

COMPUTER SCIENCE

BACHELOR OF SCIENCE IN COMPUTER SCIENCE (B.S.C.S.)

(Minimum of 120 credits required)

Admission Requirements

All students must meet the minimum admission requirements of the University. Please refer to the [Admissions section](#) of this catalog.

All students must meet the preprofessional requirements listed [above](#) in order to be accepted into the Computer Science 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 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 in Computer Science (B.S.C.S.) degree is 120 credits. All courses that count toward the degree must be completed with a grade of "C" or better. 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. This degree program is available in person and fully online.

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 in Arts (A.A.) degree from a Florida community or state college.

2. At least one course must have a laboratory component.

Pass/Fail Grades: Courses taken as pass/fail are not accepted for Computer Science students.

Program Summary

General Education	24
Mathematics	11
Science	7
Common Core	24 27
Computer Science - Computer Engineering Core	15
Computer Science Core	12
Semi-Core Group 1	6 3
Semi-Core Group 2	6 3
Electives	15 18
Total	120

General Education

Foundations of Written Communication	6
Foundations of Society and Human Behavior	6
Foundations of Global Citizenship	6
Foundations of Humanities	6
Subtotal	24

Mathematics

Calculus with Analytic Geometry 1	MAC 2311	4
Calculus with Analytic Geometry 2	MAC 2312	4
Matrix Theory	MAS 2103	3
Subtotal		11

Science

(Select two 3-credit courses and a lab or a 3-credit course and a 4-credit course)

Biological Principles	BSC 1010	3
Biological Principles Lab	BSC 1010L	1
General Chemistry 1	CHM 2045	3
General Chemistry 1 Lab	CHM 2045L	1
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/Evolution of the Earth	GLY 2010C	4
Subtotal		7

Core Courses

All students must take the following core courses, which total 51 credits.

Common Core

Introduction to Data Science and Analytics	CAP 4773	3
Computer Logic Design	CDA 3203	3
Computer Architecture	CDA 4102	3
Foundations of Computing*	COT 2000 <u>COT 2000C</u>	3
Programming 1	COP 2220	3
<u>Introduction to Programming in Python</u>	<u>COP 3035C</u>	<u>3</u>
Stochastic Processes and Random Signals**	EEE 4541	3
<u>Stochastic Models for Computer Science**</u>	<u>STA 4821</u>	
<u>Systems Programming with C++</u>	<u>COP 3274C</u>	<u>3</u>
RI: Engineering Design 1	EGN 4950C	3
RI: Engineering Design 2	EGN 4952C	3
Subtotal		24 <u>27</u>

* MAD 2104 may be substituted for COT 2000C.

** ~~STA 4821 may be substituted for EEE 4541.~~

** EEE 4541 may be substituted for STA 4821

Computer Science - Computer Engineering Core

Principles of Software Engineering	CEN 4010	3
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Communication Networks	CNT 4007	3
<u>Introduction to Software Design</u>	<u>CEN 3062C</u>	<u>3</u>
Programming 2	COP 3014	3
Data Structures and Algorithm Analysis	COP 3530 <u>COP 3530C</u>	3
Computer Operating Systems	COP 4610	3
Subtotal		15

Computer Science Core

Introduction to Database Structures	COP 3540	3
Principles of Programming Languages	COP 4020	3
Design and Analysis of Algorithms	COT 4400	3
Theory of Computation	COT 4420	3
Subtotal		12

Semi-Core Courses

All students must take ~~6~~ 3 credits from each of the two Semi-Core groups for a total of ~~12~~ 6 Semi-Core credits.

Computer Science Semi-Core Group 1 (Select one two courses)

Introduction to Deep Learning	CAP 4613	3
Introduction to Artificial Intelligence	CAP 4630	3
Introduction to Data Mining and Machine Learning	CAP 4770	3
Applied Cryptography and Security	CIS 4634	3
Network and Data Security	CNT 4411	3
Foundations of Cybersecurity	CNT 4403	3
Subtotal		6 <u>3</u>

Computer Science Semi-Core Group 2 (Select one two courses)

<u>Applied Cryptography and Security</u>	<u>CIS 4634</u>	<u>3</u>
<u>Network and Data Security</u>	<u>CNT 4411</u>	<u>3</u>
<u>Foundations of Cybersecurity</u>	<u>CNT 4403</u>	<u>3</u>
Introduction to Internet Computing	COP 3813	3

Python Programming	COP 4045	3
Object-Oriented Design and Programming	COP 4331	3
Mobile App Project	COP 4655	3
Advanced Database Systems	COP 4703	3
Full-Stack Web Development	COP 4808	3
Foundations of Cloud Computing	COP 4814	3
Subtotal		63

Electives

All students must take **15 18** credits of approved elective courses. Certain 3000- and 4000-level courses offered by the Electrical Engineering and Computer Science Department may be taken as Computer Science electives. Certain 5000- or 6000-level courses offered by the Electrical Engineering and Computer Science Department may be taken as Computer Science electives. Students must see an advisor for a current list of approved elective courses.

