CSE Freshman Course Sequence

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CSE 1310: "Introduction to Computers and Programming" (prerequisite: MATH 1322)

Course Objectives and Outcomes: This course introduces basic computer concepts and computer software design with an emphasis on problem solving and algorithmic development. Upon completion of this course, the student should be able to demonstrate these techniques and principles by developing computer programs in the C programming language.

Topics: Computer organization
Operating systems
Number conversions (binary, decimal, hexadecimal, octal)
Writing programs (basic program design, editing, compiling, executing, testing, debugging)
Scalar data types (int, float, char, etc.)
Input/Output, including file I/O
Arithmetic/Relational 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" (prerequisite: CSE 1310; corequisite: CSE 1104/CSE 1105)

Course Objectives and Outcomes: For students with basic programming skills, this course continues development of the student's capabilities in programming beyond standard control structures in C/C++, consistent with software engineering principles. Students successfully completing this course will be able to apply structured, top-down design and software engineering techniques to the analysis and procedural design of moderately complex computer programming problems.

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 and Event-driven Programming" (Java) (prerequisite: CSE 1320)

Course Objectives and Outcomes:. Advanced program design and implementation in the Java programming language. Object-oriented and event-driven concepts including the Java API, classes and objects, applications, applets, regular expressions, strings, inheritance, polymorphism, graphics and graphical user interfaces, layout managers, exception handling, collections, generics and multithreading. Windows operating system is used.

Questions for the CSE 1325 "Object-oriented and Event-driven Programming" (Java) exit exam may come from the following topics in the context of JDK 1.5:

Topics:
1. Class libraries
2. Java API
3. Concrete classes
4. Abstract classes
5. Interfaces
6. References and objects
7. Method prototypes
8. Concrete methods
9. Abstract methods
10. Formatted input/output
11. Strings
12. Characters
13. Type-wrapper classes
14. Arrays
15. Random number generation
16. Garbage collection
17. Data structures
18. Inheritance
19. Polymorphism
20. Event handling
21. GUI components
22. Layout managers
23. Graphics
24. Exception handling
25. Files and streams
26. Recursion
27. Searching and sorting
28. Generics
29. Collections
30. Java applications
31. Java applets