Computer & Electrical Engineering and Computer Science

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The Department of Computer & Electrical Engineering and Computer Science (CEECS) offers programs in Bioengineering, Computer Engineering, Computer Science and Electrical Engineering. Specifically, the department offers undergraduate programs of study leading to the degrees of Bachelor of Science (B.S.) with major in Computer Science, Bachelor of Science in Computer Engineering (B.S.C.E.), and Bachelor of Science in Electrical Engineering (B.S.E.E.). A minor in Computer Science is also available. A Data Science certificate program, designed jointly by departments of Computer and Electrical Engineering and Computer Science and Mathematical Sciences, provides an in-depth study of the methods to manage, analyze and extract knowledge from data.

In the graduate area, the department offers a Master of Science (M.S.) with major in Bioengineering, Master of Science (M.S.) with major in Artificial ~~Artifical~~ Intelligence with thesis, Master of Science (M.S.) with major in Artificial Intelligence without thesis, Master of Science with major in Computer Engineering with thesis, Master of Science with major in Computer Engineering without thesis, Master of Science with major in Computer Science with thesis, Master of Science with major in Computer Science without thesis, Master of Science with Major in Data Science and Analytics, and Master of Science with major in Electrical Engineering. A certificate in Bioengineering is also available.

Prospective doctoral students may choose from a Doctor of Philosophy (Ph.D.) with major in Computer Engineering, Doctor of Philosophy (Ph.D.) with major in Computer Science and Doctor of Philosophy with major in Electrical Engineering (Ph.D.).

To encourage undergraduates to pursue a graduate education, the department also offers a combined B.S.C.E. to M.S. degree program in Computer Engineering, a B.S. to M.S. degree program in Computer Science, a B.S.E.E. to M.S. degree program and a combined program leading to an M.S. in Bioengineering that is offered to B.S. candidates in any College of Engineering and Computer Science major. In addition These programs permit students to complete both a bachelor's and a master's degree within five years.

For students interested in combining the broad systems orientation provided in the Bachelor of Science in Electrical Engineering (B.S.E.E.) with focus in Computer Engineering, the department offers the five-year B.S.E.E./M.S.Cp.E. (Master of Science in Computer Engineering). Program details are listed in the Electrical Engineering section under Combined Programs.

Below, the Computer Science and Computer Engineering programs are described first, followed by the Electrical Engineering program and the Bioengineering program.

Link to Bioengineering Programs

Link to Electrical Engineering Programs

Link to Information Technology and Management Program

Computer Science and Computer Engineering

Mission Statement
The common mission of the Computer Science and Computer Engineering Programs is:

1. To produce graduates with a strong grasp of fundamentals of computer science and computer engineering, knowledge in technical specialty areas and an appreciation of the power of collaborative effort applied to problem solving.

2. To offer courses and programs that stimulate innovation and enhance the ability of graduates to achieve high levels of professional development and to succeed in a competitive marketplace.

3. To conduct research in selected areas and to integrate research results with teaching activities.

4. To provide service to the profession and community and forge strategic alliances with other professions.

Link to Data Science Certificate

Link to Combined Programs

Link to Master's Programs

Link to Big Data Analytics Graduate Certificate

Link to Cyber Security Graduate Certificate

Link to Energy Resilience Certificate

Link to Doctoral Programs

BACHELOR'S PROGRAMS

Educational Objectives and Outcomes for the Bachelor's Programs
Computer Science
Graduates of the baccalaureate program in Computer Science are prepared for careers with software companies, developing applications or systems software, or with companies developing software in a scientific or engineering environment.

The degree focuses on the software aspects of computing by building on a set of core courses in areas such as algorithms, machine organization, programming language concepts, theory, computer systems and software engineering.

Based on the Educational Objectives of the College of Engineering and Computer Science, the department has established the following student learning outcomes for the baccalaureate program in Computer Science. Graduates of the program will have an ability to:

1. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.

2. Design, implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

3. Communicate effectively in a variety of professional contexts.

4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

5. Function effectively as a member of leader of a team engaged in activities appropriate to the program's discipline.

6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

The Bachelor of Science degree program in Computer Science is accredited by the Computing Accreditation Commission of ABET.

Computer Engineering
Graduates of the baccalaureate program in Computer Engineering are prepared for careers in the computer industry as well as with companies that integrate computers into more complex products.

