Computer Science, BS
Bachelor of Science, 2019-2020 Catalog Year
ESCSEBS

FALL-1 | SPRING-2 | FALL-3 | SPRING-4 | FALL-5 | SPRING-6 | FALL-7 | SPRING-8
---|---|---|---|---|---|---|---
ENG 101 (3) | ENG 102 (3) | **LAB SCI** | **LAB SCI** | CSE 365 (3) | Upper Division | +CSE 4XX | +CSE 4XX
1st-Year Comp. | 1st-Year Comp. | (4) Sequence | (4) Sequence | Information Assurance | HU/ SB (3) | (3) | (3)
FSE 100 (2) | ASU 101 (1) | **LAB SCI** | **LAB SCI** | IEE 380 (3) | +CSE 412 or | +CSE 4XX | **TECH ELE**
Intro to Engr. | ASU Experience | (4) Sequence | (4) Sequence | Prob. & Stats. | +CSE 434 or | (3) | (3)
| | | | | Computing | +CSE 445 (3) | |
| | | MAT 267 (3) | MAT 267 (3) | MAT 343 (3) | CSE 355 (3) | GENERAL | **TECH ELE**
CALC I | CALC II | CALC III or | Applied Linear | Computing | Elect (2) | ELECT (2) | (3)
| | | CSE 259 Logic | Algebra | Ethics | | | |
| | | in Comp Sci | | | | | |
MAT 243 (3) | CSE 205 (3) | CSE 240 (3) | CSE 310 (3) | CSE 365 (3) | CSE 45 (3) | +CSE 4XX | +CSE 4XX
Discrete Math | Object-Oriented | Programming Languages | Data Struct. & | Intro Theoretical | Capstone I (L) | (3) | (3)
Programming | | Algorithms | Comp. Science |
CSE 120 (3) | CSE 230 (3) | CSE 360 (3) | CSE 330 (3) | **TECH ELE** | | | |
Digital Design | Comp. Org. & | Intro. Prog. Lang | Operating | (3) | (3) | | |
Assembly Lang. | Engineering |
| | Programming |
| | |
15 HOURS | 16 HOURS | 16 HOURS | 16 HOURS | 16 HOURS | 15 HOURS | 14 HOURS | 12 HOURS

Notes: **See CIDSE Advising Center or CIDSE Website (http://cidse.engineering.asu.edu/degerequirementsbscs/) for approved technical electives and approved lab science sequence courses.
‡ CSE 301 requires FSE 100 as an additional prerequisite
# CSE 340 and CSE 434 require CSE 230 as an additional prerequisite
+ CSE 4XX courses require CSE 310 and/or 360 as prerequisites
Shaded courses designate critical requirements
Minimum "C" grade required in all CSE major courses

Prerequisite

Cultural
Global
Historical
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 181, GLG 101 &103, GLG 110 & 111, CHM 113 or 114, OR PHY 121 & 122
HU/SB: 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, 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 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 CHM113 & 116 or GLG 101/103 & GLG 102/104 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 365: Information Assurance - Concepts of information assurance (IA); basic IA techniques, policies, risk management, administration, legal and ethics issues.
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 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
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
General Elective

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 355: Introduction to Theoretical Computer Science - Introduces formal language theory and automata, Turing machines, decidability/undecidability, recursive function theory, and complexity theory.
CSE 412 Database Management - Introduces DBMS concepts. Data models and languages. Relational database theory. Database security/integrity and concurrency) OR CSE 434 Computer Networks (Network architecture and protocols, principles of network applications, socket programming, flow and congestion control, switching and routing, link-layer technologies, traffic capture and analysis, security) OR CSE 445 Distributed Software Development (Distributed system architectures and design, service-oriented computing, and frameworks for development of distributed applications and software components)
HU/SB: 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 4** Elective

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
Technical Elective: Upper Division Elective
General Elective (2 credits)

Term 9

Term 10

Term 11

Term 12

Term 13

Term 14

Term 15

Term 16

Term 17

Term 18