FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Undergraduate Programs

UUPC Approval 12-2-24
UFS Approval _____
Banner _____
Catalog _____

Department Civil, Environmental and Geomatics Engineering

College Engineering and Computer Science

Program Name
Civil Engineering

☐ **New Program***

☑ **Change Program***

Effective Date
(TERM & YEAR)
summer 2025

Please explain the requested change(s) and offer rationale below or on an attachment.

This program changes to serve our students and bring us into compliance with the BOG.

1. Revises IFP language to the new general education language
2. Deletes the requirement for AA Transfers and student with over 60 Cr to take fundamentals of Engineering class (freshman class EGN 1002)
3. Creates a Construction engineering track
4. Adds Python option for classes
5. Deletes EGN 1111 Solidworks as a permissible graphic elective. This software provides no benefit to Civil engineering students.
6. Adds RI designation to SUR 4463
7. Made minor clarifications

*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.

Faculty Contact/Email/Phone

Frederick Bloetscher, Ph.D., P.E., Professor, Assoc Dean for UG studies fbloetsc@fau.edu 239-250-2423

Consult and list departments that may be affected by the change(s) and attach documentation
n/a

Approved by / ***Date***

Department Chair	Evangelos Kaisar	11/18/2024
College Curriculum Chair	Yalan Liu	11/21/2024
College Dean		11/21/24
UUPC Chair	Korey Sorge	12-2-24
Undergraduate Studies Dean	Dan Meeroff	12-2-24
UFS President		
Provost		

Email this form and attachments to mjenning@fau.edu seven business days before the UUPC meeting.

Civil, Environmental and Geomatics Engineering

Faculty:
Kaisar, E., Chair; Nagarajan, S., Associate Chair; Abdellatef, M.; Arockiasamy, M.; Bloetscher, F.; Jahandar Lakshaki, M.; Jang, J.; Kan, D.; Liu, Y.; Meeroff, D. E.; Rosson, B.; Sarhang Zadeh, O.; Sobhan K.; Su, H.; Teegavarapu, R; Yong, Y.

Affiliated Faculty:
Gammack-Clark, J.; Roberts, C.; Xie, Z.

Adjunct Faculty:
Goly, A.; Lowiec, M.; Mitrovic, N.; Muniz, A.; Munuswamy, S.; Ortega, J.; Soltani Sobh, A.; Zheng, X.

The Department of Civil, Environmental and Geomatics Engineering offers the following programs of study:

Link to Bachelor of Science in Civil Engineering (B.S.C.V.)

Link to Bachelor of Science in Environmental Engineering (B.S.E.V.)

Link to Bachelor of Science in Geomatics Engineering (B.S.G.E.)

Link to Combined B.A. or B.S. in Biological and Physical Sciences and Second B.S. to M.S. with Major in Civil Engineering

Link to Combined B.S.C.V. to M.S. degree program

Link to Combined B.S.E.V. to M.S. degree program

Link to Combined B.S.G.E. to M.S. degree program

Link to Master of Science (M.S.) with major in Civil Engineering

Link to Doctor of Philosophy (Ph.D.) in Transportation and Environmental Engineering

Link to Transportation Engineering Certificate

Link to Transportation, Logistics and Supply Chain Management Certificate

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.

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.

1. University General Education Program (insert link for Gen ed) Students who have earned a bachelor's degree from a four-year accredited institution of higher education or an A.A. degree from a Florida state college or state university in Florida are deemed to have completed the General Education Requirements. (1)
2. Pre-Engineering Requirements – Students must complete the pre-engineering requirements to declare major.
3. Math requirements (14 cr for ABET):

Calculus with Analytic Geometry 1 ~~(1),~~ 4)	MAC 2311	4
Calculus with Analytic Geometry 2 ~~(1),~~ (~~4~~4)	MAC 2312	4
Engineering Mathematics 1	MAP 3305	3 or
Differential Equations	MAP 2302	3
Probability and Statistics for Engineers	STA 4032	3 or
Stochastic Models for Computer Science	STA 4821	3 or
Probability and Statistics 1	STA 4442	3 or
Probability and Statistics for Engineers	STA 4032	3 or
Stochastic Models for Computer Science	STA 4442	3 or
Probability and Statistics 1	STA 4442	3 or
Or equivalent statistic class		3

4. Basic Science requirements (18-20 Cr for ABET)

General Chemistry 1	CHM 2045	3 and
General Chemistry Lab 1	CHM 2045L	1
General Physics for Engineers 1 (3)	PHY 2048	3 and
General Physics 1 Lab	PHY 2048L	1
Physical and Natural Science Restricted Elective 1		3 or 4 cr

Physical and Natural Science Restricted Elective 2		3 or 4 cr

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General Education Program		
College Writing 1 (1), (2)	ENC 1101	3
College Writing 2 (1), (2)	ENC 1102	3
Society and Human Behavior Courses (1), (3)	-	6
Global Citizenship Courses (1), (3)	-	6
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 (1)	CHM 2045	3 **and**
General Chemistry Lab 1 (1)	CHM 2045L	1
General Physics for Engineers 1 (1), (9)	PHY 2048	3 **and**
General Physics 1 Lab	PHY 2048L	1
Total		**40**
Basic Mathematics and Sciences		
Engineering Mathematics 1	MAP 3305	3 or
Differential Equations 1	MAP 2302	3
Statistics Restricted Elective	-	3
Physical and Natural Science Restricted Elective 1	-	4

~~Physical and Natural Science Restricted Elective 2~~	-	~~4~~
~~**Total**~~		~~**14**~~

~~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 (8)	EGN 1002	3
Computer Programming Elective		
Programming 1	COP 2220	3 **or**
Computer Applications in Engineering 1	EGN 2213	3 **or**
Introduction to Programming in Python	COP 3035C	3 **or**
C for Engineers	EEL 2161	3
Statics	EGN 3311	3
Dynamics	EGN 3321	3
Strength of Materials	EGN 3331	3
Geomatics	SUR 3103	2
Geomatics Lab	SUR 3103L	1

Total		**18 or 21**

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
RI: Construction Project Management (5)	CCE 4031	3
Total		**21~~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**
Masonry Design	CES 4830	3

Transportation Engineering Design Core (select one)		
Transportation Planning and Logistics (5)	TTE4005C	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

Construction Project management Design Core (select one)		
Construction Management Assessment	CCE 4033 or CCE6xxx	3 or
Sustainable Construction Materials and Methods	CES4830 or CES6xxx	3 or
Engineering and Construction Surveying	SUR 3205 and SUR3205L	3 or
Infrastructure Management	CGN 4612 or CGN 6616	3

Additional Engineering Design Core		
RI: Water and Wastewater Treatment Systems	ENV 4514	3 **or**
Water and Wastewater Treatment	ENV 5510	3
~~RI: Construction Project Management (5)~~	~~CCE 4031~~	~~3~~
RI: Subdivision Design (5)	SUR 4463	3~~2~~
Total		~~6~~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 up to 12 credits from the list above)		
Engineering Professional Internship	EGN 3941 **or**	0-4
Professional Internship (up to 3 cr)	IDS 3949 **or**	0-4
Directed Independent Research in Engineering and Computer Science (7)	EGN 4911 **or**	0-3
Directed Independent Research in Engineering and Computer Science	EGN 4915	1-3
Total		0-12

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. For those students entering with a B.S. degree or over 60 Cr. who have not taken EGN 1002, they may substitute an upper level technical elective to meet this requirement.

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.