**Bachelor of Science in Civil Engineering**

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 Vision and Mission~~** ~~The Civil Engineering program delivers the highest quality educational and research opportunities throughout the FAU service area and beyond and makes a significant contribution to the needs of a changing South Florida community.  
  
Civil Engineering serves the technological needs of society, especially with regard to the constructed environment in South Florida. It produces a diverse population of engineers, each possessing a superior technical foundation and a rigorous liberal education. It creates new opportunities for the communities and industries of South Florida and beyond.  
  
The faculty focuses on learning and research—the core competencies. Civil Engineering students are active learners motivated to serve society. Administrators and staff are stewards of the department's self-governance, its role within the University and its support processes.  
  
Through individual dedication, the faculty, administrators and staff contribute to the department's group success. They value ethical behavior, critical thinking, innovation, individual responsibility, thoughtful risk taking, teamwork and leadership. They also value a balanced, holistic approach to life, in which the well-being of each member of the community has primacy. In this way, their actions educate at least as well as their words.~~

**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:

~~a. An ability to apply knowledge of mathematics, science and engineering;  
  
b. An ability to design and conduct experiments, as well as to analyze and interpret data;  
  
c. An ability to design a system, component or process to meet desired needs within realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability;  
  
d. An ability to function on multidisciplinary teams;  
  
e. An ability to identify, formulate and solve engineering problems;  
  
f. An understanding of professional and ethical responsibility;  
  
g. An ability to communicate effectively;  
  
h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context;  
  
i. A recognition of the need for and an ability to engage in lifelong learning;  
  
j. A knowledge of contemporary issues;  
  
k. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.~~

(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.

**Bachelor of Science in Civil Engineering**

(Requires 128 credits)

**Admission Requirements**

All students must meet the minimum admission requirements of the University. Please refer to the Admissions section of this catalog.

Prerequisite Coursework for Transfer Students

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations 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 Transfer Student Manual 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.

**~~Prerequisite Coursework for Transfer Students~~** ~~To minimize the time necessary to complete the Civil Engineering degree, transfer students entering the University with an A.A. degree should structure their programs to include the following:~~

|  |  |  |
| --- | --- | --- |
| **~~Topics~~** | **~~Credits (1)~~** | |
| ~~English Composition~~ | ~~6~~ | ~~(two 3-credit courses)~~ |
| ~~Social Science~~ | ~~6~~ | ~~(two 3-credit courses)~~ |
| ~~Humanities~~ | ~~6~~ | ~~(two 3-credit courses)~~ |
| ~~Complete Calculus Sequence~~ | ~~12~~ | ~~(three 4-credit courses)~~ |
| ~~Ordinary Differential Equations~~ | ~~3~~ | ~~(one 3-credit course)~~ |
| ~~General Chemistry, with Lab~~ | ~~4~~ | ~~(one 4-credit course, including lab)~~ |
| ~~Calculus-based Physics, with Labs~~ | ~~8~~ | ~~(two 4-credit courses, including labs)~~ |
| ~~Computer Programming (2)~~ | ~~3~~ | ~~(one 3-credit course)~~ |
| ~~Fundamentals of/Introduction to Engineering (3)~~ | ~~3~~ | ~~(one 3-credit course)~~ |
| ~~Additional Electives (4)~~ | ~~6~~ | ~~(two 3-credit courses)~~ |

**~~Notes:~~** ~~(1) The number of credits may vary by institution.  
  
(2) Software applications courses are~~**~~not~~**~~computer programming courses.  
  
(3) An introductory course in engineering is preferred. However, substitutions may be allowed, provided they are part of a cohesive pre-engineering A.A. degree program.  
  
