BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE (STEM)

The bachelor of science (BS) program in computer science provides general education, strength in mathematics and science, communication, and an in-depth program in computer science, including an 8-credit senior design project that closely models "industrial-strength" project development.

As part of a residency requirement, all BS in computer science majors must take a minimum of 30 upper-level credits in computer science at GW. These credits include courses that students might take in an approved study abroad program.

Detailed information concerning the program curriculum is available in this Bulletin, which is the definitive statement of degree requirements and is updated to reflect and archive (https://bulletin.gwu.edu/archives/) the requirements for each entering class.

Double major

SEAS and non-SEAS students interested in pursuing the BS in computer science as a double major should see Double Major under SEAS Regulations (https://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext) in this Bulletin.

This is a STEM designated program.

Visit the program website (https://www.cs.seas.gwu.edu/bachelor-science-program/) for additional information.

ADMISSIONS

For more information on the admission process, please visit the Office of Undergraduate Admissions website. Applications may be submitted via the Common Application.

Supporting documents not submitted online should be mailed to:
Office of Undergraduate Admissions
The George Washington University
800 21st Street NW, Suite 100
Washington DC 20052

Contact for questions:
gwadm@gwu.edu or 202-994-6040

REQUIREMENTS

Residency requirement—As part of a residency requirement, all BS computer science majors, whether majors within SEAS or secondary majors in another school, must take a minimum of 30 upper-level credits in computer science courses at GW. Should a student pursue an approved study abroad program, credits earned in that program count toward this requirement.

Recommended program of study

Code	Title	Credits
First semester		**14**
CSCI 1010	Computer Science Orientation	1
CSCI 1111	Introduction to Software Development	3
SEAS 1001	Engineering Orientation	1
MATH 1231	Single-Variable Calculus I	3
or MATH 1221	Calculus with Precalculus II	
Humanities elective [2]		3
Social sciences elective [2]		3
Second semester		**16**
UW 1020	University Writing [1]	4
CSCI 1112	Algorithms and Data Structures	3
CSCI 1311	Discrete Structures I	3
MATH 1232	Single-Variable Calculus II	3
Social sciences elective [2]		3
Third semester		**16**
CSCI 2113	Software Engineering	3
CSCI 2312	Discrete Structures II	3
CSCI 2410	Systems Programming	3
Science requirement [3]		4
SEAS non-technical elective [2]		3
Fourth semester		**15**
CSCI 2541	Database Systems and Team Projects	3
CSCI 3313	Foundations of Computing	3
CSCI 3401	Computer Architecture and Organization	3
Policy and ethics requirement [4]		3
Statistics or linear algebra requirement [5]		3
Fifth semester		**15**
CSCI 3212	Algorithms	4
CSCI 3411	Operating Systems	4
Science requirement [3]		4
Computer science technical elective [6]		3

Sixth semester		15
Computer science technical elective [6]		3
Statistics or linear algebra requirement [5]		3
SEAS non-technical elective [2]		3
General elective [7]		3
General elective [7]		3
Seventh semester		**16**
CSCI 4243W	Capstone Design Project I	4
Computer science technical elective [6]		3
SEAS non-technical elective [2]		3
General elective [7]		3
General elective [7]		3
Eighth semester		**16**
CSCI 4244	Capstone Design Project II	4
General elective [7]		3
General elective [7]		3
General elective [7]		3
General elective [7]		3

[1]Fulfills the University General Education Requirement (https://bulletin.gwu.edu/university-regulations/general-education/) in writing. UW 1020 must be completed prior to taking any writing course in the major. After successful completion of UW 1020, 6 credits distributed over at least two different Writing in the Disciplines (WID) courses taken in separate semesters are required. (Summer counts as one semester.) WID courses are designated by a "W" appended to the course number.

[2]Humanities, social science, and non-technical elective requirements: All BS in computer science students must take one humanities course and two social sciences courses from the University General Education course list (https://bulletin.gwu.edu/university-regulations/general-education/) and three additional SEAS non-technical elective courses (https://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext).

[3]Science requirement: Can be met by taking two courses selected from BISC 1111 Introductory Biology: Cells and Molecules, BISC 1112 Introductory Biology: The Biology of Organisms, CHEM 1111 General Chemistry I, CHEM 1112 General Chemistry II, PHYS 1021 University Physics I, or PHYS 1022 University Physics II.

