

CIVIL ENGINEERING, BACHELOR OF SCIENCE (534P, 534)

Program Coordinator

Jason C. Wilson, jason.wilson@wku.edu, (270) 745-2322

Civil engineers design a better world in which to live. They design, build, and maintain our nation's infrastructure including: roads and bridges; buildings and foundations; water supply and waste-water facilities; stormwater management systems; and environmental protection facilities.

The mission of the civil engineering program is to prepare students for professional engineering and management positions in all phases of civil engineering projects. The program provides a broad educational background with a foundation in basic engineering and business principles. These basic skills are complemented by advanced topics in engineering design, management, finance, computer applications, and real world civil engineering experiences throughout the baccalaureate degree program. The civil engineering program at WKU focuses on construction, geotechnical engineering, construction materials, structures, surveying, and hydrology.

The teaching philosophy of this program focuses on project-based learning. This is achieved by placing competent, practicing engineers in the classroom as professors, engaging students in the practice of civil engineering through hands-on class projects, and involving students in faculty consulting and applied research activities. Real engineering projects often serve as class projects. Project sites and professional engineering and construction management firm offices often serve as classrooms.

The curriculum requires a minimum of 62-63 technical specialty hours, completion of pre-major courses, additional 32 semester hours of math and science requirements, and completion of Colonnade general education hours.

The WKU Civil Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Civil Engineering Program Educational Objectives

The program achieves its mission by focusing on specific educational objectives. A few years after graduation, WKU CE graduates are expected to have the following characteristics:

Objective 1: Graduates attain positions of Engineer in Responsible Charge on projects in both the public and private sectors and successfully execute projects using technical and managerial skills while demonstrating professional and ethical behavior.

Objective 2: Graduates attain Engineering licensure and other professional certifications as appropriate to their career.

Objective 3: Graduates continue to pursue life-long learning opportunities through advanced degrees and various continuing education endeavors.

Objective 4: Graduates become leaders within their companies, the profession, and other activities.

The CE student outcomes are listed on the program website at <https://www.wku.edu/seas/>.

Admission Requirements

Academic Standards for the WKU Civil Engineering Program

Students are admitted as a pre-major in civil engineering. To transition from pre-major to major and to graduate with a degree in civil engineering, students must complete each of the following courses and labs with a grade of "C" or better.

Code	Title	Hours
ENG 100	Introduction to College Writing	3
COMM 145	Fundamentals of Public Speaking and Communication ¹	3
MATH 136 & MATH 137	Calculus I and Calculus II	8
PHYS 255 & PHYS 256	University Physics I and University Physics I Lab	5
EM 222	Statics	3
GEOL 111	The Earth	3

¹ COMM 145 will be replaced with a Human Communications (OC Course).

Students must also complete the following courses with a grade of "C" or better: all pre-major courses, and all major courses except for one.

In addition, each student is required to have a 2-course sequence in four (4) different civil engineering areas. The curriculum already includes a 2-course sequence in structures, geotechnical engineering, and construction. Therefore, each student must select one of the technical electives to cover an additional area such as surveying, materials, environmental engineering, hydrology, or transportation.

Program Requirements (62-63 hours)

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at www.wku.edu/registrar/degree_certification.php. (https://www.wku.edu/registrar/degree_certification.php)

Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: <https://www.wku.edu/colonnade/colonnaderequirements.php>. (<https://www.wku.edu/colonnade/colonnaderequirements.php>)

Code	Title	Hours
Students must take the following 68 technical specialty credit hours required for the major:		
Select one of the following: ¹		1-2
CE 176	Civil Engineering Freshman Design	
ME 176	Mechanical Engineering Freshman Design	
EE 101	Electrical Engineering Design I	
SEAS 175 & SEAS 176	Freshmen Experience I and Freshmen Experience II	
CE 160 & CE 161	Principles of Surveying and Principles of Surveying Lab	4
CE 303	Construction Management	3

