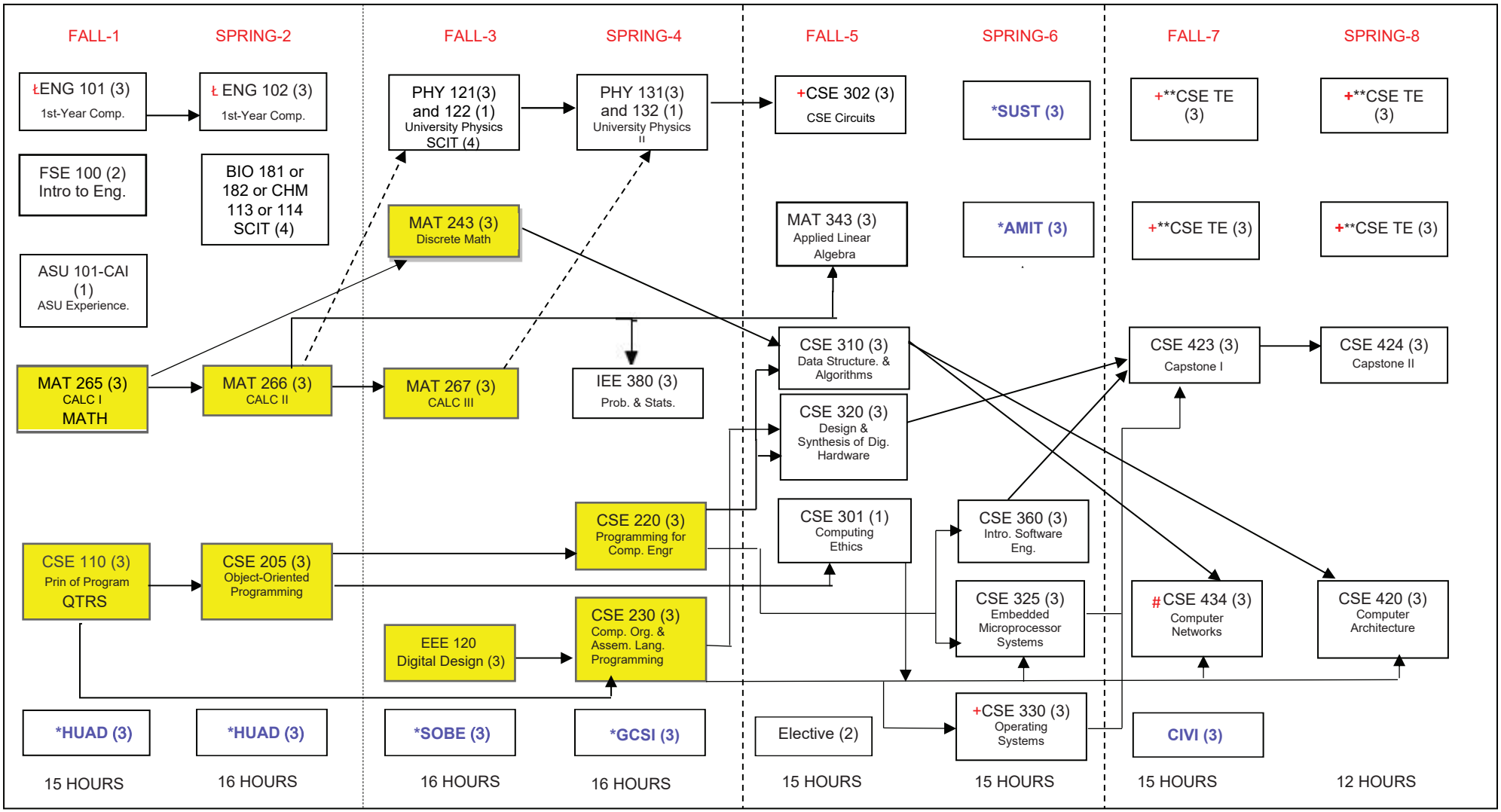
FLOWCHARTS are aids to assist in tracking academic progress. For official graduation requirements, please consult your DARS audit.

School of Computing and Augmented Intelligence
Computer Systems Engineering, BSE (ESCSEBSE)
Updated: 2025-2026 Catalog Year Requirements - GS GOLD

NAME:_____
ASU ID #: _____



Notes: ł International students may take ENG 107 and ENG 108. Students placing in to ENG 105 will replace ENG 101 with a recommended course

** See SCAI Advising Center or SCAI Website (https://scai.engineering.asu.edu/computer-systems-engineering/degree-requirements-computer-systems-engineering/) for degree requirements and a list of technical electives.

+ All Upper Division courses may require additional prerequisites. **Please check the course catalog for the most up-to-date course requirements.**

All pre-requisite coursework must be completed prior to taking CSE 423 (CSE 301; CSE 320; CSE 325; CSE 330; CSE 360; ENG 101, 105, or 107)

Shaded courses designate "Critical Requirements" and must be completed as described above to remain on-track. **Off-track twice students will be required to change their major.**

Minimum "C" grade is required in all major courses (see major map for details)

All ASU students must complete required university general studies and First Year Composition. *HUAD, SOBE, AMIT, CIVI, GCSI, & SUST classes can be taken in any order.

