

CIVIL ENGINEERING, B.S.E.

Communications and Ethics

This requirement is satisfied by completing one or more program-accepted Carolina Core courses for CMS and VSR.

Degree Requirements (124-142 hours)

See College of Engineering and Computing (<https://academicbulletins.sc.edu/undergraduate/engineering-computing/>) for progression requirements and special academic opportunities.

Program of Study

Requirements	Credit Hours
1. Carolina Core	34-46
2. College Requirements	0
3. Program Requirements	65-71
4. Major Requirements	25

Founding Documents Requirement

All undergraduate students must take a 3-credit course or its equivalent with a passing grade in the subject areas of History, Political Science, or African American Studies that covers the founding documents including the United State Constitution, the Declaration of Independence, the Emancipation Proclamation and one or more documents that are foundational to the African American Freedom struggle, and a minimum of five essays from the Federalist papers. This course may count as a requirement in any part of the program of study including the Carolina Core, the major, minor or cognate, or as a general elective. Courses that meet this requirement are listed here (<https://academicbulletins.sc.edu/undergraduate/founding-document-courses/>).

1. Carolina Core Requirements (34-46 hours)

CMW – Effective, Engaged, and Persuasive Communication: Written (6 hours)

- ENGL 101
- ENGL 102

ARP – Analytical Reasoning and Problem Solving (8 hours)

- MATH 141
- MATH 142

SCI – Scientific Literacy (8 hours)

- CHEM 111 & CHEM 111L
- PHYS 211 & PHYS 211L

GFL – Global Citizenship and Multicultural Understanding: Foreign Language (0-6 hours)

Score two or better on foreign language placement test; or complete the 109 and 110 courses in FREN, GERM, LATN or SPAN; or complete the 121 course in another foreign language.

- CC-GFL courses (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

GHS – Global Citizenship and Multicultural Understanding: Historical Thinking (3 hours)

- any CC-GHS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

GSS – Global Citizenship and Multicultural Understanding: Social Sciences (3 hours)

- any CC-GSS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

AIU – Aesthetic and Interpretive Understanding (3 hours)

- any CC-AIU course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

CMS – Effective, Engaged, and Persuasive Communication: Spoken Component ¹ (0-3 hours)

Select from the following:

- PHIL 325 (CMS/VSR overlay)
- SPCH 140
- any overlay or stand-alone CC-CMS course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

INF – Information Literacy ¹ (0-3 hours)

- any overlay or stand-alone CC-INF course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

VSR – Values, Ethics, and Social Responsibility ¹ (0-3 hours)

Select from the following:

- PHIL 325 (CMS/VSR overlay)
- PHIL 322
- any overlay or stand-alone CC-VSR course (<https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/>)

¹ **Carolina Core Stand Alone or Overlay Eligible Requirements** – Overlay-approved courses offer students the option of meeting two Carolina Core components in a single course. A maximum of two overlays is allowed. The total Carolina Core credit hours for this program must add up to a minimum of 34 hours.

2. College Requirements (0 hours)

No college-required courses for this program.

3. Program Requirements (65-71 hours)

Supporting Courses (65-71 hours)

Course	Title	Credits
Foundational Required Courses		6
MATH 242	Elementary Differential Equations	
STAT 509	Statistics for Engineers	
	or STAT 511 Probability	
Foundational Math Elective		3
Select one from the following:		
MATH 241	Vector Calculus	

MATH 300	Transition to Advanced Mathematics	
MATH 344	Applied Linear Algebra	
Foundational Math/Science Elective		3-4
Select one from the following:		
Additional course from Foundational Math Elective category		
CHEM 112 & 112L	General Chemistry II and General Chemistry II Lab	
PHYS 212 & 212L	Essentials of Physics II and Essentials of Physics II Lab	
Lower Division Engineering		18
ECIV 101	Introduction to Civil Engineering or ENCP 101 Introduction to Engineering	
ECIV 111	Introduction to Engineering Graphics and Visualization or ENCP 102 Introduction to Computer-Aided Design	
ECIV 200	Statics or ENCP 200 Statics	
ECIV 201	Computational Methods for Civil Engineering or ENCP 201 Introduction to Applied Numerical Methods	
ECIV 220	Mechanics of Solids or ENCP 260 Introduction to the Mechanics of Solids	
ECIV 360	Fluid Mechanics or ENCP 360 Fluid Mechanics	
ECIV Laboratory Courses		2
Select two from the following:		
ECIV 303L	Civil Engineering Materials Laboratory	
ECIV 330L	Geotechnical Laboratory	
ECIV 340L	Transportation Engineering Laboratory	
ECIV 350L	Introduction to Environmental Engineering Laboratory	
ECIV 362L	Introduction to Water Resources Engineering Laboratory	
ECIV Distribution Courses		12
Select one course from four of the following five areas:		
Environmental Engineering		
ECIV 551	Elements of Water and Wastewater Treatment	
ECIV 555	Principles of Municipal Solid Waste Engineering	
ECIV 556	Air Pollution Control Engineering	
ECIV 557	Sustainable Construction for Engineers	
ECIV 558	Environmental Engineering Process Modeling	
Structural Engineering		
ECIV 325	Structural Steel Design	
ECIV 327	Reinforced Concrete Design	
Transportation Engineering		
ECIV 540	Transportation Systems Planning	
ECIV 541	Highway Design	
ECIV 542	Traffic Engineering	
ECIV 580	Railway Engineering I	
Geotechnical Engineering		
ECIV 530	Foundation Analysis and Design	
ECIV 531	Design of Earth Structures	
Water Resources Engineering		
ECIV 560	Open Channel Hydraulics	

