## 2019 - 2020 Major Map

**Engineering (Electrical Systems), BSE**

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

### Term 1 - 16 Credit Hours

<table>
<thead>
<tr>
<th>Critical course signified by</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 C</td>
<td></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 C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 16

- 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.

### Term 2 - 16 - 32 Credit Hours

<table>
<thead>
<tr>
<th>Critical course signified by</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 C</td>
<td></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

- Create a Handshake profile.
- Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.

### Term 3 - 32 - 48 Credit Hours

<table>
<thead>
<tr>
<th>Critical course signified by</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

- 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.

### Term 4 - 48 - 63 Credit Hours

<table>
<thead>
<tr>
<th>Critical course signified by</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>
<tr>
<td>Course</td>
<td>Hours</td>
<td>Minimum Grade</td>
<td>Notes</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
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<td>---------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>EGR 219: Computational Modeling of Engineering Systems</td>
<td>3</td>
<td>C</td>
<td>§ Apply for internships.</td>
</tr>
<tr>
<td>EGR 280: Engineering Statistics (CS)</td>
<td>3</td>
<td>C</td>
<td>§ Attend career fairs and events.</td>
</tr>
<tr>
<td>MAT 275: Modern Differential Equations (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

*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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR 304: Embedded Systems Design Project I</td>
<td>3</td>
<td>C</td>
<td>§ 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.</td>
</tr>
<tr>
<td>HST 318: History of Engineering ((L or SB) &amp; G)</td>
<td>3</td>
<td></td>
<td>§ Network at student organization competitions or professional societies.</td>
</tr>
<tr>
<td>PHY 331: Principles of Modern Electromagnetism</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Focus Area</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 15

### Term 6 78 - 93 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR 314: Embedded Systems Design Project II</td>
<td>3</td>
<td>C</td>
<td>§ 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.</td>
</tr>
<tr>
<td>EGR 334: Analog-Digital Interface</td>
<td>3</td>
<td>C</td>
<td>§ Research and prepare for graduate school.</td>
</tr>
<tr>
<td>EGR 338: Microcontrollers in Smart Systems</td>
<td>3</td>
<td></td>
<td>§ Apply for an engineering 4+1 program.</td>
</tr>
<tr>
<td>MAT 343: Applied Linear Algebra</td>
<td>3</td>
<td></td>
<td>§ Develop a professional profile online.</td>
</tr>
<tr>
<td>Secondary Focus Area</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR 401: Professional Design Project I (L)</td>
<td>3</td>
<td>C</td>
<td>§ 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.</td>
</tr>
<tr>
<td>Upper Division Secondary Focus Area</td>
<td>3</td>
<td></td>
<td>§ Use Handshake to apply for full-time positions.</td>
</tr>
<tr>
<td>Science Elective</td>
<td>3</td>
<td></td>
<td>§ Complete an in-person or virtual practice interview.</td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU)</td>
<td>3</td>
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<td></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 15

### Term 8 108 - 120 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGR 402: Professional Design Project II</td>
<td>3</td>
<td></td>
<td>§ 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.</td>
</tr>
<tr>
<td>EGR 431: Power Management OR EGR 476: Microgrid Design and Operation</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Secondary Focus Area</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Science Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 181: General Biology I (SQ)</td>
</tr>
<tr>
<td>CHM 116: General Chemistry II (SQ)</td>
</tr>
<tr>
<td>GLG 101: Introduction to Geology I (Physical) (SQ)</td>
</tr>
<tr>
<td>GLG 103: Introduction to Geology I-Laboratory (SQ)</td>
</tr>
<tr>
<td>PHY 131: University Physics II: Electricity and Magnetism (SQ)</td>
</tr>
<tr>
<td>PHY 132: University Physics Laboratory II (SQ)</td>
</tr>
</tbody>
</table>

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum

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)