CIVIL ENGINEERING, B.S.C.E.

Contact: Dr. Isaac W. Wait, P.E., Chair
isaac.wait@marshall.edu

The Program Educational Objectives of the Bachelor of Science in Civil Engineering (B.S.C.E.) program are that within a few years of graduation program graduates will:

1. Be employed in a position, or enrolled in an advanced educational opportunity, that utilizes their critical thinking and technical skills.
2. Effectively communicate, collaborate, adapt, and apply technical skills, to fulfill the standards and responsibilities required of their profession.
3. Practice their profession for the benefit of society with attention to ethical, societal, environmental, safety, health, and constructability considerations.

The Student Outcomes of the B.S.C.E. are:

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.

Admission Requirements

- Meet Marshall University admission requirements.
- Admission to the B.S.C.E. program requires a minimum composite ACT score of 21 with a math score of 24, or a minimum SAT composite of 1060 with a math SAT of 570.
- Transfer students must have completed MTH 127 College Algebra-Expanded/MTH 130 College Algebra and MTH 132 Precalculus with Sci Applica.

For those needing to complete some requirements first, there is Pre-Engineering. Requirements for Pre-Engineering are a minimum composite ACT score of 19 with a math score of 19-23, or a minimum SAT composite of 990 with a math SAT of 510-560. Students who are admitted to the Pre-Engineering program generally will require an additional calendar year to complete the requirements for the B.S.C.E. degree. Transfer students must be eligible to take MTH 127 College Algebra-Expanded /MTH 130 College Algebra and MTH 132 Precalculus with Sci Applica.

Graduation Requirements

The B.S.C.E. degree program requires a minimum of 124 credit hours of coursework as outlined below. In addition to fulfilling the university's requirements for graduation, B.S.C.E. students must maintain a minimum GPA of 2.0 in all professional courses. These professional courses include mathematics (MTH 229 Calculus/Analytic Geom I (CT) or above), required science courses, core engineering (ENGR) courses, engineering emphasis courses (CE), and courses used as technical electives. Entering students with a math ACT of 24-26 are required to take MTH 132 Precalculus with Sci Applica. Such students will likely need an extra semester or summer term to satisfy B.S.C.E. requirements.

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

A minimum of 124 credit hours of coursework is required to complete the B.S.C.E. degree.

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at https://www.marshall.edu/gened/.

Course Requirements

Code	Title	Credit Hours
Core Curriculum		
Core I		
FYS 100	First Yr Sem Critical Thinking	3
Core I Critical Thinking		3
Core I Critical Thinking		3
Core II		
ENG 101	Beginning Composition	3
ENG 201	Advanced Composition	3
CMM 103	Fund Speech-Communication	3
or CMM 104H	Honors in Speech Comm	
or CMM 207	Bus & Prof Communication	
Core II Mathematics (Requirement met in major)		3
Core II Physical or Natural Science (Requirement met in major)		4
Core II Social Science		3
Core II Humanities		3
Core II Fine Arts		3
Additional University Requirements		
Writing Intensive		3
Writing Intensive		3
Multicultural or International		3
Major-Specific		
MTH 229	Calculus/Analytic Geom I (CT)	5
MTH 230	Calculus/Analytic Geom II	4

MTH 231	Calculus/Analytic Geom III	4
MTH 335	Ordinary Diff Equations	3
STA 345	Applied Prob and Stat	3
CHM 211	Principles of Chemistry I	3
CHM 217	Principles of Chem Lab I	2
CHM 212	Principles Chemistry II	3
CHM 218	Principles of Chem Lab II	2
PHY 211	University Physics I	4
PHY 202	General Physics I Laboratory	1
ENGR 103	Freshman Engineering Seminar	1
ENGR 104	The Engineering Profession	1
ENGR 111	Engineering Computations	3
ENGR 213	Statics	3
ENGR 214	Dynamics	3
ENGR 216	Mech of Deformable Bodies	3
ENGR 217	Engineering Career Preparation	1
ENGR 222	Engr Cost Analysis & Economy	3
ENGR 318	Fluid Mechanics	3
ENGR 451	Intro to Proj Management	3
CE 452	Senior Seminar of Civil Engr	1
CE 453	Capstone Senior Design	3
CE 102	Introduction to CAD	2
CE 241	Introduction to Geomatics	3
CE 312	Structural Analysis	3
CE 319	Civil Engr Fluid Mechanics Lab	1
CE 321	Civil Engineer Materials	4
CE 322	Geotechnical Engineering	4
CE 331	Hydraulic Engineering	3
CE 342	Transportation Engineering	3
CE 351	Environmental Engineering	3