The degree focuses on the system and hardware aspects and the interaction of hardware with software by building on courses in microprocessors, computer design and design automation on the one hand, and on data structures and algorithms, operating systems and software engineering on the other.

Based on the Educational Objectives of the College of Engineering and Computer Science, the department has established the following student learning outcomes for the baccalaureate program in Computer Engineering. Graduates will have:

~~1. An ability to identify, formulate and solve engineering problems by apply principles of engineering, science and mathematics.~~

~~2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.~~

~~3. An ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions.~~

~~4. An ability to communicate effectively with a range of audiences.~~

~~5. 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.~~

~~6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate and apply this knowledge appropriately.~~

~~7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines and analyze risk and uncertainty.~~

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. The ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

While undergraduate students make some use of University computing facilities, the department has its own facilities that are available for undergraduates and are used for assignments in many courses. A PC-based lab provides students with hands-on experience in logic design, peripheral interfacing and software design for microprocessors. Undergraduates use the department's network of UNIX and PC workstations for coursework in areas such as programming, software development using advanced tools, artificial intelligence, simulation and graphics.

The Bachelor of Science in Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET.

Link to Bachelor of Science with Major in Computer Engineering

Link to Computer Science Minor

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Bachelor of Science ~~with Major~~ in Computer Science (BSCS)
(Requires 120 credits.)

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, MAC 1147 and COP 2220, in order to be accepted into the Computer Science program. MAC 1114 and MAC 1140 may be substituted for MAC 1147.

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.*

All courses not listed with 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 minimum number of credits required for the Bachelor of Science degree with major in Computer Science is 120 credits. This degree will be awarded to students who satisfy all admission and degree requirements for the department. Items below are referenced in the table following the list.

(1) Students entering FAU with fewer than 30 credits must satisfy the course requirements specified in the catalog section, Degree Requirements. Students entering FAU with more than 30 credits (transfer students) must see the undergraduate advisor for an evaluation of courses taken at another school. The general education requirements are satisfied normally if a student has an Associate of Arts (A.A.) degree from a Florida community or state college.

(2) Complete all computer science core courses with a grade of "C" or better.

(3) Complete ~~physics,~~ calculus 1 and 2 and discrete mathematics with a grade of "C" or better in each of the courses.

(4) See advisor for approved courses.

(5) Complete two natural science courses with grade of “C” or better in each of the courses. At least one course must have a laboratory component.

Pass/Fail Grades: Note that while the University may offer some courses with the pass/fail option, Computer Science students may not use this option.

Specific Degree Requirements	
General Education (1)	
Foundations of Written Communication	6
Foundations of Society and Human Behavior	6

Foundations of Global Citizenship	6
Foundations of Humanities	6
Subtotal	**24**

~~***Mathematics and Science (1) (Lower Division)***~~		
~~Calculus with Analytic Geometry 1 (3)~~	~~MAC 2311~~	~~4~~
~~Calculus with Analytic Geometry 2 (3)~~	~~MAC 2312~~	~~4~~
~~General Physics for Engineers 1 (3)~~	~~PHY 2048~~	~~3~~
~~General Physics Lab 1 (3)~~	~~PHY 2048L~~	~~1~~
~~Physics for Engineers 2 (3)~~	~~PHY 2044~~	~~3~~
~~General Physics Lab 2 (3)~~	~~PHY 2049L~~	~~1~~
~~Discrete Mathematics (3)~~	~~MAD 2104~~	~~3~~
~~Science (4)~~		~~4~~
~~Additional Math Elective~~		~~3~~
~~**Subtotal**~~		~~**26**~~

Mathematics (1) (Lower Division)		
Calculus with Analytic Geometry 1 (3)	MAC 2311	4
Calculus with Analytic Geometry 2 (3)	MAC 2312	4
Discrete Mathematics (3)	MAD 2104	3
Additional Math Elective		3
Subtotal		**14**

Science (5) (Lower Division)		
General Chemistry 1 and Lab	CHM 2045 & L	4
Biological Principles	BSC 1010 & L	4
General Physics for Engineers 1	PHY 2048	3
General Physics Lab 1	PHY 2048L	1
Physics for Engineers 2	PHY 2044	3
General Physics Lab 2	PHY 2049L	1
Physical Geology & Lab	GLY 2010C	4
Subtotal		**7 or 8**

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Core Courses
All students must take the following core courses, which total 43 credits:

Computer Science Core (2)		
Introduction to Programming in C	COP 2220	3
Foundations of Computer Science	COP 3014	3
Introduction to Logic Design	CDA 3201C	4

