APPLIED COMPUTER SCIENCE, BS

Banner Code: EC-BS-ACS

Academic Advising

Phone: 703-993-1530
Email: csug@gmu.edu
Website: http://cs.gmu.edu/prospective-students/undergraduate-programs/bs-in-applied-computer-science/

This program presents an innovative approach to the integration of computer science with other disciplines that require expertise in computing techniques. These disciplines do not merely use computing but create new and interesting problems for computer scientists.

Admissions & Policies

Policies

Advanced Placement, Credit by Exam

A score of 4 on the Advanced Placement (AP) computer science exam qualifies students for credit in CS 112 Introduction to Computer Programming (Mason Core) (http://catalog.gmu.edu/mason-core/). A score of 4 on the International Baccalaureate (IB) computer science exam qualifies students for credits in CS 112 Introduction to Computer Programming (Mason Core) (http://catalog.gmu.edu/mason-core/), and a score of 5 or more qualifies students for credit in CS 211 Object-Oriented Programming.

Change of Major

Students requesting a change of major to Applied Computer Science must meet with the College of Engineering and Computing Coordinator of Undergraduate Advising, 2500 Nguyen Engineering Building. Students requesting a change of major to Applied Computer Science must have a GPA of at least 2.75 in computer science and math courses and successfully completed one of CS 112 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=302778) or CS 211 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=302780), and one of MATH 113 (http://catalog.gmu.edu/preview_program.php?catoid=29&poid=28176#tt1999), MATH 114 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=305053), or MATH 125 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=305056), with a grade of B or better at Mason. See Change of Major (http://catalog.gmu.edu/colleges-schools/engineering-computing/#requirementspoliciestext) for more information.

Grades

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

Program Requirements

For the BS ACS degree, students must complete 120 credits, including the Mason Core (http://catalog.gmu.edu/mason-core/) requirements. The program requires foundation, core, and concentration courses. These course requirements provide expertise in programming, computer systems, software requirements and modeling, formal methods, and analysis of algorithms.

Repeating Courses

Students may attempt an undergraduate course taught by the College of Engineering and Computing twice. A third attempt requires approval of the department offering the course. This policy does not apply to STAT 250 Introductory Statistics I (Mason Core) (http://catalog.gmu.edu/mason-core/), 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.

Writing-Intensive Requirement

Computer science majors complete the writing-intensive requirement through a sequence of projects and reports in CS 306 Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/) and CS 321 Software Engineering. Faculty members provide feedback on students' expository writing.

Termination from the Major

No math, science, or College of Engineering and Computing course that is 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 College of Engineering and Computing who do not successfully complete a course required for a College of Engineering and Computing major within three attempts will also be terminated.

In addition, students in the College of Engineering and Computing with evidence of continued failure to make adequate progress toward declaring or completing a College of Engineering and Computing major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

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. A third attempt of a College of Engineering and Computing course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. 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 College of Engineering and Computing major may not register for a College of Engineering and Computing course without permission of the department offering the course. This applies to all undergraduate courses offered by the College of Engineering and Computing except IT 104 Introduction to Computing (Mason Core) (http://catalog.gmu.edu/mason-core/) and STAT 250

Introductory Statistics I (Mason Core) (http://catalog.gmu.edu/mason-core/).

A student may not declare any major in the College of Engineering and Computing 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.

Requirements

Degree Requirements

Total credits: 120

Students must complete all foundation, core, elective, and communication requirements, and the requirements from one selected concentration.

Foundation

Code	Title	Credits
CS 110	Essentials of Computer Science (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
CS 112	Introduction to Computer Programming (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
or CS 108 & CS 109	Intro to Computer Programming, Part A (Mason Core) (http://catalog.gmu.edu/mason-core/) and Intro to Computer Programming, Part B	
CS 211	Object-Oriented Programming	3
MATH 113	Analytic Geometry and Calculus I (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
or MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core) (http://catalog.gmu.edu/mason-core/)	
MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
MATH 203	Linear Algebra	3
Total Credits		24

[1]

Must be taken within a student's first year at the university.