ECIV 562	Engineering Hydrology	
ECIV 563	Subsurface Hydrology	
Basic Science Elective		3-4
Select one from the following:		
BIOL 110	General Biology	
BIOL 270	Introduction to Environmental Biology	
ENVR 101	Introduction to the Environment	
ENVR 321	Environmental Pollution and Health	
GEOL 101	Introduction to the Earth	
GEOL 103	Environment of the Earth	
MSCI 210	Oceans and Society	
MSCI 215	Coastal Environments of the Southeastern U.S.	
Engineering, Science, or Mathematics (ESM) Electives		12-14
Select from the following:		
Additional courses from Foundational Math Elective category, Foundational Math/Science Elective category and Basic Science		
Additional ECIV courses 300 level and higher		
BIOL 101	Biological Principles I	
BIOL 102	Biological Principles II	
BIOL 250	Microbiology (and higher)	
BMEN 212	Fundamentals of Biomedical Systems (and higher)	
CHEM 118	Computational Chemistry I (and higher)	
CSCE 106	Scientific Applications Programming	
CSCE 145	Algorithmic Design I	
CSCE 146	Algorithmic Design II	
CSCE 201	Introduction to Computer Security	
CSCE 211	Digital Logic Design	
ECHE 300	Chemical Process Principles (and higher)	
ECIV 210	Dynamics or ENCP 210 Dynamics	
ELCT 220	Electrical Engineering for Non-Majors	
ELCT 221	Circuits (and higher)	
EMCH 290	Thermodynamics (or higher (but not ENCP 360)	
ENCP 290	Thermodynamic Fundamentals (and higher (but not ENCP 360) ²	
ENVR 331	Integrating Sustainability (but not ENCP 360)	
ENVR 501	Special Topics in the Environment	
ENVR 533	Sustainability Projects Course	
GEOG 347	Water as a Resource	
GEOG 563	Advanced Geographic Information Systems	
GEOL 302	Rocks and Minerals (or above)	
ITEC 233	Introduction to Computer Hardware and Software (or higher)	
MATH 520	Ordinary Differential Equations	
MATH 521	Boundary Value Problems and Partial Differential Equations	
MATH 544	Linear Algebra	
MATH 550	Vector Analysis	
MSCI 305	Ocean Data Analysis (and higher)	
NAVY 201	Naval Ships Systems I (and higher)	
NAVY 202	Naval Ships Systems II	
NAVY 301	Navigation/Naval Operations I	

PHYS 291	Einstein's Relativity: Understanding by Example (and higher)	
STAT 511	Probability	
STAT 512	Mathematical Statistics	
STAT 513	Theory of Statistical Inference	
STAT 516	Statistical Methods II	
STAT 520	Forecasting and Time Series	
STAT 587	Big Data Analytics	
Career Electives		6
Select two courses from the following:		
Additional courses from Foundational Math Elective category, Foundational Math/Science Elective category, Basic Science category and ESM Elective category.		
Additional ECIV courses 300 level and higher		
ACCT 222	Survey of Accounting	
ECON 224	Introduction to Economics	
FINA 333	Finance and Markets	
MGMT 371	Principles of Management	
MGSC 290	Computer Information Systems in Business	
MKTG 350	Principles of Marketing	
Total Credit Hours		65-69

4. Major Requirements (25 hours)

Major Courses

Course	Title	Credits
ECIV 303	Civil Engineering Materials	3
ECIV 307	Professional Development for Civil Engineers	3
ECIV 320	Structural Analysis I	3
ECIV 330	Introduction to Geotechnical Engineering	3
ECIV 340	Introduction to Transportation Engineering	3
ECIV 350	Introduction to Environmental Engineering	3
ECIV 362	Introduction to Water Resources Engineering	3
ECIV 470	Civil Engineering Design	4
Total Credit Hours		25