2023 - 2024 Major Map

Engineering Management, BSE

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

Some accelerated combinations are not available to ASU Online students. Interested students should contact their academic advisor for more information.

Term 1 - A 0 - 7 Credit Hours	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 • Prep for success using the First-Year Student Guide. • Join a Fulton community. • Explore engineering and technical professions.
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Term hours subtotal:	7		

Term 1 - B 7 - 13 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 265: Calculus for Engineers I (MA)	3	C	• View ASU Online first-year student registration information here. • If ENG 105 is taken, a 3 credit hour elective must also be taken prior to graduation.
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	
Term hours subtotal:	6		

Term 2 - A 13 - 19 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 266: Calculus for Engineers II (MA)	3	C	
Social-Behavioral Sciences (SB) (PSY 101 recommended)	3		
Term hours subtotal:	6		

Term 2 - B 19 - 24 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
FSE 100: Introduction to Engineering	2	C	• Create a Handshake profile. • Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
Basic Science Elective	3-4		
Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	5-6		

Term 3 - A 24 - 30 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
CSE 110: Principles of Programming (CS)	3	C	
MAT 267: Calculus for Engineers III (MA)	3	C	
Term hours subtotal:	6		

		Minimum	

Term 3 - B 30 - 36 Credit Hours Critical course signified by	Hours	Grade	Notes
CSE 205: Object-Oriented Programming and Data Structures (CS)	3	C	• Prep for success using the Sophomore Guide.
ECN 212: Microeconomic Principles (SB)	3	C	
Complete Mathematics (MA) requirement.			
Term hours subtotal:	6		

Term 4 - A 36 - 43 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
ACC 231: Uses of Accounting Information I	3	C	
PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ)	4	C	
Term hours subtotal:	7		

Term 4 - B 43 - 49 Credit Hours	Hours	Minimum Grade	Notes
ACC 241: Uses of Accounting Information II	3	C	• 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 49 - 55 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
IEE 380: Probability and Statistics for Engineering Problem Solving (CS)	3	C	• IEE380 is a Session C course (15 weeks long).
Humanities, Arts and Design (HU) AND Global Awareness (G)	3		
Term hours subtotal:	6		

Term 5 - B 55 - 61 Credit Hours	Hours	Minimum Grade	Notes
Global Engineering/Sustainability/Entrepreneurship Course	3-4		• Plan for success using the Junior Guide. • Network at student organization competitions or professional societies.
Math or Science Elective	3	C	
Term hours subtotal:	6-7		

Term 6 - A 61 - 67 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
IEE 300: Economic Analysis for Engineers	3	C	
Industry Focus Area Elective	3	C	
Term hours subtotal:	6		

Term 6 - B 67 - 74 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)	4		• Students who have credit for CHM113 should take CHM116. • Research and prepare for graduate school. • Apply for an engineering accelerated program. • Develop a professional profile online.
IEE 454: Risk Management	3	C	
Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).			
Term hours subtotal:	7		

Term 7 - A 74 - 80 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
IEE 458: Project Management	3	C	
Math or Science Elective	3	C	
Term hours subtotal:	6		

		Minimum	

Term 7 - B 80 - 86 Credit Hours	Hours	Grade	Notes
IEE 431: Engineering Administration (L)	3	C	• 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 Industry Focus Area Elective	3	C	
Term hours subtotal:	6		

Term 8 - A 86 - 92 Credit Hours	Hours	Minimum Grade	Notes
IEE 369: Work Analysis and Design (L)	3	C	• IEE369 is a Session C course (15 weeks long).
IEE 381: Lean Six Sigma Methodology	3	C	
Term hours subtotal:	6		

Term 8 - B 92 - 96 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ IEE 321: Professional Engineering Practice	1	C	
Upper Division Industry Focus Area Elective	3	C	
Term hours subtotal:	4		

Term 9 - A 96 - 102 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ IEE 485: Systems Design Capstone I (L)	3	C	• IEE485 is a Session C course (15 weeks long).
IEE 477: System Dynamics and Thinking	3	C	
Term hours subtotal:	6		

Term 9 - B 102 - 108 Credit Hours	Hours	Minimum Grade	Notes
Complete 2 courses: Upper Division Industry Focus Area Elective	6	C	
Term hours subtotal:	6		

Term 10 - A 108 - 114 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ IEE 486: Systems Design Capstone II (L)	3	C	• IEE486 is a Session C course (15 weeks long).
IEE 456: Introduction to Systems Engineering	3	C	
Term hours subtotal:	6		

Term 10 - B 114 - 120 Credit Hours	Hours	Minimum Grade	Notes
MGT 300: Principles of Management and Leadership	3	C	
Upper Division Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Upper Division Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)	3		
Term hours subtotal:	6		

- Major maps are built based on full-time enrollment, but can be adjusted as necessary for part-time attendance.
    - Some Industry Focus Area Electives are sequential and may be offered only in the Fall or Spring semester.
    - Some Industry Focus Area Electives may require additional prerequisites.
    - For more information on Industry Focus Areas please visit theSCAI website.

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

Basic Science Elective
BIO 181: General Biology I (SQ)
BIO 182: General Biology II (SG)
BIO 201: Human Anatomy and Physiology I (SG)
BIO 202: Human Anatomy and Physiology II (SG)
CHM 113: General Chemistry I (SQ)
GLG 101: Introduction to Geology I (Physical) (SQ)
GLG 102: Introduction to Geology II (Historical) (SG & H)
GLG 110: Dangerous World (SQ & G)
PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)
PHY 241: University Physics III

Industry Focus Area (Software Engineering)
Required Courses:
SER 222: Design and Analysis of Data Structures and Algorithms
SER 334: Operating Systems and System Programming
Complete 3 classes from the list below:
SER 321: Principles of Distributed Software Systems
SER 322: Principles of Database Management
SER 421: Web-Based Applications
SER 423: Mobile Systems
Math or Science Elective (Software Engineering Industry)
CSE 230: Computer Organization and Assembly Language Programming
MAT 243: Discrete Mathematical Structures

Global Engineering/Sustainability/Entrepreneurship
ABS 270: Sustainable Biological Systems
CEE 181: Technological, Social, and Sustainable Systems (HU)
FSE 301: Entrepreneurship and Value Creation
SES 106: Habitable Worlds (SQ)
SOS 100: Introduction to Sustainability (G)
SOS 110: Sustainable World (SB)
SOS 111: Sustainable Cities ((HU or SB) & G) or PUP 190: Sustainable Cities ((HU or SB) & G)
SOS 171: The Thread of Energy (SB & G)

Industry Focus Area (Business Analytics)
Complete 5 classes from the list below:
IEE 3** Elective
IEE 376: Operations Research Deterministic Techniques/Applications
IEE 385: Engineering Statistics: Probability
IEE 4** Elective
IEE 461: Production Control
IEE 474: Quality Control
Math or Science Elective (Business Analytics Industry)
MAT 275: Modern Differential Equations (MA)
PHY 131: University Physics II: Electricity and Magnetism (SQ)

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.