Computer Science, BS
Bachelor of Science, 2015-2016 Catalog Year
ESCSEBS

FALL-1    SPRING-2    FALL-3    SPRING-4    FALL-5    SPRING-6    FALL-7    SPRING-8

ENG 101 (3) 1st-Year Comp.  ENG 102 (3) 1st-Year Comp.
FSE 100 (2) Intro to Engr.  **LAB SCI Option (4 hrs)
ASU 101 (1) ASU Experience  GENERAL ELECT (3)
MAT 265 (3) CALC I  MAT 266 (3) CALC II  MAT 267 (3) CALC III
CSE 110 (3) Principles of Programming Java  CSE 205 (3) Object-Oriented Programming
CSE 240 (3) Programming Languages  CSE 310 (3) Data Struct. & Algorithms
CSE 355 (3) Intro Theoretical Comp. Science  CSE 340 (3) Prin. Prog. Lang
CSE 360 (3) Intro. Software Engineering  CSE 485 (3) Capstone I (L)
CSE 430 (3) Operating Systems  CSE 486 (3) Capstone II (L)

Notes:  ** See CIDSE Advising Center or CIDSE Website (http://cidse.engineering.asu.edu/degerequirementbscscs/) for approved technical electives and approved lab science sequence courses.
Shade courses designates critical requirements. Minimum 'C' grade required in all CSE courses.
+CSE 4XX courses require CSE 310 and/or 360 as prerequisites

Prerequisite
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/SB: 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, GLG, CHM or PHY
General Elective

Term 3
CSE 210: 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.
Lab Science: PHY 121 & 131 or CHM113 & 116 or GLG 101 & 103 or BIO 181 & 182
HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 4
CSE 240: Introduction to Programming Languages - Introduces the procedural (C/C++), applicative (LISP/Scheme), and declarative (Prolog) languages.
Lab Science: complete sequence from above
HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

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

Term 6
CSE 340: Principles of Programming Languages - Formal syntactic and semantic descriptions, compilation and implementation issues, and theoretical foundations for several programming paradigms.
CSE 355: Introduction to Theoretical Computer Science - Introduces formal language theory and automata, Turing machines, decidability/undecidability, recursive function theory, and complexity theory.
CSE 4** Elective
Technical Elective: Upper Division Elective
HU/SB: Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 7
CSE 430: 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 485: Computer Science Capstone Project I - First course in capstone sequence for computer science majors emphasizing development process, technical skills, teamwork, and communication.
CSE 4** Elective
CSE 4** Elective
General Elective (2 credit)

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 Elective