# 2018 - 2019 Major Map

## Informatics, BS

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

## Term 1 - 16 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI 101: Introduction to Informatics (CS)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>CSE 110: Principles of Programming with Java (CS)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 210: Brief Calculus (MA) OR MAT 265: Calculus for Engineers I (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>ASU 101-CSE: The ASU Experience</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR</td>
<td></td>
<td></td>
<td></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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 16

- An SAT, ACT, Accuplacer, TOEFL or IELTS score determines placement into first-year composition courses
- ASU Mathematics Placement Assessment score determines placement in mathematics course
- ASU 101 or College specific equivalent First Year Seminar (ASU 101-CSE) required of all students
- If ENG 105 is taken, a three (3) credit hour elective must also be taken prior to graduation.
- Prep for success using the Freshman Guide.
- Join a Fulton community.
- Explore engineering and technical professions.

## Term 2 16 - 30 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></td>
</tr>
<tr>
<td>MAT 242: Elementary Linear Algebra</td>
<td>2</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR</td>
<td></td>
<td></td>
<td></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></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>Literacy and Critical Inquiry (L)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</td>
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</tr>
</tbody>
</table>

**Term hours subtotal:** 14

- Create a Handshake profile.
- Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.

## Term 3 30 - 46 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI 220: Applied Data Structures and Algorithms</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 243: Discrete Mathematical Structures</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>IEE 305: Information Systems Engineering (CS)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Natural Science - Quantitative (SQ)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Mathematics (MA) requirement.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 16

- Prep for success using the Sophomore Guide.
- Consult the Resume, Presentation, and Resource Library for tips on how to create a technical resume, job shadow, do informational interviews and mentor with alumni.

## Term 4 46 - 62 Credit Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Term hours subtotal:**

- Prep for success using the Sophomore Guide.
- Consult the Resume, Presentation, and Resource Library for tips on how to create a technical resume, job shadow, do informational interviews and mentor with alumni.
Term 5 62 - 77 Credit Hours Necessary course signified by ★

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI 360: Decision Making and Problem Solving</td>
<td>3</td>
<td>C</td>
<td>Students who plan to pursue the Enterprise Informatics Focus Area will need to take IEE 380 for the CS requirement.</td>
</tr>
<tr>
<td>Complete 2 courses: Informatics Focus Area</td>
<td>6</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term 6 77 - 92 Credit Hours Necessary course signified by ★

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI 350: Evaluation of Informatics Systems</td>
<td>3</td>
<td>C</td>
<td>Research and prepare for graduate school.</td>
</tr>
<tr>
<td>CSE 463: Introduction to Human Computer Interaction</td>
<td>3</td>
<td>C</td>
<td>Apply for an engineering 4+1 program.</td>
</tr>
<tr>
<td>Complete 2 courses: Informatics Focus Area</td>
<td>6</td>
<td>C</td>
<td>Develop a professional profile online.</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></td>
</tr>
<tr>
<td>Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term 7 92 - 107 Credit Hours Necessary course signified by ★

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI 485: Informatics Capstone I (L)</td>
<td>3</td>
<td>C</td>
<td>Plan for success using the Senior Guide.</td>
</tr>
<tr>
<td>Complete 4 courses:</td>
<td></td>
<td></td>
<td>Use Handshake to apply for full-time positions.</td>
</tr>
<tr>
<td>Upper Division Informatics Elective</td>
<td>12</td>
<td>C</td>
<td>Complete an in-person or practice interview.</td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term 8 107 - 120 Credit Hours Necessary course signified by ★

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI 486: Informatics Capstone II (L)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Complete 3 courses:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Informatics Elective</td>
<td>9</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Informatics Focus Area and Informatics Electives: Select a focus area and complete at least 15 hours in that focus area. Select another 21 hours from the courses on these lists to complete the 36-hour requirement. Students will need to take 21 of the 36 total hours as upper division 300/400 level courses. It is recommended that you work with your academic advisor when making course selections. Visit the CIDSE website for additional information about Informatics Electives or Focus Area Required Courses.