[4]Policy and ethics requirement: Can be met by taking one course from the following: ANTH 3625 Ethnographic and Historical

Perspectives on Data Ethics, CSCI 2211 Computing and the World, PHIL 2135 Ethics in Business and the Professions, or CSCI 3532 Information Ethics and Policy.

[5]Statistics or linear algebra requirement: Students must take both a statistics course and a linear algebra course. The statistics requirement can be met by taking APSC 3115 Engineering Analysis III, CSCI 3362 Probability for Computer Science, CSCI 4341 Continuous Algorithms, or STAT 4157 Introduction to Mathematical Statistics I. The linear algebra requirement can be met by taking CSCI 4342 Computational Linear Algebra and Applications, EMSE 2705 Mathematics of Operations Research, MATH 2184 Linear Algebra I, or MATH 2185 Comprehensive Introduction to Linear Algebra.

[6]Computer science technical elective requirement: Students in the BS in computer science program must take three technical courses (for a minimum total of 9 credits) in computer science coursework. All courses must be numbered 4000 and above.

[7]General elective requirement: Students must complete 24 credits in general elective courses. All courses transferred to the University as credit by examination, e.g., Advanced Placement (AP) or International Baccalaureate (IB) credit, must have the explicit, documented approval from CS faculty. Both technical and non-technical courses from across the University can be used to meet these requirements; however, they must meet the following guidelines:

a. Courses can be combined toward the minimum of 24 credits. Lifestyle, Sport, and Physical Activity (LSPA) courses do not count toward SEAS degree requirements.

b. Variable topics (typically 1099) and special topics courses outside of Computer Science require advisor approval.

c. Credit cannot be earned for internships.

d. No more than one 3-credit research course (e.g. CSCI 3908) can be taken in a single semester.

e. Courses from other departments that significantly overlap with, or are not as advanced as, the required content for the computer science degree program do not count toward this requirement. Such courses include, but are not limited to, basic programming classes and the following: BADM 2301 Management Information Systems Technology, ECON 1001 Principles of Mathematics for Economics, EMSE 4197 Special Topics, ISTM 3119 Introduction to Programming, ISTM 4120 Business Systems Development, ISTM 4121 Database Principles and Applications, ISTM 4123 Business Data Communications, PHYS 1011 General Physics I, PUBH 4201 Practical Computing, PUBH 4202 Bioinformatics Algorithms and Data Structures, STAT 1051 Introduction to Business and Economic Statistics, STAT 1053 Introduction to Statistics in Social Science, STAT 1129 Introduction to Computing, and courses from the Professional Studies-Integrated Information, Science, and Technology (PSIS) and the Professional Studies-

Cybersecurity Strategy and Information Management (PSCS) programs.

f. CSCI courses numbered below 3000 do not counted toward this requirement. Exceptions can be made for students who took such courses prior to transferring into the BS in computer science degree program.

g. Students taking MATH 1220 Calculus with Precalculus I as a prerequisite for MATH 1221 Calculus with Precalculus II can count MATH 1220 Calculus with Precalculus I as a general elective.

h. SEAS has the following requirements for foreign language courses taken to meet general electives, humanities, or social sciences requirements:

- The foreign language studied cannot be a native language of the student unless the courses taken are literature courses.
- If a student has previously studied the language they must first take a placement test given by the language department and enroll in a course recommended by the respective language department.

COMBINED PROGRAMS

Combined programs

- Dual Bachelor of Science with a major in computer science and Master of Science in the field of computer science (https://bulletin.gwu.edu/engineering-applied-science/computer-science/combined-bs-ms-computer-science/)
- Dual Bachelor of Science with a major in computer science and Master of Science in the field of computer engineering

- Dual Bachelor of Science with a major in computer science and Master of Science in the field of cybersecurity in computer science (https://bulletin.gwu.edu/engineering-applied-science/computer-science/combined-bs-ms-cybersecurity/)
- Dual SEAS Bachelor of Science majors and Master of Science in the field of computer science (https://bulletin.gwu.edu/engineering-applied-science/computer-science/combined-seas-bs-ms-computer-science/)
- Dual SEAS Bachelor of Science majors and Master of Science in the field of cybersecurity in computer science (https://bulletin.gwu.edu/engineering-applied-science/computer-science/combined-seas-bs-ms-cybersecurity/)