Data Structures and Algorithm Analysis	COP 3530	3
Introduction to Internet Computing	COP 3813	3
Computer Operating Systems	COP 4610	3
Stochastic Models for Computer Science	STA 4821	3
Introduction to Database Structures	COP 3540	3
Introduction to Microprocessor Systems	CDA 3331C	3
Formal Languages and Automata Theory	COT 4420	3
Design and Analysis of Algorithms	COT 4400	3
Principles of Software Engineering	CEN 4010	3
Engineering Design 1	EGN 4950C	3
Engineering Design 2	EGN 4952C	3
Subtotal		**43**
Computer Science Electives (4)		21
Free Electives (4)		~~6~~ 10 or 11
Total		**120**

Computer Science Electives

To satisfy the computer science (CS) elective requirement, all students must take ~~9~~ 21 credits chosen from Computer Science and Computer Engineering upper-division courses that are not in the above CS core ~~(students can take EGN 4040 and ISM 4133 for CS elective credit)~~. ~~In order to provide advanced content, as well as programming experience in a language other than C/C++, one of these elective courses must be: COP 4020, COP 4593, COP 4703 or CAP 4630. Students seeking a specialty may consider concentrating on one of the following groups of courses; additional courses from these groups may be taken as other electives (note that 5000-level or 6000-level CS courses can be taken as CS electives).~~ Certain 5000-level or 6000-level CS courses may be taken as CS electives. Students must see an advisor for a current list of CS elective courses. Students seeking a specialty may consider taking electives in an area of study. The following are a few suggested areas of concentration from the current course offerings.

Internet Technology		
Introduction to Data Communications	CNT 4104	3
Introduction to Data and Network Security	CNT 4403	3
~~Component Program with .NET~~	~~COP 4593~~	~~3~~
Applied Database Systems	COP 4703	3
~~Web Services~~	~~COP 4814~~	~~3~~
Mobile Apps Projects	COP 4655	3

~~***Applications***~~		
~~Introduction to Artificial Intelligence~~	~~CAP 4630~~	~~3~~
~~Computer Animation~~	~~CAP 4034~~	~~3~~
~~Mobile Apps Projects~~	~~COP 4655~~	~~3~~
~~Introduction to Deep Learning~~	~~CAP 4613~~	~~3~~

Software Engineering		
Software Engineering Project	CEN 4910	3
Python Programming	COP 4045	3
Object-Oriented Design and Programming	COP 4331	3

Advanced Systems Analysis and Design	ISM 4133	3

~~***System Performance***~~		
~~Introduction to Queueing Theory~~	~~MAP 4260~~	~~3~~
~~Modeling and Simulation of Systems~~	~~CAP 4833~~	~~3~~
~~Introduction to Computer Systems Performance Evaluation~~	~~CEN 4400~~	~~3~~

~~***System Programming***~~		
~~Programming Languages~~	~~COP 4020~~	~~3~~
~~UNIX System Programming~~	~~COP 4604~~	~~3~~

Cyber Security		
Foundations of Cybersecurity	CNT 4403	3
Cyber-physical Systems Security	CIS 4214	3
Data and Network Security	CNT 4411	3
Operating Systems Security	CIS 4367	3

Data Science		
Intro to Data Mining and Machine Intelligence	COP 4770	3
Intro to Data Science and Analytics	CAP 4773	3
Introduction to Artificial Intelligence	CAP 4630	3
Introduction to Deep Learning	CAP 4613	3

Computer Architecture		
Structured Computer Architecture	CDA 4102	3
Introduction to VLSI	CDA 4210	3
CAD-Based Computer Design	CDA 4204	3

The following courses may be taken as computer science electives. The group classification will be designated when offered:

Topics in Computer Science	COT 4930	1-3
Topics in Computer Science	COT 5930	1-3
Directed Independent Study	COT 4900	1-3

Special permission is required to count more than 3 credits of directed independent study. Up to 3 computer science elective credits can be earned by taking ~~Cooperative Education - Computer Science (COT 3949), with each one-semester period of COT 3949 contributing 1 credit~~ up to 3 credits of internship.

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Additional Math Elective
One of the following mathematics courses must be taken and must be passed with a grade of "C" or better:

Calculus with Analytic Geometry 3	MAC 2313	4

Numerical Methods	MAD 3400	3
Differential Equations 1	MAP 2302	3 **or**
Engineering Math 1	MAP 3305	3
Introduction to Queueing Theory*	MAP 4260	3
Matrix Theory	MAS 2103	3
Modern Algebra	MAS 4301	3

* Cannot be used as a Computer Science elective if used to satisfy the mathematics requirement.

