



Bachelor of Science in Computer Science

Applied Option: Software Engineering

Applied Option: Software Entrepreneurship

2024-25 Catalog Year

subject to change and catalog regulations.

Program Overview

Computer science is the study of the theory, design, development, and application of computational systems, especially in the form of software. It includes artificial intelligence, human-computer interaction, computer graphics, cybersecurity, and more. Computer science on the Cascades campus emphasizes two specific areas: software engineering, and web & mobile software development. In this program you will learn the foundations of computer science theory, and the skills necessary for building scalable, long-lasting software systems. Graduates of the program typically achieve employment as software engineers, a rewarding, creative, and highly sought area of expertise.

What is the Software Engineering applied option? The Software Engineering path is a predefined set of courses that guide students in becoming a successful software engineer. The courses are very hands-on, and students take a second-year course in software development, three software engineering courses, and a senior-year experience of building software products. In addition, students may choose electives such as mobile application development, cloud application development, machine learning, and network security.

What is the Software Entrepreneurship applied option? The Software Entrepreneurship path cultivates an entrepreneurial mindset, with business-oriented knowledge needed by startups and innovation divisions within larger organizations. Students take business courses in entrepreneurship, project management, and finance. In addition, students may choose electives such as mobile application development, cloud application development, machine learning, and network security.

Computer Science Learning Goals and Objectives

The outcomes describe the knowledge and capabilities expected of each computer science graduate:

1. An ability to analyze a problem and identify and define the computing requirements appropriate to its solution.
2. Ability to function effectively on teams to accomplish a common goal.
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. An ability to function effectively on teams to accomplish a common goal.

5. An understanding of professional, ethical, legal, security and social issues and responsibilities.
6. An ability to communicate effectively with a range of audiences.
7. An ability to analyze the local and global impact of computing on individuals, organizations, and society.
8. Recognition of the need for and an ability to engage in continuing professional development.
9. An ability to use current techniques, skills, and tools necessary for computing practice.
10. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
11. An ability to apply design and development principles in the construction of software systems of varying complexity.

Degree Requirements

Students completing the CS major complete the following requirements.

University Graduation Requirements
College of Engineering Requirements
Baccalaureate Core
CS major courses
Applied Option track – Software Engineering or Software Entrepreneurship

Program Requirements

OSU Graduation Requirement:

Students are required to meet the University Graduation requirements as well as complete course work required for their major to graduate with a Bachelor of Science in Energy Systems Engineering.
**All catalog and course selection information is subject to change pending catalog declaration year.*

catalog.oregonstate.edu/regulations/#text

- 180 minimum = total number of credits required to graduate
- 60 minimum = number of upper division credits required
- 45 of last 75 credits must be OSU credits
- Max 135 credits transferred to OSU
- Max 18 W grades (withdraw)
- Max 11 credits PAC (Physical Activity Course)

College of Engineering Academic Standing

Progression Model

Grades of C or better and a minimum of 2.50 cumulative OSU GPA

Maintain 2.50 term and/or cumulative OSU GPA and 65% of courses completed

- **Warning:** OSU term GPA is below a 2.50 and/or completion is under 65%

- **Probation:** After 24 OSU credits attempted, if both term and cumulative standards are not met
- **Suspension:** If on probation and have a subsequent term OSU GPA under 2.50 and/or pace under 65%

S/U Grading: CS students may not take for S/U grading (Satisfactory/Unsatisfactory) any course listed as a requirement for the major.

Academic Progression Model Information: <https://engineering.oregonstate.edu/current-students/advising/progression>

Important Notes:

- **It is the student's responsibility to double check that all requirements are met.** The advisor can suggest courses and assist the student in constructing a plan of study, but the student in the end is responsible for assuring all requirements for graduation are met.
- Degree requirements are subject to change and dependent on catalog year of admission and major declaration.

Students will work with their Academic Advisor and use the Bacc Core approved list for OSU-Cascades to choose courses for the Bacc Core requirements. To find information about Bacc Core or for the approved list, visit: <https://admissions.oregonstate.edu/course-articulations>

Baccalaureate Core

Use the OSU-Cascades Bacc Core course guide to plan courses

osucascades.edu/advising/baccalaureate-core

An ASOT-Computer Science or an AAOT completes all Skills & Perspectives requirements in the Bacc Core.

