

BS IN COMPUTER SCIENCE (GENERAL COMPUTER SCIENCE)



SACRAMENTO STATE

In Workflow

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Approval Path

1. 2026-09-04T17:43:15Z
Abeer Abdel Khaleq (abeer.abdelkhaleq): Approved for CSC Committee Chair
2. 2026-09-04T20:20:58Z
Jinsong Ouyang (jouyang): Approved for CSC Chair
3. 2026-09-18T16:41:46Z
Tongren Zhu (tongren.zhu): Approved for ECS College Committee Chair
4. 2026-09-18T17:01:28Z
Behnam Arad (arad): Approved for ECS Dean

History

1. May 2, 2018 by clmig-jwehrheim
2. Sep 17, 2018 by 212408496
3. Mar 4, 2019 by 212408496
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
9. Feb 14, 2023 by Julie Fogarty (fogarty)

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Changes proposed by: Jinsong Ouyang (101068561)

Academic Group: (College)

Engineering & Computer Science

Academic Organization: (Department)

Computer Science

Catalog Year Effective:

2027-2028 Catalog

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

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

Concentration

Program Change Type:

Program Name, Designation, or Type Change

Title of the Program:

BS in Computer Science (General Computer Science)

Designation: (degree terminology)

Bachelor of Science

Delivery Mode:

Fully Face to Face

Support Mode:

State Support

Please see the CSU/CIP Code Crosswalk: https://www.calstate.edu/csu-system/administration/academic-affairs/academic-programs-innovation-and-faculty-development/Documents/CSU_Codes_to_CIP_2020.pdf

Will this program require accreditation?

Yes

Anticipated date of accreditation request:

January 31, 2027

Provide a clear, concise overview of the program proposal (new or change) and provide a justification. For NEW programs describe the purpose and focus of the program, identify the target student population(s), and highlight key strengths and distinguishing features of the program.

This proposal includes two related changes designed to update and strengthen the existing B.S. in Computer Science program while maintaining the program's current total unit requirement.

1. Program name change to accommodate a forthcoming concentration

To respond to the rapidly evolving technological landscape and better prepare Computer Science students for growing workforce demand in artificial intelligence and cybersecurity, the department plans to propose a new Artificial Intelligence and Cybersecurity concentration under the B.S. in Computer Science. The new concentration will be submitted through a separate curriculum proposal.

The purpose of this proposal is not to establish the new concentration, but rather to make the corresponding program name change to the existing B.S. in Computer Science in anticipation of the addition of the concentration. This change will provide the appropriate program structure for the forthcoming concentration under the B.S. in Computer Science.

2. Addition of CSC 10 and CSC 136 to the required Computer Science curriculum

To strengthen students' foundational preparation in artificial intelligence and data science, we propose adding CSC 10 to the required lower-division Computer Science courses and CSC 136 to the required upper-division Computer Science courses. To include CSC 10 and CSC 136 within the existing program unit requirement, we have updated CSC 10, revised CSC 60, and proposed CSC 136 as a new course. All three courses are currently in the curriculum approval process.

The three units required for CSC 10 will be accommodated by the three-unit reduction resulting from the elimination of the former Area E General Education requirement in the new catalog. Therefore, adding CSC 10 will not increase the total number of units required for the degree.

To accommodate CSC 136 within the existing program unit requirement, CSC 60 has been reduced by one unit through the removal of content that overlaps with CSC 139. In addition, we propose eliminating the current two-unit requirement associated with CSC 192 and CSC 199. Although CSC 192–199 provide valuable experiential learning opportunities, these courses are not part of the core

curriculum identified in ACM curricular recommendations and are not specifically required for ABET/CAC accreditation. In contrast, the subject matter covered in CSC 136 provides foundational preparation in artificial intelligence and data science and is more appropriately included as part of the required upper-division Computer Science courses.

Together, these curricular changes strengthen the existing B.S. in Computer Science by incorporating essential preparation in artificial intelligence and data science, improving alignment with current developments in the discipline and workforce needs, and preparing the program structure for the forthcoming Artificial Intelligence and Cybersecurity concentration. These changes do not increase the total number of units required for the B.S. in Computer Science.

University Learning Goals

Undergraduate Learning Goals:

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

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

Curriculum Alignment and Assessment

Program Learning Outcomes

Provide measurable, program-specific learning outcomes that reflect the most important competencies students will demonstrate upon completion of the program. Programs are expected to assess and use PLOs for continuous improvement.

Program Learning Outcomes

Learning Outcome
Students will learn 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.
3a. Communicate effectively in speech in a variety of professional contexts.
3b. Communicate effectively in writing 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 or 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.

