**ELECTRICAL ENGINEERING MAJOR (B.S.)**

https://ceps.unh.edu/ece/electrical-engineering-bs

**Description**

In addition to the university’s mandatory Discovery Program requirements, degree candidates must complete our core program (freshman through junior years). In the senior year, students select professional technical electives in the areas of their interest. They also carry out a student-designed project to acquire both breadth and depth of study and to integrate knowledge across course boundaries.

For a detailed semester by semester list of requirements for the four years of study, please refer to the Degree Plan tab.

**Requirements**

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements.

1. Any electrical engineering major whose cumulative grade-point average in ECE courses is less than 2.0 during any three semesters will not be allowed to continue as an electrical engineering major.

2. Electrical engineering majors must achieve a 2.0 grade-point average in ECE courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department’s undergraduate committee. Mindful of these rules, students, with their adviser’s assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

**Required Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 410C</td>
<td>Introduction to Scientific Programming/C 1</td>
<td>4</td>
</tr>
<tr>
<td>or CS 415</td>
<td>Introduction to Computer Science I</td>
<td>4</td>
</tr>
<tr>
<td>ECE 401</td>
<td>Perspectives in Electrical and Computer Engineering</td>
<td>4</td>
</tr>
<tr>
<td>ECE 541</td>
<td>Electric Circuits</td>
<td>4</td>
</tr>
<tr>
<td>ECE 543</td>
<td>Introduction to Digital Systems</td>
<td>4</td>
</tr>
<tr>
<td>ECE 548</td>
<td>Electronic Design I</td>
<td>4</td>
</tr>
<tr>
<td>ECE 562</td>
<td>Computer Organization</td>
<td>4</td>
</tr>
<tr>
<td>ECE 602</td>
<td>Engineering Analysis</td>
<td>4</td>
</tr>
<tr>
<td>ECE 603</td>
<td>Electromagnetic Fields and Waves I</td>
<td>4</td>
</tr>
<tr>
<td>ECE 617</td>
<td>Junior Laboratory I</td>
<td>4</td>
</tr>
<tr>
<td>ECE 618</td>
<td>Junior Laboratory II</td>
<td>4</td>
</tr>
<tr>
<td>ECE 633</td>
<td>Signals and Systems I</td>
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<tr>
<td>ECE 634</td>
<td>Signals and Systems II</td>
<td>3</td>
</tr>
<tr>
<td>ECE 647</td>
<td>Random Processes and Signals in Engineering</td>
<td>3</td>
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<tr>
<td>ECE 651</td>
<td>Electronic Design II</td>
<td>4</td>
</tr>
<tr>
<td>ECON 402</td>
<td>Principles of Economics (Micro)</td>
<td>4</td>
</tr>
<tr>
<td>or EREC 411</td>
<td>Environmental and Resource Economics Perspectives</td>
<td>3-4</td>
</tr>
<tr>
<td>MATH 425</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 426</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 427</td>
<td>Differential Equations with Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>MATH 428</td>
<td>Linear Algebra for Applications</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 407</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 408</td>
<td>General Physics II</td>
<td>4</td>
</tr>
</tbody>
</table>

**Capstone**

| ECE 791 | Senior Project I | 2 |

**Degree Plan**

**Course** | **Title** | **Credits**
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**First Year**

**Fall**

- ECE 401 Perspectives in Electrical and Computer Engineering | 4
- MATH 425 Calculus I | 4
- CS 410C Introduction to Scientific Programming/C 1 | 4
- ECON 402 or EREC 411 Principles of Economics (Micro) or Environmental and Resource Economics Perspectives | 4

**Credits** | **16**

**Spring**

- PHYS 407 General Physics I | 4
- ENGL 401 First-Year Writing | 4
- MATH 426 Calculus II | 4
- Discovery Program Category 1 | 4

**Credits** | **16**

**Second Year**

**Fall**

- ECE 541 Electric Circuits | 4
- ECE 543 Introduction to Digital Systems | 4
- PHYS 408 General Physics II | 4
- MATH 527 Differential Equations with Linear Algebra | 4

**Credits** | **16**

**Spring**

- ECE 548 Electronic Design I | 4
- ECE 562 Computer Organization | 4
- MATH 645 Linear Algebra for Applications | 4
- Discovery Program Category | 4

**Credits** | **16**

**Third Year**

**Fall**

- ECE 602 Engineering Analysis | 4
- ECE 617 Junior Laboratory I | 4
- ECE 633 Signals and Systems I | 3
- ECE 651 Electronic Design II | 4
- Math/Science Elective 4 | 3-4

**Credits** | **18-19**
Students who wish to preserve the option of transferring to the computer engineering major without incurring a delay in graduation should consult with their academic adviser before electing these courses. It is recommended that such students take CS 415 Introduction to Computer Science I in the fall semester and CS 416 Introduction to Computer Science II in the spring semester in place of the listed courses.

Four professional electives must be selected from the following categories of courses:

1. At least two from: ECE 7XX not including ECE 795 Electrical and Computer Engineering Projects and ECE 796 Special Topics
2. Any of these: ECE 795 Electrical and Computer Engineering Projects, ECE 796 Special Topics
3. No more than one from: DS 774 E-Business
4. Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II satisfy one professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II fulfill Discovery Program Capstone Experience.

Math/Science Elective approved courses: MATH 644 Statistics for Engineers and Scientists, MATH 647 Complex Analysis for Applications, CHEM 405 Chemical Principles for Engineers, PHYS 505 General Physics III, PHYS 615 Classical Mechanics and Mathematical Physics I, ME #523 Introduction to Statics and Dynamics.

Students are required to take either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives to fulfill the Social Science Category of the Discovery Program.

Fulfilling the EE Program curriculum automatically meets Discovery Category, “Environment, Technology and Society.”

Student Learning Outcomes

- An ability to apply knowledge of mathematics, science, and engineering.