Computer Science

Courses required for the first year: Prerequisite courses to place into MATH 140	
Courses recommended for the first year: CSC-201, CSC-202, MATH-160	
Contact: Dr. Forrest Stonedahl (forreststonedahl@augustana.edu)	

The Major in Computer Science

It is recommended that the student complete CSC-201 (Introduction to Computer Science), CSC-202 (Data Structures and Object Oriented Programming), and MATH-160 (Calculus) in the first year to allow for flexibility in scheduling. It is strongly recommended that the student, at minimum, complete CSC 201 Introduction to Computer Science the first year. A student must complete CSC-201 Introduction to Computer Science no later than Fall term of the second year to graduate in four years.

See the major in mathematics for information about placement into pre-calculus (MATH-140). See also information about math placement.

A major in computer science is 36 credits including CSC-201, CSC-202, CSC-305, CSC-330, CSC-371, CSC-490, four credits of elective at the 300-400 level, MATH-160, and MATH-250.

A grade of C or better is required in each prerequisite course.

Required Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
CSC-201	Introduction to Computer Science		At least placement into pre-calculus or completion of MATH-090 with grade of A	4
CSC-202 (+ Lab)	Data Structures and Object Oriented Programming		CSC-201	4
CSC-305	Software Development		CSC-202	4
CSC-330	Principles of Computer Systems		CSC-202	4
CSC-371	Algorithms and Computational Theory		CSC-202, MATH-250	4
CSC-490	Senior Capstone		CSC-305	4
MATH-160	Calculus		MIS placement or MATH-140	4

MATH-250	Discrete Mathematics		MATH-160	4
4 credits of elective (choices in the next chart)				

Additional Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
CSC-310	Database Systems		CSC-201	4
CSC-320	Principles of Artificial Intelligence	PH	CSC-202, MATH-250	4
CSC-332	Operating Systems		CSC-330	2
CSC-335	Networking Fundamentals		CSC-330	2
CSC-336	Internet and Cybersecurity		CSC-335	2
CSC-350	Programming Languages		CSC-202, MATH-250	4
CSC-380	Special Topics		Permission of instructor	4
MATH-340	Mathematical Modeling		MATH-250, CSC-201	4
MATH-440	Numerical Methods		MATH-230, CSC-201	4

The Minor in Computer Science

A minor in computer science is 20 credits including CSC-201, CSC-202, CSC-330, and 8 additional elective credits, at least 4 of which must be **CSC** courses at the 300-400 level.

A grade of C or better is required for each prerequisite course.

Required Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
CSC-201	Introduction to Computer Science		At least placement into pre-calculus or completion of MATH-090 with grade of A	4
CSC-202 (+ Lab)	Data Structures and Object Oriented Programming		CSC-201	4
CSC-330	Principles of Computer Systems		CSC-202	4
8 additional elective credits, at least 4 of which must be at the 300-400 level (choices in next chart)				

Additional Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
CSC-215	Web Programming		CSC-201	4
CSC-305	Software Development		CSC-202	4
CSC-310	Database Systems		CSC-201	4
CSC-320	Principles of Artificial Intelligence	PH	CSC-202, MATH-250	4
CSC-332	Operating Systems		CSC-330	2
CSC-335	Networking Fundamentals		CSC-330	2
CSC-336	Internet and Cybersecurity		CSC-335	2
CSC-350	Programming Languages		CSC-202	2
CSC-371	Algorithms and Computational Theory		CSC-202, MATH-250	4
CSC-380	Special Topics		Permission of instructor	4
MATH-340	Mathematical Modeling		MATH-250, CSC-201	4
MATH-440	Numerical Methods		MATH-230, CSC-201	4

Major Overview

Computer science is a very dynamic field whose majors tend to be sought-after in a variety of industries, thanks to their proven problem solving and critical thinking skills. A significant portion of the curriculum is devoted to the art of computer programming, and accordingly many computer science majors find rewarding careers in software development (including web development, app development). However, a computer science major can also provide an excellent springboard for careers in information technology (I.T.), database administration, network administration, cybersecurity, quality assurance testing, user experience (UX) designer, video game developer, technology consulting, logistics, data analytics (especially when paired with appropriate MATH or DATA courses).

CS majors often pursue internships at technology companies in the Quad Cities, such as John Deere which offers part-time student worker positions in both I.T. and software development during the school year, as well as summer internships. Increasing numbers of students are taking advantage of Augustana's internship away/abroad, including internships away/abroad, in locations such as Denver, New York, or Australia. Students are encouraged to meet with CORE to discuss/arrange such opportunities in advance, and to discuss how spending a semester off-campus might affect their course scheduling for completing the major. Several noteworthy opportunities for on-campus internships or other hands-on experience include: a) student worker positions within Augustana's I.T. department, and b) the Augustana Web Guild (within the EDGE center), where students design/develop websites for real clients.

Occasional opportunities for undergraduate research may arise, both during the school year and the summer, either by special arrangement with a faculty member, or possibly through the Beling Scholars program which especially encourages computer science students to work on projects that combine the disciplines of mathematics and computer science. Additionally, students in the honors program may do a research project as part of their interdisciplinary honors capstone. Some past research project topics include cryptocurrency/blockchain forensics, A.I. for robotic swarms, psychology and human-computer interaction (HCI), and epidemiological computer modeling. Research opportunities may be limited by faculty availability, and preference may be given to students who are planning to attend graduate school and have displayed strong academic potential and proven their ability to work independently on challenging projects in prior coursework. However, if research is something that you are interested in, you should definitely inquire about it!