The students must earn a C- grade or better in each course.

**Minimum Requirements for Electrical Engineering B.S.: 125 credits**

Students must earn a C- grade or better in each course.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>General University Requirements</strong></td>
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<tr>
<td>Complete the general university requirements. <a href="https://catalog.uaf.edu/bachelors/#bachelorofsciencetext">https://catalog.uaf.edu/bachelors/#bachelorofsciencetext</a></td>
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<tr>
<td><strong>General Education Requirements</strong></td>
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<td>36-40</td>
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<tr>
<td>Complete the general education requirements. <a href="https://catalog.uaf.edu/bachelors/#generaleducationrequirementstext">https://catalog.uaf.edu/bachelors/#generaleducationrequirementstext</a></td>
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<tr>
<td>As part of the general education requirements, complete the following:</td>
<td></td>
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<tr>
<td>CHEM F105X</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM F106X</td>
<td>General Chemistry II</td>
<td></td>
</tr>
<tr>
<td>or PHYS F213X</td>
<td>Elementary Modern Physics</td>
<td></td>
</tr>
<tr>
<td>MATH F251X</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td><strong>B.S. Degree Requirements</strong></td>
<td></td>
<td>16</td>
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<tr>
<td>Complete the B.S. degree requirements. <a href="https://catalog.uaf.edu/bachelors/#bachelorofsciencetext">https://catalog.uaf.edu/bachelors/#bachelorofsciencetext</a></td>
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</tr>
<tr>
<td>As part of the B.S. requirements, complete the following:</td>
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<td></td>
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<tr>
<td>MATH F252X</td>
<td>Calculus II</td>
<td></td>
</tr>
<tr>
<td>PHYS F211X</td>
<td>General Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS F212X</td>
<td>General Physics II</td>
<td></td>
</tr>
<tr>
<td><strong>Electrical Engineering Program Requirements</strong></td>
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</tr>
<tr>
<td>Complete the following:</td>
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<tr>
<td>EE F102</td>
<td>Introduction to Electrical and Computer Engineering</td>
<td>3</td>
</tr>
<tr>
<td>EE F203</td>
<td>Electric Circuits</td>
<td>4</td>
</tr>
<tr>
<td>EE F243</td>
<td>Digital Systems Design</td>
<td>4</td>
</tr>
<tr>
<td>EE F253</td>
<td>Circuit Theory</td>
<td>3</td>
</tr>
<tr>
<td>EE F301</td>
<td>Analytical Methods for Electrical and Computer Engineers</td>
<td>3</td>
</tr>
<tr>
<td>EE F303</td>
<td>Electric Power Systems and Machines</td>
<td>4</td>
</tr>
<tr>
<td>EE F311</td>
<td>Engineering Electromagnetics I</td>
<td>3</td>
</tr>
<tr>
<td>EE F331</td>
<td>High-frequency Lab</td>
<td>1</td>
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<tr>
<td>EE F333</td>
<td>Electronic Devices</td>
<td>4</td>
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<tr>
<td>EE F354</td>
<td>Engineering Signal Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EE F444</td>
<td>Embedded Systems Design</td>
<td>4</td>
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<tr>
<td>EE F451</td>
<td>Digital Signal Processing</td>
<td>4</td>
</tr>
<tr>
<td>EE F461</td>
<td>Communication Systems and Networks</td>
<td>4</td>
</tr>
<tr>
<td>EE F471</td>
<td>Automatic Control</td>
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<tr>
<td>EE F481</td>
<td>Electrical and Computer Engineering Design I</td>
<td>1</td>
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<tr>
<td>EE F482</td>
<td>Electrical and Computer Engineering Design II</td>
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</tbody>
</table>

**Electives**

Complete three approved upper division EE elective courses.

Graduate level EE and upper level and graduate CS courses may be used as electives upon approval.

**Recommended Electives:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE F334</td>
<td>Electronic Circuit Design</td>
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</tr>
<tr>
<td>EE F404</td>
<td>Electric Power Systems Analysis</td>
<td></td>
</tr>
<tr>
<td>EE F406</td>
<td>Electric Power Protection and Control Systems</td>
<td></td>
</tr>
<tr>
<td>EE F408</td>
<td>Power Electronics Design</td>
<td></td>
</tr>
<tr>
<td>EE F412</td>
<td>Engineering Electromagnetics II</td>
<td></td>
</tr>
<tr>
<td>EE F443</td>
<td>Computer Engineering Analysis and Design</td>
<td></td>
</tr>
<tr>
<td>EE F464</td>
<td>Advanced Communications Systems</td>
<td></td>
</tr>
</tbody>
</table>

**Fundamentals of Engineering (FE) Examination**

Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.

