NEW/CHANGE PROGRAM REQUEST
Undergraduate Programs

FLORIDA ATLANTIC UNIVERSITY

Department CEECS

College Eng

UUPC Approval 12-7-20

UFS Approval _____

Banner Posted _____

Catalog _____

Program Name		Effective Date *(TERM & YEAR)*
BSCS with major in Computer Science	☐ New Program ☑ Change Program	Summer 2021

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

Change COP 4020 Programming Languages from an elective to a required course for BSCS majors and second bachelor's. Reduce the number of elective credits by 3 to make room for the change without adding credits to the degree.

Second bachelor's will need 3 additional credits.

This change is required by ABET.

Faculty Contact/Email/Phone

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

Approved by		*Date*
Department Chair	Hanqi Zhuang Digitally signed by Hanqi Zhuang Date: 2020.11.24 13:49:00 -05'00'	
College Curriculum Chair	Dan Meeroff	12-4-20
College Dean		12-5-20
UUPC Chair	Jerry Haky	12-8-20
Undergraduate Studies Dean	Edward Pratt	12-8-20
UFS President		
Provost		

Email this form and attachments to mjenning@fau.edu one week before the UUPC meeting so that materials may be viewed on the UUPC website prior to the meeting.

Bachelor of Science in Computer Science
(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 listed above in order to be accepted into the Computer 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 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. 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 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 minimum grades of "C." 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 (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)		
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 (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
Physical Geology/Evolution of the Earth	GLY 2010C	4
Subtotal		**7 or 8**

Top

Core Courses
All students must take the following core courses, which total 43 **46** 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
Programming Languages	COP 4020	3
RI: Engineering Design 1	EGN 4950C	3
RI: Engineering Design 2	EGN 4952C	3
Subtotal		**43 46**
Computer Science Electives (4)		**21 18**
Free Electives (4)		10 or 11

Total	120

Computer Science Electives

To satisfy the computer science (CS) elective requirement, all students must take ~~21~~ **18** credits chosen from Computer Science and Computer Engineering upper-division courses that are not in the above CS core. Certain 5000-level or 6000-level courses may be taken as CS electives. Students must see an advisor for a current list of elective courses. Students seeking a specialty may consider taking electives in an area of study. 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
Applied Database Systems	COP 4703	3

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

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

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

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.

Second Bachelor's Degree

This program is for those individuals with a degree in another discipline who are seeking a Bachelor of Science with major 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
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 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."

2. Students must have completed at least 6 credits (or equivalent) in natural science coursework intended for science and engineering majors. Each course must be completed with a minimum grade of "C."

3. Students must complete 36 **39** credits in computer science core and 6 credits in computer science electives. Each course must be completed with a minimum grade of "C."

*Mathematics (15 Credits)***		
Discrete Mathematics (required)	MAD 2104	3
12 credits from the following courses or equivalent		
Methods of Calculus	MAC 2233	3
Calculus with Analytic Geometry 1	MAC 2311	4
Calculus with Analytic Geometry 2	MAC 2312	4
Discrete Mathematics (3)	MAD 2104	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
Experimental Design and Statistical Inference	PSY 3234	3
Introductory Statistics	STA 2023	3
Probability and Statistics for Engineers	STA 4032	3
Probability and Statistics 1	STA 4442	3
Stochastic Models for Computer Science	STA 4821	3
Subtotal		**12**

**Courses may be replaced with equivalent courses.

*Science (6 credits)****		
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 (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
Physical Geology/Evolution of the Earth	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~~ **39** credits.

Computer Science Core (~~36~~ 39 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
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
Programming Languages	COP 4020	3
RI: Engineering Design 1	EGN 4950C	3
RI: Engineering Design 2	EGN 4952C	3
Subtotal		~~36~~ **39**

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

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	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