# 2015 - 2016 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 with Java (CS) | 3 | C | • An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses.<br>• ASU Math Placement Exam score determines placement in Mathematics course.<br>• ASU 101 or College specific equivalent First Year Seminar required of all freshman students and should be taken the first semester<br>• If ENG 105 is taken, a 3 hour applicable elective must also be taken prior to graduation. See Advisor. |
| MAT 265: Calculus for Engineers I (MA) | 3 | C | |
| ASU 101-CSE: 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 | |
| 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 | • Select BIO or CHM from Major Map list below. |
| 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 | |
| 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). | | | |
| 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 | |
| MAT 243: Discrete Mathematical Structures | 3 | C | |
| MAT 267: Calculus for Engineers III (MA) | 3 | C | |

| | | | |
|---|---|---|---|
| | PHY 121: University Physics I: Mechanics (SQ) | 3 | C |
| | PHY 122: University Physics Laboratory I (SQ) | 1 | C |
| | Social-Behavioral Sciences (SB) AND Historical Awareness (H) | 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 220: Programming for Computer Engineering | 3 | C | |
| ! | CSE 230: Computer Organization and Assembly Language Programming | 3 | C | |
| | PHY 131: University Physics II: Electricity and Magnetism (SQ) | 3 | C | |
| | PHY 132: University Physics Laboratory II (SQ) | 1 | C | |
| | MAT 275: Modern Differential Equations (MA) | 3 | C | |
| | Humanities, Arts and Design (HU) | 3 | | |
| | Complete MAT 265 AND MAT 266 AND MAT 267 AND MAT 243 AND CSE 110 AND CSE 205 AND CSE 120 AND CSE 220 AND CSE 230 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 | |
| | 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 | |
| | CSE 360: Introduction to Software Engineering | 3 | C | |
| | EEE 334: Circuits II | 4 | C | |
| | MAT 343: Applied Linear Algebra | 3 | C | |

| | | | |
|---|---|---|---|
| | Upper Division Humanities, Arts and Design (HU) OR<br>Upper Division Social-Behavioral Sciences (SB) | 3 | |
| | Term hours subtotal: | 16 | |

| 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 CIDSE Advising or visit the CIDSE website for additional information. Maximum 6 hours at the 300-level.<br>• Effective fall 2016, CSE 423 requires CSE 320, 325, 330, and 360 with a C or better as prerequisites.<br>• Effective fall 2016, CSE 430 changes to CSE 330. |
| CSE 430: Operating Systems | 3 | C | |
| CSE 434: Computer Networks | 3 | C | |
| *Complete 2 courses:*<br>Upper Division CSE Technical Elective | 6 | C | |
| 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 CIDSE Advising or visit the CIDSE website for additional information. Maximum 6 hours at the 300-level. |
| CSE 420: Computer Architecture I | 3 | C | |
| *Complete 2 courses:*<br>4** CSE Technical Elective | 6 | C | |
| Term hours subtotal: | 12 | | |

- Please see course lists below for CSE Technical Electives. Contact CIDSE Advising or visit the CIDSE website for additional information. Maximum 6 hours at the 300-level.

  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)

| Biology or Chemistry Courses |
|---|
| 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) |
| CHM 116: General Chemistry II (SQ) |
| CHM 114: General Chemistry for Engineers (SQ) |

| CSE Technical Electives |
|---|
| Note: 6 hours maximum of 300-level Technical Electives. 6 hours minimum of 400-level Technical Electives. |
| Maximum 3 hours of CSE 484 or FSE 301. |
| Maximum 6 hours of CSE 484, 492, 493 or 499. |
| Some Technical Electives may require additional prerequisites. |
| Students considering graduate program in Computer Science should take CSE 340 and CSE 355. |

CSE 340: Principles of Programming Languages

CSE 355: Introduction to Theoretical Computer Science

EEE 304: Signals and Systems II

EEE 350: Random Signal Analysis

FSE 301: Entrepreneurship for Engineers

IEE 385: Engineering Statistics: Probability

CSE 4** Elective

CPI 411: Graphics for Games

CPI 412: Cognitive Systems and Intelligent Agents

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

MAT 421: Applied Computational Methods (CS)

**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.