




























2022 - 2023 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 Critical course signified by  | Hours | Minimum Grade | Notes |
|---|-------|---------------|---|
|  MAT 265: Calculus for Engineers I (MA) | 3 | C | <ul style="list-style-type: none"> ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students If ENG 105 is taken, a 3 hour applicable elective must also be taken prior to graduation. See advisor. |
| ASU 101-EEE: The ASU Experience | 1 | | |
| FSE 100: Introduction to Engineering | 2 | | |
| Term hours subtotal: | 6 | | |
| | | | |
| Term 1 - B 6 - 12 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
|  MAT 266: Calculus for Engineers II (MA) | 3 | C | <ul style="list-style-type: none"> View ASU Online first-year student registration information here. Prep for success using the First-Year Student Guide. Join a Fulton community. Explore engineering and technical professions. |
| 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 Critical course signified by  | Hours | Minimum Grade | Notes |
|  PHY 121: University Physics I: Mechanics (SQ) | 3 | C | |
|  PHY 122: University Physics Laboratory I (SQ) | 1 | C | |
| CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ) | 4 | | |
| Term hours subtotal: | 8 | | |
| | | | |
| Term 2 - B 20 - 26 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
| ENG 101 or ENG 102: First-Year Composition OR | | | <ul style="list-style-type: none"> Create a Handshake profile. Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center. |
| ENG 105: Advanced First-Year Composition OR | 3 | C | |
| ENG 107 or ENG 108: First-Year Composition | | | |
| MAT 267: Calculus for Engineers III (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 (SQ) | 3 | C | |
| PHY 132: University Physics Laboratory II (SQ) | 1 | C | |
| Term hours subtotal: | 7 | | |

| Term 3 - B 33 - 39 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
|--|-------|---------------|--|
| CSE 100: Principles of Programming with C++ (CS) OR CSE 110: Principles of Programming (CS) | 3 | C | <ul style="list-style-type: none"> • Prep for success using the Sophomore Guide. |
| MAT 275: Modern Differential Equations (MA) | 3 | C | |
|  Complete First-Year Composition requirement. | | | |
|  Minimum 2.00 GPA ASU Cumulative. | | | |
| Complete Mathematics (MA) requirement. | | | |
| Term hours subtotal: | 6 | | |
| Term 4 - A 39 - 46 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
|  EEE 202: Circuits I | 4 | | |
| Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C) | 3 | | |
| Term hours subtotal: | 7 | | |
| Term 4 - B 46 - 52 Credit Hours Critical course signified by  | Hours | Minimum Grade | Notes |
|  EEE 241: Fundamentals of Electromagnetics | 3 | | <ul style="list-style-type: none"> • Pursue an undergraduate research experience. • Apply for internships. • Attend career fairs and events. |
| 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 | |
| Social-Behavioral Sciences (SB) AND Global Awareness (G) | 3 | | |
| Term hours subtotal: | 6 | | |
| Term 5 - B 58 - 65 Credit Hours Necessary course signified by  | Hours | Minimum Grade | Notes |
|  EEE 203: Signals and Systems I | 3 | | <ul style="list-style-type: none"> • Plan for success using the Junior Guide. • Network at student organization competitions or professional societies. |
|  EEE 334: Circuits II | 4 | | |
| Term hours subtotal: | 7 | | |
| Term 6 - A 65 - 72 Credit Hours Necessary course signified by  | 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 Necessary course signified by  | Hours | Minimum Grade | Notes |
| EEE 230: Computer Organization and Assembly Language Programming | 3 | | <ul style="list-style-type: none"> • Research and prepare for graduate school. • Develop a professional profile online. |
| Humanities, Arts and Design (HU) AND Historical Awareness (H) | 3 | | |
|  Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s). | | | |
| Term hours subtotal: | 6 | | |
| Term 7 - A 78 - 85 Credit Hours Necessary course signified by  | Hours | Minimum Grade | Notes |
|  Upper Division Area Pathway Course | 4 | | |
| ECN 211: Macroeconomic Principles (SB) OR ECN 212: Microeconomic Principles (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"> Plan for success using the Senior Guide. Use Handshake to apply for full-time positions. Complete an in person or virtual practice interview. |
| 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 Math or Science or Engineering Elective | 3 | | |
| Upper Division Power Technical Elective | 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 | | |
| Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB) | 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 407: Digital Signal Processing | BIO Upper Division Elective | EEE 463: Electrical Power Plants |
| EEE 419: Python for Rapid Engineering Solutions | BME Upper Division Elective | EEE 465: Photovoltaic Energy Conversion |
| EEE 425: Digital Systems and Circuits | CEE Upper Division Elective | EEE 470: Electric Power Devices |
| EEE 433: Analog Integrated Circuits | CHE Upper Division Elective | EEE 471: Power System Analysis |
| EEE 434: Quantum Mechanics for Engineers | CHM Upper Division Elective | EEE 472: Power Electronics and Power Management |
| | CPI Upper Division Elective | |

| | | |
|---|--|-------------------------------|
| EEE 435: Fundamentals of CMOS and MEMS | CSE Upper Division Elective | EEE 473: Electrical Machinery |
| EEE 436: Fundamentals of Solid-State Devices | IEE Upper Division Elective | |
| EEE 439: Semiconductor Facilities and Cleanroom Practices | MAE Upper Division Elective | |
| EEE 443: Antennas for Wireless Communications | MAT Upper Division Elective | |
| EEE 445: Microwaves | MSE Upper Division Elective | |
| EEE 448: Fiber Optics | PHY Upper Division Elective | |
| EEE 455: Communication Systems | Upper Division Technical Elective | |
| EEE 459: Communication Networks | FSE 301: Entrepreneurship and Value Creation | |
| 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: Machine Learning Basics with Deployment to FPGAs | | |
| EEE 498: Manufacturing Science of Solar Cells | | |
| EEE 498: Networking for Big Data | | |
| EEE 498: Science and Technology of Solar Cell Fabrication | | |
| EEE 498: Foundations Machine Learning: From Theory to Pract | | |
| EEE 498: Renewable Energy Technology and 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 | | |
| EEE 352: Properties of Electronic Materials | | |

Notes:

- First-Year Composition: All students are placed in ENG 101 unless submission of SAT, ACT, Accuplacer, IELTS, or TOEFL score, or college-level transfer credit or test credit equivalent to ASU's first-year composition course(s), determine otherwise. Students on Polytechnic, Downtown Phoenix and West Campuses are encouraged to complete the Directed Self-Placement survey to choose the first-year composition option they believe best suits their needs. Visit: <https://cisa.asu.edu/DSP>
- Mathematics Placement Assessment score determines placement in first mathematics course.

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)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed next to courses on the major map were valid for the 2022 - 2023 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.