

BLENDED BS/MS IN COMPUTER SCIENCE

Units required for Major (both BS and MS): 96-99

Total units required for Blended BS/MS: 138

Program Description:

The Blended BS/MS program in Computer Science provides an accelerated route to a graduate professional degree, with simultaneous conferring of both Bachelor's and Master's degrees. Students in the blended program can progress from undergraduate to graduate status without applying for admission through the Office of Graduate Studies. Students are required to complete all requirements for both degrees, including senior project for the Bachelor's degree.

Admission Requirements

Students majoring in Computer Science will be eligible to apply to the program if they meet the following criteria:

- Completion of the WPJ or equivalent, eligible for WI course, and completion of the prerequisites for CSC 190 (Senior Project I);
- Completion of 60 Undergraduate Units
- Have not yet enrolled in CSC 190 or need one academic year to meet the BS requirements;
- Have a minimum overall GPA of 3.3; and
- Have a minimum GPA in CSC 130-139 of 3.3

Please note: Students must complete their application while in undergraduate status and with at least 30 semester units remaining until graduation

Application Procedures

Students interested in applying to the Blended BS/MS Program should follow the following procedure:

- Prior to Week 4 during the semester before taking CSC 190, students must complete the department application.
- Applicants do not need to pay the graduate program application fee.
- Electronic applications will be submitted to the CSC Graduate Coordinator for review.
- Upon acceptance to the program, the department forwards the approved application to the Office of Graduate Studies who will inform the Registrar's Office of the student's change in status.
- When completing 12 units of graduate courses as specified in the program of study and other BS requirements, the student must apply for a change to graduate status and the BS degree can be awarded.

Program of Study

In the two semesters of their senior year (Year 4), students admitted to the program are required to take the following courses:

- CSC 200 Professional Writing in Computer Science (3 units)
- Three graduate-level courses (200-level) in Computer Science (3 units each)

The graduate courses listed above substitute for 3 units of the BS required upper division courses and 9 units of the BS electives. When

completing 12 units of graduate courses listed above and other BS requirements, the student must apply for a change to graduate status and the BS degree can be awarded. Students will be eligible to receive the MS degree when the remaining requirements for the graduate degree are completed (i.e., the requirements for the MS degree are the same whether taken separately or blended).

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 (<https://catalog.csus.edu/search/?P=MATH%2030>) 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 Units and Grade Requirement for the Degree

Units Required for the Blended BS/MS: 138

A grade of "C-" or better is required in all undergraduate-level courses (199-level and below) applied to the Computer Science major.

A minimum cumulative GPA of 3.0 and a grade of "C" or better are required for all graduate-level courses (200-level and above).

Note: Only those graduate courses completed within seven years prior to date of graduation will satisfy course requirements.

Advancement to MS Candidacy

No later than the second week during their first semester in graduate status (Year 5), the students taking the culminating experience are required to submit to the department a thesis/project proposal approved by their committees and apply for Advancement to Candidacy (ATC). The application for ATC must be submitted at least one semester prior to registering for CSC 500/502.

Each student must file an application for Advancement to Candidacy with the Office of Graduate Studies indicating a proposed program of graduate study for the completion of the graduate portion of the BS/MS program.

This procedure should begin as soon as the classified graduate student has:

- completed or currently enrolling with a minimum of 12 units of CSC 200 level courses in the graduate program with a minimum 3.0 GPA; and
- taken or currently enrolling with CSC 200 with a grade of at least B.

Each student must be advanced to candidacy prior to registering for CSC 500/502. Advancement to Candidacy forms are available on the Office of Graduate Studies website.

