Software Engineering, BS
Bachelor of Science, 2014-2015 Catalog Year
TSSERBS

Name:
ID:

Primary Focus: Embedded Systems

Notes: ** See CIDSE website or Advisor for Secondary Focus requirements.
Shaded courses designate 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.
**** Not required for transfer students
Color Coding Key: Completed Requirements Enrolled Need to Retake

FALL-1
ENG 101 (3) 1st-Year Comp.
CTI 101 (1) Success in Tech
MAT 265 (3) CALC I

SPRING-2
ENG 102 (3) 1st-Year Comp.
SG/SQ (4)
MAT 266 (3) CALC II

FALL-3
EGR280 (3) Engineering Statistics
MAT 243 (3) Discrete Math

SPRING-4
PHY121 (3) Critical Inquiry in Engineering
MAT 267 (3) CALC III OR MAT 275 (3) DIFF EQ

FALL-5
**Secondary Focus (3)

SPRING-6
EGR 104 (3) Critical Inquiry in Engineering
MAT Elective Or SG (3-4)

FALL-7
**UD Second Focus (3)

SPRING-8
**UD Second Focus (3)
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.
CT1101: 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.
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.
ENG102: First Year Composition

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.
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.
SB: Social and Behavioral Science

Term 4:
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.
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.
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.

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:
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.

Upper Division Primary Focus:

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.

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
SG or Math elective

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
UD SB or UD HU: Upper Division Social Behavioral Sciences or Humanities