

 FLORIDA ATLANTIC UNIVERSITY	NEW/CHANGE PROGRAM REQUEST Undergraduate Programs		UUPC Approval _____ UFS Approval _____ Banner _____ Catalog _____
Department College College of Engineering & Computer Science			
Program Name College general section	<input type="checkbox"/> New Program* <input checked="" type="checkbox"/> Change Program*	Effective Date (TERM & YEAR) Spring 2026	
<p>Please explain the requested change(s) and offer rationale below or on an attachment.</p> <p>The catalog is changed as follows:</p> <ol style="list-style-type: none"> 1. Senior Design Sequence – Expanded wording to explain the content & structure of the design courses, included the course numbers, gave the option of registering for credit or as an audit to be determined by the instructors of record & advising. 2. Unsuccessful Course Attempts – Added this section to explain the grading options and give context to the limitation on attempts policies 3. Limitation on Course Attempts- a) A maximum of two attempts – Updated for “ enforceability ” and added wording about transfer courses; b) second attempt at more than three upper-division (3000-4000 level) courses - clarified language; c) more than 5 non-passing grades - clarified language 4. Timely Degree Completion: a) Transfer students – Added general education requirements; b) First Time in College and Early Admission – Duplicated transfer policy for 4-year graduation; c) Any student – Added general education requirements and removed “ more than 30 credits from graduation, ” which would allow us to award a BGS at the 6-year mark regardless of remaining courses. 			
<small>*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.</small>			
Faculty Contact/Email/Phone Fred Bloetscher fbloetsc@fau.edu		Consult and list departments that may be affected by the change(s) and attach documentation	
Approved by Department Chair _____ College Curriculum Chair <u>Galan Liu</u> College Dean _____ UUPC Chair _____ Undergraduate Studies Dean _____ UFS President _____ Provost _____			Date <u>9-25-25</u> <u>9/25/25</u> <u>9/25/25</u> _____ _____ _____ _____

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

COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

- [Bachelor's Program Information](#)
- [Combined Program Information](#)
- [Master's Program Information](#)
- [Interdisciplinary Minor and Certificates](#)
- [Doctoral Program Information](#)
- [Academic Environment](#)

Departments

- [Biomedical Engineering](#)
- [Civil, Environmental and Geomatics Engineering](#)
- [Electrical Engineering and Computer Science](#)
- [Ocean and Mechanical Engineering](#)

[Link to Course Descriptions for the College of Engineering and Computer Science](#)

Accreditation: Baccalaureate degree programs in Civil, Computer, Electrical, Geomatics, Mechanical and Ocean Engineering are accredited by the Engineering Accreditation Commission (EAC) of ABET. The baccalaureate program in Computer Science is accredited by the Computing Accreditation Commission (CAC) of ABET.

The College of Engineering and Computer Science offers undergraduate degree programs in Civil Engineering, Computer Engineering, Computer Science, Electrical Engineering, Environmental Engineering, Geomatics Engineering, Mechanical Engineering and Ocean Engineering. Also available are minors in Computer Science and Geomatics Engineering, certificates in Data Science and Surveying and Mapping, and a minor and certificate in Cybersecurity. The College recently launched an [Honors in the Major program](#) focusing on leadership, innovation and entrepreneurship within the engineering and computer science curriculum.

Graduate programs are offered to qualified persons who have sufficient and satisfactory undergraduate preparation. Master's degrees (with or without

thesis) and Ph.D. degrees are offered in Computer Engineering, Computer Science, Electrical Engineering, Mechanical Engineering, Ocean Engineering and Transportation and Environmental Engineering. Master's degrees are also offered in Artificial Intelligence, Biomedical Engineering, Civil Engineering, Data Science and Analytics, and Information Technology and Management. Certificates in Artificial Intelligence, [Big Data Analytics](#), Biomedical Engineering, Corrosion, [Cyber Security](#), [Energy Resilience](#), [Professional Energy Resilience](#), Offshore Engineering, Transportation Engineering, and [Transportation, Logistics and Supply Chain Management](#) are also available.

Combined Bachelor of Science to Master of Science degree programs are offered in all of the College's departments. Among the programs' advantages, students may count a maximum of 9 credits in approved graduate-level courses toward both the B.S. and M.S. degrees.

For highly motivated undergraduate students, the B.S. to Ph.D. program, an option in all of the College's doctoral programs, may be desirable. See admission and degree requirements later in this section. Course offerings, admission and degree requirements are given in the individual program descriptions that follow. Additional information is available from the respective departments or from the College of Engineering and Computer Science website at www.eng.fau.edu.

