




























## 2023 - 2024 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 (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 (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 (SQ)	3	C	Students who have credit for CHM 113 should take CHM 116.
 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 <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 (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 <b>Critical course signified by</b> 	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"> <li>• Prep for success using the <b>Sophomore Guide</b>.</li> </ul>
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 <b>Critical course signified by</b> 	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 <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 <b>undergraduate research experience</b>.</li> <li>• Apply for <b>internships</b>.</li> <li>• Attend <b>career fairs and events</b>.</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	
Social-Behavioral Sciences (SB) AND Global Awareness (G)	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 <b>Junior Guide</b>.</li> <li>• Network at <b>student organization competitions</b> 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 <b>Necessary course signified by</b> 	Hours	Minimum Grade	Notes
EEE 230: Computer Organization and Assembly Language Programming	3		<ul style="list-style-type: none"> <li>• Research and prepare for <b>graduate school</b>.</li> <li>• Develop a <b>professional profile online</b>.</li> </ul>
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 <b>Necessary course signified by</b> 	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"> <li>Plan for success using the <b>Senior Guide</b>.</li> <li>Use <b>Handshake</b> 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 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 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
	CSE Upper Division Elective	

EEE 435: Fundamentals of CMOS and MEMS	FSE 301: Entrepreneurship and Value Creation	EEE 498: Manufacturing Science of Solar Cells
EEE 436: Fundamentals of Solid-State Devices	IEE Upper Division Elective	EEE 498: Science and Technology of Solar Cell Fabrication
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		
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 Technology Automotive Electrification		
EEE 498: Manufacturing Science of Solar Cells		
EEE 498: Nuclear Proliferation Security & Safeguards		
EEE 498: Quantum Optics and Quantum Information		
EEE 498: Renewable Energy Technology and Systems		
EEE 498: Science and Technology of Solar Cell Fabrication		
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		

**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 2023 - 2024 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.