

**GEORGE MASON UNIVERSITY
VOLGENAU SCHOOL OF ENGINEERING
B.S. DEGREE IN APPLIED COMPUTER SCIENCE (SOFTWARE ENGINEERING CONCENTRATION)
(4300 Nguyen Engineering Building, 703-993-1530)
<http://cs.gmu.edu/programs/undergraduate/acs/>
2018 - 2019 CATALOG**

	<u>Department(s) & Course #(s)</u>	<u>Completed/ Grade(s)</u>	<u>Needed</u>
<u>MASON CORE REQUIREMENTS (31 credit hours required)</u>			
a. Written Communication: ENGH 101 (100), ENGH 302 Natural Science Section Only (C or better) (3,3)			
b. Oral Communication: COMM 100 (3)			
c. Quantitative Reasoning (satisfied by completion of major requirements)			
d. Literature (3)			
e. Arts (3)			
f. Western Civilization (HIST 100, 125, or acceptable transfer course) (3)			
g. Social & Behavioral Science (3)			
h. Natural Science (4,3)			
i. Global Understanding (3)			
j. Information Technology (satisfied by completion of major requirements)			
k. Synthesis (satisfied by CS 306) C or better required			

Go to: <http://catalog.gmu.edu/mason-core/> to link to information on Mason Core requirements.

MAJOR REQUIREMENTS (86 credit hours required)

ACS Foundation Courses (24 credits)

a. CS 110 (3)	a.	___ ___	___ ___
b. CS 112, 211 (4,3)	b.	___ ___	___ ___
c. MATH 113, 114 (4,4)	c.	___ ___	___ ___
d. MATH 125, 203 (3,3)	d.	___ ___	___ ___

ACS Core (22 credits)

a. CS 262 (3)	a.	___ ___	___ ___
b. CS 310, 321 (3,3)	b.	___ ___	___ ___
c. CS 330, 367 (3,4)	c.	___ ___	___ ___
d. CS 465, 483 (3,3)	d.	___ ___	___ ___

ACS Elective (3 credits)

a. One CS course numbered above 400 except CS 498 (3) CS _____	a.	_____	_____
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SOFTWARE ENGINEERING CONCENTRATION (37 credit hours required)

Software Engineering Foundation & Core Courses (16 credits)

a. STAT 344, CS 306 (3,3)	a.	___ ___	___ ___
b. SWE 205, 301 (3,0)	b.	___ ___	___ ___
c. SWE 401, 437 (1,3)	c.	___ ___	___ ___
d. CS 332 (3)	d.	___ ___	___ ___

e. **SWE-related (15 credits)** Any five of the following: CS 450, 455, 463, 465, 468, 475, 491; SWE 432, 443

List courses taken:

1. _____ 2. _____ 3. _____
4. _____ 5. _____

e.	___ ___	___ ___
f.	___ ___	___ ___

f. ENGH 388 (3)	f.	___ ___	___ ___
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g. One of the following: PSYC 333, COMM 320, COMM 335 (3) (circle choice) (3)	g.	_____	_____
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MATH 104, MATH 105, and MATH 108 cannot be counted toward this degree. Students must take CS 110 within their first year at the university. A grade of C or better must be earned in CS 306 for this course to satisfy the Mason Core synthesis requirement. 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.

GENERAL ELECTIVES (3 credits) (List courses) At most 3 credits of 100-level RECR coursework may be taken to satisfy the degree requirements of those VSE programs that allow general electives.

MINIMUM 120 HOURS (including Minimum 45 UPPER DIVISION HOURS) to GRADUATE

This planning form is intended to be used in consultation with your academic advisor and reflects the requirements for the 2018 - 2019 Catalog; the University Catalog is the official reference for program requirements.

Volgenau School of Engineering

APPLIED COMPUTER SCIENCE, B.S. Concentration in Software Engineering 2018 - 2019

The Bachelor of Science degree in Applied Computer Science (BS ACS) has been created for those students who want the knowledge and expertise of computer science to work in one of the many disciplines that require advanced computing techniques. These fields do not merely “use” computing but create new and interesting problems for the computer scientist. One such field is the area of Software Engineering.

