













## 2024 - 2025 Major Map

### Informatics, BS

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

Term 1 0 - 16 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CPI 101: Introduction to Informatics (QTRS OR CS)	3	C	<ul style="list-style-type: none"> <li>ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students.</li> <li>If ENG 105 is taken, a three (3) credit hour elective must also be taken prior to graduation.</li> <li>Prep for success using the <a href="#">First-Year Student Guide</a>.</li> <li>Join a <a href="#">Fulton community</a>.</li> <li>Explore <a href="#">engineering and technical professions</a>.</li> </ul>
 CSE 110: Principles of Programming (QTRS OR CS)	3	C	
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	
MAT 210: Brief Calculus (MATH OR MA) OR MAT 265: Calculus for Engineers I (MATH OR MA)	3	C	
Humanities, Arts and Design (HUAD)	3		
Term hours subtotal:	16		
Term 2 16 - 30 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CSE 205: Object-Oriented Programming and Data Structures (QTRS OR CS)	3	C	<ul style="list-style-type: none"> <li>Create a <a href="#">Handshake</a> profile.</li> <li>Get involved with EPICS, the Generator Labs, and the <a href="#">Fulton Start-Up Center</a>.</li> </ul>
 MAT 242: Elementary Linear Algebra	2	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	
Humanities, Arts and Design (HUAD)	3		
Social and Behavioral Sciences (SOBE)	3		
 Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
 Complete MAT 210 OR MAT 251 OR MAT 265 OR MAT 270 course(s).			
Term hours subtotal:	14		
Term 3 30 - 46 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 CPI 220: Applied Data Structures and Algorithms OR CSE 310: Data Structures and Algorithms	3	C	<ul style="list-style-type: none"> <li>Prep for success using the <a href="#">Sophomore Guide</a>.</li> <li>Most students will complete CPI 220. Students with credit for CSE 310 may use that in lieu of CPI 220.</li> </ul>
 MAT 243: Discrete Mathematical Structures	3	C	
IEE 305: Information Systems Engineering	3	C	
American Institutions (AMIT)	3		
Scientific Thinking in Natural Sciences (SCIT)	4		
Complete Mathematics (MATH) requirement.			
Term hours subtotal:	16		
Term 4 46 - 62 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes

❗ CPI 200: Mathematical Foundations of Informatics (MATH OR MA)	3	C
❗ CPI 221: Advanced Object-Oriented Principles Using Java	3	C
Informatics Focus Area	3	C
Governance and Civic Engagement (CIVI)	3	
Scientific Thinking in Natural Sciences (SCIT)	4	
Term hours subtotal:	16	

- Pursue an undergraduate research experience.
- Apply for internships.
- Attend career fairs and events.

Term 5 62 - 78 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ CPI 360: Decision Making and Problem Solving	3	C	<ul style="list-style-type: none"> <li>• Students who plan to pursue the Enterprise Informatics Focus Area will need to take IEE 380 for the QTRS requirement.</li> <li>• Plan for success using the <a href="#">Junior Guide</a>.</li> <li>• Network at <a href="#">student organization</a> competitions or professional societies.</li> </ul>
CPI 310: Web-Based Information Management Systems	3	C	
CSE 301: Computing Ethics	1	C	
GIS 270: Statistics for Geography and Planning OR IEE 380: Probability and Statistics for Engineering Problem Solving (QTRS OR CS) OR STP 226: Elements of Statistics (QTRS OR CS) OR STP 231: Statistics for Life Science (QTRS OR CS) OR STP 420: Introductory Applied Statistics (QTRS OR CS)	3	C	
Upper Division Informatics Focus Area	3	C	
Global Communities, Societies and Individuals (GCSI)	3		
Term hours subtotal:	16		

Term 6 78 - 93 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ CPI 350: Evaluation of Informatics Systems	3	C	<ul style="list-style-type: none"> <li>• Research and prepare for <a href="#">graduate school</a>.</li> <li>• Develop a <a href="#">professional profile online</a>.</li> </ul>
CSE 463: Introduction to Human Computer Interaction	3	C	
Complete 2 courses: Informatics Focus Area	6	C	
Sustainability (SUST)	3		
Term hours subtotal:	15		