BACHELOR'S DEGREE PROGRAM INFORMATION

General Studies Degree Program

The University offers a Bachelor of General Studies (B.G.S.) degree program that allows students to design a plan of study to meet their personal interests and career goals. The 120-credit program includes 15 credits of upper-division coursework in one discipline, which students select in consultation with an advisor. For more B.G.S. details and degree requirements, please refer to the [Degree Programs](#) section of this catalog.

Undergraduate Research Certificate

To recognize undergraduate students' excellence in undergraduate research, the Office of Undergraduate Research and Inquiry (OURI) has established the [Undergraduate Research Certificate](#). Requirements for the Research Certificate include completion of 12 credits of research exposure, skill-building and

intensive courses as well as dissemination of the outcomes of students' research and inquiry through a research presentation or exhibition.

Math Policies and Math Boot Camp Requirement

If, during a student's first attempt at a math course, a failing grade is earned or withdrawal from the math course after the drop/add deadline occurs, enrollment in and satisfactory completion of FAU's Math Boot Camp is required before the student is permitted to enroll in a second and final attempt at the math course.

Engineering and computer science students are permitted a maximum of two attempts for a single math course, whether at FAU or another institution. If a student withdraws from and/or fails the math course on the second attempt, the student may be required to change their major and leave the College of Engineering and Computer Science.

Senior Design Sequence

Most undergraduate degrees in the College of Engineering & Computer Science contain a two-semester capstone senior design sequence where the students work in teams to design, build, and test selected projects. Given the nature of these courses, students must persist through both semesters with the same group; therefore, unless permitted by the faculty member teaching the course, all two-course design sequences (CGN 4803C/CGN 4804C, EGN 4950C/EGN 4952C, EML 4521C/EML 4551, EOC 4804/EOC 4804L) must be taken in consecutive semesters (excluding summer, only if not offered). If a student fails to earn a grade of "C" or higher or withdraws from the second of the two design courses, both courses must be repeated. The retake of Design 1 must be registered for credit, which carries fee liability, and will receive a recording with a final letter grade, or as an audit (au), which will carry fee liability, but no letter grade will be recorded. Determination of which option is most appropriate is at the discretion of the instructors of record in consultation with academic advising.

Unsuccessful Course Attempts

All core, math, science, and elective courses required for degrees in the College of Engineering & Computer Science must be completed with grades of "C" or higher to satisfy the degree requirement. Grades of "C-" and lower, as well as withdrawal (W) grades, are considered unsuccessful attempts. While the university considers any grade above an "F" as passing, and therefore it may appear that credit has been earned for grades of "C-" and lower, our degree programs specify that a grade of "C" or higher is required. Some general education courses may be satisfied with grades below "C". Please check with your academic advisor to confirm satisfactory completion.

Limitation on Course Attempts

A maximum of two attempts will be allowed for any course required for a major in the College of Engineering & Computer Science. All transfer coursework, including coursework attempted through accelerated mechanisms (i.e., AP, Dual Enrollment, IB, etc.), is counted as part of the limited course attempts. Failure to complete course(s) within two attempts may result in denial of admission to degree programs in the College of Engineering & Computer Science. In taking any course for the second time, it is strongly recommended that students assess why they were unsuccessful in the first attempt, create a plan to ensure the second attempt is successful (including the use of available university resources such as tutoring & supplemental instruction), and check in with their faculty and/or advisor every 2 weeks to help remain on track.

Students may not make a second attempt at more than three upper-division (3000-4000 level) courses. Students who exceed the total of three upper-division course repetitions will not be permitted to continue in the major or any other major requiring the course(s) that have been repeated.

No student will be permitted more than 5 non-passing grades (excluding "W") throughout the course of their degree program. Students who reach 5 non-passing grades, regardless of the courses, will be dismissed from the College of Engineering & Computer Science. Re-entry at a later point will not be permitted.

Timely Degree Completion

Transfer students are expected to graduate within 3 years, as established by the Florida Board of Governors. Students who have not met all requirements for their major, but who have accumulated 120 credits, including 42 upper-division credits, have met all general education requirements, and who are more than 30 credits from graduation, will automatically be granted a Bachelor of General Studies (B.G.S.) degree (no major specified*) and have the opportunity to participate in commencement exercises. Those wishing to take additional courses after meeting degree requirements may consider a second baccalaureate degree, a graduate degree, or coursework taken as a non-degree-seeking student.

First Time in College and Early Admission students are expected to graduate within 4 years, as established by the Florida Board of Governors. Students who have not met all requirements for their major, but who have accumulated 120 credits, including 42 upper-division credits, have met all general education requirements, and who are more than 30 credits from graduation, will

automatically be granted a Bachelor of General Studies (B.G.S.) degree (no major specified*) and have the opportunity to participate in commencement exercises. Those wishing to take additional courses after meeting degree requirements may consider a second baccalaureate degree, a graduate degree, or coursework taken as a non-degree-seeking student.

