

NOTICE OF COURSE UPDATES

The below course updates were enacted after the 2016-17 catalog was published.

The course updates apply to ALL students taking an updated course in or after the effective semester regardless of a student's official catalog year.

The course updates may add necessary prerequisites which are not reflected in the flowchart ordering.

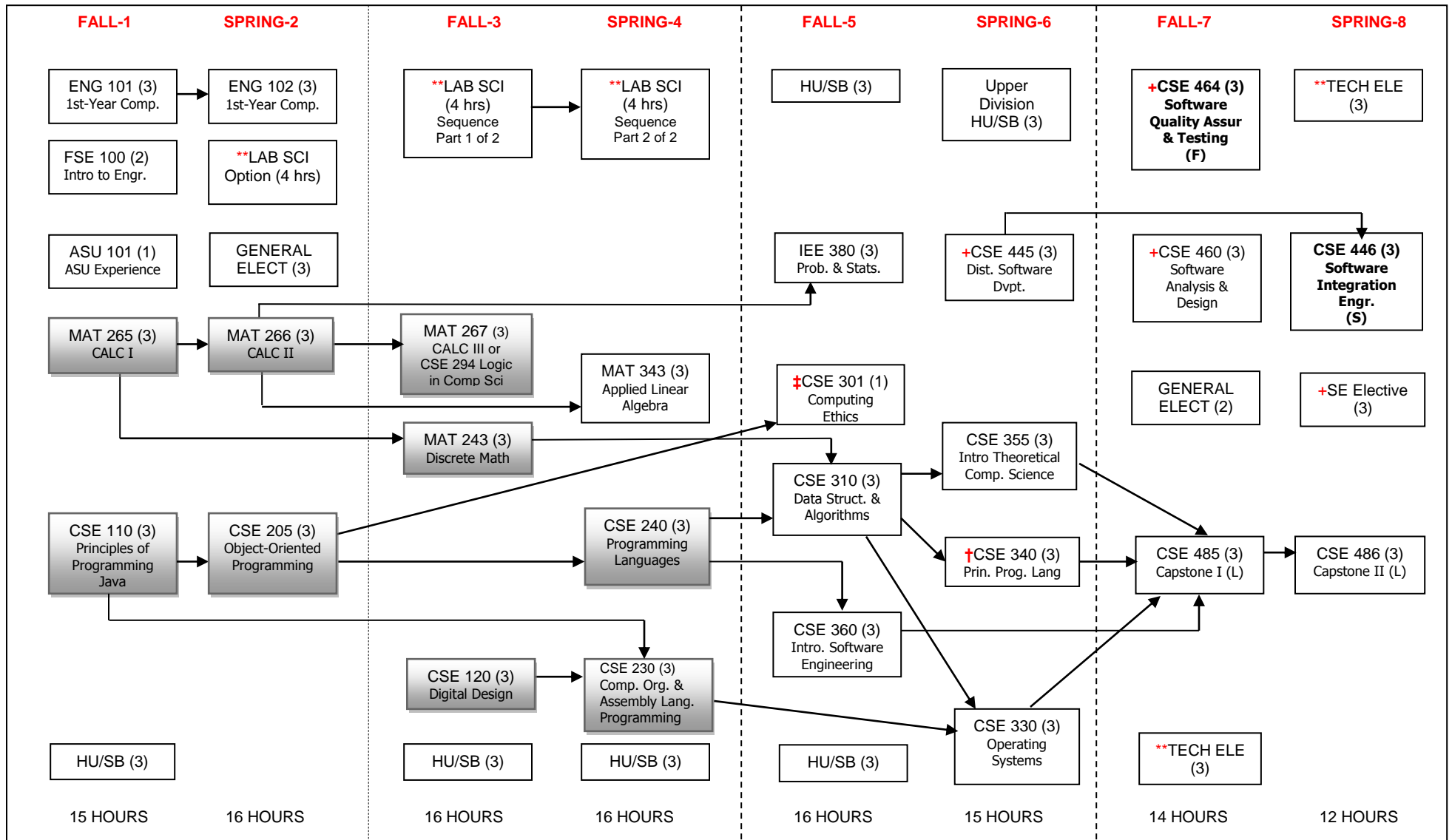
If you have any questions about the course updates and how they may impact your specific graduation plan please speak with your SCAI academic advisor.

Course	Change	Effective Semester
CSE 466	CSE 365 Added to Prerequisites	Fall 2020
CSE 467	CSE 365 Added to Prerequisites	Fall 2020
CSE 485	CSE 301 Added to Prerequisites	Fall 2021

**CONTINUE TO
COMPUTER SCIENCE (SOFTWARE ENGINEERING) FLOWCHART**

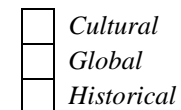
Computer Science (Software Engineering), BS Bachelor of Science, 2016-2017 Catalog Year

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Notes: ** See CIDSE Advising Center or CIDSE Website (<http://cidse.engineering.asu.edu/degree/requirementsbscs/>) 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
- + 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
- Bolded courses are offered in specific terms only**



Prerequisite →

Term 1

CSE 110: Principles of Programming with Java -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-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 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** CHM113 & 116 **or** GLG 101 & 103 **or** BIO 181 & 182

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

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

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.

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.

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

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Term 6

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 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 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 464: Software Quality Assurance and Testing- 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, integration, system, and regression testing techniques, software life cycle models and software testing, testing distributed software, bug management, and use of testing tools.

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

Technical Elective: Upper Division 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 446: Software Integration Engineering - Software development using architecture design, composition, workflow, services, data resources, data representations, data management, and development tools.

Software Engineering Elective Technical Elective: Upper Division Elective

Technical Elective: Upper Division Elective