The objectives of the BS ACS concentration in Software Engineering are to provide students with the following:

1. The fundamental knowledge regarding theory, methods and applications of Computer Science.
2. Foundational knowledge in engineering principles as applied to producing high quality software.
3. An understanding of how to integrate Computer Science and Software Engineering to produce software that is usable, reliable, maintainable, secure, scalable and efficient.
4. Preparation for employment as a software engineer in the software industry.
5. Preparation for graduate studies in fields such as Software Engineering and Computer Science.

Application Area

Software Engineering is one of the largest global industries today. Jobs are plentiful and salaries are high. Whereas in past decades, the success of software was due to efficiency, algorithms and time-to-market; 21st century software must be usable, reliable, maintainable, secure, scalable and efficient. Creating high quality software requires teams of people with highly developed and diverse skills and knowledge of cutting-edge technologies. This program is ideal for students who want careers designing, building and evaluating high quality software products, either as part of a unified team or in leadership roles.

Degree Requirements

The BS ACS in Software Engineering program can be successfully completed within the normal 120 semester hour degree at GMU. In addition to Mason Core requirements including humanities, and social science, the BS ACS Software Engineering concentration requires foundation, core, and elective courses. These course requirements provide students with expertise in programming, computer systems, software requirements and modeling, formal methods and analysis of algorithms. At least 45 semester hours of the degree requirements must be at the 300 level or above.

Sample Schedule

FIRST SEMESTER (14 CREDITS)

CS 110 Essentials of Computer Science	3
CS 112 Introduction to Programming	4
MATH 113 Analytical Geometry & Calculus	4
Mason Core*	3

SECOND SEMESTER (16 CREDITS)

CS 211 Object-Oriented Programming	3
MATH 114 Analytical Geometry & Calculus II	4
SWE 205 Software Usability Design & Analysis	3
COMM 100 Public Speaking	3
Mason Core*	3

THIRD SEMESTER (14 CREDITS)

CS 262 Low-Level Programming	3
CS 310 Data Structures	3
MATH 125 Discrete Mathematics	3
Natural Science Elective**	4
Elective	1

FOURTH SEMESTER (16 CREDITS)

CS 330 Formal Methods & Models	3
CS 367 Computer Systems and Programming	4
MATH 203 Linear Algebra	3
Mason Core*	3
Natural Science Elective**	3

FIFTH SEMESTER (15 CREDITS)

CS/SWE 332 OO Software Design & Implementation	3
STAT 344 Prob/Stat for Engrs & Scientists	3
SWE Cross Disciplinary Elective	3
ENGH 302 Advanced Composition***	3
Mason Core*	3

SIXTH SEMESTER (15 CREDITS)

CS/SWE 321 Software Engineering	3
SWE 437 Software Testing and Maintenance	3
SWE 301 Internship Preparation	0
SWE Related Elective	3
Mason Core*	3
Mason Core*	3

SEVENTH SEMESTER (15 CREDITS)

SWE Related Elective	3
SWE Related Elective	3
CS 471 Operating Systems	3
ENGH 388 Professional/Technical Writing	3
SWE 401 Internship Reflection	1
Elective	2

EIGHTH SEMESTER (15 CREDITS)

SWE Related Elective	3
SWE Related Elective	3
CS 306 Synth of Ethics & Law for Computing Professional	3
CS 483 Analysis of Algorithms	3
CS Senior Elective	3

We invite requests for additional information. Please contact:
Phone: 703-993-1530; Email: csug@gmu.edu; Website: cs.gmu.edu

* <http://catalog.gmu.edu/mason-core> Mason Core Categories: One course from each: ENGH101, Arts, Global Understanding, Literature, Western Civilization/World History, Social Behavioral Science

**Natural Science, and Natural Science w/ Lab

*** ENGH 101 and Mason Core-Literature must be completed before taking ENGH 302. ACS-SWE students do not need to seek out IT, Quantitative Reasoning, and Oral Communication categories as they are built into the major curriculum.