

















# 2022 - 2023 Major Map



## Electrical Engineering, BSE


School/College: Ira A. Fulton Schools of Engineering  
ESEEBSE



Term 1 0 - 16 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 and should be taken the first semester.</li> <li>If ENG 105 is taken, a 3 hour applicable elective must also be taken prior to graduation. See advisor.</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>
ASU 101-EEE: The ASU Experience	1		
CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)	4		
CSE 100: Principles of Programming with C++ (CS) OR CSE 110: Principles of Programming (CS)	3	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	
FSE 100: Introduction to Engineering	2		
 Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	16		
Term 2 16 - 32 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>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>
 PHY 121: University Physics I: Mechanics (SQ)	3	C	
 PHY 122: University Physics Laboratory I (SQ)	1	C	
EEE 120: Digital Design Fundamentals	3	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
 Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
 Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	16		
Term 3 32 - 46 Credit Hours <b>Critical course signified by</b> 	Hours	Minimum Grade	Notes
 EEE 202: Circuits I	4		<ul style="list-style-type: none"> <li>Prep for success using the <a href="#">Sophomore Guide</a>.</li> </ul>



MAT 267: Calculus for Engineers III (MA)	3	C
MAT 275: Modern Differential Equations (MA)	3	C
PHY 131: University Physics II: Electricity and Magnetism (SQ)	3	C
PHY 132: University Physics Laboratory II (SQ)	1	C
 Complete First-Year Composition requirement.		
 Minimum 2.00 GPA ASU Cumulative.		
Complete Mathematics (MA) requirement.		
Term hours subtotal:	14	

Term 4 46 - 61 Credit Hours  Critical course signified by	Hours	Minimum Grade	Notes
 EEE 203: Signals and Systems I	3		<ul style="list-style-type: none"> <li>Pursue an undergraduate research experience.</li> <li>Apply for internships.</li> <li>Attend career fairs and events.</li> </ul>
 EEE 241: Fundamentals of Electromagnetics	3		
MAT 342: Linear Algebra OR MAT 343: Applied Linear Algebra	3	C	
PHY 241: University Physics III	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Term hours subtotal:	15		

Term 5 61 - 75 Credit Hours  Necessary course signified by	Hours	Minimum Grade	Notes
 EEE 334: Circuits II	4		<ul style="list-style-type: none"> <li>Plan for success using the Junior Guide.</li> <li>Network at student organization competitions or professional societies.</li> </ul>
EEE 230: Computer Organization and Assembly Language Programming	3		
EEE 350: Random Signal Analysis	3		
Upper Division Area Pathway Course	4		
Term hours subtotal:	14		

Term 6 75 - 90 Credit Hours  Necessary course signified by	Hours	Minimum Grade	Notes
 Complete 3 courses: Upper Division Area Pathway Course	12		<ul style="list-style-type: none"> <li>Research and prepare for graduate school.</li> <li>Apply for an engineering 4+1 program.</li> <li>Develop a professional profile online.</li> </ul>
ECN 211: Macroeconomic Principles (SB) OR ECN 212: Microeconomic Principles (SB)	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 90 - 105 Credit Hours <b>Necessary course signified by</b> 	Hours	Minimum Grade	Notes
 EEE 488: Senior Design Laboratory I (L)	3		<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> <li>Complete an in person or virtual <a href="#">practice interview</a>.</li> </ul>
Upper Division Math or Science or Engineering Elective	3		
<b>Complete 2 courses:</b> Upper Division Technical Elective	6		
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3		
Term hours subtotal:	15		

Term 8 105 - 120 Credit Hours <b>Necessary course signified by</b> 	Hours	Minimum Grade	Notes
 EEE 489: Senior Design Laboratory II (L)	3		
<b>Complete 3 courses:</b> Upper Division Technical Elective	9		
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Term hours subtotal:	15		

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

Technical Electives	Math or Science or Engineering Elective	Area Pathway Course
EEE 404: Real-Time DSP Systems	AEE Upper Division Elective	EEE 304: Signals and Systems II
EEE 407: Digital Signal Processing	BIO Upper Division Elective	EEE 333: Hardware Design Languages and Programmable Logic
EEE 419: Python for Rapid Engineering Solutions	BME Upper Division Elective	EEE 335: Analog and Digital Circuits
EEE 425: Digital Systems and Circuits	CEE Upper Division Elective	EEE 341: Engineering Electromagnetics
EEE 433: Analog Integrated Circuits	CHE Upper Division Elective	EEE 352: Properties of Electronic Materials
EEE 434: Quantum Mechanics for Engineers	CHM Upper Division Elective	EEE 360: Energy Systems and Power Electronics
EEE 435: Fundamentals of CMOS and MEMS	CPI Upper Division Elective	
EEE 436: Fundamentals of Solid-State Devices	CSE Upper Division Elective	
EEE 437: Optoelectronics	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	FSE 301: Entrepreneurship and Value Creation	
	STP 420: Introductory Applied Statistics (CS)	
	STP 421: Probability	

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 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

EEE 492: Honors Directed Study

EEE 493: Honors Thesis (L)

**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.

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org/>.

**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.