CE 316	Equipment & Methods	3
CE 332	Transportation Engineering	3
CE 342	Fluid Thermal Science	3
CE 352	Introduction to Environmental Engineering	3
or EM 313	Dynamics	
CE 370 & CE 371	Materials of Construction and Construction Materials Laboratory	3
CE 382	Structural Analysis	3
CE 383	Structural Steel Design	3
or CE 384	Reinforced Concrete Design	
CE 410 & CE 411	Soil Mechanics and Soil Mechanics Lab	4
CE 412	Foundation Engineering	3
CE 461	Hydrology	3
or CE 462	Hydraulic Engineering Systems	
ENGR 490	Senior Project I	2
ENGR 491	Senior Project II	3
AS 163	Architectural Drafting	3
EM 222	Statics	3
EM 303	Mechanics of Deformable Solids	3
Select 9 hours of the following technical electives (six hours must have the prefix CE):		9
CE 300	Floodplain Management	
CE 378 & CE 379	Route Surveying and Route Surveying Lab	
CE 380 & CE 381	Boundary Surveying and Boundary Surveying Lab	
CE 383	Structural Steel Design	
or CE 384	Reinforced Concrete Design	
CE 426	Advanced Construction Materials	
CE 432	Traffic Engineering	
CE 440	Masonry Design and Construction	
CE 444	Bridge Engineering	
CE 462	Hydraulic Engineering Systems	
or CE 461	Hydrology	
CE 474	Civil Engineering Design Project	
CE 475	Selected Topics in Civil Engineering	
EM 313	Dynamics	
or CE 352	Introduction to Environmental Engineering	
CM 363	Construction Estimating and Bidding	
AS 305	Building Codes	
SEAS 325	Survey of Building Systems	
ENGR 400	Principles of Systems Engineering	
GEOL 310	Global Hydrology	
GEOL 415	Applied Environmental Geology	
GISC 316	Geographic Information Systems I	
GISC 317	Geographic Information Systems II	
MATH 350	Advanced Engineering Mathematics	
ME 220	Engineering Thermodynamics I	
Total Hours		62-63

¹ Students must also complete the following courses with a grade of "C" or better in all in all major courses except for one. In addition, each student is required to have a 2-course sequence in four (4) different civil engineering areas. The curriculum already includes a 2-course sequence in structures, geotechnical engineering, and construction. Therefore, each student must select one of the technical electives to cover an additional area such as surveying, materials, environmental engineering, hydrology, or transportation.

Additional Math and Science Requirements

Code	Title	Hours
MATH 237	Multivariable Calculus	4
MATH 331	Differential Equations	3
GEOL 113	The Earth Laboratory	1
CHEM 120 & CHEM 121	College Chemistry I and College Chemistry I Laboratory	5
STAT 301	Introductory Probability and Applied Statistics	3
or CE 305	Risk Analysis	

Finish in Four Plan

First Year			
Fall	Hours	Spring	Hours
CE 176		1 COMM 145	3
AS 163		3 CE 160	3
MATH 136		4 CE 161	1
GEOL 111		3 MATH 137	4
GEOL 113		1 PHYS 255	4
ENG 100		3 PHYS 256	1
		15	16
Second Year			
Fall	Hours	Spring	Hours
CE 303		3 CE 316	3
ENG 200		3 EM 303	3
MATH 237		4 MATH 331	3
EM 222		3 CE 305	3
Colonnade: Arts & Humanities		3 CE 332	3
		16	15
Third Year			
Fall	Hours	Spring	Hours
CE 382		3 CE Tech Elective	3
Colonnade: Social and Behavioral Elective		3 CHEM 120	3
CE 342		3 CHEM 121	2
CE 370		2 HIST 101 or HIST 102	3
CE 371		1 CE 384	3
ENG 300		3 CE 461	3
		15	17
Fourth Year			
Fall	Hours	Spring	Hours
CE 410		3 Colonnade - Social & Cultural	3
CE 411		1 CE Tech Elective	3
CE Tech Elective		3 ENGR 491	3
ENGR 490		2 Colonnade - Local to Global	3
CE 352		3 CE 412	3

Colonnade - Systems	3	
	15	15
Total Hours 124		