Learning Outcomes Display

Course Code	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
CSC 10							
CSC 15							
CSC 20							
CSC 28							
CSC 35							
CSC 60							
MATH 30							
MATH 31							
PHYS 11A							
STAT 50							

ENGR 115							
MATH 35							
MATH 100							
MATH 101							
MATH 102							
MATH 150							
PHIL 160							
STAT 103							
STAT 115A							
STAT 155							
BIO 1							
BIO 10							
CHEM 1A							
CHEM 1E							
PHYS 11B							
PHYS 11C							
CSC 130							
CSC 134							
CSC 137							
CSC 138							
CSC 139							
CSC 190							
CSC 191							
CSC 131							
CSC 133							
CSC 135							
CSC 136							
PHIL 103							

Catalog Description (catalog copy):

Units required for Major: 81

Total units required for BS: 120

Program Description

The General Computer Science Concentration within the Bachelor of Science in Computer Science degree program is accredited by the Computing Accreditation Commission (CAC) of ABET, Inc. (<http://www.abet.org/>), providing students in the concentration with a sound educational foundation in computer science.

Admission and Continuation Requirements (catalog copy): minimum GPA and prerequisites (if applicable), required coursework or preparation, portfolio, test scores, and/or letters of recommendation. For graduate programs: expectations for a relevant bachelor's degree (required or preferred disciplines, prerequisite knowledge, or equivalent experience), include evidence that program requirements conform to the minimum requirements for the culminating experience, as specified in Title 5 Section 40510 The Master's Degree and Section 40511 The Doctoral Degree.

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 10	Introduction to Programming Logic (CSC 10 has been updated with a new course title "CSC 10 : Introduction to Data, Python, and Computing in Society". The course is currently in the curriculum approval process)	3
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.

Program Requirements (catalog copy):

Program Requirements

Code	Title	Units
Required Lower Division Computer Science Core Courses (17 Units)		
CSC 10	Introduction to Programming Logic (CSC 10 has been updated with a new course title "CSC 10 : Introduction to Data, Python, and Computing in Society". The course is currently in the curriculum approval process)	3
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	2
Required Mathematics and Science Core 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 Computer Science Core Courses (19 Units)		
CSC 130	Data Structures and Algorithm Analysis	3
CSC 134	Database Management Systems	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
Concentration Requirements (24 Units)		
<i>Required Upper-Division Courses (15 units)</i>		
CSC 131	Computer Software Engineering	3
CSC 133	Object-Oriented Computer Graphics Programming	3
CSC 135	Computability and Formal Languages	3
CSC 136	Programming Languages (CSC 136 is a new course entitled "Introduction to Artificial Intelligence". The course is currently in the curriculum approval process)	3
PHIL 103	Business and Computer Ethics ¹	3
<i>Upper-Division Electives (9 units)</i>		
Select 9 units of upper-division CSC courses between 140 and 189. ³		9
Total Units		81-84

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
LOWER-DIVISION (34 units)		
Subject Area 1: English Communication (9 Units)		
1A	English Composition (3 units)	3
1B	Critical Thinking (3 units)	3
1C	Oral Communication (3 units)	3
Subject Area 2: Mathematical Concepts and Quantitative Reasoning		
Area 2 course	(3 units) ⁵	0
Subject Area 3: The Arts and Humanities (6 Units)		
3A	Arts (3 units)	3
3B	Humanities (3 units)	3
Subject Area 4: Social and Behavioral Sciences (6 Units) ⁸		
Area 4 Course		3
Area 4 Course		3
Subject Area 5: Physical and Biological Sciences (0-3 Units)		
5A	Physical Science (3 units) ⁵	0
5B	Biological Science (3 units) ⁶	0 - 3
5C	Laboratory (1 unit)–May be embedded in 5A or 5B course, as long as 7 units met for lower-division Subject Area 5. ⁵	0
Subject Area 6: Ethnic Studies (3 Units)		
Area 6 Course		3
Upper-division 5 Science or 2 Mathematical Concepts/Quantitative Reasoning (3 units)		3
Upper-division 3 Arts or Humanities (3 units) (3 Units)		3

Upper-division 4 Social and Behavioral Sciences (3 units) ⁸	3
Total Units	33-36

Additional Graduation Requirements ⁴

Code	Title	Units
Additional Graduation Requirements (15 Units)		
	Second Semester Composition Requirement	3
	Foreign Language Graduation Requirement ⁷	0
	American Institutions: U.S. History	3
	American Institutions: U.S. Constitution & CA Government	3
	Race & Ethnicity in American Society (3-unit Supervenient Requirement)	3
	Writing Intensive and Graduate Writing Intensive (3-unit Supervenient Requirement)	3

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 (<https://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.

⁸ Two different disciplines across the 9 units in Area 4.

Please attach the Curriculum Overview

BS in CS (General Computer Science) Curriculum Overview.docx

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:

This program change doesn't impose any programmatic or fiscal impact on other academic units' programs.

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. This program change doesn't impact the department/College existing fiscal resource.

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?

None.

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

N/A. This program change doesn't require any additional resources, thus induce no cost.

Key: 131