Any student enrolled in any College of Engineering and Computer Science degree program for six years, who has accumulated 120 credits, including 42 upper division credits, and all general education requirements, will automatically be granted a Bachelor of General Studies (B.G.S.) degree (no major specified*) and have the opportunity to participate in commencement exercises. Those wishing to take additional courses after meeting degree requirements may consider a second baccalaureate degree, a graduate degree, or coursework taken as a non-degree-seeking student.

Preprofessional Program

Entering freshmen and all transfer students in the bachelor of science programs for engineering majors will be admitted directly to the College's preprofessional program as pre-engineering students. The following are required for students to be admitted to their major of choice in the College of Engineering and Computer Science:

- 1. Students must meet University admission requirements.
- 2. In each core course listed below, students must obtain a minimum grade of "C." Advanced placement scores of 4 or above will be given credit for the appropriate course(s). A score of 5 is equivalent to an "A," and a score of "4" is equivalent to a "B."
- 3. A maximum of two attempts will be allowed for any of the listed courses. Failure to receive a passing grade in the second attempt (including withdrawals) is grounds for denial of admission to an engineering or computer science program.

B.S. in Geomatics Engineering

Course Title	Course Number	Credits
Calculus with Analytic Geometry 1 (1)	MAC 2311	4

B.S. in Civil, Computer, Electrical, Environmental, Mechanical and Ocean Engineering

Course Title	Course Number	Credits
Calculus with Analytic Geometry 1 (1)	MAC 2311	4
General Physics for Engineers 1 (2)	PHY 2048	3

Notes:

(1) MAC 2311 and MAC 2253 are substitutes.

(2) PHY 2043 and PHY 2048 are substitutes.

The entry-level mathematics requirement for the engineering programs is Calculus with Analytic Geometry 1. Students who are placed in lower-level mathematics courses and who need to maintain full-time status, may have problems finding courses that are accepted in an engineering or computer science program in future semesters. This may delay their entry into a particular engineering or computer science program.

After successfully completing the pre-professional engineering courses, students will be transitioned automatically into their engineering concentration. [The Center for Advising & Student Engagement \(CASE\)](#) is available to assist students in the selection of a major field of study and can be reached at 561-297-2790 or engineering-advising@fau.edu.

Students with engineering degrees from ABET-accredited institutions will be directly admitted to engineering or computer science programs of their choice.

Students may appeal denial of admission to a major through the academic petition process. For an appeal to have merit, students must explain new academic or personal information as well as extenuating circumstances. The evidence should show a student's case is stronger than the GPA evidence suggests. The faculty coordinator for the preprofessional program will review the petition according to the established College guidelines and make a recommendation to the academic petition committee.

The College of Engineering and Computer Science fully complies with the State of Florida Common Prerequisites for Computer Science and for Engineering. Students transferring from Florida community or state colleges who meet the preprofessional program course requirements will be directly admitted to the particular engineering and computer science program of their choice.

The College of Engineering and Computer Science participates in the Southeast Florida Engineering Education Consortium, a collaborative effort among public colleges and universities in this region. Detailed advising sheets outlining the

courses needed at the community or state college and at FAU are available for students transferring from Miami-Dade, Broward, Palm Beach and Indian River colleges. These sheets also provide a useful guide for students transferring from other institutions. Students should contact their community or state college advisor or the FAU department in which they intend to enroll.

Commented [JB1]: Is SEFEEC still active? I haven't heard anything about this in years.

General Curriculum Notes

The College recognizes that students may transfer from other schools or programs or may have course numbering system changes. As a result, the College will accept the following as equivalent:

1. MAP 3305, Engineering Mathematics 1 and MAP 2302, Differential Equations.
2. PHY 2044, Physics for Engineers 2 and PHY 2049/2049L, General Physics 2 with Lab.

Students will follow the University catalog for the year in which they began classes at Florida Atlantic University. However, students remaining in the program for longer than eight (8) years will be automatically updated to the most recent catalog.

Commented [JB2]: Did you want to change this to 6?

Advising/Student Responsibility

Experienced academic advisors are available to meet with students every term to help ensure they are taking courses in the proper sequence and at a rate consistent with their personal objectives, academic ability, and other commitments. Final responsibility for meeting degree requirements and for fulfillment of course prerequisites rests with the student. All students must meet with their advisor once per year.

Engineering Cooperative Education

The College of Engineering and Computer Science's Cooperative Education program enables qualified students to gain paid, professional work experience in business and industry prior to graduation. Co-op students either alternate periods of full-time work and study or work half time while pursuing their degrees.

