# 2022 - 2023 Major Map
## Computer Systems Engineering, BSE

**School/College:** Ira A. Fulton Schools of Engineering  
**Location:** Tempe campus

### Term 1 0 - 15 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 110: Principles of Programming (CS)</td>
<td>3</td>
<td>C</td>
<td>• ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students and should be taken in the first semester.</td>
</tr>
<tr>
<td>ASU 101-CSE: The ASU Experience</td>
<td>1</td>
<td></td>
<td>• If ENG 105 is taken, a three (3) semester hour elective must also be taken prior to graduation.</td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR</td>
<td>3</td>
<td>C</td>
<td>• Prep for success using the First-Year Student Guide.</td>
</tr>
<tr>
<td>ENG 105: Advanced First-Year Composition OR</td>
<td>3</td>
<td>C</td>
<td>• Join a Fulton community.</td>
</tr>
<tr>
<td>ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td></td>
<td>• Explore engineering and technical professions.</td>
</tr>
<tr>
<td>FSE 100: Introduction to Engineering</td>
<td>2</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 265: Calculus for Engineers I (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Mathematics (MA) requirement.</td>
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<tr>
<td>Minimum 2.00 GPA ASU Cumulative.</td>
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</tbody>
</table>

**Term hours subtotal:** 15

### Term 2 15 - 31 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 205: Object-Oriented Programming and Data Structures (CS)</td>
<td>3</td>
<td>C</td>
<td>• Create a Handshake profile.</td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR</td>
<td>3</td>
<td>C</td>
<td>• Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.</td>
</tr>
<tr>
<td>ENG 105: Advanced First-Year Composition OR</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 266: Calculus for Engineers II (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Biology or Chemistry Course</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete MAT 170 OR MAT 171 OR MAT 265 OR MAT 270 course(s).</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Minimum 2.00 GPA ASU Cumulative.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 16

### Term 3 31 - 47 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 120: Digital Design Fundamentals</td>
<td>3</td>
<td>C</td>
<td>• Prep for success using the Sophomore Guide.</td>
</tr>
<tr>
<td>MAT 243: Discrete Mathematical Structures</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 267: Calculus for Engineers III (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 121: University Physics I: Mechanics (SQ) AND PHY 122: University Physics Laboratory I (SQ)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Complete MAT 266 OR MAT 271 course(s).

Complete First-Year Composition requirement.

Minimum 2.00 GPA ASU Cumulative.

Complete Mathematics (MA) requirement.

Term hours subtotal: 16

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 220: Programming for Computer Engineering</td>
<td>3</td>
<td>C</td>
<td>• Pursue an undergraduate research experience.</td>
</tr>
<tr>
<td>CSE 230: Computer Organization and Assembly Language Programming</td>
<td>3</td>
<td>C</td>
<td>• Apply for internships.</td>
</tr>
<tr>
<td>MAT 275: Modern Differential Equations (MA)</td>
<td>3</td>
<td>C</td>
<td>• Attend career fairs and events.</td>
</tr>
</tbody>
</table>

Critical course signified by 🟠

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 131: University Physics II: Electricity and Magnetism (SQ) AND PHY 132: University Physics Laboratory II (SQ)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

Humanities, Arts and Design (HU)

Complete MAT 267 OR MAT 272 course(s).

Term hours subtotal: 16

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 310: Data Structures and Algorithms</td>
<td>3</td>
<td>C</td>
<td>• Plan for success using the Junior Guide.</td>
</tr>
<tr>
<td>CSE 301: Computing Ethics</td>
<td>1</td>
<td>C</td>
<td>• Network at student organization competitions or professional societies.</td>
</tr>
<tr>
<td>CSE 320: Design and Synthesis of Digital Hardware</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>EEE 202: Circuits I</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>IEE 380: Probability and Statistics for Engineering Problem Solving (CS)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

Necessary course signified by ⭐

Term hours subtotal: 14

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 325: Embedded Microprocessor Systems</td>
<td>3</td>
<td>C</td>
<td>• Research and prepare for graduate school.</td>
</tr>
<tr>
<td>CSE 330: Operating Systems</td>
<td>3</td>
<td>C</td>
<td>• Apply for an engineering 4+1 program.</td>
</tr>
<tr>
<td>CSE 360: Introduction to Software Engineering</td>
<td>3</td>
<td>C</td>
<td>• Develop a professional profile online.</td>
</tr>
<tr>
<td>EEE 334: Circuits II</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 343: Applied Linear Algebra</td>
<td>3</td>
<td>C</td>
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</table>

Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).

Term hours subtotal: 16

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE 423: Systems Capstone Project I (L)</td>
<td>3</td>
<td>C</td>
<td>• 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.</td>
</tr>
<tr>
<td>CSE 434: Computer Networks</td>
<td>3</td>
<td>C</td>
<td>• Plan for success using the Senior Guide.</td>
</tr>
<tr>
<td>Complete 2 courses: Upper Division CSE Technical Elective</td>
<td>6</td>
<td>C</td>
<td>• Use Handshake to apply for full-time positions.</td>
</tr>
<tr>
<td>Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)</td>
<td>3</td>
<td></td>
<td>• Complete an in person or virtual practice interview.</td>
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</tbody>
</table>

Term hours subtotal: 15

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>CSE 424: Systems Capstone Project II (L)</td>
<td>3</td>
<td>C</td>
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Term hours subtotal: 16

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Biology or Chemistry Courses</td>
<td>Upper Division CSE Technical Electives</td>
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<td>------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>BIO 181: General Biology I (SQ)</td>
<td>BME 494: Applied Computational Behavioral Science</td>
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</tr>
<tr>
<td>BIO 182: General Biology II (SG)</td>
<td>CPI 350: Evaluation of Informatics Systems</td>
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<tr>
<td>CHM 113: General Chemistry I (SQ)</td>
<td>CPI 411: Graphics for Games</td>
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<tr>
<td>CHM 114: General Chemistry for Engineers (SQ)</td>
<td>CSE 335: Principles of Mobile Application Development</td>
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<tr>
<td>CHM 116: General Chemistry II (SQ)</td>
<td>CSE 340: Principles of Programming Languages</td>
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<td></td>
<td>CSE 355: Introduction to Theoretical Computer Science</td>
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<td>CSE 365: Information Assurance</td>
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<td></td>
<td>CSE 4*** Elective</td>
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<td></td>
<td>DAT 300: Mathematical Tools for Data Science</td>
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<td>DAT 301: Exploring Data in R and Python</td>
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<td>DAT 401: Statistical Modeling and Inference for Data Science</td>
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<td>DAT 402: Machine Learning for Data Science</td>
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<td>EEE 304: Signals and Systems II</td>
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<td></td>
<td>EEE 335: Analog and Digital Circuits</td>
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<td>EEE 350: Random Signal Analysis</td>
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<td>EEE 404: Real-Time DSP Systems</td>
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<td>EEE 407: Digital Signal Processing</td>
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<td></td>
<td>EEE 425: Digital Systems and Circuits</td>
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<td>EEE 455: Communication Systems</td>
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<td>EEE 480: Feedback Systems</td>
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<td></td>
<td>EEE 481: Computer-Controlled Systems</td>
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</tbody>
</table>

- 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.

Complete 2 courses:

| 4*** Upper Division 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.
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 on the major map are current for the 2022 - 2023 academic year.