Elective courses cannot include COP 2220,-COP 2510 or STA 4032. Also, students must make sure that they have the necessary minimum of 120 credits for graduation.

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Sample Four-Year Program of Study
For the sample four-year program of study for the Bachelor of Science with Major in Computer Engineering, refer to the Curriculum Sheets and Flight Plans by major.

Second Bachelor's Degree
~~Individuals seeking a second bachelor's degree must satisfy all admission and degree requirements of a first bachelor's degree, except for free electives, general education and foreign language. The minimum number of FAU credits needed to earn a second bachelor's degree in Computer Science is 30 credits at the 3000 level or higher, but for most students the number of credits required to meet the degree requirements will be considerably larger.~~

This track is for those individuals with a degree in another discipline who are seeking a Bachelor of Science in Computer Science degree.

Admission Requirements

A Bachelor's degree or graduate degree in another discipline and must satisfy all admission requirements of the first bachelor's degree in Computer Science at FAU.

Degree Requirements

The minimum number of FAU credits needed to earn a second bachelor's degree in Computer Science is 30 credits at the 3000 level or higher.

1. Students must have completed at least 15 semester credit hours in mathematics that must include discrete mathematics and must have mathematical rigor at least equivalent to introductory calculus. Each of the courses must be completed with a C or better grade.
2. Students must have completed at least six semester credit hours (or equivalent) in natural science course work intended for science and engineering majors. Each of the courses must be completed with a C or better grade.
3. Students must complete 36 semester credit hours in computer science core and 6 semester credit hours in computer science electives. Each of the courses must be completed with a C or better grade.

Mathematics (15 credits)			
Discrete Mathematics (required)	MAD 2104	3 credits	
12 credits from following courses or equivalent			
Calculus with Analytic Geometry 1	MAC 2311	4	12 credits
Calculus with Analytic Geometry 2	MAC 2312	4	
Introductory Statistics	STA 2023	3	
Methods of Calculus	MAC 2233	3	
Expt Design and Statistical Inference	PSY 3234	3	

Stochastic Models for Computer Sci	STA 4821	3	
Probability and Stats for Engineers	STA 4032	3	
Probability and Statistics 1	STA 4442	3	
Engineering Mathematics 1	MAP 3305	3	
Numerical Methods	MAD 3400	3	
Differential Equations 1	MAP 2302	3	
Engineering Math 1	MAP 3305	3	
Introduction to Queueing Theory	MAP 4260	3	
Matrix Theory	MAS 2103	3	
Modern Algebra	MAS 4301	3	
Subtotal			**15**

** courses may be replaced with equivalent courses

Science (6* credits)		
General Chemistry 1 and Lab	CHM 2045 &L	4
Biological Principles	BSC 1010 & L	4
General Physics for Engineers 1	PHY 2048	3
General Physics Lab 1	PHY 2048L	1
Physics for Engineers 2	PHY 2044	3
General Physics Lab 2	PHY 2049L	1
Physical Geology & Lab	GLY 2010C	4
Subtotal		**6**

*** at least one science course must include a lab component. Courses may be replaced with equivalent courses

Core Courses
All students must take the following core courses, which total 36 credits:

Computer Science Core (36 credits)		
Introduction to Programming in C	COP 2220	3
Foundations of Computer Science	COP 3014	3
Data Structures and Algorithm Analysis	COP 3530	3
Introduction to Internet Computing	COP 3813	3
Computer Operating Systems	COP 4610	3
Introduction to Database Structures	COP 3540	3
Structured Computer Architecture	CDA 4102	3
Formal Languages and Automata Theory	COT 4420	3
Design and Analysis of Algorithms	COT 4400	3
Principles of Software Engineering	CEN 4010	3
Engineering Design 1	EGN 4950C	3
Engineering Design 2	EGN 4952C	3
Subtotal		**36**

Computer Science Electives *(6 credits)*

To satisfy the computer science (CS) elective requirement, all students must take 6 credits chosen from Computer Science and Computer Engineering upper-division courses that are not in the above CS core.

