

BS IN COMPUTER SCIENCE



SACRAMENTO STATE
Redefine the Possible

In Workflow

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Approval Path

1. Thu, 13 Oct 2022 02:17:26 GMT
Anna Baynes (shaverdian): Approved for CSC Committee Chair
2. Thu, 13 Oct 2022 19:21:37 GMT
Jinsong Ouyang (jouyang): Approved for CSC Chair
3. Fri, 21 Oct 2022 16:56:14 GMT
Masoud Ghodrat Abadi (abadi): Approved for ECS College Committee Chair
4. Fri, 21 Oct 2022 22:57:46 GMT
101010646: Approved for ECS Dean

History

1. May 2, 2018 by clmig-jwehrheim
2. Sep 17, 2018 by Kaitlyn Ehrmantrout (k.ehrmantrout)
3. Mar 4, 2019 by Kaitlyn Ehrmantrout (k.ehrmantrout)
4. Apr 28, 2020 by 220267334
5. Mar 29, 2021 by Ted Krovetz (tdk)
6. Apr 20, 2021 by 220267334
7. Aug 3, 2022 by 302822325
8. Aug 10, 2022 by 302822325

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Viewing: BS in Computer Science

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Changes proposed by: Julie Fogarty (218645519)

Academic Group: (College)

Engineering & Computer Science

Academic Organization: (Department)

Computer Science

Catalog Year Effective:

2023-2024 Catalog

Individual(s) primarily responsible for drafting the proposed degree major program:

Name (First Last)	Email	Phone 999-999-9999
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Type of Program Proposal:

Major

Program Change Type:

Non-Substantive

Title of the Program:

BS in Computer Science

Designation: (degree terminology)

Bachelor of Science

Briefly describe the program proposal (new or change) and provide a justification:

As part of the upper division requirements, students must take two units that fit into the area of self-paced, skills improvement, and/or experiential topics. These one or two unit courses currently include: CSC 192, CSC 194, CSC 195, CSC 195A, CSC 198, CSC 199.

The new course CSC 193A (converting experimental course CSC 196W to regular course) will also be included into this area as will ENGR 197. Both of these courses provide additional opportunities for students to develop professional skills to help them succeed in their future careers.

The CSC department has also reviewed our curriculum and quality of education. We reviewed student data, listened to instructor feedback, and decided to add a new condition for students to change their major to Computer Science. Now students must have a prerequisite course list GPA of at least 2.7. These classes include CSC 15, 20, 28, 35, Math 30, 31, and Physics 11a. This additional prerequisite will prepare students with the expectations needed to complete their degree.

University Learning Goals**Undergraduate Learning Goals:**

Competence in the disciplines
 Knowledge of human cultures and the physical and natural world
 Integrative learning
 Personal and social responsibility
 Intellectual and practical skills

Program Learning Outcomes**Program Learning Outcomes****Learning Outcome**

1. Students should make contributions to development, maintenance, and support of real world computing systems.
2. They should take initiative and assumed responsibilities as an effective member of project teams.
3. Work independently and functioned effectively in an environment with incomplete information.
4. Progress in computing field, engaged in professional development, and/or pursued an advanced degree.
5. Produce quality technical and non-technical documents and presentations for a variety of audiences.
6. Adhere to ethical standards of the profession and understood the implications of his/her professional activities.

Will this program be required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

Do these changes impact the Smart Planner roadmap?

No

Catalog Description:

Units required for Major: 78

Total units required for BS: 120

Program Description

The Bachelor of Science degree in Computer Science is accredited by the Computing Accreditation Commission (CAC) of ABET, Inc. (<http://www.abet.org/>), providing majors with a sound educational base in Computer Science.

Admission Requirements: Course prerequisites and other criteria for admission of students to the degree major program, and for their continuation in it.

