2023 - 2024 Major Map
Computer Systems Engineering, BSE

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

Term 1 0 - 15 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
CSE 110: Principles of Programming (CS)	3	C	• ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students and should be taken in the first semester. • If ENG 105 is taken, a three (3) semester hour elective must also be taken prior to graduation. • Prep for success using the First-Year Student Guide. • Join a Fulton community. • Explore engineering and technical professions.
ASU 101-CAI: The ASU Experience	1		
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	
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 205: Object-Oriented Programming and Data Structures (CS)	3	C	• Create a Handshake profile. • Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
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	
Biology or Chemistry Course	4		
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).			
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 - 47 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes

!	CSE 120: Digital Design Fundamentals	3	C	• Prep for success using the Sophomore Guide.
!	MAT 243: Discrete Mathematical Structures	3	C	
	MAT 267: Calculus for Engineers III (MA)	3	C	
	PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ)	4	C	
	Social-Behavioral Sciences (SB) AND Historical Awareness (H)	3		
!	Complete MAT 266 OR MAT 271 course(s).			
!	Minimum 2.00 GPA ASU Cumulative.			
	Complete Mathematics (MA) requirement.			
	Term hours subtotal:	16		

Term 4 47 - 63 Credit Hours Critical course signified by !	**Hours**	**Minimum Grade**	**Notes**
! CSE 220: Programming for Computer Engineering	3	C	• Pursue an undergraduate research experience. • Apply for internships. • Attend career fairs and events.
! CSE 230: Computer Organization and Assembly Language Programming	3	C	
MAT 275: Modern Differential Equations (MA)	3	C	
PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ)	4	C	
Humanities, Arts and Design (HU)	3		
! Complete MAT 267 OR MAT 272 course(s).			
Term hours subtotal:	16		

Term 5 63 - 77 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ CSE 310: Data Structures and Algorithms	3	C	• Plan for success using the Junior Guide. • Network at student organization competitions or professional societies.
CSE 301: Computing Ethics	1	C	
CSE 320: Design and Synthesis of Digital Hardware	3	C	
EEE 202: Circuits I	4	C	
IEE 380: Probability and Statistics for Engineering Problem Solving (CS)	3	C	
Term hours subtotal:	14		

Term 6 77 - 93 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ CSE 325: Embedded Microprocessor Systems	3	C	• Research and prepare for graduate school.

	CSE 330: Operating Systems	3	C
	CSE 360: Introduction to Software Engineering	3	C
	EEE 334: Circuits II	4	C
	MAT 343: Applied Linear Algebra	3	C
★	Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).		
	Term hours subtotal:	16	

- Apply for an engineering 4+1 program.
- Develop a professional profile online.

Term 7 93 - 108 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ CSE 423: Systems Capstone Project I (L)	3	C	• Please see course lists below for CSE Technical Electives. Contact SCAI Advising or visit the SCAI website for additional information. Maximum 6 hours at the 300-level. • Plan for success using the Senior Guide. • Use Handshake to apply for full-time positions. • Complete an in person or virtual practice interview.
CSE 434: Computer Networks	3	C	
Complete 2 courses: Upper Division CSE Technical Elective	6	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Term hours subtotal:	15		

Term 8 108 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ CSE 424: Systems Capstone Project II (L)	3	C	• Please see course lists below for CSE Technical Electives. Contact SCAI Advising or visit the SCAI website for additional information. Maximum 6 hours at the 300-level.
CSE 420: Computer Architecture I	3	C	
Complete 2 courses: 4** Upper Division CSE Technical Elective	6	C	
Term hours subtotal:	12		

- Maximum 3 hours of FSE 301 or FSE 404 can be applied towards major requirements.
- Maximum 6 hours of CSE 484, CSE 492, CSE 493, CSE 499, FSE 301, and FSE 404 can be applied towards major requirements.
- CSE 475 or DAT 402 can be applied towards major requirements but not both.
- Technical Electives may require additional prerequisites.
- For additional information on major curriculum please visit the Computer Systems Engineering Degree Requirements website.

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

Biology or Chemistry Courses
BIO 181: General Biology I (SQ)
BIO 182: General Biology II (SG)
CHM 113: General Chemistry I (SQ)

Upper Division CSE Technical Electives
BME 494: Applied Computational Behavioral Science
CPI 350: Evaluation of Informatics Systems

CHM 114: General Chemistry for Engineers (SQ)

CHM 116: General Chemistry II (SQ)

CPI 411: Graphics for Games

CSE 335: Principles of Mobile Application Development

CSE 340: Principles of Programming Languages

CSE 355: Introduction to Theoretical Computer Science

CSE 365: Information Assurance

CSE 4** Elective

DAT 300: Mathematical Tools for Data Science

DAT 301: Exploring Data in R and Python

DAT 401: Statistical Modeling and Inference for Data Science

DAT 402: Machine Learning for Data Science

EEE 304: Signals and Systems II

EEE 335: Analog and Digital Circuits

EEE 350: Random Signal Analysis

EEE 404: Real-Time DSP Systems

EEE 407: Digital Signal Processing

EEE 425: Digital Systems and Circuits

EEE 455: Communication Systems

EEE 480: Feedback Systems

EEE 481: Computer-Controlled Systems

FSE 301: Entrepreneurship and Value Creation

FSE 394: Engineering for Humanity

FSE 404: EPICS Gold: EPICS in Action

IEE 385: Engineering Statistics: Probability

MAT 416: Graph Theory

MAT 421: Applied Computational Methods (CS)

MAT 447: Cryptography I

MAT 448: Cryptography II

PHY 302: Mathematical Methods in Physics II

PHY 333: Electronic Circuits and Measurements

PHY 441: Statistical and Thermal Physics

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.