







## 2024 - 2025 Major Map




### Electrical Engineering (Electric Power and Energy Systems), **BSE**

School/College: [Ira A. Fulton Schools of Engineering](#)  
ESEEPBSE

| Term 1 - A 0 - 6 Credit Hours <b>Critical course signified by</b>  | Hours | Minimum Grade | Notes   |
|---|-------|---------------|---|
|  MAT 265: Calculus for Engineers I (MATH OR MA)                    | 3     | C             | <ul style="list-style-type: none"> <li>ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students</li> <li>If ENG 105 is taken, a 3 hour applicable elective must also be taken prior to graduation. See advisor.</li> </ul> |
| ASU 101-EEE: The ASU Experience   | 1     |               |   |
| FSE 100: Introduction to Engineering  | 2     |               |   |
| Term hours subtotal:  | 6     |               |   |
|   |       |               |   |




| Term 1 - B 6 - 12 Credit Hours <b>Critical course signified by</b>  | Hours | Minimum Grade | Notes   |
|--|-------|---------------|---|
|  MAT 266: Calculus for Engineers II (MATH OR MA)                    | 3     | C             | <ul style="list-style-type: none"> <li>View ASU Online first-year student registration information <a href="#">here</a>.</li> <li>Prep for success using the <a href="#">First-Year Student Guide</a>.</li> <li>Join a <a href="#">Fulton community</a>.</li> <li>Explore <a href="#">engineering and technical professions</a>.</li> </ul> |
| ENG 101 or ENG 102: First-Year Composition OR  |       |               |   |
| ENG 105: Advanced First-Year Composition OR  | 3     | C             |   |
| ENG 107 or ENG 108: First-Year Composition   |       |               |   |
|  Minimum 2.00 GPA ASU Cumulative.                                 |       |               |   |
| Term hours subtotal:   | 6     |               |   |



| Term 2 - A 12 - 20 Credit Hours <b>Critical course signified by</b>  | Hours | Minimum Grade | Notes   |
|---|-------|---------------|---|
|  PHY 121: University Physics I: Mechanics (SCIT OR SQ)               | 3     | C             | Students who have credit for CHM 113 should take CHM 116. |
|  PHY 122: University Physics Laboratory I (SCIT OR SQ)               | 1     | C             |   |
| CHM 114: General Chemistry for Engineers (SCIT OR SQ) OR  |       |               |   |
| CHM 116: General Chemistry II (SCIT OR SQ)  | 4     |               |   |
| Term hours subtotal:  | 8     |               |   |



| Term 2 - B 20 - 26 Credit Hours <b>Critical course signified by</b>  | Hours | Minimum Grade | Notes   |
|---|-------|---------------|---|
| ENG 101 or ENG 102: First-Year Composition OR   |       |               | <ul style="list-style-type: none"> <li>Create a <a href="#">Handshake</a> profile.</li> <li>Get involved with EPICS, the Generator Labs, and the <a href="#">Fulton Start-Up Center</a>.</li> </ul> |
| ENG 105: Advanced First-Year Composition OR   | 3     | C             |   |
| ENG 107 or ENG 108: First-Year Composition  |       |               |   |
| MAT 267: Calculus for Engineers III (MATH OR MA)  | 3     | C             |   |
|  Complete ENG 101 OR ENG 105 OR ENG 107 course(s).                   |       |               |   |
|  Minimum 2.00 GPA ASU Cumulative.                                    |       |               |   |
| Term hours subtotal:  | 6     |               |   |

| Term 3 - A 26 - 33 Credit Hours  | Hours | Minimum Grade | Notes |
|--|-------|---------------|-------|
| EEE 120: Digital Design Fundamentals                                   | 3     | C             |       |
| PHY 131: University Physics II: Electricity and Magnetism (SCIT OR SQ) | 3     | C             |       |
| PHY 132: University Physics Laboratory II (SCIT OR SQ)                 | 1     | C             |       |


Term hours subtotal: 7



| Term 3 - B 33 - 39 Credit Hours <b>Critical course signified by</b>  | Hours | Minimum Grade | Notes   |
|---|-------|---------------|---|
| MAT 275: Modern Differential Equations (MATH OR MA)   | 3     | C             | <ul style="list-style-type: none"> <li>• Prep for success using the <a href="#">Sophomore Guide</a>.</li> </ul> |
| CSE 100: Principles of Programming with C++ (QTRS OR CS) OR<br>CSE 110: Principles of Programming (QTRS OR CS)  | 3     | C             |   |
|  Complete First-Year Composition requirement.                        |       |               |   |
|  Minimum 2.00 GPA ASU Cumulative.                                    |       |               |   |
| Complete Mathematics (MATH) requirement.  |       |               |   |
| Term hours subtotal:  | 6     |               |   |

