Term 1:

ENG 101: First-Year Composition
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
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.

Term 2:

ENG 102: First-Year Composition
MAT 266: Calculus for Engineers II-Methods of integration, applications of calculus, elements of analytic geometry, improper integrals, Taylor series
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.
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 3:

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.
MAT243: Discrete Mathematical Structures-Logic, sets, functions, elementary number theory and combinatorics, recursive algorithms, and mathematical reasoning, including induction. Emphasizes connections to computer science.
CSE 240: Introduction to Programming Languages-Introduces the procedural (C/C++), applicative (LISP/Scheme), and declarative (Prolog) languages.
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.

Lab Science Sequence. Refer to course options outlined on the flow chart.

Term 4:

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.
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.

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.

Term 5:

SER315: 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.
SER334: 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 6:

TECHNICAL ELECTIVE-Select from upper division SER, CSE or IFT prefix courses
SER316: 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.
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.
SER335: Engineering Secure Software Systems-SE principles applied to securing software systems. Software lifecycle processes, requirements analysis, verification.

Term 7:

SER 401: Computing Capstone Project I-First half of a comprehensive project experience based on cumulative knowledge and skills gained in earlier coursework.
SER415: 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 4** Elective (3 credits)

Term 8:

SER402: Computing Capstone Project II-Second half of a comprehensive project experience based on cumulative knowledge and skills gained in earlier coursework.
SER416: 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.
Two (2) – SER4** Elective courses (6 credits)