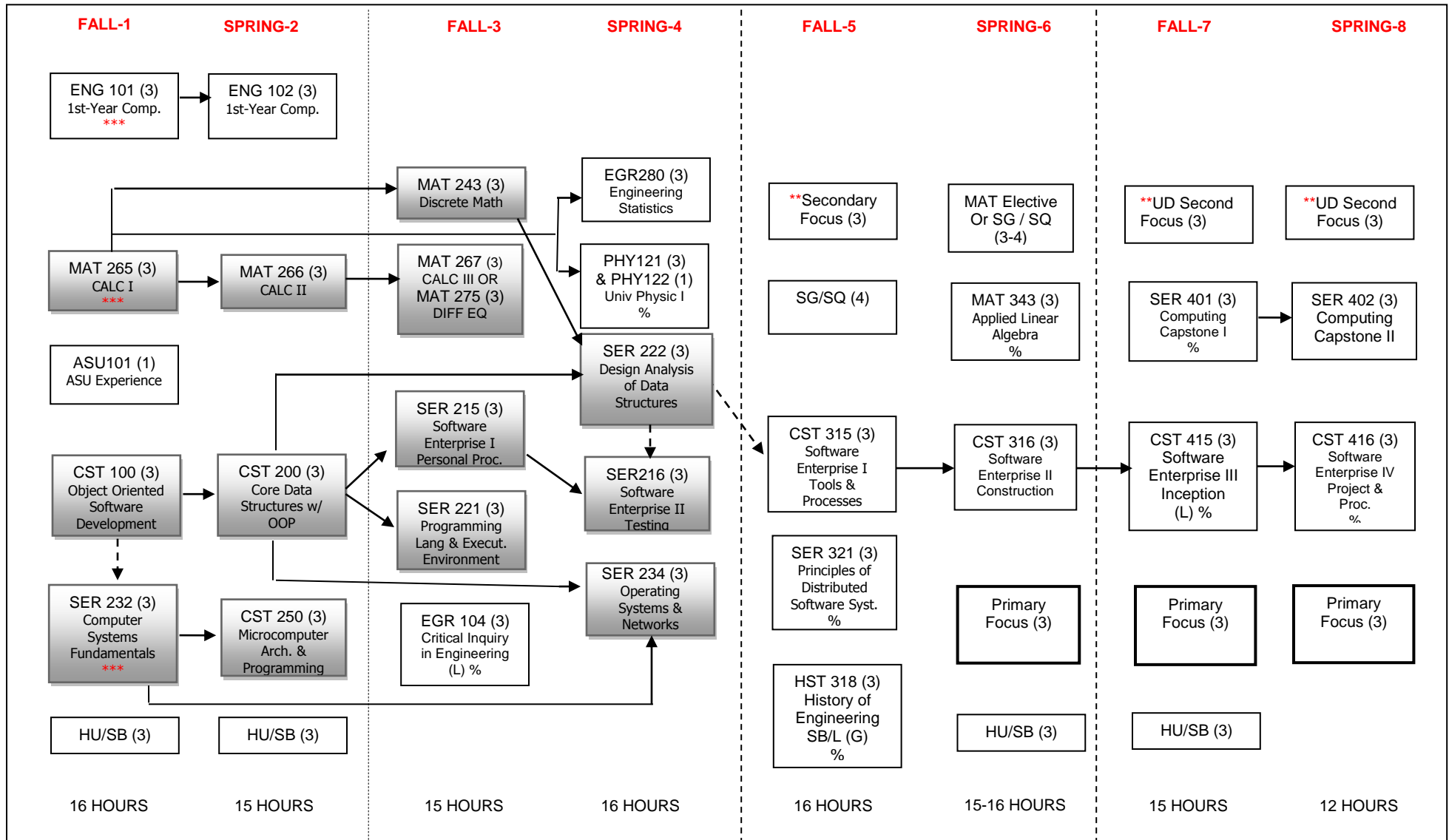


**Software Engineering, BS**  
**Bachelor of Science, 2015 -2016 Catalog Year**

TSSERBS

Name: \_\_\_\_\_  
 ID: \_\_\_\_\_

**Primary Focus:**  
**To Be Determined**



Notes: \*\* See CIDSE website or Advisor for Secondary Focus requirements.  
 Shaded courses designates critically tracked requirements.  
 Prerequisite → Co-requisite →  
 % indicates prerequisites not listed by arrows. See major map for more information.  
 \*\*\* Requires placement exam score and may require additional courses dependent on placement.  
 Color Coding Key: Completed Requirements Enrolled Need to Retake

Cultural  
 Global  
 Historical

Term 1:

**CST100: Object- Oriented Software Development**- Introduces problem solving with a state-of-the-art programming language. Expressions, statements, basic control flow and methods. Data, data aggregation and usage. Uses a structured personal software development process to implement solutions representative of common computing applications. Uses development kits for some course activities.

