

# BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER ENGINEERING

GW's Computer Engineering program will prepare you to specialize in computer systems architecture, computer communications networking, and very-large-scale integrated (VLSI) systems. You'll build on your classroom experience by having the opportunity to be involved in cutting-edge, high-profile research opportunities and internships at federal laboratories and high-tech companies—made possible by our location in the nation's capital. Our Computer Engineering community is a close-knit family of faculty and students and as part of this community, you will benefit from smaller class sizes and have access to our state-of-the-art high-performance computers. Graduates of our program have gone on to have career paths at companies such as Intel, Qualcomm, Google, Microsoft, and Apple—or have continued their education at the top graduate and doctorate programs in the country.

Visit the program website (<http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering/>) 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

The following requirements must be fulfilled:

129 credits as outlined below.

A minimum technical GPA of 2.20 and SEAS GPA of 2.00. A student's technical GPA is calculated using all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semester of curriculum.

### Recommended program of study

The plan of study lists all course requirements in sequence for the degree. Students should review this information carefully and consult their advisor before changing the sequence of any courses.

Code	Title	Credits
<b>First semester</b>		
CHEM 1111	General Chemistry I <sup>1</sup>	
ECE 1010	Introduction to Electrical and Computer Engineering I	
MATH 1231	Single-Variable Calculus I <sup>1</sup>	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing <sup>1</sup>	
	One humanities or social sciences elective <sup>2</sup>	
<b>Second semester</b>		
CSCI 1311	Discrete Structures I	
ECE 1020	Introduction to Electrical and Computer Engineering II	
ECE 1120	C Programming for Electrical and Computer Engineering	
MATH 1232	Single-Variable Calculus II <sup>1</sup>	
PHIL 2135	Ethics in Business and the Professions	
PHYS 1021	University Physics I <sup>1</sup>	
	or PHYS 1025 University Physics I with Biological Applications	
<b>Third semester</b>		
APSC 2113	Engineering Analysis I	
ECE 1125	Data Structures and Algorithms for ECE	
ECE 2110	Circuit Theory	
ECE 2120	Engineering Seminar	
MATH 2233	Multivariable Calculus <sup>1</sup>	
PHYS 1022	University Physics II <sup>1</sup>	
	or PHYS 1026 University Physics II with Biological Applications	
<b>Fourth semester</b>		
APSC 3115	Engineering Analysis III	
CSCI 2113	Software Engineering	
ECE 2115	Engineering Electronics	
ECE 2140	Design of Logic Systems	
ECE 2210	Circuits, Signals, and Systems	

**Fifth semester**

ECE 3130 Digital Electronics and Design

ECE 3220 Introduction to Digital Signal Processing

ECE 3515 Computer Organization

ECE 3520 Microprocessors: Software, Hardware, and Interfacing

One technical elective <sup>3</sup>**Sixth semester**

ECE 3135 Digital Design with FPGAs

ECE 3525 Introduction to Embedded Systems

ECE 3915W Electrical and Computer Engineering Capstone Project Lab I

ECE 4415 Introduction to Computer Networks

ECE 4425 Data Communications Laboratory

One technical elective <sup>3</sup>**Seventh semester**

ECE 4140 VLSI Design and Simulation

ECE 4535 Computer Architecture and Design

ECE 4920W Electrical and Computer Engineering Capstone Project Lab II

One humanities or social sciences elective <sup>2</sup>One technical elective <sup>3</sup>**Eighth semester**

ECE 4150 ASIC Design and Testing of VLSI Circuits

ECE 4925W Electrical and Computer Engineering Capstone Project Lab III

Two humanities or social sciences electives <sup>2</sup>One technical elective <sup>3</sup>

<sup>1</sup> Course satisfies the university general education requirement in math, science, and writing.

<sup>2</sup>All electrical and computer engineering students take five courses to satisfy the ECE humanities and social science/non-technical requirement. Three of these courses—one in humanities and two in social sciences—must be on the University General Education Requirement list; one course must be PHIL 2135 Ethics in Business and the Professions (or NSC 4176 Leadership and Ethics for

students in the NROTC Program); and one course can be in the humanities/social sciences, or a non-technical course related to public health, safety, and welfare; global cultural, social, environmental, and economic factors; or innovation, entrepreneurship, and creativity. For the last category, students can consider taking DNSC 1051 Introduction to Business Analytics, DNSC 4404 Essentials of Project Management, EMSE 4410 Engineering Economic Analysis, ISTM 4223 Innovation Ventures MGT 3300 Entrepreneurship, MGT 3301 Small Business Management, MGT 3302 e-Entrepreneurship, MGT 3303 Women's Entrepreneurial Leadership, or MGT 4003 Management of the Growing Entrepreneurial Venture. The non-technical course cannot focus on scientific/mathematical approaches or technology. All courses selected to satisfy this requirement must be taken for a minimum of 3 credits and approved by the advisor.

<sup>3</sup>Four 3-credit technical elective courses must be chosen with the approval of the advisor from upper division undergraduate (2000 to 4000 level) or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences. At least one of the technical electives must be math or science course at the 2000-level or above. Exceptions from the rule must be approved by the advisor.

## COMBINED PROGRAM

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