BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING, MEDICAL PREPARATION OPTION

The bachelor of science with a major in electrical engineering, medical option degree program prepares students for application to medical school. Students are prepared to work in various health sciences fields, to conduct research toward development of electronic equipment to assist in diagnosing and treating disease, or to continue as a graduate student in engineering with exceptional qualifications for biomedical engineering.

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 (http://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.

**REQUIREMENTS**

The following requirements must be fulfilled:

- 131 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.

### Code | Title | Credits
--- | --- | ---
**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

- **BISC 1111** Introductory Biology: Cells and Molecules
- **CHEM 1111** General Chemistry I
- **ECE 1010** Introduction to Electrical and Computer Engineering
- **MATH 1231** Single-Variable Calculus I
- **UW 1020** University Writing

### Second semester

- **CHEM 1112** General Chemistry II
- **ECE 1020** Introduction to Electrical and Computer Engineering II
- **ECE 1120** C Programming for Electrical and Computer Engineering
- **MATH 1232** Single-Variable Calculus II
- **PHYS 1021** University Physics I
  - or **PHYS 1025** University Physics I with Biological Applications

### Third semester

- **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

### Fourth Semester

- **BISC 1112** Introductory Biology: The Biology of Organisms
- **ECE 2115** Engineering Electronics
- **ECE 2140** Design of Logic Systems
- **ECE 2210** Circuits, Signals, and Systems
- **PHYS 1022** University Physics II
  - or **PHYS 1026** University Physics II with Biological Applications

### Fifth Semester

- **APSC 3115** Engineering Analysis III
- **CHEM 2151** Organic Chemistry I
- **CHEM 2153** Organic Chemistry Laboratory I
- **ECE 3130** Digital Electronics and Design
- **ECE 3220** Introduction to Digital Signal Processing
- **ECE 3520** Microprocessors: Software, Hardware, and Interfacing

### Sixth Semester

- **CHEM 2151** Organic Chemistry I
- **CHEM 2153** Organic Chemistry Laboratory I
- **ECE 3130** Digital Electronics and Design
- **ECE 3220** Introduction to Digital Signal Processing
- **ECE 3520** Microprocessors: Software, Hardware, and Interfacing
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CHEM 2152</td>
<td>Organic Chemistry II</td>
</tr>
<tr>
<td>CHEM 2154</td>
<td>Organic Chemistry Laboratory II</td>
</tr>
<tr>
<td>ECE 3125</td>
<td>Analog Electronics Design</td>
</tr>
<tr>
<td>ECE 3310</td>
<td>Introduction to Electromagnetics</td>
</tr>
<tr>
<td>ECE 3410</td>
<td>Communications Engineering</td>
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<tr>
<td>ECE 3915W</td>
<td>Electrical and Computer Engineering Capstone Project Lab I</td>
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**Seventh Semester**

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BME 3820</td>
<td>Engineering Analysis of Neural, Muscular, and Cardiovascular Physiology</td>
</tr>
<tr>
<td>ECE 4710</td>
<td>Control Systems Design</td>
</tr>
<tr>
<td>ECE 4920W</td>
<td>Electrical and Computer Engineering Capstone Project Lab II</td>
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Humanities, social science, or non-technical elective ²

One technical elective ³

**Eighth Semester**

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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECE 4925W</td>
<td>Electrical and Computer Engineering Capstone Project Lab III</td>
</tr>
<tr>
<td>PHIL 2135</td>
<td>Ethics in Business and the Professions</td>
</tr>
</tbody>
</table>

Two humanities, social science, or non-technical electives ²

One technical elective ³

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

² 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 requirement must be taken for a minimum of 3 credits and approved by the advisor.

³ Two 3-credit technical elective courses 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.