Note:

MATH 104 Trigonometry and Transcendental Functions, MATH 105 Precalculus Mathematics, MATH 108 Introductory Calculus with Business Applications (Mason Core) (http://catalog.gmu.edu/mason-core/), and courses with an IT designation (and any associated cross-listed courses) cannot be counted toward this degree.

Core

Code	Title	Credits
CS 262	Introduction to Low-Level Programming	3
CS 310	Data Structures	3
CS 321	Software Engineering	3
CS 330	Formal Methods and Models	3
CS 367	Computer Systems and Programming	4
CS 471	Operating Systems	3
CS 483	Analysis of Algorithms	3
Total Credits		22

Elective

Code	Title	Credits
Select one CS course numbered above 400, except CS 498 (http://catalog.gmu.edu/courses/cs/)		3
Total Credits		3

Concentration in Bioinformatics (BNF)

Foundation

Code	Title	Credits
PHYS 160	University Physics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
PHYS 161	University Physics I Laboratory (Mason Core) (http://catalog.gmu.edu/mason-core/)	1
BIOL 213	Cell Structure and Function	4
CHEM 211	General Chemistry I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
CHEM 213	General Chemistry Laboratory I (Mason Core) (http://catalog.gmu.edu/mason-core/)	1
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
STAT 344	Probability and Statistics for Engineers and Scientists I	3
Total Credits		18

[1]

Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
BINF 450	Bioinformatics for Life Sciences	4
BIOL 482	Introduction to Molecular Genetics	3
BIOL 580	Computer Applications for the Life Sciences	3
CS 450	Database Concepts	3
BINF 401	Bioinformatics and Computational Biology I	3
BINF 402	Bioinformatics and Computational Biology II	3
Total Credits		19

Two Approved Electives Related to Bioinformatics

Code	Title	Credits
Select two approved electives (6 credits) related to bioinformatics with the student's advisor and approved by the CS department		6
Total Credits		6

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or COMM 101	Fundamentals of Communication (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or ENGH 101	Composition (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Advanced Composition		3
ENGH 302	Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/) (Natural Sciences section) [1]	
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Social and Behavioral Sciences (http://catalog.gmu.edu/mason-core/#social-behavioral-science)		3
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3
Total Credits		24

[1]

Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/).

Electives

Code	Title	Credits
Select 4 credits of electives		4
Total Credits		4

Concentration in Business Management (BMGT)
Foundation

Code	Title	Credits
STAT 250	Introductory Statistics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
BUS 100	Business and Society (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
PSYC 100	Basic Concepts in Psychology (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
MGMT 303	Principles of Management	3
MKTG 303	Principles of Marketing	3
Total Credits		18

[1]

Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
MGMT 313	Organizational Behavior	3
MGMT 321	Introduction to Human Resource Management	3
MGMT 451	Introduction to Entrepreneurship	3
MGMT 453	Starting a Business	3
Total Credits		12

Electives

Code	Title	Credits
Select 9 credits from MGMT 300-499		9
Total Credits		9

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or COMM 101	Fundamentals of Communication (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or ENGH 101	Composition (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/) (Natural Sciences section)	
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Natural Science (http://catalog.gmu.edu/mason-core/#natural-science)		7
Total Credits		28

[1]

Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/).

