

George Mason University
The Volgenau School of Engineering
B.S. Degree in Applied Computer Science, Software Engineering Concentration
4300 Nguyen Engineering, 703-993-1530
<http://cs.gmu.edu/>
2019-20 Catalog Degree Planner

Degree Requirements

For the BS ACS degree, students must complete 120 credits, including the Mason Core requirements. The program requires foundation, core, and concentration courses as described below. These course requirements provide expertise in programming, computer systems, software requirements and modeling, formal methods, and analysis of algorithms.

Mason Core (31 Credits)

Course Name	Credits:	Term Taken	Grade
Written Communication: ENGH 101 (100) & 302 (Natural Sciences)	Credits: 6		
Literature	Credits: 3		
Arts	Credits: 3		
Western Civilization/World History: HIST 100 or 125	Credits: 3		
Social and Behavioral Science	Credits: 3		
Global Understanding	Credits: 3		
Natural Science	Credits: 7		
COMM 100 or 101 – Oral Communication	Credits: 3		

ACS Foundation Courses (24 Credits)

CS 110 - Essentials of Computer Science	Credits: 3		
CS 112 - Introduction to Computer Programming	Credits: 4		
CS 211 - Object-Oriented Programming	Credits: 3		
MATH 113 - Analytic Geometry and Calculus I	Credits: 4		
MATH 114 - Analytic Geometry and Calculus II	Credits: 4		
MATH 125 - Discrete Mathematics I	Credits: 3		
MATH 203 - Linear Algebra	Credits: 3		

ACS Core (25 credits)

CS 262 - Introduction to Low-Level Programming	Credits: 3		
CS 310 - Data Structures	Credits: 3		
CS 321 - Software Engineering	Credits: 3		
CS 330 - Formal Methods and Models	Credits: 3		
CS 367 - Computer Systems and Programming	Credits: 4		
CS 471 - Operating Systems	Credits: 3		
CS 483 - Analysis of Algorithms	Credits: 3		
ACS elective (3 credits): One CS course numbered above 400, except CS 498	Credits: 3		

▲ Concentration in Software Engineering (SWE)			
Foundation (6 credits)			
Course Name	Credits:	Term Taken	Grade
STAT 344 - Probability and Statistics for Engineers and Scientists I	Credits: 3		
CS 306 - Synthesis of Ethics and Law for the Computing Professional	Credits: 3		
Core (10 credits)			
SWE 205 - Software Usability Analysis and Design	Credits: 3		
SWE 301 - Internship Preparation	Credits: 0		
SWE 401 - Internship Reflection	Credits: 1		
SWE/CS 332 - Object-Oriented Software Design and Implementation	Credits: 3		
SWE 437 - Software Testing and Maintenance	Credits: 3		

SWE related (15 credits) chosen from:			
CS 450 - Database Concepts	Credits: 3		
CS 455 - Computer Communications and Networking	Credits: 3		
CS 463 - Comparative Programming Languages	Credits: 3		
CS 465 - Computer Systems Architecture	Credits: 3		
CS 468 - Secure Programming and Systems	Credits: 3		
CS 475 - Concurrent and Distributed Systems	Credits: 3		
CS 477 Mobile Application Development	Credits: 3		
SWE 432 - Web Application Development	Credits: 3		
SWE 443 - Software Architectures	Credits: 3		
CS 491 - Industry-Sponsored Senior Design Project (Full Year)	Credits: 6		

Cross-disciplinary (6 credits)			
ENGH 388 - Professional and Technical Writing	Credits: 3		
PSYC 333 - Industrial and Organizational Psychology OR COMM 320 - Business and Professional Communication OR COMM 335 - Organizational Communication	Credits: 3		

Electives (3 credits)			
Total: 120 credits (with 45+ Upper Division)			

CS Policies and Procedures

- **Note:** MATH 105 and MATH 108 cannot be counted toward this degree.

CS 110 and 306: Students must take CS 110 within their first year as a CS major. A grade of C or better must be earned in CS 306 for this course to satisfy the Mason Core synthesis requirement.

- **Grades**

Students must earn a C or better in any course intended to satisfy a prerequisite for a computer science course. Computer science majors may not use more than one course with grade of C- or D toward department requirements.

- **Repeating Courses**

Students may attempt an undergraduate course taught by the Volgenau School of Engineering twice. A third attempt requires approval of the department offering the course.

The CS Department may not allow students to retake certain high-demand CS courses in which they have already earned a grade of C or better simply to improve their GPA.

- **Termination from the Major**

No math, science or Volgenau School of Engineering course, required for the major, may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated. For more information, see the “Termination from the Major” section under AP.5 Undergraduate Policies in the current catalog (catalog.gmu.edu).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student’s advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 and STAT 250.

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student’s major was at the time the courses were taken.

- **Writing-Intensive Requirement**

Computer science majors complete the writing-intensive requirement through a sequence of projects and reports in CS 306 and CS 321. Faculty members provide feedback on students’ expository writing.

- **CS Honors Program**

The Department of Computer Science offers a CS Honors Program for students with strong computational foundations and the drive to delve deeper into computing. The program is based on the Bachelor of Science in computer science and applied computer science curriculum and is distinct from the University Honors College curriculum. Please talk to a CS Advisor for more information.