Term 7 93 - 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"> <li>• Plan for success using the <a href="#">Senior Guide</a>.</li> <li>• Use <a href="#">Handshake</a> to apply for full-time positions.</li> <li>• Complete an in person or virtual <a href="#">practice interview</a>.</li> </ul>
Complete 4 courses: Upper Division Informatics Elective	12	C	
Term hours subtotal:	15		

Term 8 108 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ CSE 486: Computer Science Capstone Project II (L)	3	C	
Complete 3 courses: Upper Division Informatics Elective	9	C	
Term hours subtotal:	12		

- Upper-Division Coursework: A minimum of 24 hours of upper-division coursework is required across the Informatics Focus Area and Informatics Elective requirements.
- Informatics Focus Area: All Focus Area coursework must be completed from the same Focus Area.
- Informatics Electives: It is recommended that you work with your academic advisor when making course selections.
- For additional information on major curriculum, including Informatics Focus Area courses, please visit the [Informatics Degree Requirements website](#).

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

Informatics Focus Area (Data Science)	Informatics Focus Area (Digital Culture Studies)	Informatics Focus Area (Enterprise Informatics)
CSE 450: Design and Analysis of Algorithms	Recommended first course is AME 111.	Required courses:
CSE 467: Data and Information Security	AME 111: Introduction to Digital Culture (QTRS OR CS)	IEE 376: Operations Research Deterministic Techniques/Applications
CSE 471: Introduction to Artificial Intelligence	AME 112: Computational Thinking for Media Arts (CS)	IEE 385: Engineering Statistics: Probability
CSE 475: Foundations of Machine Learning	AME 130: Prototyping Dreams (L)	IEE 470: Stochastic Operations Research
CSE 476: Introduction to Natural Language Processing	AME 220: Programming for the Web (QTRS OR CS)	MAT 266: Calculus for Engineers II (MATH OR MA)
DAT 250: Data Science and Society	AME 230: Programming for the Media Arts (QTRS OR CS)	Select One:
DAT 300: Mathematical Tools for Data Science	AME 240: Introduction to Physical Computing	IEE 421: Urban Operations Research
DAT 301: Exploring Data in R and Python	ART 116: Introduction to Digital Media	IEE 426: Operations Research in Healthcare
DAT 401: Statistical Modeling and Inference for Data Science	ART 206: Digital Photography I	IEE 461: Production Control
DAT 402: Machine Learning for Data Science	ART 217: Introduction to Computer Animation	IEE 474: Quality Control
	ART 218: 3D Tools	IEE 475: Simulating Stochastic Systems (QTRS OR CS)
	ART 308: 2D Digital Animation I	IEE 477: System Dynamics and Thinking
	ART 345: Visualization and Prototyping	SCM 300: Global Supply Operations (SUST)
	ART 346: 3D Computer Imaging and Animation (QTRS OR CS)	
	ART 348: Animation Motion Studies	
	ART 394: Digital Photography for Non-Majors	
	ART 424: Stop Motion Animation	
	ART 440: Experimental Video Art	
	ART 494: Visual Prototyping	
	CIS 300: Web Design and Development	
	CPI 111: Game Development I (QTRS OR CS)	
	DCE 294: HybridAction:PhysicalIntelligenceinDigitalCulture	
	EDT 440: Creating and Marketing Mobile Apps	
	FMP 225: Principles of Visual Effects Compositing	
	FMP 240: Introduction to Animation for Film	
	FMP 255: Media Authorship (QTRS OR CS)	
	GIT 135: Graphic Communications	
	GIT 215: Introduction to Web Authoring	
	GIT 230: Digital Illustration in Publishing	
	GRA 294: InDesign	
	IAP 103: Foundations I: Interdisciplinary Art Practice	