Electives

Code	Title	Credits
Select 4 credits of electives		4
Total Credits		4

Concentration in Business Marketing (BMKT)

Foundation

Code	Title	Credits
STAT 250	Introductory Statistics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
BUS 100	Business and Society (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
PSYC 100	Basic Concepts in Psychology (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
MGMT 303	Principles of Management	3
MKTG 303	Principles of Marketing	3
Total Credits		18

[1]

Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
MKTG 312	Consumer Behavior	3
MKTG 351	Marketing Research	3
MKTG 471	Marketing Management	3
Total Credits		9

Electives

Code	Title	Credits
Select 12 credits from MKTG >3xx		12
Total Credits		12

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or COMM 101	Fundamentals of Communication (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or ENGH 101	Composition (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/) (Natural Sciences section)	
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Natural Science (http://catalog.gmu.edu/mason-core/#natural-science)		7
Total Credits		28

[1]

Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/).

Electives

Code	Title	Credits
Select 4 credits of electives		4
Total Credits		4

Concentration in Computer Game Design (CGDS)

Foundation

Code	Title	Credits
GAME 230	History of Computer Game Design	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
CS 325	Introduction to Game Design	3
CS 351	Visual Computing	3
AVT 104	Two-Dimensional Design and Color (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
STAT 344	Probability and Statistics for Engineers and Scientists I	3
Total Credits		18

[1]

Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
CS 425	Game Programming I	3
CS 426	Game Programming II	3
CS 451	Computer Graphics	3
AVT 382	2D Experimental Animation	3
AVT 383	3D Experimental Animation	3
Total Credits		15

Approved Elective Related to Game Design

Code	Title	Credits
Select one course from the following:		3
CS 332	Object-Oriented Software Design and Implementation	
or SWE 332	Object-Oriented Software Design and Implementation	
or SWE 419	Object-Oriented Software Design and Implementation	
CS 452	Virtual Reality	
CS 455	Computer Communications and Networking	
CS 475	Concurrent and Distributed Systems	

Code	Title	
CS 477	Mobile Application Development	
CS 480	Introduction to Artificial Intelligence	
CS 485	Autonomous Robotics	
SWE 432	Web Application Development	
GAME 332	RS: Story Design for Computer Games	
AVT 370	Entrepreneurship in the Arts	
AVT 374	Sound Art I	
AVT 487	Advanced Topics: New Media Art	
JAPA 370	Video Games and Japan	
Total Credits		3

Natural Science

Code	Title	Credits
PHYS 160	University Physics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
PHYS 161	University Physics I Laboratory (Mason Core) (http://catalog.gmu.edu/mason-core/)	1
Select one additional lab science		4
Total Credits		8

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or COMM 101	Fundamentals of Communication (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or ENGH 101	Composition (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/) (Natural Sciences section)	
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Social and Behavioral Sciences (http://catalog.gmu.edu/mason-core/#social-behavioral-science)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Total Credits		21

[1]

Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/).

Electives

Code	Title	Credits
Select 6 credits of electives		6
Total Credits		6

Concentration in Geoinformatics (GINF)

Foundation

Code	Title	Credits
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
GGS 102	Physical Geography (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
GGS 103	Human Geography (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
GGS 110	Introduction to Geoinformation Technologies	3
GGS 300	Quantitative Methods for Geographical Analysis	3
STAT 250	Introductory Statistics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
Total Credits		18

[1]

Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
GGS 310	Cartographic Design	3
GGS 311	Geographic Information Systems	3
GGS 366	Spatial Computing	3
GGS 379	Remote Sensing	3
Select 12 credits from the following:		12
GGS 354	Data Analysis and Global Change Detection Techniques	
GGS 411	Geovisualization	
GGS 416	Satellite Image Analysis	
GGS 422	Drone Remote Sensing	
GGS 426	Physical Fundamentals of Remote Sensing	
GGS 429	Remote Sensing of the Environment and Earth System	
GGS 462	Web-based Geographic Information Systems	
GGS 463	RS: GIS Analysis and Application	
GGS 470	Special Topics in Geographic Techniques	
Total Credits		24

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or COMM 101	Fundamentals of Communication (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core) (http://catalog.gmu.edu/mason-core/)	

or ENGH 101	Composition (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/) (Natural Sciences section)	
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Lab Science		4
Total Credits		25

[1]

Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/).