| Term 4 - A 39 - 46 Credit Hours <b>Critical course signified by</b>  | Hours | Minimum Grade | Notes |
|---|-------|---------------|-------|
|  EEE 202: Circuits I   | 4     |               |       |
| Sustainability (SUST)   | 3     |               |       |
| Term hours subtotal:  | 7     |               |       |



| Term 4 - B 46 - 52 Credit Hours <b>Critical course signified by</b>  | Hours | Minimum Grade | Notes   |
|---|-------|---------------|---|
|  EEE 241: Fundamentals of Electromagnetics                           | 3     |               | <ul style="list-style-type: none"> <li>• Pursue an <a href="#">undergraduate research experience</a>.</li> <li>• Apply for <a href="#">internships</a>.</li> <li>• Attend <a href="#">career fairs and events</a>.</li> </ul> |
| MAT 343: Applied Linear Algebra   | 3     | C             |   |
| Term hours subtotal:  | 6     |               |   |

| Term 5 - A 52 - 58 Credit Hours    | Hours | Minimum Grade | Notes |
|------------------------------------|-------|---------------|-------|
| PHY 241: University Physics III    | 3     | C             |       |
| Humanities, Arts and Design (HUAD) | 3     |               |       |
| Term hours subtotal:               | 6     |               |       |

| Term 5 - B 58 - 65 Credit Hours <b>Necessary course signified by</b>  | Hours | Minimum Grade | Notes   |
|--|-------|---------------|---|
|  EEE 203: Signals and Systems I                                       | 3     |               | <ul style="list-style-type: none"> <li>• Plan for success using the <a href="#">Junior Guide</a>.</li> <li>• Network at <a href="#">student organization competitions</a> or professional societies.</li> </ul> |
|  EEE 334: Circuits II   | 4     |               |   |
| Term hours subtotal:   | 7     |               |   |

| Term 6 - A 65 - 72 Credit Hours <b>Necessary course signified by</b>  | Hours | Minimum Grade | Notes |
|--|-------|---------------|-------|
|  EEE 350: Random Signal Analysis                                      | 3     |               |       |
| EEE 360: Energy Systems and Power Electronics  | 4     |               |       |
| Term hours subtotal:   | 7     |               |       |

| Term 6 - B 72 - 78 Credit Hours    | Hours | Minimum Grade | Notes   |
|------------------------------------|-------|---------------|---|
| American Institutions (AMIT)       | 3     |               | <ul style="list-style-type: none"> <li>• Research and prepare for <a href="#">graduate school</a>.</li> <li>• Develop a <a href="#">professional profile online</a>.</li> </ul> |
| Humanities, Arts and Design (HUAD) | 3     |               |   |
| Term hours subtotal:               | 6     |               |   |

| Term 7 - A 78 - 85 Credit Hours <b>Necessary course signified by</b>  | Hours | Minimum Grade | Notes |
|--|-------|---------------|-------|
|  Upper Division Area Pathway Course                                   | 4     |               |       |
| ECN 211: Macroeconomic Principles (SOBE OR SB) OR ECN 212: Microeconomic Principles (SOBE OR SB)   | 3     |               |       |
| Term hours subtotal:   | 7     |               |       |

| Term 7 - B 85 - 92 Credit Hours Necessary course signified by ★    | Hours | Minimum Grade | Notes   |
|--|-------|---------------|---|
| ★ Upper Division Area Pathway Course                               | 4     |               | <ul style="list-style-type: none"> <li>Plan for success using the <a href="#">Senior Guide</a>.</li> <li>Use <a href="#">Handshake</a> to apply for full-time positions.</li> </ul> |
| Upper Division Power Technical Elective                            | 3     |               |   |
| Term hours subtotal:   | 7     |               |   |
| Term 8 - A 92 - 99 Credit Hours Necessary course signified by ★    | Hours | Minimum Grade | Notes   |
| ★ EEE 488: Senior Design Laboratory I (L)                          | 3     |               |   |
| ★ Upper Division Area Pathway Course                               | 4     |               |   |
| Term hours subtotal:   | 7     |               |   |
| Term 8 - B 99 - 105 Credit Hours                                   | Hours | Minimum Grade | Notes   |
| Upper Division Power Technical Elective                            | 3     |               |   |
| Governance and Civic Engagement (CIVI)                             | 3     |               |   |
| Term hours subtotal:   | 6     |               |   |
| Term 9 - A 105 - 111 Credit Hours Necessary course signified by ★  | Hours | Minimum Grade | Notes   |
| ★ EEE 489: Senior Design Laboratory II (L)                         | 3     |               |   |
| Upper Division Power Technical Elective                            | 3     |               |   |
| Term hours subtotal:   | 6     |               |   |
| Term 9 - B 111 - 117 Credit Hours Necessary course signified by ★  | Hours | Minimum Grade | Notes   |
| ★ Upper Division Technical Elective                                | 3     |               |   |
| Global Communities, Societies and Individuals (GCSI)               | 3     |               |   |
| Term hours subtotal:   | 6     |               |   |
| Term 10 - A 117 - 120 Credit Hours Necessary course signified by ★ | Hours | Minimum Grade | Notes   |
| ★ Upper Division Technical Elective                                | 3     |               |   |
| Term hours subtotal:   | 3     |               |   |

