

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW/CHANGE PROGRAM REQUEST</b> <b>Undergraduate Programs</b>	UUPC Approval <u>3/25/24</u> UFS Approval _____ Banner _____ Catalog _____
	<b>Department</b> Civil, Environmental and Geomatics Engineering  <b>College</b> College of Engineering and Computer Science	
<b>Program Name</b> BACHELOR OF SCIENCE IN ENVIRONMENTAL ENGINEERING	<input type="checkbox"/> New Program*  <input checked="" type="checkbox"/> Change Program*	<b>Effective Date</b> (TERM & YEAR) Fall 2024
<p><b>Please explain the requested change(s) and offer rationale below or on an attachment.</b></p> <p>One cross-listed graduate course (ENV5510) was added as the equivalent course to the corresponding undergraduate course.</p> <p>The current catalog of this program allows up to 9 graduate credits to be counted towards the bachelor's degree. We propose to remove this limit and use the maximum number of graduate credits our university allows for the bachelor's degree. The similar change of the BS/MS combined program was submitted separately to the Graduate Program Committee.</p>		
<p><small>*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.</small></p>		
<b>Faculty Contact/Email/Phone</b>  Evangelos I. Kaisar, Ph.D. ekaisar@fau.edu, 561-297-4084	<b>Consult and list departments that may be affected by the change(s) and attach documentation</b>  None	
<b>Approved by</b> Department Chair _____ <u>E. Kaisar</u> College Curriculum Chair _____ <u>Hongbo Su</u> College Dean _____ <u>[Signature]</u> UUPC Chair _____ <u>Korey Sorge</u> Undergraduate Studies Dean _____ <u>Dan Meeroff</u> UFS President _____ Provost _____	<b>Date</b> _____ <u>3/6/2024</u> _____ <u>3/11/2024</u> _____ <u>3/11/24</u> _____ <u>3/25/24</u> _____ <u>3/25/24</u> _____ _____	

Email this form and attachments to [mjenning@fau.edu](mailto:mjenning@fau.edu) seven business days before the UUPC meeting.

## 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:

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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.

[Link to Combined Programs](#)

## **ENVIRONMENTAL ENGINEERING** **BACHELOR OF SCIENCE IN ENVIRONMENTAL ENGINEERING (B.S.E.V.)**

*(Minimum of 120 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 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 [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.

### 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

College Writing 1 (1), (2)	ENC 1101	3
College Writing 2 (1), (2)	ENC 1102	3
<a href="#">Intellectual Foundations Program</a> : Society and Human Behavior Courses (1), (3)		6
<a href="#">Intellectual Foundations Program</a> : Global Citizenship Courses (1), (3)		6
<a href="#">Intellectual Foundations Program</a> : Humanities Courses (1), (3)		6

#### Foundations of Math and Quantitative Reasoning

Calculus with Analytic Geometry 1 (1), (4)	MAC 2311	4
Calculus with Analytic Geometry 2 (1), (4)	MAC 2312	4

#### Foundations of Science and the Natural World

General Chemistry 1 <b>or</b> Engineering Chemistry (1)	CHM 2045 <b>or</b> EGN 2095	3 <b>and</b>
General Chemistry Lab 1 <b>or</b> Engineering Chemistry Lab (1)	CHM 2045L <b>or</b> EGN 2095L	1
General Physics for Engineers 1 (1), (9)	PHY 2048	3 <b>and</b>
General Physics 1 Lab	PHY 2048L	1
<b>Total</b>		<b>40</b>

#### Basic Mathematics and Sciences

General Chemistry 2 (1)	CHM 2046	3 <b>and</b>
General Chemistry 2 Lab (1)	CHM 2046L	1
Engineering Mathematics 1	MAP 3305	3 <b>or</b>

Differential Equations	MAP 3302	3
Earth Science Elective (1)		3
Biological Science Elective (1)		4
Statistics Restricted Elective		3
<b>Total</b>		<b>17</b>

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		
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
Statics	EGN 3311	3
Strength of Materials	EGN 3331	3
Engineering Thermodynamics	EGN 3343	3
<b>Total</b>		<b>18</b>

#### Environmental Engineering Technical Core

Soil Mechanics (5)	CEG 3011C	3
Applied Hydraulics (5)	CWR 3201C	3
Environmental Science and Engineering (5)	ENV 3001C	3
RI: Environmental Fate and Transport	ENV 4053	3
Introduction to Pollution Prevention and Sustainability	ENV 4072	3
<b>Total</b>		<b>15</b>

#### Environmental Engineering Design Core

Hydrologic Engineering	CWR 4202	3
Air Pollution and Control Systems	ENV 4112	3
Air Pollution Lab	ENV 4112L	1
RI: Solid and Hazardous Waste and Site Remediation	ENV 4341	3
RI: Water and Wastewater Treatment Systems	ENV 4514	3 or
Water and Wastewater Treatment	ENV 5510	3
Subdivision Design	SUR 4463	2
<b>Total</b>		<b>15</b>

#### Capstone Design Core

RI: Civil, Environmental and Geomatics Engineering Design 1 (2), (5), (10)	CGN 4803C	3
RI: Civil, Environmental and Geomatics Engineering Design 2 (2), (5), (11)	CGN 4804C	3
<b>Total</b>		<b>6</b>

#### Technical Electives (Select 9 credits from the list) (6)

Any CECE graduate course offering approved by the department (7)

Any approved College of Engineering and Computer Science course 3000-level and above ~~Other approved 3000- or 4000-level course offered by the department~~

Environmental Geochemistry	GLY 4241	3
Hydrogeology	GLY 4822	3
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
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
<b>Total</b>		<b>9</b>

**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. Includes a 1-credit laboratory.
6. All design core courses contain a communications component (writing or speaking).

~~7. 9 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.~~

~~8.7.~~ Grading: S/U.

~~9.8.~~ PHY 2048, General Physics 1 (4 credits) is an acceptable substitute, but only 3 credits will apply toward the degree.

~~10.9.~~ Prerequisites are ENV 4514 and SUR 4463.

~~11.10.~~ Prerequisite is CGN 4803C.

**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 environmental engineering technical elective with prior approval from the department chair and only if taken for a grade (IDS 3949, Professional Internship) for a total of three semesters. For more information, contact the FAU Career Center at 561-297-3533 or visit its [website](#).