2022 - 2023 Major Map

Computer Science, BS

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

Term 1 - A 0 - 6 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 and should be taken in the first semester. • If ENG 105 is taken, a three credit 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.
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	
Term hours subtotal:	6		

Term 1 - B 6 - 12 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ CSE 110: Principles of Programming (CS)	3	C	• View ASU Online first-year student registration information here.
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	
⬥ Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	6		

Term 2 - A 12 - 18 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.
MAT 265: Calculus for Engineers I (MA)	3	C	
Term hours subtotal:	6		

Term 2 - B 18 - 24 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ CSE 120: Digital Design Fundamentals	3	C	
MAT 266: Calculus for Engineers II (MA)	3	C	
⬥ 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).			
Term hours subtotal:	6		

Term 3 - A 24 - 30 Credit Hours Critical course signified by ⬥	Hours	Minimum Grade	Notes
⬥ CSE 240: Introduction to Programming Languages	3	C	• Prep for success using the Sophomore Guide.
⬥ MAT 243: Discrete Mathematical Structures	3	C	

	Term hours subtotal:	6		

Term 3 - B 30 - 36 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ CSE 230: Computer Organization and Assembly Language Programming	3	C	
MAT 267: Calculus for Engineers III (MA)	3	C	
⚠ Complete First-Year Composition requirement.			
Complete Mathematics (MA) requirement.			
Term hours subtotal:	6		

Term 4 - A 36 - 42 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
⚠ CSE 310: Data Structures and Algorithms	3	C	• CSE 310 and CSE 360 are both Session C courses (15 weeks long).
CSE 360: Introduction to Software Engineering	3	C	
Term hours subtotal:	6		

Term 4 - B 42 - 48 Credit Hours Critical course signified by ⚠	Hours	Minimum Grade	Notes
Natural Science - Quantitative (SQ)	4		• Three total (SQ) lab science courses are required. Two (SQ) courses must be from the same subject area and one (SQ) course must be from a different subject area.
Elective	2		
⚠ Complete MAT 266 OR MAT 271 course(s).			• Plan for success using the Junior Guide.
Term hours subtotal:	6		

Term 5 - A 48 - 54 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ CSE 330: Operating Systems	3	C	• CSE 330 and CSE 355 are both Session C courses (15 weeks long).
⭐ CSE 355: Introduction to Theoretical Computer Science	3	C	
⭐ Complete MAT 267 OR MAT 272 course(s).			
Term hours subtotal:	6		

Term 5 - B 54 - 61 Credit Hours	Hours	Minimum Grade	Notes
CSE 301: Computing Ethics	1	C	
Upper Division Technical Elective	3	C	
Humanities, Arts and Design (HU)	3		
Term hours subtotal:	7		

Term 6 - A 61 - 67 Credit Hours	Hours	Minimum Grade	Notes
CSE 365: Information Assurance	3	C	• CSE 365 is a Session C course (15 weeks long).
CSE 412: Database Management OR CSE 445: Distributed Software Development	3	C	• CSE 412 / CSE 445 are in Session C (15 weeks long).
Term hours subtotal:	6		• Develop a professional profile online.

Term 6 - B 67 - 73 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ CSE 340: Principles of Programming Languages	3	C	
MAT 343: Applied Linear Algebra	3	C	
Term hours subtotal:	6		

Term 7 - A 73 - 79 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes

⭐ IEE 380: Probability and Statistics for Engineering Problem Solving (CS)	3	C	• IEE 380 and the CSE 4** (400-Level) Elective are both Session C courses (15 weeks long).
4** CSE Elective	3	C	
Term hours subtotal:	6		

Term 7 - B 79 - 85 Credit Hours	Hours	Minimum Grade	Notes
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3		
Elective	3		
Term hours subtotal:	6		

Term 8 - A 85 - 91 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
⭐ CSE 485: Computer Science Capstone Project I (L)	3	C	• CSE 485 and the CSE 4** (400-Level) Elective are both Session C courses (15 weeks long).
4** CSE Elective	3	C	
Term hours subtotal:	6		

Term 8 - B 91 - 98 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		• Three total (SQ) lab science courses are required. Two (SQ) courses must be from the same subject area and one (SQ) course must be from a different subject area.
Natural Science - Quantitative (SQ)	4		
⭐ Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).			
Term hours subtotal:	7		

Term 9 - A 98 - 104 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
⭐ CSE 486: Computer Science Capstone Project II (L)	3	C	• CSE 486 and the CSE 4** (400-Level) Elective are both Session C courses (15 weeks long).
4** CSE Elective	3	C	
Term hours subtotal:	6		

Term 9 - B 104 - 111 Credit Hours	Hours	Minimum Grade	Notes
Natural Science - Quantitative (SQ)	4		• Three total (SQ) lab science courses are required. Two (SQ) courses must be from the same subject area and one (SQ) course must be from a different subject area.
Social-Behavioral Sciences (SB) AND Historical Awareness (H)	3		
Term hours subtotal:	7		

Term 10 - A 111 - 117 Credit Hours **Necessary course signified by** ⭐	Hours	Minimum Grade	Notes
⭐ 4** CSE Elective	3	C	• The CSE 4** (400-Level) Elective is a Session C course (15 weeks long).
Upper Division Technical Elective	3	C	
Term hours subtotal:	6		

Term 10 - B 117 - 120 Credit Hours	Hours	Minimum Grade	Notes
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Term hours subtotal:	3		

• • Maximum three hours of FSE 301 or FSE 404 can be applied towards major requirements.

- Maximum six 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 Science Degree Requirements website.

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

Technical Electives	Technical Electives continued
BCH 361: Advanced Principles of Biochemistry	EEE 360: Energy Systems and Power Electronics
BCH 461: General Biochemistry	EEE 407: Digital Signal Processing
BCH 462: General Biochemistry	EEE 425: Digital Systems and Circuits
BIO 340: General Genetics	EEE 433: Analog Integrated Circuits
BIO 345: Evolution	EEE 434: Quantum Mechanics for Engineers
CIS 415: Big Data Analytics in Business	EEE 435: Fundamentals of CMOS and MEMS
CSE 4** Elective	EEE 436: Fundamentals of Solid-State Devices
DAT 300: Mathematical Tools for Data Science	EEE 439: Semiconductor Facilities and Cleanroom Practices
DAT 301: Exploring Data in R and Python	EEE 445: Microwaves
DAT 401: Statistical Modeling and Inference for Data Science	EEE 448: Fiber Optics
DAT 402: Machine Learning for Data Science	EEE 459: Communication Networks
EEE 304: Signals and Systems II	EEE 460: Nuclear Power Engineering
EEE 333: Hardware Design Languages and Programmable Logic	EEE 463: Electrical Power Plants
EEE 335: Analog and Digital Circuits	EEE 470: Electric Power Devices
EEE 350: Random Signal Analysis	EEE 471: Power System Analysis
	EEE 481: Computer-Controlled Systems
	FSE 301: Entrepreneurship and Value Creation
	IEE 376: Operations Research Deterministic Techniques/Applications
	IEE 381: Lean Six Sigma Methodology
	IEE 385: Engineering Statistics: Probability
	IEE 412: Introduction to Financial Engineering
	IEE 431: Engineering Administration (L)
	IEE 456: Introduction to Systems Engineering
	IEE 458: Project Management
	IEE 461: Production Control
	IEE 470: Stochastic Operations Research
	IEE 474: Quality Control

MAE 417: System Dynamics and Control II

PHY 302: Mathematical Methods in Physics II

PHY 361: Introductory Modern Physics

SER 421: Web-Based Applications

SER 423: Mobile Systems

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 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.