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

FALL-1
ENG 101 (3) 1st-Year Comp. ***
MAT 265 (3) CALC I ***
CST 100 (3) Object Oriented Software Development
ASU101 (1) ASU Experience
SER 232 (3) Computer Systems Fundamentals ***
HU/STB (3)
16 HOURS

SPRING-2
ENG 102 (3) 1st-Year Comp.
MAT 266 (3) CALC II ***
CST 200 (3) Core Data Structures w/ OOP
CST 250 (3) Microcomputer Arch. & Programming
HU/STB (3)
15 HOURS

FALL-3
MAT 243 (3) Discrete Math
MAT 267 (3) CALC III OR MAT 275 (3) DIFF EQ
MAT 265 (3) CALC I ***
ASU101 (1) ASU Experience
15 HOURS

SPRING-4
EGR280 (3) Engineering Statistics
PHY121 (3) & PHY122 (1) Univ Physic I
CST 200 (3) Core Data Structures w/ OOP
CST 250 (3) Microcomputer Arch. & Programming
16 HOURS

FALL-5
**Secondary Focus (3)
MAT Elective Or SG / SQ (3-4)
**UD Second Focus (3)
SG/SQ (4)
16 HOURS

SPRING-6
MAT 343 (3) Applied Linear Algebra %
**UD Second Focus (3)
SER 401 (3) Computing Capstone I %
15-16 HOURS

FALL-7
**UD Second Focus (3)
SER 402 (3) Computing Capstone II
15 HOURS

SPRING-8

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 Requirement Enrolled Need to Retake

Primary Focus: Embedded Systems

Name: ID:
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.4
SER215: Software Enterprise 1: Pers 
HU and C: Humanities and Cultural Awareness
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.
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. Pre-requisites:
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 C: 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