

CIVIL ENGINEERING (B.S.) ENVIRONMENTAL 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 Program 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 B.S. in Civil Engineering program is accredited by Accreditation Board for Engineering and Technology (ABET), Inc.

Code	Title	Hours
MATH 242	CALCULUS II WITH LABORATORY	3
PHY 211 & PHYL 211	General Physics I and GENERAL PHYSICS LAB I	4
MATH 243	CALCULUS III WITH LABORATORY	3
MATH 244	CALCULUS IV WITH LABORATORY	3
CHEM 142 & CHML 142	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LAB	4
CHEM 241 & CHML 241	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY I LAB	4
BIO 101 & BIOL 101	INTRO TO BIOLOGICAL SCIENCE and INTRO TO BIO SCI LAB	3
	or SCI 205 EARTH & SPACE SCIENCE	
CIV 222	ENGINEERING MECHANICS I	3
MATH 368	DIFFERENTIAL EQUATIONS	3
CIV 223	ENGINEERING MECHANICS II	3
CIV 201	ENGINEERING GRAPHICS	2
CIV 240	STRENGTH OF MATERIALS	3
CIV 330 & CIVL 330	FLUID MECHANICS LECTURE and FLUID MECHANICS LAB	4

MATH 307	PROBLY & 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
CIVL 421	STRUCTURES & MATERIALS LAB	1
Civil Engineering Elective		12
Total Hours		94

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 two civil engineering electives must be chosen from:

Code	Title	Hours
CIV 441	WATER AND WASTEWATER TREATMENT	3
CIV 468	HAZARDOUS WASTE ENGINEERING	3

The selection of other courses requires the approval of advisor and Dept. Chair.

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

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

The selection of other courses requires the approval of advisor and Dept. Chair.

- The students are required to contact their advisors and 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.

2 Civil Engineering (B.S.) Environmental Engineering Concentration

Course	Title	Hours
Freshman		
Fall		
CHEM 141 & CHML 141	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB	4
ENG 104 or ENG 103 or ENG 111	COMPOSITION I or English Composition I with Co-requisite Support or COMPOSITION & LITERATURE FOR L	3
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 & PHY 211	General Physics I and GENERAL PHYSICS LAB I	4
Pathway 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
CHEM 142 & CHML 142	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LAB	4
CIV 201	ENGINEERING GRAPHICS	2
CIV 222	ENGINEERING MECHANICS I	3
MATH 243	CALCULUS III WITH LABORATORY	3
Pathway Option		3
Hours		18
Spring		
CHEM 241	ORGANIC CHEMISTRY I	3
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
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	PROBLY & 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 TRNSPRTN ENGINEERING	3
Social & Behavioral Science Option		3
Hours		17
Senior		
Fall		
CIV 410	CAPSTONE DESIGN I	3
CIV 420	DESIGN OF CONCRETE STRUCTURES	3

CIV 430	FOUNDATION ENGINEERING	3
CIVL 421	STRUCTURES & MATERIALS LAB	1
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.
- Online Graduation Clearance (to be completed during the graduating semester only).

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.