~~Cooperative Education~~

~~Students in the Computer Science and Computer Engineering programs are encouraged to consider gaining practical experience through participation in Cooperative Education. Three one-semester periods of Cooperative Education (COT 3949) may be substituted for one program technical elective. For information, contact the FAU Career Center, 561-297-3533, or visit its website.~~

Directed Independent Study

Students in the Computer Science, Computer Engineering and Information Engineering Technology programs must earn a minimum of 9 credits in core courses for their major before being eligible to register for directed independent study. Students are allowed to take no more than the equivalent of one course (3 credits) to satisfy degree requirements. If a student needs more than 3 credits of independent study, written approval must be obtained from the chair of the department prior to enrolling in the additional credits.

Computer Science Minor

The minor in Computer Science is available to all FAU undergraduates who are not majoring in Computer Science or Computer Engineering. This minor can be attained by successfully completing the following requirements and earning a grade of "C" or better in Computer Science core courses listed below.

Calculus with Analytical Geometry 1 **or**	MAC 2311	4 **or**
Methods of Calculus	MAC 2233	3
Discrete Mathematics	MAD 2104	3
Introduction to Programming in C	COP 2220	3
Foundations of Computer Science	COP 3014	3
Foundations/Computer Science Lab	COP 3014L	1
Data Structures and Algorithm Analysis	COP 3530	3
Minimum upper-division computer science and engineering credits in addition to above courses		9
Total*		**25-26**

* At least 75 percent of credits earned must be from FAU.

Acknowledgment of a minor in Computer Science is official upon successful completion of an FAU degree program.

Bachelor of Science in Computer Science Professional Track

The professional track is designed specifically for working professionals who will be able to advance their careers with an accelerated undergraduate program and obtain a bachelor's degree in Computer Science while continuing to work in their professional careers. The course offering format includes evenings, weekends and online material using Canvas. This degree requires 36 core computer science credits and 6 credits of computer science electives. The duration of each course may be four, eight, or sixteen weeks depending on the course format. Students are normally expected to complete the program in two years.

Admission Requirements

Applicants are required to meet all the admission requirements for the Second Bachelor's Degree in Computer Science.

Degree Requirements

Degree requirements are the same as those for the Second Bachelor's Degree in Computer Science.

Program Fees

The professional track is a full-service, all-inclusive program. The fees cover all program costs including tuition, course materials and graduation activities.

Application Process and More Information

To apply or receive more information about the professional track, visit the Computer & Electrical Engineering and Computer Science website or call 561-297-3855.

Bachelor of Science in Computer Engineering

(Requires 124 credits.)

Sample Four-Year Program of Study

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

Second Bachelor's Degree

Individuals seeking a second bachelor's degree must satisfy all admission and degree requirements of a first bachelor's degree. The minimum number of FAU credits (beyond those used for the first degree) needed to earn a Bachelor of Science in Computer Engineering is 30 credits at the 3000 level or higher.

~~Cooperative Education~~

~~Students in the Computer Science, Computer Engineering programs are encouraged to consider gaining practical experience through participation in Cooperative Education. Three, one-semester periods of Cooperative Education (COT 3949) may be substituted for one program technical elective. For information, contact the FAU Career Center, 561-297-3533 or visit its website.~~

Electrical Engineering

Link to Combined Programs

Link to Master's Program

Link to Doctoral Program

BACHELOR'S PROGRAM

Mission Statement
The mission of the undergraduate program in Electrical Engineering is to offer an E.E. program of study that augments the liberal education expected of all FAU undergraduates and imparts a basic understanding of electrical engineering built on a foundation of physical science, mathematics, computing and technology.

Educational Objectives and Outcomes
The educational objectives of the Electrical Engineering undergraduate program are to enable graduates who, within a few years after graduation, will:

A. Be successful in understanding, formulating, analyzing and solving a variety of electrical engineering problems;

B. Be successful in designing a variety of engineering systems, products or experiments;

C. Be successful in careers and/or graduate study in engineering or other areas such as business, medicine and law;

D. Have the ability to assume leadership and entrepreneurial positions;

E. Successfully function and communicate effectively, both individually and in multidisciplinary teams;

F. Understand the importance of lifelong learning, ethics and professional accountability.

The Bachelor of Science degree program in Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET.

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

~~1. An ability to identify, formulate and solve engineering problems by apply principles of engineering, science and mathematics.~~

~~2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.~~

~~3. An ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions.~~

~~4. An ability to communicate effectively with a range of audiences.~~

~~5. 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.~~

~~6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate and apply this knowledge appropriately.~~

~~7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines and analyze risk and uncertainty.~~

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. The ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Bachelor of Science in Electrical Engineering

(Requires ~~128~~ 125 credits.)

