Description: A course for students interested in computer programming, which involves solving problems by designing, implementing, and testing algorithms. Implementation will be done in the high-level language C++. Emphasis throughout the course is on problem solving and learning to develop computer programs that are readable, well-documented, efficient, and correct. (Three hours lecture and two hours lab per week.)


Prerequisite: COSC 117 with a “C” or better or equivalent programming experience.

Introduction to Computer Software and Hardware
History of C++, Computer Structure, Concept of High-Level vs. Lower-level Languages, C++ Programming Environments, and C++ Program Structures

Data Types, Expression, Statements, and Input/output
Identifiers, Primitive Data Types, Expressions, Control Structures, Loops, File and Stream Input/Output, Variable Declarations, Constant Variables, Static Variables and Local/Global Variables, Variable Scope

Function and Parameter Passing Method
Defining and Calling Functions, Function Prototypes, Function Return Types, Parameter Passing Methods in C++, Function Prototypes with Default Arguments, and Function Overloading

Arrays and Structured Data Types
One-Dimensional and Two-Dimensional Arrays, Accessing Arrays with Index Values, Passing arrays as Parameters, Elementary Sorting and Searching with Arrays, User Defined Structured Data Types, and Accessing Members of Structured Data Type

Advanced Topics
Pointers, Passing Pointers as Parameters, Introduction to Classes, Types of Class Members, Constructors and Destructors in Classes, User Defined Class Members, and Dynamic Memory allocation using Pointers

Optional Topics
Introduction to operator overloading, and introduction to recursion

Testing

EVALUATION
Programs (Design and & Implementation): 40 - 60%
Tests, Quizzes, & Final Exam: 40 - 60%

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.