CSE Freshman Course Sequence

Permission to take the placement exams is granted by CSE advisors. After permission is granted, tests can be scheduled by contacting: Belinda Tarrant   817-272-3603 tarrant@uta.edu   (phone is preferred). The test MUST BE TAKEN BEFORE THE FIRST DAY OF CLASSES.

CSE 1310: Introduction to Computers and Programming

An introduction to the computer, to the algorithmic process, and to programming using basic control structures, arrays, and files. Windows and UNIX operating systems are used.

Topics: Computer organization and operating systems
Number conversions (binary, decimal, hexadecimal)
Software development lifecycle (analysis, design, editing, compiling, executing, testing, debugging)
Scalar data types (int, float, char, etc.)
Good Coding Practices (readability, robustness, correctness, divide and conquer)
Input/Output, including file I/O
Arithmetic operators
Relational/Logical operators
Selection structures (if, switch/case)
Repetition structures (for, while, do-while)
Arrays (one-dimensional)
Functions (built-in, user-defined, parameter passing - by value and by reference, returning values)
Character array processing

CSE 1320: Intermediate Programming

Programming concepts beyond basic control and data structures. Emphasis is given to data structures including linked lists and trees as well as modular design consistent with software engineering principles.

Topics: Software design
Algorithms
Pseudo code
Software Engineering
The Software Development Lifecycle (SDLC)
SDLC Models
Structured process steps (requirements analysis, design, implementation, testing, and maintenance)
ANSI C language elements
Scalar data types (int, float, char, etc.)
Operators (arithmetic, relational, boolean, bitwise logical)
Selection structures (if, switch/case)
Repetition structures (for, while, do-while)
Arrays (single- and multi-dimensional)
Functions (built-in, user-defined, parameter passing - by value and by reference, returning values)
Character array processing, strings
Input/Output, including file I/O (both text and binary files)
Recursion
Pointers and dynamic memory allocation
Elementary data structures (record structures, stacks, queues, linked lists)
Double indirection
The C preprocessor
Command line arguments
C library functions

CSE Freshman Course Sequence (continued)

CSE 1325: Object-Oriented Programming

Object-oriented concepts, basic Unified Modeling Language (UML) modeling, collection classes, generics, polymorphism, reusability and introduction to design patterns. Projects involve extensive programming and include graphical user interfaces and multithreading.

Topics:
- Types, variables, arithmetic
- Scope
- Pointers, arrays, references
- Structures
- Enumerations
- Operator Overloading
- Instantiation, cleanup, copy, move operations
- Classes (base classes, inheritance, friends, etc.)
- Data members (public, private, protected)
- Namespaces
- Strings
- Streams
- Standard Library
- Standard library containers (vector, list, map, etc.)
- Standard library algorithms (sequence operations, sorting operations, iterators, etc.)