Skills Requirements	Course	Grade
Health		
Fitness		
Mathematics	MTH 251 in major	
Writing I	WR 121z in major	
Writing II	WR 214/WR 227z in major	
Speech	COMM 111z or 114 in major	
Perspective Requirements: no more than 2 from 1 department		
Cultural Diversity		
Literature & the Arts		
Social Processes & Institutions - (<i>ECON 201 recommended</i>)		
Western Culture		
Physical Science		
Biological Science		
Additional Science (Physical or Biological)		
Difference, Power & Discrimination		
Synthesis Requirements: cannot be from the same department		
Contemporary Global Issues		
Science, Technology & Society	CS 391 in major	

Major Requirements

Completed mark with X	Class	Computer Science Core Requirements	Credits	Term Offered	Grade
	COMM 114 or COMM 111Z	*ARGUMENT AND CRITICAL DISCOURSE or PUBLIC SPEAKING	3-4	COMM 114 S or COMM 111Z-F,W,S	
	CS 162	INTRODUCTION TO COMPUTER SCIENCE II	4	F	
	CS 261	DATA STRUCTURES	4	W	
	CS 290	WEB DEVELOPMENT	4	S	
	CS 325	ANALYSIS OF ALGORITHMS	4	S	
	CS 340	INTRODUCTION TO DATABASES	4	W	
	CS 361	SOFTWARE ENGINEERING I	4	F	
	CS 362	SOFTWARE ENGINEERING II	4	W	
	CS 374	OPERATING SYSTEMS I	4	W	
	CS 391	*SOCIAL AND ETHICAL ISSUES IN COMPUTER SCIENCE	3	F	
	ENGR 100	THE OREGON STATE ENGINEERING STUDENT	3	F	
	ENGR 102	DESIGN ENGINEERING AND PROBLEM SOLVING	3	W	
	ENGR 103	ENGINEERING COMPUTATION AND ALGORITHMIC THINKING	3	S	
	MTH 231	ELEMENTS OF DISCRETE MATHEMATICS	4	S	
	MTH 251	*DIFFERENTIAL CALCULUS	4	F, W	
	MTH 252	INTEGRAL CALCULUS	4	W, S	
	WR 121Z	+*COMPOSITION I	4	F, W, S	
	WR 214	*WRITING IN BUSINESS	3	TBD	
	WR 227Z	*TECHNICAL WRITING	4	F, W, S	
		CS Applied Option Requirements	Credits	Term Offered	Grade
	CS 271	COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE	4	F	
	CS 461	^SENIOR SOFTWARE ENGINEERING PROJECT I	3	F	
	CS 462	^SENIOR SOFTWARE ENGINEERING PROJECT II	3	W	
	CS 463	SENIOR SOFTWARE ENGINEERING PROJECT	2	S	
	CS 352	INTRODUCTION TO USABILITY ENGINEERING	4	F	
	CS 372	INTRODUCTION TO COMPUTER NETWORKS	4	F	
	CS 381	PROGRAMMING LANGUAGE FUNDAMENTALS	4	W	
	CS 474	OPERATING SYSTEMS II	4	S	

		CS Restricted Electives – choose 9 credits	Total 9 credits	Term Offered	Grade
	CS 331	INTRODUCTION TO ARTIFICIAL INTELLIGENCE	4	S	
	CS 475	INTRODUCTION TO PARALLEL PROGRAMMING	4	F	
	ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS	3	S	
	CS 406	PROJECTS – department approval required; must be approved <u>term prior</u>	Variable credit	F, W, S	
	See catalog for more (online only) class choices	https://catalog.oregonstate.edu/courses/cs/			
Choose SW Engineering or SW Entrepreneurship		Software Engineering Approved Applied Option Electives	Total 32 credits	Term Offered	Grade
	CS 434	MACHINE LEARNING AND DATA MINING	4	F	
	CS 466	WEB-BASED START-UP PROJECT	4	W	
	CS 478	NETWORK SECURITY	4	W	
	CS 464	OPEN-SOURCE SOFTWARE	4	S	
	CS 492	MOBILE SOFTWARE DEVELOPMENT	4	W	
	CS 493	CLOUD APPLICATION DEVELOPMENT	4	S	
	CS 494	ADVANCED WEB DEVELOPMENT	4	S	
	SE 467	BUSINESS OF SOFTWARE II	4	S	
	See catalog for more (online only) class choices	https://catalog.oregonstate.edu/courses/cs/			
Choose SW Engineering or SW Entrepreneurship		Software Entrepreneurship Approved Applied Option Electives	Total 32 credits	Term Offered	Grade
	BA 252	MANAGING INDIVIDUAL AND TEAM PERFORMANCE	4	F, S	
	BA 260	FOUNDATIONS OF THE ENTREPRENEURIAL MINDSET	4	F, S	
	BA 315	ACCOUNTING FOR DECISION MAKING	4	S	
	BA 360	INTRODUCTION TO FINANCIAL MANAGEMENT	4	F, S	
	CS 466	WEB-BASED START-UP PROJECT	4	W	
	CS 492	MOBILE SOFTWARE DEVELOPMENT	4	W	
	CS 493	CLOUD APPLICATION DEVELOPMENT	4	S	
	SE 467	BUSINESS OF SOFTWARE II	4	S	