BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE

The program combines software development, computer systems and architecture, algorithms, project design, science, and mathematics to provide a strong foundation in the underpinnings of computer science. Students are prepared to design and implement software needed for Internet operations, computer graphics and animation, secure systems, and applications for small, large, and embedded systems. In consultation with the advisor, students choose a technical track and a non-technical track. The technical track provides depth in a particular area of computer science, while the non-technical track enables students to stay current with the rapidly evolving field and to establish the relevance of their studies in the ever-changing global environment. The BS in computer science degree program is accredited by ABET.

Medical Preparation Option in Computer Science

This option is for students interested in pursuing a computer science major as they prepare to apply to a medical school. The degree program combines additional natural science course work with computer science course requirements.

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

Bachelor of Science With a Second Major in Computer Science

Students who are not enrolled in the School of Engineering and Applied Sciences (SEAS), who are enrolled in another Bachelor of Science program, but wish to declare a second major in computer science must apply and be admitted to the second major program in computer science. Students in this program must follow the same degree requirements as those receiving a Bachelor of Science in computer science as their primary major.

Criteria for admission:

To be considered for admission to the second major in computer science, a student must satisfy the following criteria:

• Take CSCI 1111 Introduction to Software Development or CSCI 1011 Introduction to Programming with Java or CSCI 1121 Introduction to C Programming and receive at least a B OR make a B or better in CSCI 1112 Algorithms and Data Structures; receive a minimum grade of B– in MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II or in MATH 1231 Single-Variable Calculus I.

• A minimum overall grade-point average of 3.0 at the time of application to the major.

• The application is due no later than the start of the fifth semester of study at GW or completion of the 60th credit, whichever comes first.

Contact the School of Engineering and Applied Science Undergraduate Advising Office (https://www.seas.gwu.edu/academic-advising) for current application deadlines for the second major in computer science.

Credits in residence requirement:

• For a second major, at least 24 credits in computer science courses must be completed in SEAS.

Graduation grade-point average criteria:

• To satisfactorily complete a second major in computer science, a student must have a minimum grade-point average of 2.2 in all the computer science courses. See the department webpage (http://www.seas.gwu.edu/department-computer-science) for more information on curriculum requirements for the second major in computer science.

REQUIREMENTS

Recommended program of study

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td><strong>First semester</strong></td>
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<tr>
<td>UW 1020</td>
<td>University Writing *</td>
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<td>CSCI 1010</td>
<td>Computer Science Orientation</td>
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<tr>
<td>CSCI 1111</td>
<td>Introduction to Software Development</td>
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<td>SEAS 1001</td>
<td>Engineering Orientation</td>
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<td>Math requirement *</td>
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<td>Humanities or social sciences elective **</td>
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<td><strong>Second semester</strong></td>
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<tr>
<td>CSCI 1311</td>
<td>Discrete Structures I</td>
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<tr>
<td>CSCI 1112</td>
<td>Algorithms and Data Structures</td>
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<td>Humanities or social sciences elective **</td>
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<td><strong>Third semester</strong></td>
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<td>CSCI 2312</td>
<td>Discrete Structures II</td>
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<td>CSCI 2461</td>
<td>Computer Architecture I</td>
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<td>CSCI 2113</td>
<td>Software Engineering</td>
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<td>Science requirement *</td>
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<td>Humanities or social sciences elective **</td>
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<td><strong>Fourth semester</strong></td>
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CSCI 3410 Systems Programming  
CSCI 2541W Database Systems and Team Projects  
CSCI 2501 Ethical Issues in Computing  
Computer science elective  
Science requirement  
Statistics requirement - one of the following:  
CSCI 4341 Continuous Algorithms  
CSCI 3362 Probability for Computer Science  
APSC 3115 Engineering Analysis III  
STAT 4157 Introduction to Mathematical Statistics I  
**Fifth semester**  
CSCI 3313 Foundations of Computing  
CSCI 3212 Algorithms  
CSCI 3411 Operating Systems  
Humanities or social sciences elective  
**Sixth semester**  
Technical track elective  
Non-technical track elective  
Math or science elective  
Humanities or social sciences elective  
Unrestricted elective  
**Seventh semester**  
CSCI 4243W Capstone Design Project I  
Technical track elective  
Non-technical track elective  
Humanities or social sciences elective  
Unrestricted elective  
**Eighth semester**  
CSCI 4244 Capstone Design Project II  
Technical track elective  
Non-technical track elective  
Two unrestricted electives

*Course satisfies the university general education requirement in math, science, or writing. UW 1020 must be completed prior to any writing course in the major, including CSCI 2441W Database Systems and Team Projects. CSCI 2541W Database Systems and Team Projects.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (http://bulletin.gwu.edu/university-regulations/general-education); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf)

***Any CSCI course numbered 3000 or above.

Mathematics requirements can be met by taking MATH 1220 Calculus with Precalculus I-MATH 1221 Calculus with Precalculus II and MATH 1232 Single-Variable Calculus II or by taking MATH 1231 Single-Variable Calculus I and MATH 1232 Single-Variable Calculus II. All students must take two math courses not counting MATH 1220 Calculus with Precalculus I; students who take MATH 1220 Calculus with Precalculus I must take it as one of their unrestricted electives.

Science requirements can be met by choosing from BISC 1115 Introductory Biology: Cells and Molecules and BISC 1125 Introduction to Cells and Molecules Laboratory, BISC 1116 Introductory Biology: The Biology of Organisms and BISC 1126 Introduction to Organisms Laboratory, CHEM 1111 General Chemistry I-CHEM 1112 General Chemistry II, and PHYS 1021 University Physics I-PHYS 1022 University Physics II. The three science requirement courses must include a two-course sequence.

CSCI 4341 Continuous Algorithms and CSCI 3362 Probability for Computer Science/CSCI 6362 Probability for Computer Science may count toward the statistics requirement or the math/science elective, but not both. Students who were admitted prior to fall 2014 may count STAT 1051 Introduction to Business and Economic Statistics and STAT 1053 Introduction to Statistics in Social Science toward the statistics requirement, if they took the course prior to the spring 2015 semester.

Some examples of technical tracks include computer security and information assurance, digital media, foundations and theory, biomedical computing, systems, software engineering and applications and research. Examples of non-technical tracks include business, project management, global engineering, pre-law, and environment and climate.
change. Students may define their own non-technical track in consultation with their advisor. More information on the tracks and track requirements may be found on the program website (http://www.cs.seas.gwu.edu/bachelor-science-program).