Pre-Major Requirements

Students requesting to become Computer Science majors must first complete the lower-division (pre-major) courses listed in this section. If a student requests to become a Computer Science major but has not yet completed these courses, they should change their major to pre-Computer Science. Changing to the pre-Computer Science major requires either completion of or enrollment in MATH 30 and a Sacramento State and overall GPA of at least 2.5. Changing to the Computer Science major requires a GPA of at least 2.7 in the courses listed in this section.

To change to the Computer Science or pre-Computer Science major, students are required to complete and submit a Change of Major form to the Computer Science Department Office along with transcript copies.

Registration in Computer Science courses numbered 133 and above is restricted to Computer Science and Computer Engineering majors. Other students need to obtain approval from the CSC Department Chair.

Code	Title	Units
CSC 15	Programming Concepts and Methodology I	3
CSC 20	Programming Concepts and Methodology II	3
CSC 28	Discrete Structures for Computer Science	3
CSC 35	Introduction to Computer Architecture	3
MATH 30	Calculus I	4
MATH 31	Calculus II	4
PHYS 11A	General Physics: Mechanics	4

Minimum Grade Requirement

Grade of "C-" or better required in all courses applied to the Computer Science major.

As defined by policy <http://www.csus.edu/umannual/acadaff/fsm00010.htm>, a change in units constitutes a substantive change to the program. If your changes constitute a substantive change, please refer back to the "Program Change Type" field above to ensure that "Substantive" is selected.

Program Requirements: (If new courses are being created as part of a new program, it will be useful to propose courses first.)

Program Requirements

Code	Title	Units
Required Lower Division Courses (15 Units)		
CSC 15	Programming Concepts and Methodology I	3
CSC 20	Programming Concepts and Methodology II	3
CSC 28	Discrete Structures for Computer Science	3
CSC 35	Introduction to Computer Architecture	3
CSC 60	Introduction to Systems Programming in UNIX	3
Required Mathematics and Science Courses (21-24 Units)		
MATH 30	Calculus I ¹	4
MATH 31	Calculus II	4
PHYS 11A	General Physics: Mechanics ¹	4
Select one of the following:		3 - 4
STAT 50	Introduction to Probability and Statistics	
ENGR 115	Statistics For Engineers	
Select one of the following:		3
MATH 35	Introduction to Linear Algebra ²	
MATH 100	Applied Linear Algebra ²	
MATH 101	Combinatorics	
MATH 102	Number Theory	
MATH 150	Introduction to Numerical Analysis	
PHIL 160	Deductive Logic II	
STAT 103	Intermediate Statistics	
STAT 115A	Introduction to Probability Theory	
STAT 155	Introduction to Techniques of Operations Research	

Select one of the following:		3 - 5
BIO 1	Biodiversity, Evolution and Ecology ¹	
BIO 10	Basic Biological Concepts ¹	
CHEM 1A	General Chemistry I	
CHEM 1E	General Chemistry for Engineering	
PHYS 11B	General Physics: Heat, Light, Sound, Modern Physics	
PHYS 11C	General Physics: Electricity and Magnetism	
Required Upper Division Courses (33 Units)		
CSC 130	Data Structures and Algorithm Analysis	3
CSC 131	Computer Software Engineering	3
CSC 133	Object-Oriented Computer Graphics Programming	3
CSC 134	Database Management Systems	3
CSC 135	Computing Theory and Programming Languages	3
CSC 137	Computer Organization	3
CSC/CPE 138	Computer Networking Fundamentals	3
CSC 139	Operating System Principles	3
CSC 190	Senior Project - Part I	2
CSC 191	Senior Project - Part II	2
PHIL 103	Business and Computer Ethics ¹	3
Select two units from the following:		2
CSC 192	Career Planning	
CSC 193A	Web Programming	
CSC 194	Computer Science Seminar	
CSC 195	Fieldwork in Computer Science	
CSC 195A	Professional Practice	
CSC 198	Co-Curricular Activities in Computer Science	
CSC 199	Special Problems	
ENGR 197	Seminar in Peer-Assisted Learning	
Electives (9 Units)		
Select 9 units of CSC courses 140 or above excluding the following: ³		9
CSC 192	Career Planning	
CSC 193A	Web Programming	
CSC 194	Computer Science Seminar	
CSC 195	Fieldwork in Computer Science	
CSC 195A	Professional Practice	
CSC 198	Co-Curricular Activities in Computer Science	
CSC 199	Special Problems	
ENGR 197	Seminar in Peer-Assisted Learning	

Total Units **78-81**

¹ Course also satisfies General Education (GE)/Graduation Requirement.