Electives

Code	Title	Credits
Select 4 credits of electives		4
Total Credits		4

Concentration in Software Engineering (SWE)

Foundation

Code	Title	Credits
STAT 344	Probability and Statistics for Engineers and Scientists I	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
Total Credits		6

[1]

Requires a grade of C or better to satisfy the Mason Core synthesis requirement.

Core

Code	Title	Credits
SWE 205	Software Usability Analysis and Design	3
SWE 301	Internship Preparation	0
SWE 401	Internship Reflection	1
SWE 419	Object-Oriented Software Design and Implementation	3
SWE 437	Software Testing and Maintenance	3
Total Credits		10

SWE Related

Code	Title	Credits
Select 15 credits from the following:		15
CS 450	Database Concepts	
CS 455	Computer Communications and Networking	
CS 463	Comparative Programming Languages	
CS 465	Computer Systems Architecture	

Code	Title	Credits
CS 468	Secure Programming and Systems	
CS 475	Concurrent and Distributed Systems	
CS 477	Mobile Application Development	
CS 478	Natural Language Processing	
CS 491	Industry-Sponsored Senior Design Project	
SWE 432	Web Application Development	
SWE 443	Software Architectures	
SYST 469	Human Computer Interaction	
Total Credits		15

Cross-Disciplinary

Code	Title	Credits
ENGH 388	Professional and Technical Writing	3
Select one from the following:		3
PSYC 333	Industrial and Organizational Psychology (Mason Core) (http://catalog.gmu.edu/mason-core/)	
COMM 320	Business and Professional Communication	
COMM 335	Organizational Communication	
Total Credits		6

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or COMM 101	Fundamentals of Communication (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or ENGH 101	Composition (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/) (Natural Sciences section)	
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3
Social and Behavioral Sciences (http://catalog.gmu.edu/mason-core/#social-behavioral-science)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Natural Science (http://catalog.gmu.edu/mason-core/#natural-science)		7
Total Credits		31

[1]

Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/).

Electives

Code	Title	Credits
Select 3 credits of electives		3
Total Credits		3

Concentration in Technology Policy (TCHP)

Foundation

Code	Title	Credits
GOVT 101	Democratic Theory and Practice (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
or GOVT 103	Introduction to American Government (Mason Core) (http://catalog.gmu.edu/mason-core/)	
GOVT 134	Grand Challenges to Human Security (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
GOVT 150	Introduction to Technology Policy	3
GOVT 300	Research Methods and Analysis (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
Total Credits		13

Core

Code	Title	Credits
GOVT 352	Responsible Innovation	3
GOVT 363	Science and Technology Institutions/Policy	3
GOVT 366	Public Policy Analysis	3
or GOVT 367	Money, Markets and Economic Policy (Mason Core) (http://catalog.gmu.edu/mason-core/)	
or GOVT 368	Tools for Economic Policy Analysis	
GOVT 426	Political Theory of Autonomous Algorithms	3
GOVT 460	Surveillance and Privacy in Contemporary Society	3
GOVT 490	Synthesis Seminar (Mason Core) (http://catalog.gmu.edu/mason-core/) [1]	3
or CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Total Credits		18

[1]

GOVT 490 enrollment must be in a section titled "Senior Seminar: Computing, Ethics & Law".

TCHP Related

Code	Title	Credits
Select 12 credits from the following:		12
GOVT 304	American State and Local Government	
GOVT 312	Political Parties and Campaigns	
GOVT 318	Interest Groups, Lobbying, and the Political Process	
GOVT 351	Administration in the Political System	
GOVT 369	Cybersecurity Policy	
GOVT 400	Issues in Political Analysis	
GOVT 414	Politics of Race and Gender	

