2015 - 2016 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 with Java (CS)	3	C	• An SAT, ACT, Accuplacer, TOEFL or IELTS score determines placement into first-year composition courses
⬥ MAT 265: Calculus for Engineers I (MA)	3	C	• ASU Math Placement Exam score determines placement in Mathematics course
ASU 101-CSE: The ASU Experience	1		• ASU 101 or College specific equivalent First Year Seminar required of all freshman students
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	• If ENG 105 is taken, a 3 credit hour applicable elective must also be taken prior to graduation. Contact CIDSE Advising.
FSE 100: Introduction to Engineering	2	C	
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3		
⬥ 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	• Three (3) lab science classes are required. 2 of the 3 classes must be from the same subject area or discipline.
⬥ MAT 266: Calculus for Engineers II (MA)	3	C	
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	
Lab Science Requirement AND Natural Science - Quantitative (SQ)	4		
Elective	3		
⬥ Complete ENG 101 OR ENG 105 OR ENG 107 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	• Three (3) lab science classes are required. 2 of the 3 classes must be from the same subject area or discipline.
⬥ MAT 243: Discrete Mathematical Structures	3	C	
⬥ MAT 267: Calculus for Engineers III (MA)	3	C	

	Hours		
Lab Science Requirement AND Natural Science - Quantitative (SQ) or Natural Science - General (SG)	4		
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
⬥ 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 230: Computer Organization and Assembly Language Programming	3	C	• Three (3) lab science classes are required. 2 of the 3 classes must be from the same subject area or discipline.
⬥ CSE 240: Introduction to Programming Languages	3	C	
MAT 343: Applied Linear Algebra	3	C	
Lab Science Requirement AND Natural Science - Quantitative (SQ) or Natural Science - General (SG)	4		
Social-Behavioral Sciences (SB) AND Historical Awareness (H)	3		
Complete MAT 265 AND MAT 266 AND MAT 267 AND MAT 243 AND CSE 110 AND CSE 205 AND CSE 120 AND CSE 230 AND CSE 240 course(s).			
Term hours subtotal:	16		

Term 5 63 - 79 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ CSE 310: Data Structures and Algorithms	3	C	
CSE 301: Computing Ethics	1	C	
CSE 360: Introduction to Software Engineering	3	C	
IEE 380: Probability and Statistics for Engineering Problem Solving (CS)	3	C	
Humanities, Arts and Design (HU)	3		
Social-Behavioral Sciences (SB)	3		
Term hours subtotal:	16		

Term 6 79 - 94 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ CSE 340: Principles of Programming Languages	3	C	• Please see course lists below for Technical Electives. Contact CIDSE Advising or visit the CIDSE website for additional information.
CSE 355: Introduction to Theoretical Computer Science	3	C	

	Hours	Minimum Grade	
CSE 430: Operating Systems	3	C	• Effective fall 2016, CSE 430 changes to CSE 330.
Upper Division Technical Elective	3	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Term hours subtotal:	15		

Term 7 94 - 108 Credit Hours Necessary course signified by ⭐	Hours	Minimum Grade	Notes
⭐ CSE 485: Computer Science Capstone Project I (L)	3	C	• Effective fall 2016, CSE 485 requires CSE 330, 340, 355, and 360 with a C or better as prerequisites.
CSE 465: Information Assurance	3	C	• Effective fall 2018, CSE 465 changes to CSE 365.
CSE 466: Computer Systems Security	3	C	
CSE 468: Computer Network Security	3	C	
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	• Please see course lists below for Technical Electives. Contact CIDSE Advising or visit the CIDSE website for additional information.
CSE 469: Computer and Network Forensics	3	C	
Information Assurance Elective Course	3	C	
Upper Division Technical Elective	3	C	
Term hours subtotal:	12		

- Please see course lists below for Technical Electives. Contact CIDSE Advising or visit the CIDSE website for additional information.

