



Programming in C++

CSE 4252

Credit Hours:

1.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Lecture

Course Description:

Syntax and pragmatics of C++ programming; C++ types, arrays, classes, pointers; objects and classes; compile-time vs. run-time picture; inheritance; template classes.

Prerequisites and Co-requisites:

Prereq: 2123 or 2231; and 2321; and enrollment in CSE, CIS, ECE, Engr Physics, or Data Analytics major, or CIS minor.

Course Goals / Objectives:

- Be competent with using C++ classes, member functions, constructors, destructors, etc.
 - Be competent with using templates and the C++ standard template library (STL)
 - Be competent with using inheritance including using virtual functions
 - Be familiar with using arrays and pointers to work with collections of objects and with allocating and releasing memory
 - Be familiar with using .h and .cpp files to organize large programs
 - Be familiar with the relation between the runtime picture and the source-level picture of moderately complex programs; and using this to build reliable programs
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Course Topics:

- Compiling and running C++ programs (including use of .h and .cpp files)
 - Overview of simple types in C++; arrays, classes, address types (pointers and references)
 - Distinction between objects and classes; compile-time picture vs. runtime; member functions are invoked on objects; exception: static members (both data and functions)
 - Stack vs. heap objects; automatic vs. explicit creation; constructors and destructors; new and delete; "this" pointer; complex structures such as trees
 - Inheritance; public vs. private vs. protected; overriding; virtual methods, pure virtual methods, abstract classes; virtual vs. non-virtual methods; runtime dispatch and how it works
 - Exceptions, namespaces
 - Templates; examples using STL
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Designation:

Elective