## 2019 - 2020 Major Map
### Engineering (Electrical Systems), BSE

**School/College:** Ira A. Fulton Schools of Engineering  
**Location:** Polytechnic campus

### Term 1 - 0 - 16 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASU 101-TPS: The ASU Experience</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGR 101: Foundations of Engineering Design Project I</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 265: Calculus for Engineers I (MA) OR Humanities, Arts and Design (HU) AND Historical Awareness (H) OR Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 16

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### Term 2 - 16 - 32 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR 102: Foundations of Engineering Design Project II</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM 113: General Chemistry I (SQ)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>EGR 104: Critical Inquiry in Engineering (L)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 266: Calculus for Engineers II (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

Complete ENG 101 OR ENG 105 OR ENG 107 course(s).  
Complete MAT 265 course(s).  
Complete Mathematics (MA) requirement.

**Term hours subtotal:** 16

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### Term 3 - 32 - 48 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR 201: Use-Inspired Design Project I</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>EGR 216: Engineering Electrical Fundamentals</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>EGR 218: Materials and Manufacturing Processes</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 267: Calculus for Engineers III (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 121: University Physics I: Mechanics (SQ)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 122: University Physics Laboratory I (SQ)</td>
<td>1</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

Complete MAT 266 course(s).

**Term hours subtotal:** 16

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### Term 4 - 48 - 63 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR 202: Use-Inspired Design Project II</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

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*ASU 101 is required of all freshman students; FSE 310 is required for all new transfer students; LIA 294 is highly recommended for all new veteran students.  
An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses  
Mathematics Placement Assessment score determines placement in mathematics course  
Prep for success using the [Freshman Guide](#).  
Join a [Fulton community](#).  
Explore engineering and technical professions.

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* Create a [Handshake](#) profile.  
* Get involved with EPICS, the Generator Labs, and the [Fulton Start-Up Center](#).  
* Prep for success using the [Sophomore Guide](#).  
* Consult the [Resume, Presentation, and Resource Library](#) for tips on how to create a technical resume, job shadow, do informational interviews and mentor with alumni.
EGR 217: Engineering Mechanics Fundamentals 3 C
EGR 219: Computational Modeling of Engineering Systems 3 C
EGR 280: Engineering Statistics (CS) 3 C
MAT 275: Modern Differential Equations (MA) 3 C

Complete EGR 216 AND EGR 217 AND EGR 218 AND EGR 219 course(s).

Complete MAT 267 course(s).

Term hours subtotal: 15

Term 5 63 - 78 Credit Hours Necessary course signified by ★ Hours Minimum Grade
★ EGR 304: Embedded Systems Design Project I 3 C
★ EGR 330: Design of Electrical Systems 3 C
HST 318: History of Engineering ((L or SB) & G) 3
PHY 331: Principles of Modern Electromagnetism 3
Secondary Focus Area 3

Term hours subtotal: 15

Term 6 78 - 93 Credit Hours Necessary course signified by ★ Hours Minimum Grade
★ EGR 314: Embedded Systems Design Project II 3 C
★ EGR 334: Analog-Digital Interface 3 C
EGR 338: Microcontrollers in Smart Systems 3
MAT 343: Applied Linear Algebra 3
Secondary Focus Area 3

★ Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).

Term hours subtotal: 15

Term 7 93 - 108 Credit Hours Necessary course signified by ★ Hours Minimum Grade
★ EGR 401: Professional Design Project I (L) 3 C
★ EGR 430: Design, Fabrication, and Architecture of Electronic Devices 3
Upper Division Secondary Focus Area 3
Science Elective 3
Humanities, Arts and Design (HU) 3

Term hours subtotal: 15

Term 8 108 - 120 Credit Hours Necessary course signified by ★ Hours Minimum Grade
★ EGR 402: Professional Design Project II 3
EGR 431: Power Management OR EGR 476: Microgrid Design and Operation 3
Upper Division Secondary Focus Area 3
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB) 3

Term hours subtotal: 12

Notes:
- Pursue an undergraduate research experience.
- Apply for internships.
- Attend career fairs and events.

- A secondary focus area is a group of courses comprising of 12 or more credit hours (at least 6 must be at the upper-division level) which form a coherent theme.
- Plan for success using the Junior Guide.
- Network at student organization competitions or professional societies.

- A secondary focus area is a group of courses comprising of 12 or more credit hours (at least 6 must be at the upper-division level) which form a coherent theme.
- Research and prepare for graduate school.
- Apply for an engineering 4+1 program.
- Develop a professional profile online.

- A secondary focus area is a group of courses comprising of 12 or more credit hours (at least 6 must be at the upper-division level) which form a coherent theme.
- Plan for success using the Senior Guide.
- Use Handshake to apply for full-time positions.
- Complete an in-person or virtual practice interview.

- A secondary focus area is a group of courses comprising of 12 or more credit hours (at least 6 must be at the upper division level) which form a coherent theme.
General Studies designations listed on the major map are current for the 2019 - 2020 academic year.

**General University Requirements Legend**

General Studies Core Requirements:
- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

**General Studies Awareness Requirements:**
- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

**First-Year Composition**

General Studies designations listed on the major map are current for the 2019 - 2020 academic year.

**Science Elective**

- BIO 181: General Biology I (SQ)
- CHM 116: General Chemistry II (SQ)
- GLG 101: Introduction to Geology I (Physical) (SQ)
- GLG 103: Introduction to Geology I-Laboratory (SQ)
- PHY 131: University Physics II: Electricity and Magnetism (SQ)
- PHY 132: University Physics Laboratory II (SQ)