

**George Mason University
The Volgenau School of Engineering**

**B.S. Degree in Applied Computer Science, Geography Concentration
4300 Nguyen Engineering, 703-993-1530**

<http://cs.gmu.edu/>
2016-2017 Catalog

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 (22 Credits)

Course Name	Credits:	Term Taken	Grade
Written Communication: ENGH 101 (100) & 302 (Natural Science)	Credits: 6		
Literature	Credits: 3		
Arts	Credits: 3		
Western Civilization/World History: HIST 100 or 125	Credits: 3		
Natural Science	Credits: 4		
COMM 100 - Public Speaking	Credits: 3		

• **Computer Science students must make a technical presentation. COMM 100 fulfills the Mason Core requirement in oral communication for Volgenau School students.**

ACS Foundation Courses (24 Credits)

Course Name	Credits:	Term Taken	Grade
CS 101 - Preview of Computer Science	Credits: 2		
CS 105 - Computer Ethics and Society	Credits: 1		
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 (26 credits)

Course Name	Credits:	Term Taken	Grade
ECE 301 - Digital Electronics	Credits: 3		
CS 262 - Introduction to Low-Level Programming	Credits: 2		
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: 3		
CS 465 - Computer Systems Architecture	Credits: 3		
CS 483 - Analysis of Algorithms	Credits: 3		
ACS elective (3 credits): One CS course numbered above 400.	Credits: 3		

▲ Concentration in Geography (GEOG)			
Foundation (21 credits)			
Course Name	Credits:	Term Taken	Grade
CS 306 - Synthesis of Ethics and Law for the Computing Professional	Credits: 3		
GGS 101 - Major World Regions	Credits: 3		
GGS 102 - Physical Geography	Credits: 3		
GGS 103 - Human Geography	Credits: 3		
GGS 110 - Maps and Mapping	Credits: 3		
GGS 300 - Quantitative Methods for Geographical Analysis	Credits: 3		
STAT 344 - Probability and Statistics for Engineers and Scientists I	Credits: 3		
Core (22 credits)			
Course Name	Credits:	Term Taken	Grade
GGS 310 - Introduction to Digital Cartography	Credits: 4		
GGS 311 - Introduction to Geographic Information Systems	Credits: 3		
GGS 411 - Advanced Digital Cartography	Credits: 3		
GGS 412 - Air Photography Interpretation	Credits: 3		
GGS 416 - Satellite Image Analysis	Credits: 3		
GGS 463 - Applied Geographic Information Systems	Credits: 3		
One GGS course numbered above 300 Credits: 3	Credits: 3		
Electives (5 credits)			
Total: 120 credits (with 45+ Upper Division)			

Note: MATH 104, MATH 105, and MATH 108 cannot be counted toward this degree.

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 lower 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. This policy does not apply to STAT 250, which follows the normal university policy for repeating undergraduate courses.

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.

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.

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.

Students must take CS 101 within their first year at the university. Students should take CS 105 during their second semester. A grade of C or better must be earned in CS 306 for this course to satisfy the Mason Core synthesis requirement.