#### Hide Course List(s)/Track Group(s)

| Technical Electives                                       | Math or Science or Engineering Elective      | Power Technical Electives                       |
|---|--|---|
| EEE 404: Real-Time DSP Systems                            | AEE Upper Division Elective                  | EEE 460: Nuclear Power Engineering              |
| EEE 405: Machine Learning Basics with Deployment to FPGAs | BIO Upper Division Elective                  | EEE 463: Electrical Power Plants                |
| EEE 407: Digital Signal Processing                        | BME Upper Division Elective                  | EEE 465: Photovoltaic Energy Conversion         |
| EEE 419: Python for Rapid Engineering Solutions           | CEE Upper Division Elective                  | EEE 470: Electric Power Devices                 |
| EEE 425: Digital Systems and Circuits                     | CHE Upper Division Elective                  | EEE 471: Power System Analysis                  |
| EEE 433: Analog Integrated Circuits                       | CHM Upper Division Elective                  | EEE 472: Power Electronics and Power Management |
| EEE 434: Quantum Mechanics for Engineers                  | CPI Upper Division Elective                  | EEE 473: Electrical Machinery                   |
| EEE 435: Fundamentals of CMOS and MEMS                    | CSE Upper Division Elective                  | EEE 498: Manufacturing Science of Solar Cells   |
|   | FSE 301: Entrepreneurship and Value Creation |   |

|  |                                      |   |
|--|--------------------------------------|---|
| EEE 436: Fundamentals of Solid-State Devices                 | FSE 404: EPICS Gold: EPICS in Action | EEE 498: Science and Technology of Solar Cell Fabrication |
| EEE 439: Semiconductor Facilities and Cleanroom Practices    | IEE Upper Division Elective          |   |
| EEE 443: Antennas for Wireless Communications                | MAE Upper Division Elective          |   |
| EEE 445: Microwaves  | MAT Upper Division Elective          |   |
| EEE 448: Fiber Optics  | MSE Upper Division Elective          |   |
| EEE 455: Communication Systems                               | PHY Upper Division Elective          |   |
| EEE 459: Communication Networks                              | Upper Division Technical Elective    |   |
| EEE 460: Nuclear Power Engineering                           |                                      |   |
| EEE 463: Electrical Power Plants                             |                                      |   |
| EEE 465: Photovoltaic Energy Conversion                      |                                      |   |
| EEE 470: Electric Power Devices                              |                                      |   |
| EEE 471: Power System Analysis                               |                                      |   |
| EEE 472: Power Electronics and Power Management              |                                      |   |
| EEE 473: Electrical Machinery                                |                                      |   |
| EEE 480: Feedback Systems                                    |                                      |   |
| EEE 481: Computer-Controlled Systems                         |                                      |   |
| EEE 492: Honors Directed Study                               |                                      |   |
| EEE 493: Honors Thesis (L)                                   |                                      |   |
| EEE 498: Emerging Technology in Automotive & Transportation  |                                      |   |
| EEE 498: Lithium-Ion Battery Technlgy Automtve Electrifiactn |                                      |   |
| EEE 498: Manufacturing Science of Solar Cells                |                                      |   |
| EEE 498: Nuclear Prolif Secur & Safegrd                      |                                      |   |
| EEE 498: Quantum Optics and Quantum Information              |                                      |   |
| EEE 498: Renewable Energy Technology and Systems             |                                      |   |
| EEE 498: Science and Technology of Solar Cell Fabrication    |                                      |   |
| EEE 498: Augmented Reality and Virtual Reality Systems       |                                      |   |
| Area Pathway Course  |                                      |   |
| EEE 304: Signals and Systems II                              |                                      |   |
| EEE 333: Hardware Design Languages and Programmable Logic    |                                      |   |
| EEE 335: Analog and Digital Circuits                         |                                      |   |
| EEE 341: Engineering Electromagnetics                        |                                      |   |

- **Total Hours:** 120
- **Upper Division Hours:** 45 minimum
- **University Undergraduate Graduation Requirements**

**Notes:**

Mathematics Placement Assessment score determines placement in first mathematics course.

General Studies designations listed next to courses on the major map were valid for the 2024 - 2025 academic year. Please refer to the course catalog for current General Studies designations at time of class registration. General Studies credit is applied according to the designation the course carries at the time the class is taken.