

CIVIL ENGINEERING (B.S.) GENERAL CIVIL ENGINEERING CONCENTRATION

Introduction/Mission

The mission of the Civil Engineering Program is to prepare students for professional careers in civil engineering in the global society, and for life-long learning and continuous development in the profession through a comprehensive curriculum emphasizing basic engineering principles and fundamentals, practical design applications, communication skills, critical thinking, teamwork, laboratory skills, and professional and ethical issues.

The Programs offers two concentrations:

- General Civil Engineering
- Environmental Engineering

Objectives

Graduates of JSU Civil Engineering Program are expected to:

1. Establish themselves as professionals actively engaging in problem-solving to address the needs of society.
2. Progress in their civil engineering careers or other chosen professions and/or engaged in advanced studies in civil engineering or other related fields.
3. Demonstrate their ability to act professionally and ethically in making decisions and to practice life-long learning and continuing education.

Accreditation

The Undergraduate Civil Engineering Program at JSU is **accredited by the Engineering Accreditation Commission of ABET**, <https://www.abet.org> (<https://www.abet.org/>), **under the commission's General Criteria and Program Criteria for Civil Engineering.**

Code	Title	Hours
MATH 242	CALCULUS II WITH LABORATORY	3
MATH 243	CALCULUS III WITH LABORATORY	3
MATH 244	CALCULUS IV WITH LABORATORY	3
BIO 101 & BIOL 101 or SCI 205	INTRO TO BIOLOGICAL SCIENCE and INTRO TO BIO SCI LAB EARTH & SPACE SCIENCE	3
PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
CIV 222	ENGINEERING MECHANICS I	3
MATH 368	DIFFERENTIAL EQUATIONS	3
CIV 223	ENGINEERING MECHANICS II	3
CIV 201	ENGINEERING GRAPHICS	2
CIV 330 & CIVL 330	FLUID MECHANICS LECTURE and FLUID MECHANICS LAB	4
MATH 307	PROBBLTY & STATISTICS/ENGINEERG	3
CIV 320	STRUCTURAL ANALYSIS	3
CIV 340 & CIVL 340	INTRO TO ENVIRONMENTAL ENGINEE and ENVIRONMENTAL ENGINEERING LAB	4
CIV 360	DESIGN OF STEEL STRUCTURES	3

CIV 355	ENGINEERING ECONOMY	3
CIV 370	WATER RESOURCES ENGINEERING	3
CIV 380 & CIVL 380	INTRO TO GEOTECHNICAL ENGINEER and GEOTECHNICAL ENGINEERING LAB	4
CIV 390	INTRO TO TRNSPRTN ENGINEERING	3
CIV 410	CAPSTONE DESIGN I	3
CIV 411	CAPSTONE DESIGN II	3
CIV 430	FOUNDATION ENGINEERING	3
CIV 420	DESIGN OF CONCRETE STRUCTURES	3
CIV 461	PROF & ETHCL IS IN CIVIL ENGIN	1
Civil Engineering Elective		15
Total Hours		85

Civil Engineering Technical Electives

Code	Title	Hours
CIV 310 & CIVL 310	ENGINEERING SURVEYING and ENGINEERING SURVEYING LAB	3
CIV 431	TRAFFIC ENGINEERING	3
CIV 441	WATER AND WASTEWATER TREATMENT	3
CIV 451	COMPTR METHODS IN CIV ENGINEER	3
CIV 466	ADVD DESIGN OF HYDRAULIC STRUC	3
CIV 468	HAZARDOUS WASTE ENGINEERING	3
CIV 475	PAVEMENT DESIGN	3
CIV 476	ADVD DESIGN OF STEEL STRUCTURE	3
CIV 477	ADVD DESIGN OF CONCRETE STRUCT	3
CIV 481	SPCL PROBLEMS IN CIV ENGR	3
CIV 491	INTRNSHPS IN CIV ENGINEERING I	1-3
CIV 492	INTRNSHPS N CIV ENGINEERING II	1-3

- At least one civil engineering elective must be chosen from:

Code	Title	Hours
CIV 441	WATER AND WASTEWATER TREATMENT	3

(required environmental engineering elective).

- At least one civil engineering elective must be chosen from:

Code	Title	Hours
CIV 431	TRAFFIC ENGINEERING	3
CIV 475	PAVEMENT DESIGN	3

(required transportation engineering elective). The selection of other courses requires the approval of adviser and Dept. Chair.

- The students are required to contact their advisers or Department Chair prior to taking any civil engineering elective.
- The students must take the Fundamentals of Engineering (FE) exam during the last semester, prior to graduation.
- Engineering classes are generally offered once a year.
- No pre-requisite violations are allowed. If a student has a pre-requisite violation, they may not be able to graduate on time.

