
















2023 - 2024 Major Map


Computer Science (Cybersecurity), BS





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

Term 1 0 - 15 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CSE 110: Principles of Programming (CS)	3	C	<ul style="list-style-type: none"> 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 3 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.
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	<ul style="list-style-type: none"> 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. 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	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Natural Science - Quantitative (SQ)	4		
 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
 CSE 240: Introduction to Programming Languages	3	C
 MAT 243: Discrete Mathematical Structures	3	C
MAT 267: Calculus for Engineers III (MA) OR CSE 259: Logic in Computer Science	3	C
Natural Science - Quantitative (SQ)	4	
 Complete MAT 266 OR MAT 271 course(s).		
 Minimum 2.00 GPA ASU Cumulative.		
Complete Mathematics (MA) requirement.		
Term hours subtotal:	16	


- 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.
- Prep for success using the [Sophomore Guide](#).

Term 4 47 - 63 Credit Hours  Critical course signified by	Hours	Minimum Grade	Notes
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 CSE 230: Computer Organization and Assembly Language Programming	3	C
 CSE 310: Data Structures and Algorithms	3	C
Complete 2 courses: Elective	6	
 Complete CSE 259 OR MAT 267 OR MAT 272 course(s).		
 Minimum 2.00 GPA ASU Cumulative.		
Natural Science - Quantitative (SQ)	4	
Term hours subtotal:	16	


- 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.
- Pursue an [undergraduate research experience](#).
- Apply for [internships](#).
- Attend [career fairs and events](#).

Term 5 63 - 79 Credit Hours  Necessary course signified by	Hours	Minimum Grade	Notes
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 IEE 380: Probability and Statistics for Engineering Problem Solving (CS)	3	C
CSE 301: Computing Ethics	1	C
CSE 355: Introduction to Theoretical Computer Science	3	C
CSE 360: Introduction to Software Engineering	3	C
CSE 365: Information Assurance	3	C
Social-Behavioral Sciences (SB) AND Historical Awareness (H)	3	
Term hours subtotal:	16	

- Plan for success using the [Junior Guide](#).
- Network at [student organization competitions](#) or professional societies.

Term 6 79 - 94 Credit Hours  Necessary course signified by	Hours	Minimum Grade	Notes
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★ CSE 330: Operating Systems	3	C
★ CSE 340: Principles of Programming Languages	3	C
CSE 412: Database Management OR CSE 434: Computer Networks OR CSE 445: Distributed Software Development	3	C
MAT 343: Applied Linear Algebra	3	C
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:		15

- CSE 434 is a prerequisite for CSE 468 which is an option for the Cybersecurity Focus Courses requirement.
- Research and prepare for graduate school.
- Apply for an engineering 4+1 program.
- Develop a professional profile online.

★ Term 7 94 - 108 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
★ CSE 485: Computer Science Capstone Project I (L)	3	C	<ul style="list-style-type: none"> • 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 Cybersecurity Elective	3	C	
Upper Division Cybersecurity Focus Courses	3	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Elective	2		
Term hours subtotal:		14	

★ Term 8 108 - 120 Credit Hours Necessary course signified by	Hours	Minimum Grade	Notes
★ CSE 486: Computer Science Capstone Project II (L)	3	C	<ul style="list-style-type: none"> • Please see course lists below for Technical Electives. Contact SCAI Advising or visit the Scai website for additional information.
Upper Division Cybersecurity Elective	3	C	
Upper Division Cybersecurity Focus Courses	3	C	
Upper Division Technical Elective	3	C	
Term hours subtotal:		12	

- Technical Electives may require additional prerequisites.
- For additional information on major curriculum, please visit the Computer Science Degree Requirements website and the Concentration Requirements website.

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

Cybersecurity Focus Courses	Cybersecurity Electives	Technical Electives
CSE 466: Computer Systems Security	CSE 445: Distributed Software Development	AEE 415: Vibration Analysis
CSE 468: Computer Network Security		