### Informatics Focus Area (Enterprise Informatics)

- IEE 421: Urban Operations Research
- IEE 426: Operations Research in Healthcare
- IEE 461: Production Control
- IEE 474: Quality Control
- IEE 475: Simulating Stochastic Systems (CS)
- IEE 477: System Dynamics and Thinking

### Informatics Focus Area (Game Informatics)
**Required:** AND CPI 111: Game Development I (CS) AND CPI 211: Game Development II AND CPI 311: Game Engine Development AND CPI 321: Fundamentals of Game Art AND Select one:

- CPI 411: Graphics for Games
- CPI 412: Cognitive Systems and Intelligent Agents
- CPI 421: 3-D Modeling and Texturing
- CPI 422: 3-D Animation and Rigging for Video Games
- CPI 462: Design for Learning in Virtual Worlds
- SER 431: Advanced Graphics

### Informatics Focus Area (Geo-Informatics)
**Required:**

- GIS 205: Geographic Information Science I (CS)
- GIS 211: Geographic Information Science II (CS)
- GIS 311: Geographic Information Science III (CS)

**Select two:**

- ABS 485: GIS in Natural Resources
- GCU 361: Urban Geography (SB)
- GCU 441: Economic Geography (SB)
- GCU 442: Geographical Analysis of Transportation (SB)
- GCU 494: Special Topics
- GIS 341: Introduction to Cartography and Georepresentation (CS)
- GIS 351: Air Photo Interpretation
- GIS 461: Optimization Fundamentals for Spatial Analysis
- GIS 471: Spatial Statistics for Geography and Planning

### Informatics Focus Area (Digital Culture Studies)
**Recommended first course is AME 111.**

- AME 111: Introduction to Digital Culture (CS)
- AME 112: Computational Thinking for Digital Culture
- AME 130: Prototyping Dreams (L)
- AME 220: Programming for the Web
- AME 294: Introduction to Physical Computing
- AME 310: Media Literacies and Composition
- AME 320: Motion Capture for Integrative Systems
- AME 330: Digital-Physical Systems

### Additional Informatics Electives
Students may choose from any of the courses not in their selected focus area as Informatics Electives in addition to the courses listed below:

- AME 394: Philosophies of Technology
- ART 346: 3-D Computer Imaging and Animation (CS)
- BIO 355: Introduction to Computational Molecular Biology (CS)
- BIO 411: Quantitative Methods in Conservation and Ecology
- BIO 424: Dynamic Modeling in Social and Ecological Systems

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Hide Course List(s)/Track Group(s)
AME 340: Compositional and Computational Principles for Media Arts

AME 394: Media Theatre

AME 394: Technical Lives

AME 430: Mac Development for Media Arts

AME 470: Programming for Social and Interactive Media

AME 494: Animating Virtual Worlds

ANP 394: Digital Modeling and Fabrication

ANP 494: Design by Algorithm

ANP 494: Designing Hybrid Spaces

ART 116: Introduction to Digital Media

ART 206: Digital Photography I: The Still Image in Digital Culture

ART 218: 3D Tools

ART 345: Visualization and Prototyping

DCE 294: HybridAction:PhysicalIntelligenceinDigitalCulture

FMP 240: Introduction to Animation for Film

FMP 294: Story Development for Game Design

FMP 394: Non-Linear Editing for Film and Media

IAP 103: Foundations I: Interdisciplinary Digital Media

IAP 104: Foundations I: Fundamentals of Sound Art

MDC 211: Introduction to Digital Sound

MDC 311: Composing and Performing for Hybrid Ensembles

BMI 102: Introduction to Public Health Informatics

CIS 300: Web Design and Development

CIS 365: Business Database Systems Development

CPI 441: Gaming Capstone

CPI 460: Intelligent Interactive Instructional Systems

CPI 484: Internship

CPI 494: Special Topics

CSE 220: Programming for Computer Engineering

CSE 240: Introduction to Programming Languages

CSE 259: Logic in Computer Science

CSE 294: Algorithmic Problem Solving

CSE 310: Data Structures and Algorithms

CSE 335: Principles of Mobile Application Development

CSE 360: Introduction to Software Engineering

CSE 394: Special Topics

CSE 408: Multimedia Information Systems

CSE 412: Database Management

CSE 471: Introduction to Artificial Intelligence

CSE 476: Introduction to Natural Language Processing

CSE 477: Introduction to Computer-Aided Geometric Design or CSE 494: Special Topics

CSE Special Topics must be Digital Culture classes with 3** or 4** numbers.

FSE 301: Entrepreneurship and Value Creation

FSE 494: EPICS Gold III

GIT 135: Graphic Communications

GIT 230: Digital Illustration in Publishing

GIT 335: Computer Systems Technology

GRA 294: InDesign

GRA 294: Photoshop
General Studies designations listed on the major map are current for the 2018 - 2019 academic year.

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

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)

HSE 101: Introduction to Human Systems Engineering (SB)
IEE 385: Engineering Statistics: Probability
MAT 267: Calculus for Engineers III (MA)
SER 316: Software Enterprise: Construction and Transition
SER 334: Operating Systems and Networks
SOC 334: Technology and Society (L or SB)
STS 304: Science, Technology, and Society (SB)
TEL 313: Technology in an Educational Setting
TWC 414: Visualizing Data and Information
TWC 444: User Experience