

CIVIL ENGINEERING

BACHELOR'S PROGRAM

Civil engineers design the constructed environment that supports our society. From highways and buildings to bridges and water systems, the profession of civil engineering is responsible for much of the world in which we live.

The program of study leading to the Bachelor of Science in Civil Engineering (B.S.C.V.) reflects the breadth of the profession. Students complete coursework in basic science and mathematics, engineering sciences, civil engineering systems and materials, and the major disciplines in civil engineering. Because of the tremendous impact civil engineers have on society, the curriculum also requires students to pursue studies in the social sciences and the humanities.

The B.S.C.V. program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Civil Engineering Educational Objectives and Student Outcomes

The Civil Engineering program strongly supports the educational objectives and learning outcomes of the College of Engineering and Computer Science (see the [Educational Objectives](#) and [Expected Student Learning](#)

[Outcomes](#) subsections previously listed in this section).

Program Educational Objectives are broad statements that describe the expected accomplishments and professional status of Civil Engineering graduates a few years beyond the baccalaureate degree.

The Civil Engineering program at Florida Atlantic University is dedicated to graduating civil engineers who, within a few years after graduation will:

- A. **Practice civil engineering** within the general areas of structural engineering, transportation engineering, geotechnical engineering and water resources/environmental engineering in the organizations that employ them;
- B. **Advance their knowledge of civil engineering**, both formally and informally, by engaging in lifelong learning experiences including attainment of professional licensure and/or graduate studies;
- C. **Serve as effective professionals** based on strong interpersonal and teamwork skills, an understanding of professional and ethical responsibility and a willingness to take the initiative and seek progressive responsibilities;
- D. **Participate as leaders** in activities that support service to, and/or economic development of, the community, the region, the state and the nation.

The educational objectives of the Bachelor of Science in Civil Engineering program are achieved by ensuring that graduates have the following characteristics or student outcomes:

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.

CIVIL ENGINEERING

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (B.S.C.V.)

(Minimum of 128 credits required)

Admission Requirements

All students must meet the minimum admission requirements of the University. Please refer to the [Admissions section](#) of this catalog.

All students must meet the preprofessional requirements listed [above](#) to be accepted in the Civil Engineering program.

Prerequisite Coursework for Transfer Students

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the General Education Program) and requirements for the college and major. Lower-

division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the [Transition Guides](#) and below.

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment. Transfer students who enter with over 60 credits from an Associate in Arts (AA) degree are not required to take EGN1002 Fundamentals of Engineering. Instead, they could substitute it with a civil engineering design core.

Degree Requirements

The Bachelor of Science in Civil Engineering degree will be awarded to students who:

1. Meet all general degree requirements of the University;
2. Complete the curriculum for the B.S. in Civil Engineering degree (see below);
3. Take the Fundamentals of Engineering examination (the first of two exams necessary for professional licensure; contact the department for details).

Curriculum

The Bachelor of Science in Civil Engineering degree requires 128 credits. For credit toward the degree, a grade of "C" or better must be received in each course listed. In addition, all prerequisites for each mathematics, science or engineering course must be completed with a grade of "C" or better before enrollment is permitted. The degree components are listed below.

General Education Program

College Writing 1 (1), (2)	ENC 1101	3
College Writing 2 (1), (2)	ENC 1102	3
General Education Program : Society and Human Behavior Courses (1), (3)		6

General Education Program: Global Citizenship Courses (1), (3)		6
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General Education Program: Humanities Courses (1), (3)		6
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Foundations of Math and Quantitative Reasoning

Calculus with Analytic Geometry 1 (1), (4)	MAC 2311	4
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Calculus with Analytic Geometry 2 (1), (4)	MAC 2312	4
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Foundations of Science and the Natural World

General Chemistry 1 (1)	CHM 2045	3 and
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General Chemistry Lab 1 (1)	CHM 2045L	1
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General Physics for Engineers 1 (1), (9)	PHY 2048	3 and
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General Physics 1 Lab	PHY 2048L	1
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Total		40
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Basic Mathematics and Sciences

Engineering Mathematics 1	MAP 3305	3 or
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Differential Equations 1	MAP 2302	3
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Statistics Restricted Elective		3
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Physical and Natural Science Restricted Elective 1		4
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Physical and Natural Science Restricted Elective 2		4
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Total		14
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Statistics Restricted Elective: Probability and Statistics for Engineers (STA 4032), Stochastic Models for Computer Science (STA 4821), Probability and Statistics 1 (STA 4442) or equivalent.

Physical and Natural Science Restricted Elective 1: includes but is not limited to Physical Geology/Evolution of the Earth with Lab (GLY 2010C), Biological Science with Lab, Earth Science, or equivalent.

Physical and Natural Science Restricted Elective 2: includes but is not limited to Physics for Engineers 2 (PHY 2044) with lab (PHY 2049L), General Chemistry 2 (CHM 2046) with lab (CHM 2046L), or other physical or natural science course approved by the department.