Code	Title	Credits
GOVT 435	Data Analysis for Comparative and International Politics	
GOVT 444	Issues in International Studies	
GOVT 446	International Law and Organization	
GOVT 461	Governance in Space	
GOVT 462	Public Interest Technology	
GOVT 464	Issues in Public Policy and Administration	
GOVT 480	Internship	
Total Credits		12

Additional Mason Core

Code	Title	Credits
Oral Communication		
COMM 100	Public Speaking (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
or COMM 101	Fundamentals of Communication (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Written Communication		
ENGH 100	Composition for Multilingual Writers (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
or ENGH 101	Composition (Mason Core) (http://catalog.gmu.edu/mason-core/)	
Advanced Composition		
ENGH 302	Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/) (Natural Sciences section) [1]	3
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Natural Science (http://catalog.gmu.edu/mason-core/#natural-science)		7
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3

Electives

Code	Title	Credits
Select 3 credits of electives		3
Total Credits		3

[1]

Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core) (http://catalog.gmu.edu/mason-core/).

4-Year Plan

Bachelor of Science in Applied Computer Science

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

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.

Entry Requirements

Students must be seeking a Bachelor of Science in Computer Science or a Bachelor of Science in Applied Computer Science and must apply for entry into the CS Honors Program after completing 12 credits of CS courses. Applicants must meet the GPA requirements outlined below to enter into the CS Honors Program.

Honors Requirements

CS Honors Program students must fulfill all standard courses required by the Bachelor of Science in Computer Science or Applied Computer Science degree as well as the following additional requirements:

- GPA Requirement: Students must maintain an overall GPA of at least 3.50 and a GPA of at least 3.50 for courses which count towards the BS/CS or BS/ACS major including math, natural sciences, and all CS/SWE courses.
- Research Project Requirement: Students must complete a significant research project prior to graduation. Students should seek out a CS faculty member willing to serve as their research advisor for the project. The project should comprise original work by the student and be demonstrated via two channels:
  a. a written project report that is approved by the student's research advisor and submitted to the department;
  b. a presentation of the project to an audience of students and/or faculty.
- Advanced Course Requirement: At least two Advanced Courses must be completed. A complete list of acceptable advanced courses is maintained by the CS department and is available on the department web site.

Accelerated Master's

Applied Computer Science, BS/Computer Science, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS (http://catalog.gmu.edu/colleges-schools/engineering/computer-science/applied-computer-science-bs/) can complete both a BS-ACS and a Computer Science, MS (http://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-ms/) in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Computer Science, BS (http://catalog.gmu.edu/colleges-schools/engineering/computer-science/applied-computer-science-bs/) program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Computer Science, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Data Analytics Engineering, MS (http://catalog.gmu.edu/colleges-schools/engineering-computing/data-analytics-engineering-ms/) in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 9 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses. For all students in the Applied Computer Science, BS program:

Code	Title	Credits
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3

Students in the Software Engineering and Bioinformatics concentrations of the Applied Computer Science, BS (http://catalog.gmu.edu/colleges-schools/engineering/computer-science/applied-computer-science-bs/) program may also register for:

Code	Title	Credits
CS 550	Database Systems (to replace CS 450)	3

Students in the Computer Game Design and Geography concentrations of the Applied Computer Science, BS program may also register for one or both of the following courses:

Code	Title	Credits
CS 550	Database Systems (to replace CS 450)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3

Notes:

- For students in the Computer Game Design and Geography concentrations of the Applied Computer Science, BS program, one of the 500 level courses will count as an elective towards their undergraduate degree.

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students must still take the DAEN core courses (AIT 580 Analytics Big Data to Information, OR 531 Analytics and Decision Analysis, and STAT 515 Applied Statistics and Visualization for Analytics).
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Computer Science, BS/Information Systems, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS program can complete both a BS-ACS and an Information Systems, MS (http://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/information-sciences-technology/information-systems-ms/) in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3

CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Computer Science, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Software Engineering, MS (http://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/computer-science/software-engineering-ms/) in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75

undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.