Term 1


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 - Limits and continuity, differential calculus of functions of one variable, introduction to integration. Not open to students with credit in MAT 270

ASU 101 -CSE: The ASU Experience

ENG 101: First-Year Composition

HU/SC: Humanities, Fine Arts & Design or Social & Behavioral Sciences

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 BIO 181, GLG 101 & 103, GLG 110 & 111, CHM 113 or 114, OR PHY 121 & 122

HU/SC: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 3

CSE 120: Digital Design Fundamentals - Number systems, conversion methods, binary and complement arithmetic, Boolean algebra, circuit minimization, ROMs, PLA, flip-flops, synchronous sequential circuits

CSE 240: Introduction to Programming Languages - Introduces the procedural (C/C++), applicative (LISP/Scheme), and declarative (Prolog) languages.

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 OR

CSE 259: Logic in Computer Science - This course is a mathematically solid introduction to propositional logic, first order logic, logic programming, and their applications in computer science.

Lab Science: PHY 121/122 & PHY 131/132 or CHM 113 & 116 or GLG 101/103 & GLG 102/104 or BIO 181 & 182

Term 4

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.

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.

Lab Science: complete sequence from above

HU/SC: Humanities, Fine Arts & Design or Social & Behavioral Sciences

General Elective

Term 5

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 355: Introduction to Theoretical Computer Science - Introduces formal language theory and automata, Turing machines, decidability/undecidability, recursive function theory, and complexity theory.

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.

CSE 365: Information Assurance - Concepts of information assurance (IA): basic IA techniques, policies, risk management, administration, legal and ethics issues.

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

HU/SC: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 6

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 340: Principles of Programming Languages - Formal syntactic and semantic descriptions, compilation and implementation issues, and theoretical foundations for several programming paradigms.

CSE 445 Distributed Software Development (Distributed system architectures and design, service-oriented computing, and frameworks for development of distributed applications and software components)


HU/SC: Upper Division Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 7

CSE 485: Computer Science Capstone Project I - First course in capstone sequence for computer science majors emphasizing development process, technical skills, teamwork, and communication.

CSE 460: Object-oriented and structured analysis and design; software architecture and design patterns; component-based development; software safety and reliability.

CSE 464: Software quality assurance (SQA), software quality metrics, software configuration management, software verification and validation, reviews, inspections, understanding software testing process, functional testing, structural testing, model-based testing, model-based testing, integration, system, and regression testing techniques, software life cycle models and software testing, testing distributed software, bug management, and use of testing tools.

Technical Elective: Upper Division Elective

General Elective (2 credits)

Term 8

CSE 486: Computer Science Capstone Project II - Second course in capstone sequence for computer science majors continuing the development process, technical skills, teamwork, and communication.

CSE 4** Elective

CSE 4** Elective

Technical Elective: Upper Division Technical Elective from list on DARS/major map