

George Mason University
The Volgenau School of Engineering
B.S. Degree in Applied Computer Science, Computer Game Design
4300 Nguyen Engineering, 703-993-1530
<http://cs.gmu.edu/>
2017-2018 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 (21 Credits)

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

Course Name	Credits:	Term	Grade
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	Credits: 3		

▲ Concentration in Computer Game Design (CGDS)			
Foundation (19 credits)			
Course Name	Credits:	Term	Grade
GAME 230 - Culture and Theory of Games	Credits: 3		
CS 306 - Synthesis of Ethics and Law for the Computing Professional	Credits: 3		
CS 325 - Introduction to Game Design *(Spring)	Credits: 3		
CS 351 - Visual Computing *(Spring)	Credits: 3		
AVT 104 - Studio Fundamentals I	Credits: 4		
STAT 344 - Probability and Statistics for Engineers and Scientists I	Credits: 3		
Core (15 credits)			
Course Name	Credits:	Term	Grade
CS 425 - Game Programming I *(Fall)	Credits: 3		
CS 426 - Game Programming II *(Spring)	Credits: 3		
CS 451 - Computer Graphics *(Fall)	Credits: 3		
AVT 382 - 2D Experimental Animation **	Credits: 3		
AVT 383 - 3D Experimental Animation **	Credits: 3		
One approved elective related to game design (3 credits)			
Choose one course from the following:			
Course Name	Credits:	Term	Grade
CS 332 - Object-Oriented Software Design and Implementation	Credits: 3		
CS 455 - Computer Communications and Networking	Credits: 3		
CS 475 - Concurrent and Distributed Systems	Credits: 3		
CS 480 - Introduction to Artificial Intelligence	Credits: 3		
CS 485 - Autonomous Robotics	Credits: 3		
SWE 432 - Design and Implementation of Software for the Web	Credits: 3		
GAME 332 - Story Design for Computer Games	Credits: 3		
AVT 370 - Entrepreneurship in the Arts	Credits: 3		
AVT 374 - Sound Art I	Credits: 3		
AVT 487 - Advanced Topics: New Media Art	Credits: 3		

Natural Science (8 credits)			
Course Name		Term	Grade
PHYS 160 - University Physics I	Credits: 3		
PHYS 161 - University Physics I Laboratory	Credits: 1		
One additional lab science	Credits: 4		

Electives (5 credits)			
Total: 120 credits (with 45+ Upper Division)			

*** = Expected semester for course offering. Please meet with your advisor to ensure you stay on track**

**** = AVT 382 and AVT 383; AVT 280 prerequisite is not required for ACS CGD majors**

See page 3 for CS Policies and Procedures

CS Policies and Procedures

- **Note:** MATH 104, 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 an ACS 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. 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.

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.