Code	Title	Credit Hours
CE Design, Design Elective and Technical Electives		
CE 453	Capstone Senior Design	3
To be eligible to take Capstone Senior Design (CE 453), students must have completed Introduction to Project Management (ENGR 451) and at least one CE Design Elective.		
CE Design Electives		*6*
Select at least two CE design electives from the following:		
CE 413	Reinforced Concrete	
or CE 414	Structural Steel Design	
CE 425	Foundation Engineering	
or CE 426	Retaining Structures and Slope	
CE 434	Water/Wastewater Trtmt Dsgn	
CE 438	Pavement Design and Management	
or CE 443	Transportation Systems Design	
CE Electives		*6*
Select at least two CE electives from the following, excluding courses that are taken to satisfy the CE Design Electives:		
CE 341	Advanced Geomatics	
CE 413	Reinforced Concrete	
CE 414	Structural Steel Design	
CE 415	Advanced Reinforced Concrete	
CE 425	Foundation Engineering	
CE 426	Retaining Structures and Slope	
CE 433	Hydrologic Engineering	
CE 434	Water/Wastewater Trtmt Dsgn	
CE 438	Pavement Design and Management	
CE 443	Transportation Systems Design	
Any 300 -level or higher CE course not taken to satisfy a CE Design Elective or a CE Elective.		
Technical Elective		*3*
Select one technical elective that satisfies one of the criteria below:		
Any 300-level or higher CE course not taken to satisfy a CE Design Elective or CE Elective.		
Any 3- or 4-hour, 200-level or higher ENGR, ME, or EE course (except ENGR 215, ENGR 280-283, or ENGR 290), or other course with advance approval from the student's advisor and chair.		

Major Information

- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- Course offerings and course attributes are subject to change each semester. Please consult each semester's schedule of courses for availability and attributes.

- General Education Course

- Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

Semester Plan

First Year

First Semester		**Credit Hours**
ENGR 103	Freshman Engineering Seminar	1
ENGR 104	The Engineering Profession	1
MTH 229	Calculus/Analytic Geom I (CT)	5
ENG 101	Beginning Composition	3
FYS 100	First Yr Sem Critical Thinking	3
CMM 103 or CMM 207	Fund Speech-Communication or Bus & Prof Communication	3
	Credit Hours	**16**
Second Semester		
CE 102	Introduction to CAD	2
ENGR 111	Engineering Computations	3
MTH 230	Calculus/Analytic Geom II	4
ENG 201	Advanced Composition	3
PHY 211	University Physics I	4
PHY 202	General Physics I Laboratory	1
	Credit Hours	**17**

Second Year

First Semester		
ENGR 213	Statics	3

CE 241	Introduction to Geomatics	3
MTH 231	Calculus/Analytic Geom III	4
CHM 211	Principles of Chemistry I	3
CHM 217	Principles of Chem Lab I	2
ENGR 217	Engineering Career Preparation	1
	Credit Hours	**16**
Second Semester		
ENGR 214	Dynamics	3
ENGR 216	Mech of Deformable Bodies	3
ENGR 222	Engr Cost Analysis & Economy	3
CHM 212	Principles Chemistry II	3
CHM 218	Principles of Chem Lab II	2
MTH 335	Ordinary Diff Equations	3
	Credit Hours	**17**
Third Year		
First Semester		
ENGR 318	Fluid Mechanics	3
CE 319	Civil Engr Fluid Mechanics Lab	1
CE 312	Structural Analysis	3
CE 321	Civil Engineer Materials	4
STA 345	Applied Prob and Stat	3
	Credit Hours	**14**
Second Semester		
CE 322	Geotechnical Engineering	4
CE 331	Hydraulic Engineering	3
CE 342	Transportation Engineering	3
CE 351	Environmental Engineering	3
CE Design Elective		3
	Credit Hours	**16**
Fourth Year		
First Semester		
CE Design Elective		3
CE Elective		3
ENGR 451	Intro to Proj Management	3
CE 452	Senior Seminar of Civil Engr	1
Core II Social Science		3
Core II Humanities		3
	Credit Hours	**16**
Second Semester		
CE Elective		3
CE 453	Capstone Senior Design	3
Technical Elective		3
Core II Fine Arts		3
	Credit Hours	**12**
	Total Credit Hours	**124**