IAP 104: Foundations I: Fundamentals of Sound Art

MDC 211: Introduction to Digital Sound

MDC 311: Composing and Performing for Hybrid Ensembles

Informatics Focus Area (Game Informatics)	Informatics Focus Area (Geo-Informatics)	Additional Informatics Electives
Fall Only Courses: CPI 311, CPI 421	Required:	Students may take additional coursework from their selected focus area or any course in another focus area as Informatics Electives in addition to the courses listed below:
Spring Only Courses: CPI 321, CPI 411	GIS 205: Geographic Information Science I (QTRS OR CS)	
Required:	GIS 211: Geographic Information Science II (QTRS OR CS)	AME 394: Philosophies of Technology
CPI 111: Game Development I (QTRS OR CS)	GIS 311: Geographic Information Science III (QTRS OR CS)	BIO 355: Introduction to Computational Molecular Biology (CS)
CPI 211: Game Development II	Select two:	BIO 411: Quantitative Methods in Conservation and Ecology
CPI 311: Game Engine Development	ABS 485: GIS in Natural Resources	BMI 102: Introduction to Population Health Informatics
CPI 321: Fundamentals of Game Art	GCU 441: Economic Geography (SB)	BMI 201: Introduction to Clinical Informatics
Select one:	GCU 442: Geographical Analysis of Transportation (SB)	CIS 308: Advanced Excel in Business
CPI 394: Game Design Fundamentals	GIS 202: Drones to Satellites: Observing Earth from Above (QTRS OR CS)	CIS 310: Business Data Visualization
CPI 411: Graphics for Games	GIS 222: Programming Principles in GIS I	CIS 405: Business Intelligence
CPI 421: 3-D Modeling and Texturing	GIS 3** Elective	CIS 407: Business Database Systems Development
CPI 462: Design for Learning in Virtual Worlds	GIS 4** Elective	CPI 394: Special Topics
FMS 365: Video Games and Narrative	Not from GIS 484, GIS 492, GIS 493, GIS 499, GIS 494 "GIS Methods for Non-Majors"	CPI 441: Gaming Capstone
SER 431: Advanced Graphics		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 365: Information Assurance
		CSE 394: Special Topics

CSE 408: Multimedia Information Systems

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CSE 412: Database Management

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CSE 434: Computer Networks

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CSE 445: Distributed Software Development

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CSE 446: Software Integration and Engineering

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CSE 460: Software Analysis and Design

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CSE 464: Software Quality Assurance and Testing

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CSE 470: Computer Graphics

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CSE 471: Introduction to Artificial Intelligence

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CSE 476: Introduction to Natural Language Processing

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CSE 477: Introduction to Computer-Aided Geometric Design

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CSE 494: Special Topics

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FSE 301: Entrepreneurship and Value Creation

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FSE 404: EPICS Gold: EPICS in Action

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GIT 335: Computer Systems Technology

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GIT 340: Information Design and Usability

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GRA 294: Photoshop

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HSE 101: Introduction to Human Systems Engineering (SOBE OR SB)

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IEE 380: Probability and Statistics for Engineering Problem Solving (QTRS OR CS)

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IEE 385: Engineering Statistics: Probability

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MAE 318: System Dynamics and Control I

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MAE 417: System Dynamics and Control II

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MAT 267: Calculus for Engineers III (MATH OR MA)

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MAT 275: Modern Differential Equations (MATH OR MA)

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MAT 300: Mathematical Structures (L)

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MAT 342: Linear Algebra or MAT 343: Applied Linear Algebra

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MAT 421: Applied Computational Methods (MATH OR CS)

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SER 216: Software Enterprise: Personal Process and Quality

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SER 316: Software Enterprise: Construction and Transition

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SER 334: Operating Systems and System Programming

SOC 334: Technology and Society (SOBE OR L or SB)

STS 304: Science, Technology and Society (SOBE OR SB)

TEL 313: Technology in an Educational Setting

TEL 494: Introduction to Computer Science for Educators

TWC 414: Visualizing Data and Information

TWC 444: User Experience

- **Total Hours:** 120
- **Upper Division Hours:** 45 minimum
- **University Undergraduate Graduation Requirements**

**Notes:**

Mathematics Placement Assessment score determines placement in first mathematics course.

General Studies designations listed next to courses on the major map were valid for the 2024 - 2025 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.