² Computer science students choosing between MATH 35 and MATH 100 should normally choose MATH 100 because it is more applied. MATH 35 at Sacramento State is designed for math majors.

³ In addition to the required lower-division and upper-division Computer Science courses, Computer Science majors must take additional elective courses, totaling at least nine (9) units, from undergraduate Computer Science courses numbered CSC 140 or above (excluding the listed courses).

Course choices should be made with advisor consultation. With advance written approval from their advisor, the course instructor, and the Department Chair, students with a GPA of 3.0 or greater may take graduate courses as electives. In any case students must meet any course prerequisite stated in the catalog prior to taking any elective course.

General Education Requirements ⁴

Code	Title	Units
Area A: Basic Subjects (9 Units)		
A1	Oral Communication	3
A2	Written Communication	3
A3	Critical Thinking	3
Area B: Physical Universe and Its Life Forms (3-6 Units)		
B1	Physical Science ⁵	0

B2 - Life Forms ⁶	0 - 3
B3 - Lab (Note: Lab experience to be taken with one of the following: B1, B2 or B5 ⁵)	0
B4 - Math Concepts ⁵	0
B5 - Additional Course (Any B to reach 12 units) - Take upper-division course to complete Area & upper division requirements.	3
Area C: Arts and Humanities (12 Units)	
C1 - Arts	3
C2 - Humanities	3
C1/C2 - Area Course C	3
C1/C2 - Area C Course - Take upper-division course to complete Area & upper division requirements.	3
Area D: The Individual and Society (6 Units)	
Area D Course	3
Area D Course	3
Area D Course - Take upper-division course to complete Area & upper division requirements. ⁵	0
Area E: Understanding Personal Development (3 Units)	
Area E Course	3
Area F: Ethnic Studies (3 Units)	
Area F Course	3
Total Units	36-39

Graduation Requirements⁴

Code	Title	Units
Graduation Requirements (required by CSU) (9 Units)		
	American Institutions: U.S. History	3
	American Institutions: U.S. Constitution & CA Government	3
	Writing Intensive (WI)	3
Graduation Requirements (required by Sacramento State) (6 Units)		
	English Composition II	3
	Race and Ethnicity in American Society (RE)	3
	Foreign Language Proficiency Requirement ⁷	0

⁴ To help you complete your degree in a timely manner and not take more units than absolutely necessary, there are ways to use single courses to meet more than one requirement (overlap). For further information, please visit the General Education page (<http://catalog.csus.edu/colleges/academic-affairs/general-education/>).

Note: There is no way to list all possible overlaps so please consult with a professional advisor. The Academic Advising Center can be visited online (<http://www.csus.edu/acad/>), by phone (916) 278-1000, or email (advising@csus.edu).

⁵ A required course in the major satisfies this GE area.

⁶ Choosing BIO 1 or BIO 10 as the Computer Science science elective satisfies GE Area B2.

⁷ Students with a declared major of BS in Computer Science are exempt from the Foreign Language Graduation Requirement.

Fiscal Impact to Change an Existing Program

Indicate programmatic or fiscal impact which this change will have on other academic units' programs, and describe the consultation that has occurred with affected units:

N/A

Provide a fiscal analysis of the proposed changes:

N/A

How will the above changes be accommodated within the department/College existing fiscal resources?

N/A

Will the proposed changes require additional resources?

No

What additional space, equipment, operating expenses, library, computer, or media resources, clerical/technical support, or other resources will be needed?

N/A

Estimate the cost and indicate how these resource needs will be accommodated:

N/A

Key: 131