The College also sponsors one-semester internships available to students enrolled for a degree within the College. Internships provide an opportunity for students to gain career-related work experience while pursuing their degrees.

Commented [JB3]: Is this accurate?

Internships may be either full time (35-40 hours/week) or part time (20-25 hours/week) and are repeatable.

To learn more about the Cooperative Education and internship programs, students in the College of Engineering and Computer Science should contact the FAU Career Center at 561-297-3533 or refer to its [website](#). All students must be registered with the Center to participate in co-op or internship programs.

Engineering Student Services

The goal of [The Center for Advising & Student Engagement \(CASE\)](#) is to provide engineering and computer science students with hands-on guidance, support and encouragement to help facilitate their academic success as they work towards their degree. The CASE team is comprised of academic advisors and student service professionals who work closely with students to address their unique and specific needs through personalized advising, academic coaching, and meaningful programming to enhance their university experience. Questions related to admissions, financial aid, advising, student organizations and activities and other student-related matters may be directed to the CASE Team at 561-297-2790 or engineering-advising@fau.edu.

Financial Aid/Student Employment

Opportunities for financial aid are available to Engineering and Computer Science students. Work opportunities sometimes are available as student assistants in offices and laboratories and on externally sponsored research projects. For job opportunities, visit Handshake

Foreign Language Requirement

The Foreign Language Entrance Requirement (FLENT) is an admission requirement of the State University System that requires a student to have taken two years of the same language in high school. Universities may waive the FLENT requirement for students seeking admission. However, FLENT must be satisfied before any degree can be awarded. This requirement may be satisfied by providing documentation of completion of two years of the same language in high school, achieving a minimum required score on a proficiency exam (CLEP, etc.), providing an official transcript from a secondary or postsecondary institution primarily taught in a non-English language, or by completing at least

the 2nd level of a foreign language course sequence (XXX 1121).

HONORS PROGRAM IN ENGINEERING

Commented [JB4]: Is all of this still accurate?

The Honors Program provides FAU's students in the College of Engineering and Computer Science the opportunity to achieve academic excellence beyond the level of standard coursework. Students interested in pursuing the Honors designation should meet the following eligibility and admission requirements.

Eligibility Requirements

Engineering and Computer Science students with strong academic records and interest in improving their leadership and innovation skills are encouraged to apply for the Honors Program in Engineering program. Students must meet the following program entry requirements:

1. Junior standing (must have completed 60 credits toward an engineering or computer science major);
2. At the time of application, must have a cumulative GPA of at least 3.25 in the last 60 credits taken at FAU and any other previous institution of higher education;
3. Must not have received a grade lower than a "C" in any college course; and
4. Apply through the Center for Advising & Student Engagement.

Program Requirements

1. Preferred to maintain full-time status (excluding summer semesters); however, a one-semester grace period may be given if the student decides to study abroad or has other considerations that preclude full-time status.
2. Must maintain cumulative GPA of 3.25 or better. If a student's overall GPA falls below 3.25, a one-semester grace period may be given for improvement. If the GPA does not recover, the student's honors status will be withdrawn.
3. Must not receive any grade lower than a "C" in any college course.
4. Must not have any violation of the Code of Academic Integrity.
5. Must participate in at least one general enrichment activity (membership in a student professional organization, attend professional development seminar, other approved activity).
6. Must not receive a grade lower than a "B" in any Honors-in-the-Major course requirement (9 credits of honors-level coursework as approved in consultation with the advisor and the associate dean and capstone with honors compact).

- 7. Must complete Honors Directed Independent Study (EGN 5908, 3 credits), which will count as the thesis.
- 8. Must complete a formal Honors application.

Sample Flight Plan

Junior Year Fall Term

Course Title	Course Number	Credits
Engineering Honors Seminar	EGN 4933	0
Core Elective 1		1

Junior Year Spring Term

Course Title	Course Number	Credits
Engineering Honors Seminar	EGN 4933	0
Core Elective 2		1

Junior Year Summer Term

Course Title	Course Number	Credits
Engineering Honors Seminar	EGN 4933	0
Core Elective 3		1

Senior Year Fall Term

Course Title	Course Number	Credits
Engineering Honors Seminar	EGN 4933	0
Engineering Capstone Design 1		3

Senior Year Spring Term

Course Title	Course Number	Credits
Engineering Honors Seminar	EGN 4933	0
Engineering Capstone Design 2		1

COMBINED DEGREE PROGRAM INFORMATION

B.S. to M.S. Programs

To encourage undergraduates to pursue a graduate education, the College of Engineering and Computer Science offers joint B.S. to M.S. degree programs. These programs allow students to complete both a bachelor's and a master's degree within five years. The undergraduate degree programs range from 120 to 127 credits, while the combined degree program includes a minimum of 150 credits. Students admitted after January 1, 2017, may count up to 12 credits of graduate coursework (5000 level or higher) taken as an undergraduate to satisfy both degrees. See academic program requirements.

