# Computer Science (Cybersecurity), BS
## Bachelor of Science, 2016-2017 Catalog Year

<table>
<thead>
<tr>
<th>FALL-1</th>
<th>SPRING-2</th>
<th>FALL-3</th>
<th>SPRING-4</th>
<th>FALL-5</th>
<th>SPRING-6</th>
<th>FALL-7</th>
<th>SPRING-8</th>
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<tr>
<td>ENG 101 (3) 1st-Year Comp.</td>
<td>ENG 102 (3) 1st-Year Comp.</td>
<td>**LAB SCI Option (4)</td>
<td>**LAB SCI Option (4)</td>
<td>Upper Division HU/SB (3)</td>
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<td>**TECH ELE (3)</td>
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<td>FSE 100 (2) Intro to Engin.</td>
<td>**LAB SCI HU/SB (3) Sequence Part 1 of 2</td>
<td>**LAB SCI HU/SB (3) Sequence Part 2 of 2</td>
<td>IEE 380 (3) Prob. &amp; Stats.</td>
<td>CSE 465 (3) Information Assurance (F)</td>
<td>CSE 468 (3) Computer Network Security (F)</td>
<td>CSE 469 (3) Computer and Network Forensics (S)</td>
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<td>ASU 101 (1) ASU Exper.</td>
<td>GENERAL ELE (3)</td>
<td>MAT 243 (3) Discrete Math</td>
<td>MAT 244 (3) Applied Linear Algebra</td>
<td>CSE 301 (1) Computing Ethics</td>
<td>†CSE 301 (1) Computing Ethics</td>
<td>†CSE 466 (3) Computer Systems Security (F)</td>
<td>†IA ELEC (3)</td>
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<tr>
<td>MAT 265 (3) CALC I</td>
<td>MAT 266 (3) CALC II</td>
<td>MAT 267 (3) CALC III</td>
<td>CSE 310 (3) Data Struc. &amp; Algorithms</td>
<td>CSE 355 (3) Intro to Theo. Comp. Sci.</td>
<td>CSE 455 (3) Operating Systems</td>
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<td>CSE 110 (3) Principles of Programming Java</td>
<td>CSE 205 (3) Object-Oriented Programming</td>
<td>CSE 240 (3) Programming Languages</td>
<td>CSE 360 (3) Intro. Software Eng.</td>
<td>CSE 360 (3) Operating Systems</td>
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<td>15 HOURS</td>
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**Notes:**
- **See CIDSE Advising Center or CIDSE Website (http://cidse.engineering.asu.edu/degreerequirementsbscs/) for approved technical electives and approved lab science sequence courses.
- †CSE 301 requires FSE 100 as an additional prerequisite
- †CSE 340 requires CSE 230 as an additional prerequisite
- IA Concentration courses required CSE 310 and/or CSE 360 as a prerequisite.
- Shaded courses designates critical requirements. Minimum ‘C’ grade required in all CSE major courses.
- **Bolded courses are offered in specific terms only**
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/ST: 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 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 294: 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 & 131 or CHM 113 & 116 or GLG 101 & 103 or BIO 181 & 182
HU/ST: 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/ST: 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.
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
HU/ST: 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 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.
Technical Elective: Upper Division Elective
HU/ST: Upper Division Humanities, Fine Arts & Design or Social & Behavioral Sciences

Term 7
CSE 465: Information Assurance - Concepts of information assurance (IA); basic IA techniques, policies, risk management, administration, legal and ethics issues.
CSE 485: Computer Science Capstone Project I - First course in capstone sequence for computer science majors emphasizing development process, technical skills, teamwork, and communication.
IA Core
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.
IA Core
Technical Elective: Upper Division Elective