

** S BS = Social Behavior Science; HS FA = Humanities Studies/Fine Arts