

# BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING, ENERGY OPTION

The bachelor of science with a major in electrical engineering, energy option prepares students to work in technical energy fields such as electric utility companies and in research into improved methods of generation, transmission, and distribution of electrical energy.

The electrical engineering program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

## Double major

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

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](mailto:gwadm@gwu.edu) or 202-994-6040

## REQUIREMENTS

| Code | Title | Credits |
|------|-------|---------|
|------|-------|---------|

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.

### First semester

|           |                                  |  |
|-----------|----------------------------------|--|
| 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>                       |
| Humanities, social science, or non-technical elective <sup>2</sup> |   |

### Second semester

|  |  |
|--|--|
| 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      |
| Humanities, social science, or non-technical elective <sup>2</sup> |  |

### Third semester

|              |  |
|--------------|--|
| APSC 2057    | Analytical Mechanics I                             |
| APSC 2113    | Engineering Analysis I                             |
| 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 |

### Fourth Semester

|           |                                |
|-----------|--------------------------------|
| APSC 2058 | Analytical Mechanics II        |
| APSC 2114 | Engineering Analysis II        |
| ECE 2115  | Engineering Electronics        |
| ECE 2210  | Circuits, Signals, and Systems |
| ECE 2140  | Design of Logic Systems        |

### Fifth Semester

|           |   |
|-----------|---|
| APSC 3115 | Engineering Analysis III                  |
| ECE 3130  | Digital Electronics and Design            |
| ECE 3220  | Introduction to Digital Signal Processing |

|          |  |
|----------|--|
| ECE 3315 | Fields and Waves I                                   |
| ECE 3520 | Microprocessors: Software, Hardware, and Interfacing |

### Sixth Semester

|           |  |
|-----------|--|
| ECE 3125  | Analog Electronics Design                                  |
| ECE 3915W | Electrical and Computer Engineering Capstone Project Lab I |
| ECE 4320  | Fields and Waves II  |
| MAE 2131  | Thermodynamics   |
| MAE 3134  | Linear System Dynamics                                     |

### Seventh Semester

|           |   |
|-----------|---|
| ECE 4620  | Electrical Power Systems                                    |
| ECE 4710  | Control Systems Design                                      |
| ECE 4920W | Electrical and Computer Engineering Capstone Project Lab II |

Humanities, social science, or non-technical elective <sup>2</sup>

One technical elective <sup>3</sup>

### Eighth Semester

|           |  |
|-----------|--|
| ECE 3410  | Communications Engineering                                   |
| ECE 4610  | Electrical Energy Conversion                                 |
| ECE 4662  | Power Electronics  |
| ECE 4925W | Electrical and Computer Engineering Capstone Project Lab III |

Humanities, social science, or non-technical elective <sup>2</sup>

requirement must be taken for a minimum of 3 credits and approved by the advisor.

<sup>3</sup> One 3-credit technical elective course must be selected 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. Exceptions must be approved by the advisor.

<sup>1</sup> Course satisfies the University General Education Requirement (<https://bulletin.gwu.edu/university-regulations/general-education/>) in math, science, and writing.

<sup>2</sup> All electrical and computer engineering students take five courses to satisfy the ECE humanities, social science, or non-technical elective 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 (or NSC 4176 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, DNSC 4404, EMSE 4410, ISTM 4223, MGT 3300, MGT 3301, MGT 3302, MGT 3303, or MGT 4003. The non-technical course cannot focus on scientific/mathematical approaches or technology. All courses selected to satisfy this