(4) Some institutions offer engineering fundamentals courses that may fulfill degree requirements. See degree requirements below.~~

**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. BSCV students must complete the following coursework as follows.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Intellectual Foundations Program**  **~~General Studies~~** | | | | |
| College Writing 1 (1), (2) | | ENC 1101 | | 3 |
| College Writing 2 (1), (2) | | ENC 1102 | | 3 |
| [Intellectual Foundations Program:](http://www.fau.edu/academic/registrar/PREcatalog/degreerequirements.php#intellectual) Society and Human Behavior Courses (1), (3) | |  | | 6 |
| [Intellectual Foundations Program:](http://www.fau.edu/academic/registrar/PREcatalog/degreerequirements.php#intellectual) Global Citizenship Courses (1), (3) | |  | | 6 |
| [Intellectual Foundations Program:](http://www.fau.edu/academic/registrar/PREcatalog/degreerequirements.php#intellectual) Humanities Courses (1), (3) | |  | | 6 |
| **~~Total~~** | | | | **~~24~~** |
| **Foundations of Math and Quantitative Reasoning** | | | | |
| **~~Basic Mathematics and Sciences~~** | | | | |
| Calculus with Analytic Geometry 1 (1), (4) | MAC 2311 | | 4 | |
| Calculus with Analytic Geometry 2 (1), (4) | MAC 2312 | | 4 | |
| ~~Calculus with Analytic Geometry 3~~ | ~~MAC 2313~~ | | ~~4~~ | |
| **Foundations of Science and the Natural World** | | | | |
| ~~Engineering Mathematics 1~~ | ~~MAP 3305~~ | | ~~3~~ | |
| ~~Probability and Statistics for Engineers~~ | ~~STA 4032~~ | | ~~3~~ | |
| General Chemistry 1 (1) AND | CHM 2045 | | 3 AND | |
| General Chemistry Lab 1 (1) | CHM 2045L | | 1 | |
| General Physics for Engineers 1 (1) AND | PHY 2048 | | 3 AND | |
| General Physics 1 Lab | PHY 2048L | | 1 | |
| **TOTAL** | | | **40** | |
| **Basic Mathematics and Sciences** | | | | |
| ~~Physics for Engineers 2 (1), (5)~~ | ~~PHY 2044~~ | | ~~3~~ | |
| ~~General Physics 2 Lab~~ | ~~PHY 2049L~~ | | ~~1~~ | |
| ~~Basic Science Elective (1):~~ | | | | |
| ~~Physical Geology/Evolution of the Earth or~~ | ~~GLY 2010C~~ | | ~~4 or~~ | |
| ~~Biological Principles and  Biological Principles Lab~~ | ~~BSC 1010, 1010L~~ | | ~~4~~ | |
| Engineering Math 1  OR Differential Equations 1 (MAP 2302) | MAP 3305 | | 3 | |
| Statistics Restricted Elective |  | | 3 | |
| Physical and Natural Science Restricted Elective 1 |  | | 4 | |
| Physical and Natural Science Restricted Elective 2 |  | | 4 | |
| **Total** | | | **14 ~~34~~** | |

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 General Physics for Engineers 2 (PHY 2044 (5)) 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 |  |  |
| Engineering Graphics OR | EGN2213 | 3 OR |
| Computer Aided Design  ~~Fundamentals of AutoCAD~~ | CGN 2327 | 3 |
| Fundamentals of Engineering | EGN 1002 | 3 |
| Computer Programming Elective |  |  |
| Introduction to Programming in C | COP2220 OR | 3 OR |
| Computer Applications in Engineering 1 | EGN 2213 | 3 |
| Statics | EGN 3311 | 3 |
| Dynamics | EGN 3321 | 3 |
| Strength of Materials | EGN 3331 | 3 |
| Geomatics  ~~Fundamentals of Surveying~~ | SUR 3103 ~~2101~~ | 2 |
| Geomatics Lab  ~~Fundamentals of Surveying Lab~~ | SUR 3103L ~~2101L~~ | 1 |
| Construction Project Management | CCE 4031 | 3 |
| **Total** | | **24~~21~~** |