**Total Credits**

125-133

**Note:** Students must plan their elective courses in consultation with their electrical engineering faculty advisor, and all elective courses must be approved by their electrical engineering faculty advisor.

1 Fulfills the baccalaureate capstone requirement.

< Back to Department [https://catalog.uaf.edu/academic-departments/electrical-computer-engineering/](https://catalog.uaf.edu/academic-departments/electrical-computer-engineering/)

### Roadmaps

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

- This roadmap should be used in conjunction with regular academic advising appointments. All students are encouraged to meet with their advisor or mentor each semester.
- Some courses and milestones must be completed in the semester listed to ensure timely graduation.
- Transfer credit may change the roadmap.
- Requirements, course availability and sequencing are subject to change.
- Courses with (*) are recommended.

#### First Year

<table>
<thead>
<tr>
<th>Credits</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 CHEM F106X (*)</td>
<td>CHEM F105X</td>
</tr>
<tr>
<td>4 COM F121X, F131X, or F141X</td>
<td>ES F100X and ES F100L</td>
</tr>
<tr>
<td>4 EE F102</td>
<td>MATH F251X</td>
</tr>
<tr>
<td>3 ES F201</td>
<td>WRTG F111X</td>
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</table>
### Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>EE(^{F})203(^{20})</td>
<td>20</td>
<td>EE(^{F})253(^{20})</td>
<td>4</td>
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<tr>
<td>EE(^{F})243(^{20})</td>
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<td>EE(^{F})F301(^{20,25})</td>
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<tr>
<td>LS(^{F})101X(^{15})</td>
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<td>MATH(^{F})F302(^{20})</td>
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<tr>
<td>MATH(^{F})F253X(^{20})</td>
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<td>PHYS(^{F})F212X(^{17})</td>
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<tr>
<td>PHYS(^{F})F211X(^{17})</td>
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<td>WRTG(^{F})F211X, F212X, F213X, or F214X(^{1})</td>
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</table>

### Third Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EE(^{F})F303(^{20,25})</td>
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<td>EE(^{F})F311(^{20,25})</td>
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<td>EE(^{F})F461(^{20,25})</td>
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<tr>
<td>EE(^{F})F333(^{20,25})</td>
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<td>EE(^{F})F471(^{20})</td>
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<tr>
<td>EE(^{F})F331(^{20,25})</td>
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<td>General Education Requirement - Humanities</td>
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<tr>
<td>EE(^{F})F354(^{20,25})</td>
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<td>Program Elective</td>
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</table>

### Fourth Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE(^{F})F461(^{20,25})</td>
<td>20,25</td>
<td>EE(^{F})F482(^{20,25})</td>
<td>3</td>
</tr>
<tr>
<td>EE(^{F})F481(^{20,25})</td>
<td>20,25</td>
<td>General Education Requirement - Humanities</td>
<td>3</td>
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<tr>
<td>Degree Requirement - Ethics</td>
<td>3</td>
<td>Program Elective</td>
<td>4</td>
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<tr>
<td>Program Elective</td>
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<td>FE Examination</td>
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</table>

### Total Credits 129

### Footnote Definitions

<table>
<thead>
<tr>
<th>General Education Requirements</th>
<th>Degree Requirements</th>
<th>Program &amp; Other Requirements</th>
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<tbody>
<tr>
<td>1—Communication</td>
<td>8—Alaska Native-themed</td>
<td>20—Program Requirement</td>
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<tr>
<td>2—Arts</td>
<td>9—Communication</td>
<td>21—Capstone Requirement</td>
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<tr>
<td>3—Humanities</td>
<td>10—Computation</td>
<td>22—Concentration Course</td>
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<tr>
<td>4—Social Sciences</td>
<td>11—Ethics</td>
<td>23—General Elective</td>
</tr>
<tr>
<td>5—Additional Arts, Humanities or Social Sciences</td>
<td>12—Humanities</td>
<td>24—Minor Course</td>
</tr>
</tbody>
</table>