Students with a cumulative GPA of at least 3.25 at the end of their junior year are eligible to apply to the graduate programs. For combined programs in the Department of Ocean and Mechanical Engineering, students with an overall GPA of above 3.0 and a GPA of above 3.25 in the last 60 credits of coursework completed at the time of admission may apply to the graduate programs. The GPA must be maintained until graduation from the B.S. degree.

The GRE is not required for these programs. All other degree requirements apply. See individual departments for the specific program descriptions appearing just before the master's degree programs. The College also offers a combined program leading to an M.S. in [Biomedical Engineering](#) that is available to all B.S. candidates in any major in the College.

Commented [JB5]: Should AI be listed here as well?

B.S. to Ph.D. Programs

The normal path from B.S. degree to Ph.D. degree in the College of Engineering and Computer Science is through the M.S. degree and its associated requirements. The B.S. to Ph.D. Program gives highly qualified students in the College the option of bypassing the M.S. degree and moving to their doctoral research activities more rapidly. B.S. to Ph.D. students will not be required to write an M.S. thesis. Students selecting the B.S. to Ph.D. option who fail to pass the Ph.D. Qualifying/Candidacy examination will be allowed to switch to an M.S. program, complete the degree requirements and receive the M.S. degree. Admission to the B.S. to Ph.D. Program may be granted to students entering or already in a graduate engineering program, including students selected for the joint B.S. to M.S. program. Admission and degree requirements are listed below.

Admission Requirements

Students in the B.S. Program:

1. Satisfaction of the department's minimum GPA requirement, normally in the 3.2 – 3.3 range, in the last 60 credits of undergraduate coursework;
2. A combined score (verbal and quantitative) of at least 310 on the GRE;
3. A minimum of two letters of recommendation. Where possible, these letters should address the student's qualifications for research.

Students in the M.S. Program at FAU:

1. Satisfaction of the department's minimum GPA requirement, normally in the 3.2 – 3.3 range, in the last 60 credits of undergraduate coursework;
2. A combined score (verbal and quantitative) of at least 310 on the GRE;
3. A minimum GPA of 3.5 in the graduate program at FAU;
4. Students must apply for the direct path Ph.D. program within the first year of graduate studies. Students who do not satisfy the GRE or GPA requirements stated above must obtain approval from the department and College graduate committees overseeing the graduate program and from the Graduate College before being admitted to the direct path program.

Degree Requirements

1. Successful completion of the department's doctoral qualifying/candidacy exam. This exam will normally be taken after the student has completed 24 credits of graduate coursework in the department.
2. A minimum of 72 credits beyond the B.S. degree, distributed according to the following conditions:
 - a. A minimum of 42 credits of graduate coursework from which a minimum of 27 credits of coursework must be in the doctorate-granting department (excluding directed independent study credits) and a minimum of 18 credits of 6000-level courses must be completed;
 - b. Except under unusual circumstances, no more than 6 credits are allowed for directed independent study and/or advanced research graduate courses;
 - c. No 4000-level course is allowed toward the degree. Courses taken to make up for the deficiencies will not be counted toward the degree;
 - d. A minimum of 30 dissertation credits.
3. Successful completion and defense of the dissertation.

MASTER'S DEGREE PROGRAM INFORMATION

(For master's degree programs, the GRE admission requirement is waived for the time being.)

Distance Education

Engineering credit courses in support of degree programs and professional development are available through the [Division of Engineering Student Services and Advising](#) (DESSA) in the following disciplines: Civil Engineering, Computer Engineering, Computer Science, Electrical Engineering, Mechanical Engineering and Ocean Engineering. Students can enroll in one or more courses encompassing the six different disciplines each semester. DESSA provides access to university courses at industry sites and government agencies. The goal of DESSA is to deliver engineering and computer science programs to students any place and any time. For information, contact the DESSA Director, 561-297-3578, or visit DESSA's [website](#).

Commented [JB6]: This is no longer accurate and should be removed or updated.

Graduate Summer Internship Program

The College of Engineering and Computer Science supports a Graduate Summer Internship (GSI) Program through the FAU Career Center. Available to all master's degree students enrolled in the College, this program provides an opportunity to gain career-related, paid work experience during the summer semester. GSI application and placement are handled through the CDC. Interested students should contact the CDC early in the spring semester to establish eligibility and to submit an application packet. For information, call 561-297-3533 or visit its [website](#).