|  |  |  |
| --- | --- | --- |
| **Civil Engineering Technical Core ~~Professional Core (6)~~** | | |
| Soil Mechanics (5~~7~~) | CEG 3011C | 3 |
| ~~Foundation Engineering~~ | ~~CEG 4012~~ | ~~3~~ |
| Analysis of Structures (5~~7~~) | CES 3102C | 3 |
| ~~Structural Steel Design~~ | ~~CES 4605~~ | ~~3~~ |
| ~~Reinforced Concrete Design~~ | ~~CES 4702~~ | ~~3~~ |
| Civil Engineering Materials (5~~7~~) | CGN 3501C | 3 |
| ~~Undergraduate Research in Civil Engineering 1~~ | ~~CGN 3910~~ | ~~1~~ |
| ~~Civil, Environmental and Geomatics Engineering Design 1 (2), (7)~~ | ~~CGN 4803C~~ | ~~3~~ |
| ~~Civil, Environmental and Geomatics Engineering Design 2 (2), (7)~~ | ~~CGN 4804C~~ | ~~3~~ |
| Applied Hydraulics (5~~7~~) | CWR 3201C | 3 |
| ~~Hydrologic Engineering~~ | ~~CWR 4202~~ | ~~3~~ |
| Environmental Science and Engineering (5~~7~~) | ENV 3001C | 3 |
| ~~Water and Wastewater Treatment Systems~~ | ~~ENV 4514~~ | ~~3~~ |
| Introduction to Transportation Engineering (5~~7~~) | TTE 3004C | 3 |
| ~~Transportation Planning and Logistics (7)~~ | ~~TTE 4005C~~ | ~~3~~ |
| **Total** | | **18 ~~43~~** |

|  |  |  |
| --- | --- | --- |
| **Civil Engineering Design Core – Students must take 4 classes, 1 class in each of the 4 core areas to meet ABET criteria (6 ~~8~~).** | | |
| **Geotechnical Engineering Design Core (Choose 1)** | | |
| Foundation Engineering | CEG 4012 | 3 or |
| Geosynthetics and Soil Stabilization | CEG 4124 | 3 or |
| Pavement Design | CEG 4126 | 3 |
| **Structural Engineering Design Core (Choose 1)** | | |
| Reinforced Concrete Design | CES 4702 | 3 or |
| Structural Steel Design | CES 4605 | 3 or |
| Prestressed Concrete Design | CES 4711 | 3 |
| **Transportation Engineering Design Core (Choose 1)** | | |
| Transportation Planning and Logistics (5~~7~~) | TTE 4005C | 3 or |
| Transportation Operations and Logistics Management | TTE 4105 | 3 or |
| Highway Engineering | TTE 4810 | 3 |
| **Water Resources Engineering Design Core (Choose 1)** | | |
| Hydrologic Engineering | CWR 4202 | 3 or |
| Advanced Hydraulic Systems | CWR 4223 | 3 or |
| Stormwater Modeling and Management | CWR 4307 | 3 |
| TOTAL | | 12 |

|  |  |  |
| --- | --- | --- |
| **Additional Engineering Design Core** | | |
| Water and Wastewater Treatment Systems | ENV 4514 | 3 |
| Subdivision Design | SUR 4463 | 2 |
| TOTAL | | 5 |

|  |  |  |
| --- | --- | --- |
| **Capstone Design Core** | | |
| Civil, Environmental and Geomatics Engineering Design 1 (2), (5) | CGN 4803C | 3 |
| Civil, Environmental and Geomatics Engineering Design 2 (2), (5) | CGN 4804C | 3 |
| Total | | 6 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Technical Electives (Choose 9 credits from the following list) (6)**  **~~Technical Electives, 6 credits from the list below (8)~~** | | | |
| ~~Construction Project Management~~ | ~~CCE 4031~~ | ~~3~~ | |
| ~~Pavement Design~~ | ~~CEG 4126~~ | ~~3~~ | |
| ~~GIS Application in Civil Engineering~~ | ~~CGN 4321~~ | ~~3~~ | |
| ~~Advanced Hydraulic Systems~~ | ~~CWR 4223~~ | ~~3~~ | |
| ~~Stormwater Modeling and Management~~ | ~~CWR 4307~~ | ~~3~~ | |
| ~~Introduction to Terrestrial Laser Scanning~~ | ~~SUR 4150C~~ | ~~3~~ | |
| ~~Transportation Operations and Logistics Management~~ | ~~TTE 4105~~ | ~~3~~ | |
| Any approved 3000 or 4000 level course offered by the Department | | | |
| Any graduate course offering approved by the Department | | | |
| For Students in the Innovation Leadership Honors Program: | | | |
| Innovation and Entrepreneurship | EGN 4641 | | 3 |
| Leadership Development Workshop 1 AND | EGS 3030 | | 1 + |
| Leadership Development Workshop 2 AND | EGS 4031 | | 1 + |
| Innovation Leadership Internship | EGS 4942 | | 1 |
| Honors Directed Independent Study | EGN 4906 | | 3 |
| Engineering Professional Internship | EGN 3941 | | 0-4 |
| Professional Internship | IDS 3949 | | 0-1 |
| **Total** | | | **9 ~~6~~** |

**Notes:**  
(1) Contributes to University Core Curriculum requirements.

(2) Contributes to Writing Across Curriculum (Gordon Rule) writing requirement.