Course	Title	Hours
Freshman		
Fall		
ENG 104 or ENG 103 or ENG 111	COMPOSITION I or English Composition I with Co-requisite Support or COMPOSITION & LITERATURE FOR L	3
CHEM 141 & CHML 141	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB	4

MATH 241	CALCULUS I WITH LABORATORY	3
UNIV 100	UNIVERSITY SUCCESS	2
Humanities & Fine Arts Option		3
Hours		15
Spring		
ENG 105 or ENG 112	COMPOSITION II or COMPOSITION	3
MATH 242	CALCULUS II WITH LABORATORY	3
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
Social & Behavioral Science Option		3
Pathway Option		3
Hours		16
Sophomore		
Fall		
BIO 101 & BIOL 101 or SCI 205	INTRO TO BIOLOGICAL SCIENCE or EARTH & SPACE SCIENCE	3
CIV 201	ENGINEERING GRAPHICS	2
CIV 222	ENGINEERING MECHANICS I	3
MATH 243	CALCULUS III WITH LABORATORY	3
PHY 212 & PHYL 212	General Physics II and GENERAL PHYSICS LAB II	4
Pathway Option		3
Hours		18
Spring		
CIV 223	ENGINEERING MECHANICS II	3
CIV 240	STRENGTH OF MATERIALS	3
MATH 244	CALCULUS IV WITH LABORATORY	3
MATH 368	DIFFERENTIAL EQUATIONS	3
UNIV 200	CIVIC ENGAGEMENT	1
Pathway Option		3
Hours		16
Junior		
Fall		
CIV 320	STRUCTURAL ANALYSIS	3
CIV 330	FLUID MECHANICS LECTURE	3
CIV 340 & CIVL 340	INTRO TO ENVIRONMENTAL ENGINEE and ENVIRONMENTAL ENGINEERING LAB	4
CIV 355	ENGINEERING ECONOMY	3
MATH 307	PROBLTY & STATISTICS/ENGINEERG	3
Hours		16
Spring		
CIVL 330	FLUID MECHANICS LAB	1
CIV 360	DESIGN OF STEEL STRUCTURES	3
CIV 370	WATER RESOURCES ENGINEERING	3
CIV 380 & CIVL 380	INTRO TO GEOTECHNICAL ENGINEER and GEOTECHNICAL ENGINEERING LAB	4
CIV 390	INTRO TO TRANSPRTN ENGINEERING	3
Civil Engineering Elective		3
Hours		17
Senior		
Fall		
CIV 410	CAPSTONE DESIGN I	3
CIV 420	DESIGN OF CONCRETE STRUCTURES	3
CIVL 421	STRUCTURES & MATERIALS LAB	1
CIV 430	FOUNDATION ENGINEERING	3
CIV 461	PROF & ETHCL IS IN CIVIL ENGIN	1
Civil Engineering Elective		3
Civil Engineering Elective		3
Hours		17
Spring		
CIV 411	CAPSTONE DESIGN II	3

Civil Engineering Elective	3
Civil Engineering Elective	3
Humanities & Fine Arts Option	3
Hours	12
Total Hours	127

Notes:

- Candidates that transfer 12 or more hours of college credit are exempt from UNIV 100 UNIVERSITY SUCCESS, however, the student must take 2 hours of general electives to replace the UNIV course.
- Students are required to take the Mathematics Placement Test to determine if they need to take any math courses before taking MATH 241 CALCULUS I WITH LABORATORY (C).
- The students are required to contact their advisers or Department Chair prior to taking any civil engineering elective.
- The students must take the Fundamentals of Engineering (FE) exam during the last semester, prior to graduation.
- Engineering classes are generally offered once a year.
- No pre-requisite violations are allowed. If a student has a pre-requisite violation, they may not be able to graduate on time.
- Online Graduation Clearance (**to be completed during the graduating semester only**).

Civil Engineering Technical Electives

Code	Title	Hours
CIV 310 & CIVL 310	ENGINEERING SURVEYING and ENGINEERING SURVEYING LAB	3
CIV 431	TRAFFIC ENGINEERING	3
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At least one civil engineering elective must be chosen from:

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(required environmental engineering elective).

At least one civil engineering elective must be chosen from:

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CIV 431	TRAFFIC ENGINEERING	3
CIV 475	PAVEMENT DESIGN	3

(required transportation engineering elective). The selection of other courses requires the approval of adviser and Dept. Chair.

Basic Science Elective:

Code	Title	Hours
BIO 101 & BIOL 101	INTRO TO BIOLOGICAL SCIENCE and INTRO TO BIO SCI LAB	3
SCI 205	EARTH & SPACE SCIENCE	3

Student Learning Outcomes

The JSU Civil Engineering graduates will have

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, and
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.