Requirements for Students with Bachelor's Degrees in Non-Engineering Disciplines

Students with bachelor's degrees in non-engineering disciplines may satisfy the undergraduate engineering requirements and earn an M.S. degree in Biomedical Engineering, Computer Science, Computer Engineering, Electrical Engineering, Mechanical Engineering, Ocean Engineering or Civil Engineering. Part-time or full-time study is possible. To receive the M.S. degree in engineering, these students must correct deficiencies in their programs of study by taking, in addition to regular graduate engineering courses, certain undergraduate engineering courses appropriate to the master's degree objective. Four or five such courses are typically required of students with B.S. degrees in science and 10-12 courses for non-science/engineering students. Students may opt for thesis

or non-thesis options. The program of study will be individually tailored to each student's academic background, graduate engineering degree objective and relevant experience. It is expected that full-time students with appropriate preparation and background in math, science and engineering will complete the undergraduate courses phase of the program in one year.

Students must satisfy the following eligibility requirements:

1. A cumulative GPA of 3.00.
2. Completion of at least two semesters of college calculus with grades of "B" or better.
3. Satisfaction of departmental minimum GRE score requirements.
4. A letter of recommendation from their potential thesis advisor.

Specific course requirements for each program in the College of Engineering and Computer Science are listed as follows:

Electrical Engineering and Computer Science

The Department of Electrical Engineering and Computer Science requires that each student and an academic advisor work out a customized plan of study based on the student's background and desired graduate area of study. The following remedial coursework represents a maximum plan. It can be shorter if the students have already taken some of the courses or equivalent courses. Students are expected to score a "C" or better in each of the courses and to maintain an average of 3.0 or better for all the remedial courses.

Requirements for science majors:

1. EEE 3300, Electronics 1;
2. EEL 2161, C for Engineers;
3. EEL 3111, Circuits 1;
4. EEL 3118L, Electronics Laboratory 1;
5. EEL 4656, Analysis of Linear Systems;
6. EEL 3470, Electromagnetic Fields and Waves; or EEL 4510, Introduction to Digital Signal Processing; or EEL 4512C, Principles of Communication Systems; or EEL 4652C, Control Systems 1.

Requirements for non-science majors:

1. The six requirements listed above;
2. MAC 2281, Calculus for Engineers 1;
3. MAC 2282, Calculus for Engineers 2;

4. PHY 2048, General Physics for Engineers 1;
5. PHY 2044, Physics for Engineers 2.

Civil, Environmental and Geomatics Engineering

The Department of Civil, Environmental and Geomatics Engineering requires the following remedial coursework:

1. EGN 3311, Statics;
2. EGN 3331, Strength of Materials;
3. Two civil and/or environmental engineering courses in the relevant area as determined by the graduate supervisory committee;
4. Any other course dictated by the graduate supervisory committee.

Ocean and Mechanical Engineering

The Department of Ocean and Mechanical Engineering requires the following remedial coursework. If students have not taken these classes during their undergraduate studies, their case needs to be reviewed by the department graduate committee, which may require them to take prerequisite classes for the graduate program and pass them with a grade of "B" or better:

1. EGN 3311, Statics;
2. EGN 3321, Dynamics;
3. EGN 3331, Strength of Materials;
4. EML 3701, Fluid Mechanics;
5. MAC 2281, Calculus for Engineers 1;
6. MAC 2282, Calculus for Engineers 2;
7. MAC 2313, Calculus with Analytic Geometry 3;
8. MAP 3305, Engineering Mathematics1; or MAP 2302, Differential Equations 1.

INTERDISCIPLINARY MINOR AND CERTIFICATES

BUSINESS

GRADUATE MINOR

(Minimum of 15 credits required)

A minor in Business is available to students pursuing a non-thesis master's degree who wish to combine technical coursework in engineering or computer science with a sequence of courses designed to provide a broad background in modern business concepts. Thesis students may participate with approval of their major department.

The Business minor is available to students admitted to master's studies in any program in the College of Engineering and Computer Science. It is not available to students with non-degree-seeking status. Requirements for the minor include completion of five graduate-level business courses (3 credits each) from the list below (course descriptions may be found in the [College of Business Course Descriptions section of this catalog](#)):

1. ACG 6027, Financial Accounting Concepts;
2. FIN 6406, Financial Management;
3. ISM 6026, Management of Information Systems and Technology, or QMB 6603, Data Analysis for Managers;
4. Select one of the following courses: MAN 6937, Global Environment of Management; ENT 6196, Biotechnology Business Development; ENT 6016, Venture Creation; or MAN 6296, Leadership and Organizations;
5. MAR 6055, Marketing Functions and Processes.

Some course substitution may be possible for students with prior academic background in one or more of these areas. Additional requirements for master's degrees with a minor in Business are given in the individual program descriptions that follow.