CSE 469: Computer and Network Forensics	CSE 460: Software Analysis and Design	AEE 426: Design of Aerospace Structures
CSE 494: Artificial Intelligence for Cyber Security	CSE 463: Introduction to Human Computer Interaction	AEE 462: Space Vehicle Dynamics and Control
	CSE 464: Software Quality Assurance and Testing	AEE 463: Aircraft Propulsion
	CSE 466: Computer Systems Security	AEE 465: Rocket Propulsion
	CSE 467: Data and Information Security	AEE 468: Aircraft Systems Design
	CSE 468: Computer Network Security	AEE 471: Computational Fluid Dynamics
	CSE 469: Computer and Network Forensics	AME 430: Mac Development for Media Arts
	CSE 471: Introduction to Artificial Intelligence	AME 435: Mobile Development
	CSE 494: Artificial Intelligence for Cyber Security	BCH 361: Advanced Principles of Biochemistry
		BCH 461: General Biochemistry
		BCH 462: General Biochemistry
		BIO 340: General Genetics
		BIO 343: Genetic Engineering and Society (L)
		BIO 345: Evolution
		BME 350: Signals and Systems for Bioengineers
		BME 413: Biomedical Instrumentation (L)
		BME 416: Advanced Biomechanics
		BME 494: Applied Computational Behavioral Science
		CEE 412: Pavement Analysis and Design
		CEE 432: Developing Software for Engineering Applications
		CEE 440: Hydrology
		CEE 441: Water Resources Engineering
		CEE 452: Foundations
		CEE 462: Unit Operations in Environmental Engineering
		CEE 466: Urban Water System Design
		CEE 467: Environmental Microbiology
		CEE 474: Transportation Systems Planning
		CEE 475: Highway Geometric Design
		CEE 481: Civil Engineering Project Management
		CEE 483: Highway Materials, Construction, and Quality
		CEE 486: Integrated Civil Engineering Design (L)
		CHE 342: Introduction to Applied Chemical Thermodynamics
		CHE 432: Principles of Chemical Engineering Design

CHE 442: Introduction to Chemical Reactor Design

CHE 461: Process Dynamic Control (CS)

CHE 462: Process Design (L)

CHE 469: Air Quality Engineering

CHE 475: Biochemical Engineering

CIS 415: Big Data Analytics in Business

CPI 311: Game Engine Development

CPI 350: Evaluation of Informatics Systems

CPI 360: Decision Making and Problem Solving

CPI 411: Graphics for Games

CPI 460: Intelligent Interactive Instructional Systems

CPI 462: Design for Learning in Virtual Worlds

CSE 320: Design and Synthesis of Digital Hardware

CSE 325: Embedded Microprocessor Systems

CSE 335: Principles of Mobile Application Development

CSE 4** Elective

CSE 484: Internship

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 333: Hardware Design Languages and Programmable Logic

EEE 335: Analog and Digital Circuits

EEE 350: Random Signal Analysis

Technical Electives continued

EEE 360: Energy Systems and Power Electronics

EEE 404: Real-Time DSP Systems

EEE 407: Digital Signal Processing

EEE 425: Digital Systems and Circuits

EEE 433: Analog Integrated Circuits

EEE 434: Quantum Mechanics for Engineers

EEE 435: Fundamentals of CMOS and MEMS

EEE 436: Fundamentals of Solid-State Devices

EEE 437: Optoelectronics

EEE 439: Semiconductor Facilities and Cleanroom Practices

EEE 443: Antennas for Wireless Communications

EEE 445: Microwaves

EEE 448: Fiber Optics

EEE 455: Communication Systems

EEE 459: Communication Networks

EEE 460: Nuclear Power Engineering

EEE 463: Electrical Power Plants

EEE 470: Electric Power Devices

EEE 471: Power System Analysis

EEE 473: Electrical Machinery

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 376: Operations Research
Deterministic Techniques/Applications

IEE 381: Lean Six Sigma Methodology

IEE 385: Engineering Statistics: Probability

IEE 412: Introduction to Financial Engineering

IEE 426: Operations Research in Healthcare

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

IEE 475: Simulating Stochastic Systems (CS)

MAE 341: Mechanism Analysis and Design

MAE 404: Finite Elements in Engineering

MAE 417: System Dynamics and Control II

MAE 436: Combustion

MAE 455: Polymers and Composites

MAT Upper Division Elective

Except for: MAT 300, MAT 340, MAT 342,
MAT 343 and MAT 485

MSE 335: Materials Kinetics

MEE 351: Manufacturing Processes

MEE 434: Internal Combustion Engines

MEE 446: Energy Systems Design II

MSE 415: Mathematical and Computer
Methods in Materials (CS)

PHY 302: Mathematical Methods in
Physics II

PHY 361: Introductory Modern Physics

PHY 462: Particle and Nuclear Physics

SER 421: Web-Based Applications

SER 422: Web Application Programming

SER 423: Mobile Systems

STP 421: Probability

STP 425: Stochastic Processes

STP 427: Mathematical Statistics

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.