Computer Science 1362 – Computer Science II

Student Learning Outcomes

1. Students will become familiar with the internal storage of integral data.
2. Students will learn how to create, compile, link, and run a program in a Unix operating environment.
3. Students will learn how to create multi-file source programs.
4. Students will learn about C++ programming topics, including bit manipulation, strings, structures, classes, and pointers.

Course Content

Textbook: *Starting out with C++ From Control Structures through Objects,* Sixth Edition, by Tony Gaddis
The following chapters including the particular sections listed are covered. (See textbook "Contents")

J. Binary Numbers and Bitwise Operators

- Converting Base-B Numbers to Base-10
- Converting Base-10 Whole Numbers to Base-B
- Converting Base-10 Fractional Numbers to Base-B
- Converting from Base-B_1 to Base-B_2
- Base-B Complements
- Unsigned, Sign Magnitude, One's Complement, and Two's Complement Storage Modes
- The Bitwise Operators: left shift, right shift, bitwise not, bitwise and, bitwise or, and bitwise exclusive or

9. Pointers

- Getting the Address of a Variable
- Pointer Variables
- The Relationship Between Arrays and Pointers
- Pointer Arithmetic
- Initializing Pointers
- Comparing Pointers
- Pointers as Function Parameters
- Dynamic Memory Allocation
- Returning Pointers from Functions

10. Characters, Strings, and the string Class

- Character Testing
- Character Case Conversion
- The C++ string class

11. Structured Data

- Abstract Data Types
- Combining Data into Structures
- Accessing Structure Members
- Initializing a Structure
- Arrays of Structures
- Nested Structures
- Structures as Function Arguments

- Returning a Structure from a Function
- Pointers to Structures
- When to Use ., When to Use ->, and When to Use *
- Unions
- Enumerated Data Types

13. Introduction to Classes

- Procedural and Object-Oriented Programming
- Introduction to Classes
- Defining an Instance of a Class
- Why Have Private Members?
- Separating Class Specification from Implementation
- Inline Member Functions
- Constructors
- Passing Arguments to Constructors
- Destructors
- Overloading Constructors
- Private Member Functions
- Arrays of Objects

Additional Content

Any section or chapter not listed previously.