2023 - 2024 Major Map
Industrial Engineering, BSE

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

Term 1 0 - 15 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
ASU 101-CAI: The ASU Experience	1		• ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students and should be taken in the first semester. • 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 ENG 107 or ENG 108: First-Year Composition	3	C	
FSE 100: Introduction to Engineering	2	C	
MAT 265: Calculus for Engineers I (MA)	3	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3		
Complete Mathematics (MA) requirement.			
Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	15		

Term 2 15 - 31 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
CSE 110: Principles of Programming (CS)	3	C	• Students with credit for CHM 113 must take CHM 116. • Create a Handshake profile. • Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)	4		
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	
MAT 266: Calculus for Engineers II (MA)	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Complete MAT 170 OR MAT 171 OR MAT 265 OR MAT 270 course(s).			
Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	16		

Term 3 31 - 46 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes

!	CSE 205: Object-Oriented Programming and Data Structures (CS)	3	C	• Prep for success using the Sophomore Guide.
!	IEE 210: Introduction to Industrial Engineering	3	C	
	ECN 211: Macroeconomic Principles (SB)	3	C	
	MAT 267: Calculus for Engineers III (MA)	3	C	
	MSE 250: Structure and Properties of Materials	3		
!	Complete MAT 266 OR MAT 271 course(s).			
!	Minimum 2.00 GPA ASU Cumulative.			
	Complete Mathematics (MA) requirement.			
	Term hours subtotal:	15		

Term 4 46 - 62 Credit Hours Critical course signified by !	**Hours**	**Minimum Grade**	**Notes**
! IEE 380: Probability and Statistics for Engineering Problem Solving (CS)	3	C	• Pursue an undergraduate research experience. • Apply for internships. • Attend career fairs and events.
! MAT 275: Modern Differential Equations (MA)	3	C	
! PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ)	4	C	
IEE 305: Information Systems Engineering (CS)	3	C	
Engineering Science Elective	3-4		
Term hours subtotal:	16-17		

Term 5 62 - 78 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ IEE 385: Engineering Statistics: Probability	3	C	• Plan for success using the Junior Guide. • Network at student organization competitions or professional societies.
IEE 300: Economic Analysis for Engineers	3	C	
MAE 201: Mechanics of Particles and Rigid Bodies I: Statics	3		
MAT 342: Linear Algebra OR MAT 343: Applied Linear Algebra	3	C	
PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ)	4		
Term hours subtotal:	16		

Term 6 78 - 92 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ IEE 321: Professional Engineering Practice	1	C	• Recommended Upper Division (SB) Course: FSE 394 "Engineering for Humanity"

★	IEE 376: Operations Research Deterministic Techniques/Applications	4	C
	IEE 369: Work Analysis and Design (L)	3	C
	IEE 4** Elective	3	C
	Upper Division Social-Behavioral Sciences (SB) OR Upper Division Humanities, Arts and Design (HU)	3	
★	Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).		
	Term hours subtotal:	14	

- Research and prepare for graduate school.
- Apply for a Fulton Schools 4+1 program.
- Develop a professional profile online.

Term 7 92 - 108 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ IEE 485: Systems Design Capstone I (L)	3	C	
IEE 470: Stochastic Operations Research	3	C	
IEE 474: Quality Control	3	C	
IEE 475: Simulating Stochastic Systems (CS)	4	C	
IEE 4** Elective	3	C	
Term hours subtotal:	16		

- Plan for success using the Senior Guide.
- Use Handshake to apply for full-time positions.
- Complete an in person or virtual practice interview.

Term 8 108 - 120 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ IEE 486: Systems Design Capstone II (L)	3	C	
IEE 461: Production Control	3	C	
Upper Division Industrial Engineering Major Electives	3	C	
IEE 4** Elective	3	C	
Term hours subtotal:	12		

- Some IEE Major Electives may require additional prerequisites.
- For more information on Industrial Engineering requirements please visit the SCAI website.

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

Engineering Science Elective
CEE 384: Numerical Methods for Engineers (CS)
CSE 120: Digital Design Fundamentals
CSE 240: Introduction to Programming Languages

Industrial Engineering Major Electives
CEE 400: Earth Systems Engineering and Management ((L or HU) & H)
CSE 310: Data Structures and Algorithms
CSE 330: Operating Systems

EEE 202: Circuits I

MAE 213: Mechanics of Materials

MAE 241: Introduction to Thermodynamics

CSE 360: Introduction to Software Engineering

CSE 494: Data Mining

EEE 352: Properties of Electronic Materials

EEE 435: Fundamentals of CMOS and MEMS

EEE 436: Fundamentals of Solid-State Devices

FSE 301: Entrepreneurship and Value Creation

FSE 404: EPICS Gold: EPICS in Action

IEE 3** Elective

IEE 4** Elective

MAE 384: Advanced Mathematical Methods for Engineers (CS) or CEE 384: Numerical Methods for Engineers (CS)

MAT 300: Mathematical Structures (L)

STP 425: Stochastic Processes

STP 429: Applied Regression (CS)

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.