George Mason University
The Volgenau School of Engineering

B.S. Degree in Applied Computer Science, Bioinformatics Concentration

4300 Nguyen Engineering, 703-993-1530
http://cs.gmu.edu/
2015-2016 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 (24 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		
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 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 Requirements and Design Modeling	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 Bioinformatics (BNF)			
Foundation (17 credits)			
Course Name	**Credits:**	**Term Taken**	**Grade**
PHYS 160 - University Physics I	Credits: 3		
PHYS 161 - University Physics I Laboratory	Credits: 1		
CHEM 201 - Introductory Chemistry I	Credits: 3		
BIOL 213 - Cell Structure and Function	Credits: 4		
CS 306 - Synthesis of Ethics and Law for the Computing Professional	Credits: 3		
STAT 344 - Probability and Statistics for Engineers and Scientists I	Credits: 3		
Core (25 credits)			
Course Name	**Credits:**	**Term Taken**	**Grade**
BINF 450 - Bioinformatics for Life Sciences	Credits: 4		
BIOL 482 - Introduction to Molecular Genetics	Credits: 3		
BIOL 580 - Computer Applications for the Life Sciences	Credits: 3		
CS 450 - Database Concepts	Credits: 3		
BINF 401 - Bioinformatics and Computational Biology I **OR** CS 444 - Introduction to Computational Biology	Credits: 3		
BINF 402 - Bioinformatics and Computational Biology II **OR** CS 445 - Computational Methods for Genomics	Credits: 3		
Two approved electives related to bioinformatics (6 credits). A list of relevant courses can be obtained from the department office.	Credits: 6		
Electives (4 credits)			
Total: 120 credits (with 45+ Upper Division)			

Notes: 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.

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 103 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.