The minor in Business is awarded upon graduation as an integral part of a master's degree program in Engineering or Computer Science; it is not awarded independent of these degrees. Courses taken as part of the Business minor apply toward the prerequisites for many M.B.A. programs but generally cannot be used to satisfy M.B.A. degree requirements.

ENERGY RESILIENCE

GRADUATE CERTIFICATE

(Minimum of 12 credits required)

The availability of reliable electric power is foundational to the health and safety of citizens as well as the economy. Technology is rapidly providing solutions that increase the efficiency and resiliency of the electrical grid, while renewable energy technologies are providing cleaner sources of electric power. These technological advances are made possible by engineers and scientists with advanced knowledge of the power grid, data analysis techniques and renewable energy extraction. By specializing in these areas, graduate students will be well prepared to contribute to the efficiency and resiliency of the electrical grid as well as renewable power generation.

This 12-credit certificate provides graduate students with knowledge and skills in the concepts and technologies necessary to improve the efficiency and resiliency of energy generation, transmission and distribution.

Admission

The certificate program is open to students with a bachelor's degree in engineering or science and a GPA of at least 3.0. Students must satisfy the prerequisites for each course in the program. The average GPA of all four courses counted in the program must be 3.0 or better.

Curriculum

Select four courses from the list below. Additional graduate courses in energy and power systems may be counted in the certificate program with prior permission of the advisor.

Course Title	Course Number	Credits
Smart Grid	EEL 6297	3
Energy Engineering	EGN 5735	3
Power System Analysis and Control	EEL 5256	3
Advanced Photovoltaic Power Systems	EEL 6284	3
Solar Energy Engineering	EML 6417C	3
Advanced Energy Conversion Processes and Systems	EML 6451	3
Wind and Ocean Energy Turbines	EML 6455	3
Marine Renewable Energy	EOC 6145	3

ENERGY RESILIENCE GRADUATE CERTIFICATE PROFESSIONAL PROGRAM

(Minimum of 12 credits required)

The Professional Energy Resilience certificate is designed specifically for working professionals, allowing professionals to advance their careers with an accelerated graduate program and obtain an advanced degree while continuing to work. This stand-alone certificate is tailored for professionals and alumni with graduate degrees who are looking for specialized knowledge in Energy Resilience. The course offering format includes evenings, weekends and online material. Admission details and degree requirements for this 12-credit certificate are noted above.

SMART CITIES AND INTERNET OF THINGS (SC-IOT) UNDERGRADUATE CERTIFICATE

(Minimum of 12 credits required)

The certificate program in Smart Cities and Internet of Things (SC-IoT) is designed to provide undergraduate students with the necessary foundations for a career in smart cities in alignment with their academic major. Emphasis is placed on application of sensing, data-intensive management and public space automation.

Undergraduate students from the College of Engineering and Computer Science and the College of Science may earn the certificate in Smart Cities and Internet of Things by completing 12 credits of coursework within a focused topic area.

Certificate Requirements

All students applying for this certificate are required to take the following 3-credit course:

Course Title	Course Number	Credits
Introduction to Programming in Python	COP 3035C	3

Students must complete 3 credits in one of the following courses:

Course Title	Course Number	Credits
Tools for Data Science	CAP 2751	3
RI: Experimental Design and Data Analysis	CAP 2753	3
Introduction to Data Science and Analytics	CAP 4773	3
Site Planning	URP 4870	3

Students must complete 6 credits selected from a series of courses associated with one of four focused topic areas noted below:

1. Smart and Connected Mobility - Select 6 credits

Course Title	Course Number	Credits
RI: Data-Driven Civil Infrastructure	CGN 4344	3
Introduction to Transportation Engineering	TTE 3004C	3
Transportation Planning and Logistics	TTE 4005C	3
Transportation Operations and Logistics Management	TTE 4105	3

2. Smart and Resilient Infrastructure - Select 6 credits

Course Title	Course Number	Credits
Analysis of Structures	CES 3102C	3
Computer-Aided Design	CGN 2327	3
Civil Engineering Materials	CGN 3501C	3
Strength of Materials	EGN 2327	3
City Structure and Change	URP 4055	3
Advanced Visual Planning Technologies	URP 4255	3
Capital Facilities Planning	URP 4730	3

3. Smart and Sustainable Environments - Select 6 credits

Course Title	Course Number	Credits
Applied Hydraulics	CWR 3201C	3
Environmental Science and Engineering	ENV 3001C	3
Introduction to Pollution Prevention and Sustainability	ENV 4072	3
Planning Implementation Strategies	URP 4120	3
RI: Sustainable Cities	URP 4403	3
Environmental Planning Methods	URP 4420	3

4. Sensing and Power Systems - Select 6 credits

Course Title	Course Number	Credits
Communication Networks	CNT 4007	3
Introduction to the Internet of Things and Sensor Networks	CNT 4164	3
Electric Power Systems	EEL 4216	3
Photovoltaic Power Systems	EEL 4281	3
Fundamentals of Energy Systems	EGN 4732	3
Thermal Infrared Remote Sensing and Applications	SUR 4384	3
Planning for Hazards/Disasters	URP 4430	3

DOCTORAL DEGREE PROGRAM INFORMATION

(For doctoral degree programs, the GRE admission requirement is waived for the time being.)