(3) Intellectual Foundations 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) PHY 2049 (4 credits) is an acceptable substitute, but only 3 credits will apply toward the degree.~~

(5 ~~7~~) Includes a 1-credit laboratory.

(6) All design ~~professional~~ core courses contain a communications component (writing or speaking).

(7 ~~8~~) 9 ~~6~~ credits may be taken from Department of Civil, Environmental and Geomatics Engineering graduate courses—this is highly recommended for students planning to pursue the B.S./M.S.

**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:

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

**~~Geomatics Engineering minor, 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**

**~~Cooperative Education~~**

Civil Engineering students are strongly encouraged to gain practical experience through participation in internship ~~Cooperative Education~~ opportunities. However, internships ~~Cooperative Education~~ may only ~~does not~~ 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) ~~the civil engineering technical elective~~. For more information, contact the FAU Career Center at 561-297-3533 or visit [www.fau.edu/cdc](http://www.fau.edu/cdc).

**Environmental Engineering**

**Bachelor's Program**

Environmental engineers integrate principles of engineering, mathematics, earth science, soil science, life science and materials science with emphasis on the design and development of solutions to environmental challenges, such as improvement of water, air pollution control, safe disposal of wastes and the stewardship of our natural resources.

**Environmental Engineering Educational Objectives and Student Outcomes**

The Environmental 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 Environmental Engineering graduates a few years beyond the baccalaureate degree.

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

A. Practice environmental engineering within the general areas of water and wastewater, air quality, solid and hazardous waste, and groundwater and soils in the organizations that employ them;

B. Advance their knowledge of environmental 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 Environmental 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.

~~a. An ability to apply knowledge of mathematics, science and engineering;  
  
b. An ability to design and conduct experiments, as well as to analyze and interpret data;  
  
c. An ability to design a system, component or process to meet desired needs within realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability;  
  
d. An ability to function on multidisciplinary teams;  
  
e. An ability to identify, formulate and solve engineering problems;  
  
f. An understanding of professional and ethical responsibility;  
  
g. An ability to communicate effectively;  
  
h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context;  
  
i. A recognition of the need for and an ability to engage in lifelong learning;  
  
j. A knowledge of contemporary issues;  
  
k. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.~~

These educational outcomes result from successful completion of a well-planned, rigorous set of courses and a major capstone experience.

**Bachelor of Science in Environmental Engineering**[/Link to Combined Program](http://www.fau.edu/academic/registrar/PREcatalog/engineering.php#bsev)  
**(Requires 120 credits.)**  
**Admission Requirements**  
All students must meet the minimum admission requirements of the University. Please refer to the [Admissions section](http://www.fau.edu/academic/registrar/PREcatalog/admissions.php) of this catalog.  
  
All students must meet the preprofessional requirements listed [above](http://www.fau.edu/academic/registrar/PREcatalog/engineering.php#preprof) to be accepted in the Environmental Engineering program.

**~~Prerequisite Coursework for Transfer Students~~**

~~Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations 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 Transfer Student Manual 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.~~

**Degree Requirements**

The Bachelor of Science in Environmental 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 Environmental 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 Environmental Engineering degree requires 120 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.