The curriculum updates referred to in some terms of the major map occurred because the Ira A. Fulton Engineering programs are **required** by our accreditation agency ABET to follow a curriculum continuous improvement process to keep up with technology changes and feedback from industry constituents. The changes were made to better prepare students for future success in the capstone courses for the degree.

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

Lab Science Requirement	Technical Electives	Technical Electives continued
BIO 181: General Biology I (SQ)	AEE 415: Vibration Analysis	EEE 304: Signals and Systems II
BIO 182: General Biology II (SG)	AEE 426: Design of Aerospace Structures	EEE 350: Random Signal Analysis
BIO 201: Human Anatomy and Physiology I (SG)	AEE 462: Space Vehicle Dynamics and Control	EEE 360: Energy Systems and Power Electronics
BIO 202: Human Anatomy and Physiology II (SG)	AEE 463: Aircraft Propulsion	EEE 404: Real-Time DSP Systems
		EEE 407: Digital Signal Processing

CHM 113: General Chemistry I (SQ)

CHM 116: General Chemistry II (SQ)

GLG 101: Introduction to Geology I (Physical) (SQ & G) AND GLG 103: Introduction to Geology I-Laboratory (SQ)

GLG 102: Introduction to Geology II (Historical) (SG & H) AND GLG 104: Introduction to Geology II-Laboratory (SG)

PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ)

PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ)

AEE 465: Rocket Propulsion

AEE 468: Aircraft Systems Design

AEE 469: Projects in Astronautics or Aeronautics

AEE 471: Computational Fluid Dynamics

CSE 4** Elective

Except for CSE 430, CSE 485 and CSE 486

CPI 411: Graphics for Games

CPI 412: Cognitive Systems and Intelligent Agents

BCH 361: Advanced Principles of Biochemistry

BCH 461: General Biochemistry

BCH 462: General Biochemistry

BCH 465: Protein and Nucleic Acid Biochemistry

BME 350: Signals and Systems for Bioengineers

BME 413: Biomedical Instrumentation (L)

BME 416: Biomechanics

BME 419: Biocontrol Systems

BIO 340: General Genetics

BIO 343: Genetic Engineering and Society (L)

CHE 342: Introduction to Applied Chemical Thermodynamics

CHE 432: Principles of Chemical Engineering Design

CHE 442: Introduction to Chemical Reactor Design

CHE 458: Semiconductor Material Processing

CHE 461: Process Dynamic Control (CS)

CHE 462: Process Design

CHE 469: Air Quality Engineering

CHE 475: Biochemical Engineering

CHE 476: Bioreaction Engineering

CEE 412: Pavement Analysis and Design

CEE 423: Structural 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

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 for Engineers

IEE 376: Operations Research Deterministic Techniques/Applications

IEE 381: Lean Six Sigma Methodology

IEE 385: Engineering Statistics: Probability

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 351: Manufacturing Processes

MAE 404: Finite Elements in Engineering

MAE 406: Advanced CAE Simulation

MAE 417: Control System Design

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)

MAE 436: Combustion

MAE 447: Robotics and Its Influence on Design

MAE 455: Polymers and Composites

MEE 434: Internal Combustion Engines

MEE 446: Energy Systems Design

MAT Upper Division Elective

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

PHY 361: Introductory Modern Physics

STP 421: Probability

STP 425: Stochastic Processes

STP 427: Mathematical Statistics

STP 429: Experimental Statistics (CS)

NOTE: Maximum 3 hours CSE 484 or FSE 301. Maximum 6 hours of CSE 484, 492, 493 or 499. Some Technical Electives may require addition prerequisites.

Information Assurance Elective (Select 1)

CSE 412: Database Management

CSE 434: Computer Networks

CSE 460: Software Analysis and Design

CSE 463: Introduction to Human Computer Interaction

CSE 471: Introduction to Artificial Intelligence

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 2015 - 2016 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.