Term 1

CSE 110: Principles of Programming with Java (QTRS)-Concepts of problem-solving using Java, algorithm design, structured programming, fundamental algorithms and techniques, and computer systems concepts. Social and ethical responsibility.

FSE 100: Introduction to Engineering-Introduces the engineering design process; working in engineering teams; the profession of engineering; engineering models, written and oral technical communication skills.

MAT 265: Calculus for Engineers I (MATH)-Limits and continuity, differential calculus of functions of one variable, introduction to integration. Not open to students with credit in MAT 270.

ASU 101-CAI: The ASU Experience

ENG 101: First-Year Composition

Humanities, Art, & Design (HUAD)

Term 2

CSE 205: Object-Oriented Programming & Data Structures-Problem solving by programming with an object-oriented programming language. Introduces data structures. Overview of computer science topics.

MAT 266: Calculus for Engineers II -Methods of integration, applications of calculus, elements of analytic geometry, improper integrals, Taylor series

ENG 102: First-Year Composition

Lab Science Option: choose from BIO181 or 182 or CHM 113 or 114 (SCIT)

Humanities, Art, & Design (HUAD)

Term 3

EEE 120: Digital Design Fundamentals-Number systems, conversion methods, binary and complement arithmetic, Boolean algebra, circuit minimization, ROMs, PLAs, flipflops, synchronous sequential circuits

MAT 243: Discrete Mathematical Structures-Logic, sets, functions, elementary number theory and combinatorics, recursive algorithms, and mathematical reasoning, including induction. Emphasizes connections to computer science.

MAT 267: Calculus for Engineers III -Vector-valued functions of several variables, partial derivatives, multiple integration.

PHY 121/122: **University Physics I: Mechanics and laboratory (SCIT)**- Kinematics; Newton's laws; work, energy, momentum, conservation laws; dynamics of particles, solids, and fluids. Both PHY 121 and PHY 122 must be taken to secure SQ General Studies credit.

Social & Behavioral Sciences (SOBE)

Term 4

CSE 220: Programming for Computer Engineering-Introduction to C/C++, systems programming, and concurrency.

CSE 230: Computer Organization & Assembly Language Programming-Register-level computer organization. Instruction set architecture. Assembly language. Processor organization and design. Memory organization. IO programming, Exception/interrupt handling.

PHY 131/132: University Physics II: Electricity and Magnetism and laboratory- Electric charge and current, electric and magnetic fields in vacuum and in materials, and induction. AC circuits, displacement current, and electromagnetic waves. Both PHY 131 and PHY 132 must be taken to secure SQ General Studies credit.

IEE 380: Probability and Statistics for Engineering Problem Solving -Applications-oriented course with computer-based experience using statistical software for formulating and solving engineering problems.

Global Communities, Societies, and Individuals (GCSI)

Term 5

CSE 302: Computer Science **Circuits**

CSE 301: Computing Ethics-Ethics for computing majors: history of computing, intellectual property, privacy, ethical frameworks, professional ethical responsibilities, and risks of computer-based systems.

CSE 310: Data Structures and Algorithms-Advanced data structures and algorithms, including stacks, queues, trees (B, B+, AVL), and graphs. Searching for graphs, hashing, external sorting.

CSE 320: Design and Synthesis of Digital Hardware-Design and synthesis of digital hardware with hardware description language, computer-aided design tools, and programmable devices.

MAT 343: Applied Linear Algebra--Solving linear systems, matrices, determinants, vector spaces,
bases, linear transformations, eigenvectors, norms, inner products, decompositions, applications. Problem solving using MATLAB.

Elective (2 credits)

Term 6

CSE 325: Embedded Microprocessor Systems: System level programming and analysis of embedded microprocessors systems. Fundamental concepts of digital system design for embedded system applications.

CSE 330: Operating Systems-Operating system structure and services, processor scheduling, concurrent processes, synchronization techniques, memory management, virtual memory, input/output, storage management, and file systems.

CSE 360: Introduction to Software Engineering-Software life cycle models; project management, team development environments and methodologies; software architectures; quality assurance and standards; legal, ethical issues

Global Sustainability (SUST)

American Institutions (AMIT)

Term 7

CSE 423: Systems Capstone Project I-Development process: specification, design, implementation, evaluation, and testing with economic, social, and safety considerations. Technical communication and team skills enrichment.

CSE 434: Computer Networks-Distributed computing paradigms and technologies, distributed system architectures and design patterns, frameworks for development of distributed software components.

CSE Technical Elective

CSE Technical Elective

Governance and Civic Engagement (CIVI)

Term 8

CSE 420: Computer Architecture I-Computer architecture. Performance versus cost tradeoffs. Instruction set design. Basic processor implementation and pipelining.

CSE 424: Systems Capstone Project II- Continuation of capstone project started in CSE 423.

CSE Technical Elective

CSE Technical Elective