|  |  |  |
| --- | --- | --- |
| **Intellectual Foundations Program**  **~~General Studies~~** | | |
| College Writing 1 (1), (2) | ENC 1101 | 3 |
| College Writing 2 (1), (2) | ENC 1102 | 3 |
| [Intellectual Foundations Program:](http://www.fau.edu/academic/registrar/PREcatalog/degreerequirements.php#intellectual) Society and Human Behavior Courses (1), (3) |  | 6 |
| [Intellectual Foundations Program:](http://www.fau.edu/academic/registrar/PREcatalog/degreerequirements.php#intellectual) Global Citizenship Courses (1), (3) |  | 6 |
| [Intellectual Foundations Program:](http://www.fau.edu/academic/registrar/PREcatalog/degreerequirements.php#intellectual) Humanities Courses (1), (3) |  | 6 |
| **~~Total~~** | | **~~24~~** |
| **Foundations of Math and Quantitative Reasoning** | | |
| **~~Basic Mathematics and Sciences~~** | | |
| Calculus with Analytic Geometry 1 (1), (4) | MAC 2311 | 4 |
| Calculus with Analytic Geometry 2 (1), (4) | MAC 2312 | 4 |
| ~~Calculus with Analytic Geometry 3~~ | ~~MAC 2313~~ | ~~4~~ |
| **Foundations of Science and the Natural World** | | |
| ~~Engineering Mathematics 1~~ | ~~MAP 3305~~ | ~~3~~ |
| ~~Probability and Statistics for Engineers~~ | ~~STA 4032~~ | ~~3~~ |
| General Chemistry 1 **or** Engineering Chemistry (1) AND | CHM 2045 **or** EGN 2095 | 3 AND |
| General Chemistry Lab 1 **or** Engineering Chemistry Lab (1) | CHM 2045L **or** EGN 2095L | 1 |
| ~~General Chemistry 2 (1)~~ | ~~CHM 2046~~ | ~~3~~ |
| ~~General Chemistry Lab 2 (1)~~ | ~~CHM 2046L~~ | ~~1~~ |
| General Physics for Engineers 1 (1) AND | PHY 2048 | 3 AND |
| General Physics 1 Lab | PHY 2048L | 1 |
| **TOTAL** | | **40** |
| **Basic Mathematics and Sciences** | | |
| ~~Physics for Engineers 2 (1), (5)~~ | ~~PHY 2044~~ | ~~3~~ |
| ~~General Physics 2 Lab~~ | ~~PHY 2049L~~ | ~~1~~ |
| General Chemistry 2 (1) | CHM 2046 | 3 |
| General Chemistry Lab 2 (1) | CHM 2046L | 1 |
| Earth Science Elective (1) |  | 3 |
| Biological Science Elective (1) |  | 4 |
| Engineering Math 1  OR Differential Equations 1 (MAP 2302) | MAP 3305 | 3 |
| Statistics Restricted Elective |  | 3 |
| **Total** | | **17 ~~41~~** |

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

|  |  |  |
| --- | --- | --- |
| **Engineering Fundamentals** | | |
| Engineering Graphics Elective |  |  |
| Engineering Graphics OR | EGN2213 | 3 OR |
| Computer Aided Design  ~~Fundamentals of AutoCAD~~ | CGN 2327 | 3 |
| Fundamentals of Engineering | EGN 1002 | 3 |
| Computer Programming Elective |  |  |
| Introduction to Programming in C | COP2220 OR | 3 OR |
| Computer Applications in Engineering 1 | EGN 2213 | 3 |
| Statics | EGN 3311 | 3 |
| Strength of Materials | EGN 3331 | 3 |
| Engineering Thermodynamics | EGN 3343 | 3 |
| **Total** | | **18** |

|  |  |  |
| --- | --- | --- |
| **Environmental Engineering Technical Core ~~Professional Core (6)~~** | | |
| ~~Civil, Environmental and Geomatics Engineering Design 1 (2), (7)~~ | ~~CGN 4803C~~ | ~~3~~ |
| ~~Civil, Environmental and Geomatics Engineering Design 2 (2), (7)~~ | ~~CGN 4804C~~ | ~~3~~ |
| Soil Mechanics (5) | CEG 3011C | 3 |
| Applied Hydraulics (5 ~~7~~) | CWR 3201C | 3 |
| ~~Hydrologic Engineering~~ | ~~CWR 4202~~ | ~~3~~ |
| Environmental Science and Engineering (5 ~~7~~) | ENV 3001C | 3 |
| Environmental Fate and Transport | ENV 4053 | 3 |
| Introduction to Pollution Prevention and Sustainability | ENV 4072 | 3 |
| ~~Air Pollution and Control Systems with Lab (5 7)~~ | ~~ENV 4112C~~ | ~~4~~ |
| ~~Solid and Hazardous Waste and Site Remediation~~ | ~~ENV 4341~~ | ~~3~~ |
| ~~Water and Wastewater Treatment Systems~~ | ~~ENV 4514~~ | ~~3~~ |
| **Total** | | **15 ~~31~~** |