Engineering Fundamentals

Engineering Graphics Elective

Computer-Aided Design	CGN 2327	3 or
Engineering Graphics	EGN 1111C	3
Fundamentals of Engineering	EGN 1002	3

Computer Programming Elective

Programming 1	COP 2220	3 or
Computer Applications in Engineering 1	EGN 2213	3 or
C for Engineers	EEL 2161	3 or

Intro to Programming in Python

COP 3035C

Statics	EGN 3311	3
Dynamics	EGN 3321	3
Strength of Materials	EGN 3331	3
Geomatics	SUR 3103	2
Geomatics Lab	SUR 3103L	1
RI: Construction Project Management	CCE 4031	3 or
Civil Engineering Project Management	CCE 5036	3

Total **24**

Civil Engineering Technical Core

Soil Mechanics (5)	CEG 3011C	3
Analysis of Structures (5)	CES 3102C	3
Civil Engineering Materials (5)	CGN 3501C	3

Applied Hydraulics (5)	CWR 3201C	3
Environmental Science and Engineering (5)	ENV 3001C	3
Introduction to Transportation Engineering (5)	TTE 3004C	3
Total		18

Civil Engineering Design Core. Students must take four courses, one course in each of the four core areas to meet ABET criteria (6)

Geotechnical Engineering Design Core (select one)

Foundation Engineering	CEG 4012	3 or
Ground Improvement Design	CEG 4122	3 or
Pavement Design	CEG 4126	3

Structural Engineering Design Core (select one)

Reinforced Concrete Design	CES 4702	3 or
Structural Steel Design	CES 4605	3 or

Transportation Engineering Design Core (select one)

Transportation Planning and Logistics (5)	TTE 4005C	3 or
Transportation Operations and Logistics Management	TTE 4105	3 or
Highway Engineering	TTE 4810	3

Water Resources Engineering Design Core (select one)

Hydrologic Engineering	CWR 4202	3 or
Stormwater Modeling and Management	CWR 4307	3

Total **12**

Additional Engineering Design Core

RI: Water and Wastewater Treatment Systems	ENV 4514	3 or
Water and Wastewater Treatment	ENV 5510	3
Subdivision Design	SUR 4463	2
Total		5

Capstone Design Core

RI: Civil, Environmental and Geomatics Engineering Design 1 (2), (5)	CGN 4803C	3
RI: Civil, Environmental and Geomatics Engineering Design 2 (2), (5)	CGN 4804C	3
Total		6

Technical Electives (Select 9 credits from the list)

Engineering Professional Internship	EGN 3941	0-4
Professional Internship	IDS 3949	0-4
Directed Independent Research in Engineering and Computer Science (8)	EGN 4911	0-3
Directed Independent Research in Engineering and Computer Science	EGN 4915	1-3
Total		9

Notes:

1. Contributes to University Core Curriculum requirements.
2. Contributes to Writing Across Curriculum (Gordon Rule) writing requirement.
3. General Education Program courses, totaling 6 credits, must be selected to satisfy Writing Across Curriculum (Gordon Rule) writing requirements.
4. Contributes to Gordon Rule mathematics requirement.
5. Includes a 1-credit laboratory .

6. All design professional core courses contain a communications component (writing or speaking)
7. Grading: S/U.
8. PHY 2048, General Physics 1 (4 credits) is an acceptable substitute, but only 3 credits will apply toward the degree.

Sample Four-Year Program of Study

For the sample four-year program of study for the Bachelor of Science in Civil Engineering, refer to the [Curriculum Sheets and Flight Plans](#) by major.

Minors and Certificate Programs Appropriate for Civil Engineering

Civil engineering is a uniquely wide-ranging profession. Various departments offer minors and certificate programs that augment a student's civil engineering education. The faculty encourages students to pursue a minor or certificate, such as:

Surveying and Mapping certificate program, highly recommended (Department of Civil, Environmental and Geomatics Engineering)

Geographic Information Systems certificate program, highly recommended (Department of Geosciences)

Obtaining a minor or certificate will require the completion of credits beyond the 128 required for the B.S. in Civil Engineering. Contact the department offering the minor or certificate for more details.

Internships

Civil Engineering students are strongly encouraged to gain practical experience through participation in internship opportunities. However, internships may only substitute for one technical elective with prior approval from the department chair and only if taken for a grade (IDS 3949, Professional Internship or EGN 3941, Engineering Professional Internship). For more information, contact the FAU Career Center at 561-297-3533 or visit its [website](#).

COMBINED PROGRAMS

CIVIL ENGINEERING

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (B.S.C.V.) TO MASTER OF SCIENCE (M.S.) COMBINED PROGRAM

With an approximate duration of five years, the combined Bachelor of Science in Civil Engineering to Master of Science program provides an attractive way for students to continue their graduate work. The undergraduate degree program is 128 credits, while the combined degree program includes a minimum of 150 credits. Students admitted after January 1, 2017, may count 12 credits of graduate coursework (5000 level or higher) taken as an undergraduate to satisfy both degrees. See specific program requirements.

1. The student has met the minimum 120 credits for the bachelor's degree; and
2. The student has taken a minimum of 30 credits in 5000 level or higher courses for the master's program.

The combined degree program is 150 credits, 120 for the undergraduate degree and 30 for the master's degree. Students complete the undergraduate degree first, taking no more than 12 credits of graduate coursework in their senior year, which will then be counted to satisfy both degrees.

Prerequisite Coursework for Transfer Students

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the General Education Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the [Transition Guides](#).

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

To be eligible for the joint B.S.C.V./M.S. program, students must:

1. Have a cumulative GPA of 3.25 or higher (FAU and transfer courses);
2. Have a total institution GPA of 3.25 or higher (FAU courses); and
3. Formally apply to the joint program, completing the admissions process at least one semester prior to beginning the M.S. portion of the program.

**BIOLOGICAL AND PHYSICAL SCIENCES TO CIVIL, ENVIRONMENTAL OR GEOMATICS
ENGINEERING TO CIVIL ENGINEERING**

**BACHELOR OF ARTS (B.A.) OR BACHELOR OF SCIENCE (B.S.) TO SECOND BACHELOR OF
SCIENCE (B.S.) TO MASTER OF SCIENCE (M.S.)**

COMBINED PROGRAM

This program is offered in partnership with the Wilkes Honors College. Details for this [combined degree program](#) are listed in the [Wilkes Honors College](#) section.