

# COMPUTER SCIENCE (CPSC)

## CPSC 110 Programming Fundamentals

(3 Credits, Fall/Spring)

This course introduces the core fundamentals found in modern computer programming languages. Topics include variables, constants, data types, structures, enumerations, classes, expressions, code re-use through functions, control branching structures, collections, control repeating structures, code editing, building, testing, and deploying programs. (2 lecture hours, 2 lab hours, 3 credits)

## CPSC 111 Introduction to Python Programming

(3 Credits, Fall/Spring/Summer)

Essentials of programming using the Python programming language with a focus on selection statements, loops, arrays, functions, classes, and objects. Includes construction, compilation, and debugging of complete programs that solve simple problems. (2 lecture hours, 2 lab hours, 3 credits)

## CPSC 121 Computer Science I

(4 Credits, Fall/Spring)

This introductory course in computer science addresses object-oriented problem solving and programming. Topics covered include software development processes, data, expressions, conditionals, loops, arrays, lists, classes, interfaces, graphical user interfaces, and Unified Modeling Languages (UML) Diagrams. PREREQ: MATH 170. (3 lecture hours, 3 lab hours, 4 credits)

## CPSC 131 Swift App Development I

(3 Credits, Spring)

This course introduces the fundamental concepts and technologies involved in developing an application on the Apple platform using the Swift programming language. Topics include software design and development methodology, data types, control flow, collection types, functions, structures, objects, enumerations, graphical user interface controls, navigation, responsive design, and user experience considerations. PREREQ: CPSC 110 or PERM/INST. (2 lecture hours, 2 lab hours, 3 credits)

## CPSC 151 Swift App Development II

(3 Credits, Fall)

This course expands on the fundamental concepts and technologies from Swift App Development I. Students will continue developing applications on the Apple platform using the Swift programming language. Topics include advanced software design and development methodology, protocols, app life cycle, Model-View-Controller pattern, Views, controls, file management, network interface, and concurrency considerations. PREREQ: CPSC 131. (2 lecture hours, 2 lab hours, 3 credits)

## CPSC 171 Swift App Development: Augmented Reality

(3 Credits, Spring)

This course will explore using Swift to create apps that include 3D rendering, virtual reality, and augmented reality. Students will incorporate challenge-based learning as a focus of an app implementation. PREREQ: CPSC 151. (2 lecture hours, 2 lab hours, 3 credits)

## CPSC 199 Computer Science Special Topics

(1-5 Credits, Varies)

This course is designed to permit the offering of special topics appropriate to a student's program. Regular or frequently recurring topics are not offered under this title. The course may be repeated as new topics are presented. (1 lecture hours, 0 lab hours, 1 credits)

## CPSC 221 Computer Science II

(3 Credits, Fall/Spring)

This advanced course in computer science addresses object-oriented design including inheritance, polymorphism, and dynamic binding. Additional topics include graphical user interfaces; recursion; introduction to program correctness and analysis of time and space requirements; basic data structures including lists, collections, stacks, and queues; and basic searching and sorting algorithms. PREREQ: CPSC 121 with a grade of C or higher. (2 lecture hours, 2 lab hours, 3 credits)

## CPSC 296 Computer Science Independent Study

(1-10 Credits, Varies)

This is a term-long project. Each credit hour is equivalent to 45 hours of work on a project. Students should make arrangements with the instructor in their field of interest. Before enrolling for independent study, a student must obtain approval of the department chair and dean, acting on the recommendation of the instructor who will be supervising the independent study. An Independent Study Registration Form must be completed and turned into a One Stop Student Services location before a student may register for this course. PREREQ: PERM/INST and submission of a completed Independent Study Registration Form. (0 lecture hours, 0 lab hours, 1 credits)

*Refer to [How to Read Course Descriptions](#) for an explanation of elements found in the course descriptions above.*