

Bachelor of Science in Computer Systems Engineering

The Bachelor of Science (BS) in Computer Systems Engineering program at the University of Alaska Anchorage teaches students the fundamental principles of computer systems engineering and topical issues in computing so they may pursue advanced degrees or enter the workplace as productive, competent engineers. The program seeks to further the profession of computer systems engineering through professional activities and public service within the local community and beyond. Faculty engage in and disseminate research to advance the development of computer systems engineering and provide innovative technological solutions to address the needs of modern society.

The BS in Computer Systems Engineering is accredited by the Engineering Accreditation Commission of ABET (<https://www.abet.org>).

Licensure and/or Certification

Graduates of the Bachelor of Science in Computer Systems Engineering gain four years of education credit toward obtaining a Professional Engineer license in Alaska.

Please go to UAA's Authorization by State (https://www.uaa.alaska.edu/academics/office-of-academic-affairs/provost_office/uaa-state-authorization/authorization.cshtml/) website for information about licensure or certification in a state other than Alaska.

Admission Requirements

- Complete the Admission Requirements for Baccalaureate Degrees (<http://catalog.uaa.alaska.edu/academicpoliciesprocesses/admissions/undergraduate/>)

Special Considerations

- Students who intend to enroll in this degree of study are strongly encouraged to complete the following content in high school with a grade of C or better: Trigonometry (1/2 year), Physics (1 year), Algebra (2 years), Chemistry (1 year), and English (3 years). Insufficient preparation may increase the number of semesters required to complete the degree.
- A student who is unable to earn a minimum grade of C in any course offered by the college may retake that course up to two additional times. A student who fails to earn a minimum grade of C on the second attempt will be required to meet with an academic advisor and a member of the College of Engineering professional advising staff to develop a plan for improvement of academic performance before continuing in the program. Failure to earn a minimum grade of C on the third attempt will result in removal from the program. Re-admittance requires a letter of appeal from the student with an explanation of any mitigating factors and how

these factors have been addressed. Re-admittance is subject to approval by the department chair of the program.

Graduation Requirements

- Complete the General University Requirements for Baccalaureate Degrees (<http://catalog.uaa.alaska.edu/undergraduateprograms/baccalaureaterequirements/>).
- Complete the General Education Requirements for Baccalaureate Degrees (<http://catalog.uaa.alaska.edu/undergraduateprograms/baccalaureaterequirements/gers/>).
 - The 3 credit Tier 1 Quantitative Skills GER will be met and exceeded by the following degree requirements: MATH A251, MATH A252, and MATH A253.
 - The 7 credit Tier 2 Natural Science GER will be met and exceeded by the following degree requirements: PHYS A211, PHYS A211L, PHYS A212, and PHYS A212L.
- All computer systems engineering majors must take a standardized test of knowledge of computer science approved by the CS&E faculty for the purpose of evaluating program effectiveness. There is no minimum score required for graduation. This test will normally be taken during the senior year.
- Complete the following major requirements with a minimum grade of C:

Code	Title	Credits
Core Courses		
CSCE A101	Introduction to Computer Science	3
CSCE A201	Computer Programming I	4
CSCE A211	Computer Programming II	4
CSCE/EE A241	Computer Hardware Concepts	4
CSCE A248	Computer Organization and Assembly Language Programming	3
CSCE A311	Data Structures and Algorithms	3
CSCE A321	Operating Systems	3
CSCE A342	Digital Circuits Design	3
CSCE A365	Computer Networks	3
CSCE A448	Computer Architecture	3
CSCE A465	Computer and Network Security	3
CSCE A470	Computer Science and Engineering Capstone Project	3
EE A203	Fundamentals of Electrical Engineering I	4
EE A333	Electronic Devices	4
EE A353	Circuit Theory	3
ESM A450	Economic Analysis and Operations	3
MATH A251	Calculus I	4
MATH A252	Calculus II	4
MATH A253	Calculus III	4
MATH A261	Introduction to Discrete Mathematics	3
MATH A302	Ordinary Differential Equations	3
PHIL A305	Professional Ethics	3

PHYS A211 & A211L	General Physics I and General Physics I Laboratory	4
PHYS A212 & A212L	General Physics II and General Physics II Laboratory	4
STAT A307	Probability and Statistics	4
Advanced Engineering Electives		
Complete 12 credits from the following: ¹		12
Any upper-division elective with a CSCE prefix		
EE/PHYS A314	Electromagnetics	
EE/PHYS A324	Electromagnetics II	
EE A324L	Electromagnetics Laboratory II	
EE A354	Engineering Signal Analysis	
EE A441	Integrated Circuit Design	
EE A451	Digital Signal Processing	
EE A462	Communication Systems	
EE A465	Telecommunications	
Total		98

¹ At least 6 credits must be from CSCE courses. A maximum of 3 credits from CSCE A395, a maximum of 3 credits from CSCE A495 and a maximum of 6 credits from CSCE A498 may be applied toward this degree requirement. Other relevant courses may be accepted by approved petition.

A minimum of 120 credits is required for the degree, of which 42 credits must be upper-division.

Honors in Computer Systems Engineering

The BS in Computer Systems Engineering recognizes distinguished achievements by conferring programmatic honors in Computer Systems Engineering. In order to receive honors in Computer Systems Engineering, a student must meet the following requirements:

- Complete all program requirements.
- Earn a GPA of 3.50 or above in the courses required for the major.
- Gain approval for, complete and present a design or research project prior to applying for graduation. The project proposal, presentation and final written report must be approved by the program faculty.

Program Student Learning Outcomes

Students graduating with a BS in Computer Systems Engineering will be able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences, including technical and non-technical audiences for business, end-user, client, and computing contexts.

- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.