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 (30 Units)		
Select 30 units from the following in consultation with the graduate coordinator:		30
CSC 130	Data Structures and Algorithm Analysis	
CSC 131	Computer Software Engineering	
CSC 133	Object-Oriented Computer Graphics Programming	
CSC 134	Database Management Systems	
CSC 135	Computability and Formal Languages	

CSC 137	Computer Organization	
CSC/CPE 138	Computer Networking Fundamentals	
CSC 139	Operating System Principles	
CSC 190	Senior Project - Part I	
CSC 191	Senior Project - Part II	
PHIL 103	Business and Computer Ethics ¹	
Include two units from the following:		
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	
Undergraduate Electives		
Three 200-level graduate courses taken during the last year of study in the BS program substitute for 9 units of the BS electives.		
Required Graduate Courses (16 Units)		
CSC 200	Professional Writing in Computer Science 	3
CSC 201	Programming Language Principles	3
CSC 205	Computer Systems Structure ³	3
CSC 206	Algorithms And Paradigms ³	3
CSC 209	Research Methodology	1
CSC 290	Preparation for Culminating Experience	3
Graduate Breadth Requirement (9 Units)		
Select three courses from at least TWO of the following areas:		9
Computer Architecture/Computer Engineering		
CSC 237	Microprocessor Systems Architecture	
CSC 242	Computer-Aided Systems Design and Verification	
CSC/EEE 273	Hierarchical Digital Design Methodology	
CSC/EEE 280	Advanced Computer Architecture	
Data Science		
CSC 212	Bioinformatics: Data Integration and Algorithms	
CSC 219	Machine Learning	
CSC 238	Human-Computer Interface Design	
CSC 244	Database System Design	
CSC 258	Distributed Systems	
Information Assurance and Security		
CSC 250	Computer Security	
CSC 252	Cryptography Theory and Practice	
CSC 253	Computer Forensics	
CSC 254	Network Security	
CSC 258	Distributed Systems	
Artificial Intelligence		
CSC 215	Artificial Intelligence	
CSC 219	Machine Learning	
CSC 296R	Computer Vision	
CSC 296S	Deep Learning	
Networks and Communications		
CSC 255	Computer Networks	
CSC 258	Distributed Systems	

CSC 275	Advanced Data Communication Systems	
Software Engineering		
CSC 230	Software System Engineering	
CSC 231	Software Engineering Metrics	
CSC 232	Software Requirements Analysis and Design	
CSC 233	Advanced Software Engineering Project Management	
CSC 234	Software Verification and Validation	
CSC 235	Software Architecture	
CSC 236	Formal Methods in Secure Software Engineering	
CSC 238	Human-Computer Interface Design	
System and Networks		
CSC 239	Advanced Operating Systems Principles and Design	
CSC 245	Performance Modeling and Evaluation	
CSC 250	Computer Security	
CSC 251	Principles of Compiler Design	
CSC 255	Computer Networks	
CSC 258	Distributed Systems	
CSC 275	Advanced Data Communication Systems	
CSC 296P	Theory and Practice of Parallel Programming with GPUs	
CSC 296Z	Computer Graphics Theories and Algorithms	
Graduate Restricted Electives (3 Units)		
Select 3 units ⁴		3
Culminating Requirement (2 Units)		
Select one of the following:		2
CSC 500	Master's Thesis ⁵	
CSC 502	Master's Project ⁵	
Total Units		96-99

substitute for 3 units of the BS required upper division courses and 9 units of the BS electives.

The total number of units required for the BS degree will be the same (120 units) as for students who are not in the blended program.

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 Students whose undergraduate preparation has covered a significant amount of the material in CSC 205 or CSC 206 may be given a waiver by the Department from taking one or more of these courses. In this case, for each course waived with department approval, the student must take three additional units from the list below.

⁴ Students should choose their electives according to the following guidelines:
a.) Any 200-level CSC courses not already used to satisfy the Breadth Requirement, with the exception of CSC 295 and CSC 299.
b.) Related 200-level courses from outside the Computer Science Department may only be taken with prior department approval and may not have been used in another program.

⁵ Students are required to conduct an oral defense of their master's projects or their master's thesis. The recommended department-level deadline in each semester for submitting an MS project or thesis signed by the committee chair and its members to the Graduate Coordinator's office is 10 working days prior to the University deadline.

Opt-Out Option

Students who wish to opt out after completing the four graduate courses and other BS requirements may do so and the four graduate courses