|  |  |  |
| --- | --- | --- |
| **Environmental Engineering Design Core** | | |
| Hydrologic Engineering | CWR 4202 | 3 |
| Air Pollution and Control Systems with Lab (5 ~~7~~) | ENV 4112 | 4 |
| Solid and Hazardous Waste and Site Remediation | ENV 4341 | 3 |
| Water and Wastewater Treatment | ENV 4214 | 3 |
| Subdivision Design | SUR 4463 | 2 |
| Total |  | 15 |

|  |  |  |
| --- | --- | --- |
| **Capstone Design Core** | | |
| Civil, Environmental and Geomatics Engineering Design 1 (2), (5) | CGN 4803C | 3 |
| Civil, Environmental and Geomatics Engineering Design 2 (2), (5) | CGN 4804C | 3 |
| Total | | 6 |

|  |  |  |
| --- | --- | --- |
| **Technical Electives (Choose 9 credits from the following list) (6)**  **~~Technical Electives, 6 credits from the list below (8)~~** | | |
| Any CEGE graduate course offering approved by the Department | | |
| Other approved 3000 or 4000 level course offered by the Department | | |
| ~~Construction Project Management~~ | ~~CCE 4031~~ | ~~3~~ |
| ~~Soil Mechanics (7)~~ | ~~CEG 3011C~~ | ~~3~~ |
| ~~Advanced Hydraulic Systems~~ | ~~CWR 4223~~ | ~~3~~ |
| ~~Stormwater Modeling and Management~~ | ~~CWR 4307~~ | ~~3~~ |
| ~~Engineering Economics~~ | ~~EGN 4613~~ | ~~3~~ |
| Environmental Geochemistry | GLY 4241 | 3 |
| Hydrogeology | GLY 4822 | 3 |
| ~~Fundamentals of Surveying~~**~~and~~** | ~~SUR 2101~~ | ~~2~~ |
| ~~Fundamentals of Surveying Lab~~ | ~~SUR 2101L~~ | ~~1~~ |
| Oceanography | OCE 3008 | 3 |
| Sustainable Cities | URP 4403 | 3 |
| Environmental Planning Methods | URP 4420 | 3 |
| Environment and Disease | ANT 4463 | 3 |
| Environmental Ethics | PHI 3640 | 3 |
| Global Environmental Politics and Policies | INR 4350 | 3 |
| Environmental Economics | ECP 4302 | 3 |
| Entrepreneurship | ENT 4024 | 3 |
| For Students in the Innovation Leadership Honors Program: | | |
| Innovation and Entrepreneurship | EGN 4641 | 3 |
| Leadership Development Workshop 1 AND | EGS 3030 | 1 + |
| Leadership Development Workshop 2 AND | EGS 4031 | 1 + |
| Innovation Leadership Internship | EGS 4942 | 1 |
| Honors Directed Independent Study | EGN 4906 | 3 |
| ~~Any Civil, Environmental or Geomatics Engineering course not specified above, with department approval~~ | | ~~3~~ |
| **Total** | | **9 ~~6~~** |

Notes:

(1) Contributes to University Core Curriculum requirements.

(2) Contributes to Writing Across Curriculum (Gordon Rule) writing requirement.

(3) Intellectual Foundations 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) PHY 2049 (4 credits) is an acceptable substitute, but only 3 credits will apply toward the degree.~~

(5 ~~7~~) Includes a 1-credit laboratory.

(6) All design ~~professional~~ core courses contain a communications component (writing or speaking).

(7 ~~8~~) 9 ~~6~~ credits may be taken from Department of Civil, Environmental and Geomatics Engineering graduate courses—this is highly recommended for students planning to pursue the B.S./M.S.

Sample Four-Year Program of Study

For the sample four-year program of study for the Bachelor of Science in Environmental Engineering, refer to the Curriculum Sheets and Flight Plans by major.

**Internships**

Environmental 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 www.fau.edu/cdc.