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 in order to be accepted into the Electrical 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*.

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.

General Degree Requirements

The Bachelor of Science in Electrical Engineering degree will be awarded to students who meet all admission and degree requirements of the department and the University. Notes below are referenced in the tables following the list.

Notes:

(1) Students entering FAU with less than 30 credits must satisfy the course requirements specified in the catalog section, Degree Requirements. Students entering FAU with more than 30 credits (transfer students) must see the undergraduate advisor for an evaluation of courses taken at another school. The general education requirements are normally satisfied if a student has an Associate of Arts (A.A.) degree from a Florida community or state college.

(2) Fundamentals of Engineering is the preferred course; however, this course may not be available at all institutions. In certain instances, substitutions for this course may be allowed provided that the credits are a part of an approved pre-engineering A.A. degree program.

(3) Complete physics, calculus, mathematics and math elective courses with a grade of "C" or better in each course.

(4) Receive a "C" or better in all EE core courses.

(5) All EE electives must be approved by the undergraduate advisor.

(6) In general, a technical elective is defined as an upper-division course with significant technical disciplinary content. A maximum of 3 credits ~~in Cooperative Education (EEL 4949)~~ internship can be used as a technical elective.

(7) See advisor for approved courses.

Specific Degree Requirements	
General Education (1)	
Foundations of Written Communication	6
Foundations of Society and Human Behavior	6
Foundations of Global Citizenship	6
Foundations of Humanities	6
Subtotal	**24**

Mathematics and Science (2) (Lower Division)		
Fundamentals of Engineering (2)	EGN 1002	3
Calculus with Analytic Geometry 1 (3)	MAC 2311	4
Calculus with Analytic Geometry 2 (3)	MAC 2312	4
Calculus with Analytic Geometry 3 (3)	MAC 2313	4
Introduction to Programming in C	COP 2220	3
~~C for Engineers~~	~~EEL 2161~~	~~3~~
General Physics for Engineers 1 (3)	PHY 2048	3
General Physics Lab 1 (3)	PHY 2048L	1
Physics for Engineers 2 (3)	PHY 2044	3
General Physics Lab 2 (3)	PHY 2049L	1
Science (7)		4
Subtotal		~~**33**~~ **30**

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Electrical Engineering Core (4)		
Circuits 1	EEL 3111	3
Introduction to Logic Design	CDA 3201C	4
Electronics 1	EEE 3300	4
Analysis of Linear Systems	EEL 4656	3
Stochastic Models for Computer Science	STA 4821	3
Electronics Laboratory 1	EEL 3118L	2
Electronics 2	EEE 4361	3
Electromagnetic Fields and Waves	EEL 3470	3
Introduction to Microprocessor Systems	CDA 3331C	3
Electronics Laboratory 2	EEL 4119L	3
Engineering Design 1	EGN 4950C	3
Engineering Design 2	EGN 4952C	3
Communication Systems 1	EEL 4512	3
Control Systems 1	EEL 4652	3

Control Systems Lab	EEL 4652L	1 **or**
Communication Systems Lab	EEL 4512L	1
Introduction to Digital Signal Processing	EEE 4510	3
Electric Power Systems	EEL 4216	3 or
Electrical Machines	EEL 4220	3
Subtotal		**50**

Electrical Engineering Electives (5)	12
Electrical Engineering or Technical Electives (5) (6)	6
Mathematics Elective (5)	3
Subtotal	**21**
Total	~~**128**~~ **125**

Sample Four-Year Program of Study
For the sample four-year program of study for the Bachelor of Science in Electrical Engineering, refer to the Curriculum Sheets and Flight Plans by major.

Second Bachelor's Degree
Individuals seeking a second bachelor's degree must satisfy all admission and degree requirements of a first bachelor's degree, except for free electives, general education and foreign language. The minimum number of FAU credits needed to earn a second bachelor's degree in Computer Science is 30 credits at the 3000 level or higher, but for most students the number of credits required to meet the degree requirements will be considerably larger.

~~**Cooperative Education**~~
~~Students in the Computer Science, Computer Engineering programs are encouraged to consider gaining practical experience through participation in Cooperative Education. Three, one-semester periods of Cooperative Education (COT 3949) may be substituted for one program technical elective. For information, contact the FAU Career Center, 561-297-3533 or visit its website.~~