Computer Science Electives

15 18

Students seeking a specialty may consider taking electives in **an area** areas of study such as internet technology, software engineering, artificial intelligence and machine learning, and cybersecurity. ~~A few suggested areas of concentration follow.~~

Internet Technology

Introduction to Data Communications	CNT 4104	3
Foundations of Cybersecurity	CNT 4403	3
Mobile App Projects	COP 4655	3
Advanced Database Systems	COP 4703	3
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Software Engineering

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

Cyber Physical System Security	CIS 4213	3
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Operating Systems Security	CIS 4367	3
Foundations of Cybersecurity	CNT 4403	3
Network and Data Security	CNT 4411	3

Data Science

Introduction to Deep Learning	CAP 4613	3
Introduction to Artificial Intelligence	CAP 4630	3
Introduction to Data Mining and Machine Learning	CAP 4770	3

Computer Architecture

<i>Computer Architecture</i>	<i>CDA 4102</i>	<i>3</i>
<i>Introduction to VLSI</i>	<i>CDA 4210</i>	<i>3</i>
<i>CAD-Based Computer Design</i>	<i>CDA 4204</i>	<i>3</i>

Students are permitted to take no more than the equivalent of one course (3 credits) of the following three courses as a Computer Science elective.

The following courses may be taken as a Computer Science elective.

Professional Internship	IDS 3949	0-3
Directed Independent Study	COT 4900	1-3
Directed Independent Research	EGN 4915	1-3

Professional Internship

Students must have completed COP 3530C, Data Structures and Algorithm Analysis with a minimum grade of "C" before being eligible to register for a professional internship. Approval through the Career Center is required prior to enrollment.

Directed Independent Study and Directed Independent Research

Students must have completed ~~COP 3530~~ **COP 3530C**, Data Structures and Algorithm Analysis, with a minimum grade of "C" before being eligible to register for directed independent study or **Directed Independent Research**. ~~Students are permitted to take no more than the equivalent of one course (3 credits) to satisfy degree requirements.~~

Students must make sure that they have the necessary minimum of 120 credits for graduation.

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 B.S.C.S. DEGREE

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

Admission Requirements

Students seeking a bachelor's degree or graduate degree in another discipline must satisfy all admission requirements of the first bachelor's degree in Computer Science at FAU.

Degree Requirements

1. Earn a minimum of 30 credits in residence at FAU, at the 3000 level or higher, beyond those required for the first degree. Students earning two degrees simultaneously (a dual degree) must earn at least 150 credits.
2. Earn at least 75 percent of all upper-division credits required for the major from FAU.
3. Students must have completed at least 15 credits in mathematics including discrete mathematics with mathematical rigor at least equivalent to introductory calculus. Each course must be completed with a minimum grade of "C."
4. Students must have completed at least 6 credits (or equivalent) in natural science coursework intended for science and engineering majors. At least one course must have a laboratory component. Each course must be completed with a minimum grade of "C."
5. Students must complete **54 51** credits of core courses listed in the Computer Science degree program. Each course must be completed with a

minimum grade of "C."

COMPUTER SCIENCE UNDERGRADUATE MINOR

(Minimum of 15 credits required)

The minor in Computer Science is available to all FAU undergraduates who are not majoring in Computer Science or Computer Engineering. This minor requires completion of five courses (15 credits) with a minimum grade of "C." Students must ensure that they have completed the prerequisites for the selected courses.

~~C/C++ Track~~

Programming 2*	COP 3014
Data Structures and Algorithm Analysis	COP 3530
Select three upper-division courses from the Electives table.	
Total**	

Python Track

Introduction to Programming in Python	COP 3035	3
<u>Introduction to Software Design *</u>	<u>CEN 3062C</u>	<u>3</u>
Data Structures and Algorithm Analysis with Python	COP 3410 <u>COP 3410C</u>	3
Select three upper-division courses from the Electives table.		9
Total**		15

Elective Courses***

Applied Machine Learning and Data Mining	CAP 4612	3
Introduction to Deep Learning	CAP 4613	3
Introduction to Artificial Intelligence	CAP 4630	3
Introduction to Data Mining and Machine Learning	CAP 4770	3
Introduction to Data Science and Analytics	CAP 4773	3
Principles of Software Engineering	CEN 4010	3
Introduction to Database Structures	COP 3540	3
<u>Introduction to Web Programming</u>	<u>COP 3826</u>	<u>3</u>
Introduction to Internet Computing	COP 3813	3

Python Programming	COP 4045	3
Object-Oriented Design and Programming	COP 4331	3
Computer Operating Systems	COP 4610	3
Advanced Database Systems	COP 4703	3
<u>Systems Programming with C++</u>	<u>COP 3274C</u>	<u>3</u>
Design and Analysis of Algorithms	COT 4400	3

* Requires prerequisite: COP **3035C 2220** with minimum grade of "C"

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

*** See program advisor for a complete list of elective courses.

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