**SER232: Systems Fundamentals I** - Logic design and computer organization; number systems and arithmetic, boolean algebra; digital systems components; assembly language and instruction set concepts and application.

**ASU: Success in Technology and Innovation**

**MAT265: Calculus for Engineers I** - Limits and continuity, differential calculus of functions of one variable, introduction to integration.

**ENG101: First Year Composition**

**HU and C: Humanities and Cultural Awareness**

Term 2:

**CST 200: Core Data Structures with Object Oriented Programming** - Design, implementation and use of core data structures; object-oriented software development: design, analysis and programming.

**MAT266: Calculus for Engineers II** - Methods of integration, applications of calculus, elements of analytic geometry, improper integrals, Taylor series.

**CST250: Microcomputer Architecture and Programming** - Microcomputer architecture, instruction set, assembly language programming and debugging, I/O considerations, memory interface, peripherals and busses, exception/interrupt handling.

**ENG102: First Year Composition**

**SB: Social and Behavioral Science**

Term 3:

**MAT243: Discrete Mathematical Structures** - Logic, sets, functions, elementary number theory and combinatorics, recursive algorithms, and mathematical reasoning, including induction. Emphasizes connections to computer science.

**MAT267: Calculus for Engineers**- Vector-valued functions of several variables, partial derivatives, multiple integration. **OR Mat 275: Modern Differential Equations** - Introduces differential equations, theoretical and practical solution techniques. Applications. Problem solving using MATLAB.

**SER215: Software Enterprise 1: Personal Process** - Software engineering; personal software processes for individual professionalism; time and defect estimation, yield, and productivity. Software tools. Project based.

**SER221: Programming Languages and Their Execution Environment** - Introduces the fundamental programming language concepts of data, type, control, abstraction, and structure; software development and execution environments; programming language paradigms.

**EGR104: Critical Inquiry in Engineering** - Critical thinking. Systematic evaluation of information as input to well-informed decision making. Close reading and substantive writing in a technical setting

Term 4:

**SER216: Software Enterprise II** - Project-centered course covering testing and quality in software engineering; concepts, tools, and methods in testing and quality management; teamwork and communication in software engineering. Project based.

**SER222: Data Analysis of Data Structures and Algorithms** - Data structures and related algorithms for their specification, complexity analysis, implementation and application. Sorting and searching. Professional responsibilities that are part of program development, documentation and testing.

**SER234: Operating Systems and Networks** - Fundamentals of operating systems, process management, scheduling, synchronization techniques and file management. Network technology, topologies, protocols, application control; network and operating system security.

**EGR280: Engineering Statistics** - Applications-oriented introduction to statistics with computer-based experience using statistical software for formulating and solving engineering problems.

**PHY121/122: University Physics Mechanics 1 Mechanics and laboratory** - Kinematics; Newton's laws; work, energy, momentum, conservation laws; dynamics of particles, solids, and fluids. Both PHY 121 and PHY 122 must be taken to secure SQ General Studies credit.

Term 5:

**CST315: Software Enterprise I: Tools and Process** - Introduces tools and techniques used in software enterprise/development, including coding, design, testing, configuration management, and personal process management.

**HST318: History of Engineering** - The history of engineering from the earliest record to modern times, examining the social, cultural, and economic effects on society.

**SER321: Software Systems** - Design and implementation of distributed software components; process and memory management underlying software applications; sockets, protocols, threads, XML, serialization, reflection, security, and events. Prerequisites:

**Secondary Focus**

**SQ or SG: Natural Science Quantitative or Qualitative**

Term 6:

**CST316: Software Enterprise II** - Construction and Transition – Best practices in Software construction in the context of a team project, including refactoring, defensive programming, unit testing, and configuration and release management.

**MAT343: Applied Linear Algebra** - Solving linear systems, matrices, determinants, vector spaces, bases, linear transformations, eigenvectors, norms, inner products, decompositions, applications. Problem solving using MATLAB.4

**Upper Division Primary Focus:**

**SG or Math elective**

**HU and H: Humanities, Arts, and Design and Historical Awareness**

Term 7:

**CST415: Software Enterprise III: Inception and Elaboration** - Third course in the four-course enterprise sequence. Students perform inception (project launch) and elaboration (requirements analysis) activities in project teams.

**SER 401: Computing Capstone Project I** – First half of a comprehensive project experience based on cumulative knowledge and skills gained in earlier coursework.

**UD PF: Upper Division Primary Focus**

**UD SF: Upper Division Secondary Focus**

**UD or HU: Social Behavioral Sciences or Humanities**

Term 8:

**CST416: Software Enterprise IV: Project and Process** – Project-centric course focusing on applying software process project management, and technical leadership. Final course in the software enterprise sequence.

**SER402: Computing Capstone Project II** – Second half of a comprehensive project experience based on cumulative knowledge and skills gained in earlier coursework.

**UD PF: Upper Division Primary Focus**

**UD SF: Upper Division Secondary Focus**