Doctoral programs through the College of Engineering and Computer Science are available in the following disciplines: Computer Engineering, Computer Science, Electrical Engineering, Mechanical Engineering, Ocean Engineering and [Transportation and Environmental Engineering](#). Details on each program follow under the department in which each program is housed.

ACADEMIC ENVIRONMENT

The College of Engineering and Computer Science provides outstanding educational opportunities for students and personnel. With over 75 faculty, almost all with Ph.D. degrees, it is large enough to have a good selection of course offerings and student activities, yet small enough to provide the personal attention of smaller schools.

Each department has unique features and facilities indicated in the individual program descriptions. Each is affiliated with one or more national professional societies, providing students opportunities to engage in industry tours, hear professional speakers, interact and network with engineering and computer science professionals, develop leadership skills and participate in various social

activities arranged by these student groups. Each has active programs of research with opportunities for student participation.

Florida Atlantic University is located in a high-tech region of the United States. Close affiliations with business and industry provide students many benefits, including job opportunities before and after graduation.

College Vision and Mission

The College of Engineering and Computer Science is committed to providing accessible and responsive programs of education and research recognized nationally for their high quality. The College aims to be the institution of choice for regional students, business and industry. As a community of scholars, the College leads by example with vision, inspiration, integrity and a shared sense of purpose. It promotes a stimulating and productive environment of work, study and scholarly inquiry for students, faculty and staff.

Through its programs in engineering and computer science, the College:

1. Educates those who will pioneer the advancement of knowledge and who will be the leaders of tomorrow;
2. Conducts basic and applied research in engineering, computer science and related interdisciplinary areas;
3. Provides service to the engineering and computer science professions, to the State of Florida, to the nation and to the community at large.

College Goals

The College's goals are results-oriented. As a community of scholars, it will:

1. Encourage young people to consider careers in engineering and computer science by introducing them to these fields while in middle and high school;
2. Prepare graduates in ways that provide them a basis for lifelong personal and professional development and that enable them to exercise leadership and make lasting contributions in their disciplines;
3. Continue on new roads of research and discovery in its existing areas of expertise, in emerging disciplines and in related interdisciplinary areas;

4. Provide the educational resources that working professionals need to keep pace with developments in their field;
5. Magnify its positive impact in serving regional, state, national and global needs by building mutually beneficial linkages with business, industry, state colleges, K-12 programs and schools and other constituencies.

Educational Objectives

The baccalaureate experience in the Florida Atlantic University College of Engineering and Computer Science provides students with:

1. Preparation for Practice. Graduates will be prepared for entry-level positions in their discipline and for graduate/professional studies.
2. Tools for Creativity. Graduates will experience the creative and design processes and their application to typical engineering situations.
3. Societal Awareness. Graduates will receive the breadth of education necessary to integrate practice in their disciplines with the needs and interests of a diverse modern society.
4. Leadership Skills. Graduates will be prepared for leadership in their disciplines.

Expected Student Learning Outcomes

The baccalaureate educational objectives will be achieved by ensuring that graduates have:

1. An understanding of professional and ethical responsibility. Graduates will be familiar with the professional and ethical underpinnings of their discipline and with their professional obligation for continuing education and professional development.
2. A working knowledge of fundamentals, engineering tools and experimental methodologies. Graduates will have knowledge of math, science and engineering fundamentals. They will be able to combine these basics with their knowledge of experimental methodologies and modern engineering tools to identify, formulate and solve engineering problems.
3. An understanding of the social, economic and political contexts in which engineers must function. Graduates will be able to combine their knowledge of the social sciences and humanities with their own personal and professional experiences to demonstrate an understanding of the impact of engineering solutions in an increasingly diverse and technological society.

4. An ability to plan and execute an engineering design to meet an identified need. Graduates will be able to use their knowledge of fundamentals, engineering techniques and tools and project planning and management to design a system, component or process that satisfies constraints and meets an identified need.
5. An ability to function on multidisciplinary teams. Graduates will be able to function effectively on teams using their knowledge of team dynamics, team communication, social norms and conflict management.
6. An ability to communicate effectively. Graduates will be able to communicate their ideas and results to diverse audiences using their knowledge of written, oral and graphic communication.