

BS IN COMPUTER SCIENCE (ARTIFICIAL INTELLIGENCE AND CYBERSECURITY)



SACRAMENTO STATE

In Workflow

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Approval Path

1. 2026-09-04T18:03:30Z
Abeer Abdel Khaleq (abeer.abdelkhaleq): Approved for CSC Committee Chair
2. 2026-09-04T20:19:28Z
Jinsong Ouyang (jouyang): Rollback to Initiator
3. 2026-09-04T22:40:27Z
Abeer Abdel Khaleq (abeer.abdelkhaleq): Approved for CSC Committee Chair
4. 2026-09-04T23:31:06Z
Jinsong Ouyang (jouyang): Approved for CSC Chair
5. 2026-09-18T18:29:59Z
Tongren Zhu (tongren.zhu): Approved for ECS College Committee Chair
6. 2026-09-18T19:12:28Z
Behnam Arad (arad): Approved for ECS Dean

New Program Proposal

Date Submitted: 2026-09-04T20:24:00Z

Viewing: BS in Computer Science (Artificial intelligence and Cybersecurity)

Last edit: 2026-09-18T17:51:16Z

Changes proposed by: Jinsong Ouyang (101068561)

Academic Group: (College)

Engineering & Computer Science

Academic Organization: (Department)

Computer Science

Catalog Year Effective:

2027-2028 Catalog

NOTE: This degree major program will be subject to program review evaluation within six years after implementation.

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

Name (First Last)	Email	Phone 999-999-9999
Jinsong Ouyang	jouyang@csus.edu	916-278-7628

Program Snapshot

Type of Program:

Concentration

Title of the Program:

BS in Computer Science (Artificial intelligence and Cybersecurity)

Designation: (degree terminology)

Bachelor of Science

Delivery Mode:

Fully Face to Face

Support Mode:

State Support

CIP Code:

11.0701 (Computer Science)

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

Is this a pilot program?

No

Will this program require accreditation?

No

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 establishes a new Artificial Intelligence and Cybersecurity (Cyber-AI) concentration within the existing B.S. in Computer Science degree program. The concentration is designed to provide students with focused preparation in two rapidly evolving and increasingly interconnected areas of Computer Science while maintaining the strong foundational knowledge and skills provided by the existing B.S. in Computer Science curriculum.

Students in the Cyber-AI concentration will complete the same required lower-division Computer Science Core courses, upper-division Computer Science Core courses, Mathematics and Science Core courses, and General Education requirements as students in the General Computer Science concentration. The two concentrations differ only in their concentration requirements. This structure ensures that all students in the B.S. in Computer Science degree program receive the same broad and rigorous foundation in Computer Science, mathematics, science, and general education, while allowing students to develop additional depth in their chosen area of concentration.

Artificial intelligence and cybersecurity have become increasingly important areas of computing, with significant applications across industry, government, education, healthcare, finance, critical infrastructure, and other sectors. At the same time, the growing use of artificial intelligence creates new cybersecurity challenges, while AI techniques are increasingly used to detect, analyze, and respond to cyber threats. The convergence of these two areas has created a growing need for computing professionals who understand both artificial intelligence technologies and cybersecurity principles and can apply them in the development and protection of intelligent computing systems.

The proposed concentration responds to these developments by providing students with a structured academic pathway that integrates artificial intelligence and cybersecurity within the broader discipline of Computer Science. Rather than treating AI and cybersecurity as separate areas of specialization, the concentration emphasizes their increasingly important intersection and prepares students to analyze, design, implement, and evaluate computing-based solutions involving intelligent systems, data, software, and security.

Establishing the Cyber-AI concentration will provide students with an additional academic pathway within the B.S. in Computer Science while preserving the common curricular foundation shared by all students in the degree program. The concentration will better prepare students for advanced study and professional opportunities in artificial intelligence, machine learning, cybersecurity, secure software and systems, intelligent systems, and emerging areas at the intersection of artificial intelligence and cybersecurity.

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 Goals

Provide a brief statement of the program's overarching goals and priorities: • Describe the program's mission, focus, and intended impact on students. • Identify broad areas of emphasis (e.g., career preparation, research, community engagement, leadership development). • Goals may be aspirational or developmental and do not need to be directly measurable.

Program Goals Statement

The Artificial Intelligence and Cybersecurity (Cyber-AI) concentration within the BS in Computer Science is designed to prepare students for the rapidly evolving and increasingly interconnected fields of artificial intelligence and cybersecurity. Building on the common foundation of the Computer Science degree program, the concentration emphasizes specialized knowledge and practical skills in AI, cybersecurity, and their intersection, with a focus on developing secure, intelligent computing solutions and addressing associated technical, ethical, and professional challenges. Its overarching goals are to support student success through strong career preparation, readiness for advanced study and research, development of problem-solving and professional skills, and continued learning in emerging areas of computing. The concentration aims to prepare graduates to contribute effectively and responsibly to the development and security of intelligent computing technologies across a broad range of professional and societal applications.

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, artificial intelligence, cybersecurity, 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 artificial intelligence and cybersecurity.
- 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 artificial intelligence and cybersecurity 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, artificial intelligence and cybersecurity principles, 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 136							
CSC 154							

Please attach a Comprehensive Program Assessment Plan

CS_BS_CyberAI_Assessment_Plan_and_Mapping.docx

Please attach a Curriculum Map Matrix

CS_BS_CyberAI_Curriculum_Map_Matrix.docx

Please attach a Five-Year Budget Projection. For NEW programs, also attach a Budget Narrative.

5-year-budget_projection_BSCS_CyberAI_v2.xlsx
BudgetNarrative_BSCS_CyberAI_V3.docx

Please attach the updated roadmap:

BS_CS_CyberAI_FourYearRoadmap.xlsx

Catalog Description (catalog copy):

Units required for Major: 81

Total units required for BS: 120

Program Description

The Artificial Intelligence and Cybersecurity (Cyber-AI) concentration within the Bachelor of Science degree in Computer Science degree program provides students in the concentration with a sound educational foundation in Computer Science, with specialized preparation in artificial intelligence, cybersecurity, and their intersection.

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 (6 units)</i>		
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
CSC 154	Computer System Attacks and Countermeasures	3
<i>Upper Division Cybersecurity Electives (9 units)</i>		9
Select 9 units of CSC upper-division courses: CSC 152, CSC 153, CSC 159, or related courses covering cryptography, computer forensics, computer system attacks and countermeasures, artificial intelligence security, and artificial intelligence for cybersecurity, subject to department approval. Because the cybersecurity curriculum is updated frequently, students are encouraged to consult the department for the most current list of Cybersecurity electives.		
<i>Upper Division Artificial Intelligence Electives (9 units)</i>		9
Select 9 units of CSC upper-division courses: CSC 174, CSC 177, CSC 180, or related courses covering deep learning, natural language processing, large language models, reinforcement learning, and computer vision, subject to department approval. Because the AI curriculum is updated frequently, students are encouraged to consult the department for the most current list of AI electives.		
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.

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

Additional Graduation Requirements ⁴

Code	Title	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 (Cyber-AI) Curriculum Overview.docx

Reviewer Comments:

Jinsong Ouyang (jouyang) (Fri, 04 Sep 2026 20:19:28 GMT): Rollback: Provide an updated roadmap.

Key: 634