Course Outcomes	CSC 1350

CSC 1350: Computer Science I for Majors

Credit Hours: 3 hours

Frequency: Fall and Spring semesters

Prerequisites:

Credit or registration in MATH 1550.

Prerequisites by Topics:

Basic skills in mathematics

Catalog Course Description:

Credit will not be given for both this course and CSC 1248 or 1250 or 1253 or ISDS 3107. Fundamentals of algorithm development, program design and structured programming using an object-oriented language.

Course Outcomes

1. Be exposed to basic hardware and software concepts.
2. Be familiar with issues related to software design.
3. Be familiar with the creativity and skills needed to solve problems using Java.
4. Be familiar with using key structured Java programming constructs: declarations, sequence, selection, repetition, evaluating expressions.
5. Be familiar with using file input/output.
6. Be familiar with Java structures
7. Be exposed to encapsulation and Java classes, inheritance and polyphormism.

Texts and Other Course Materials

- Big Java - Cay Horstmann, 2/e (ISBN: 0471697036)
- Recommended: Computer Science: An Overview - J. Glen Brookshear 8/e (ISBN: 0321247264)

Major Topics

- Hardware and Software: different types of computers and terms; parts of a computer (memory, CPU, I/O); how data and instructions are represented including base conversions; types of software; types of programming languages and terms. Introduction to operating systems.
- Compilation process, programming process (software development lifecycle), algorithm development, structured programming principles and construction. Writing algorithms using pseudocode.

- Variables, expressions (arithmetic, Boolean, literals), assignment statements, precedence, association, data types, enumeration types, union types.
- Interactive input/output, formatting output.
- Branching statements.
- Repetition structures (while, do-while, for). Counter-control loops (incremental and decremental), event control loops including sentinel control. Nested repetition.
- Programming standards and style guidelines: good documentation.
- Single dimensional and multi-dimensional arrays. Partially filled arrays.
- Unordered and ordered linear search and binary search of arrays.
- Sorting of arrays: bubble, insertion and selection sorts.
- Arrays of class objects.
- Character and string I/O. Predefined string methods.
- Streams and text File I/O and formatting output.
- Use of math class and wrapper classes
- Classes (encapsulation): Public and private members; accessor and mutator functions; static members, constructors.
- Inheritance and polyphormism.

Assignments/Projects/Laboratory Projects/Homework

- Using the Java compiler and the UNIX system
- Writing a simple Java program using data declarations, conditionals and loops
- Designing and implementation using methods
- Designing and implementing a solution using 1-d and 2-d arrays

Curriculum Category Content (estimated in semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms	5	1	Data Structures	2	
Software Design	3		Prog. Languages	20	
Computer Arch.	2				

Relationship to Criterion 3 Outcomes

A	B	C	D	E	F	G	H	I	J	K
*	*			*	*	*	*		*	

Math Fundamentals:

Base conversions (2 hrs)

Data Structures:

Use of JAVA array list class (2 hrs)

Algorithms and Software:

Algorithm Analysis (hr)
Binary search, linear search (ordered and unordered), selection sort (total 6 hrs)
Documentation and style guidelines (.5 hr)
Software development method (3hrs)

Computer Organization and Architecture:

Parts of a computer including the CPU (2 hrs)

Concepts of Programming Languages:

Features of object oriented languages (6 hrs),
syntax and semantics, scope, duration, parameter passing (total 12 hrs)

Social and Ethical Issues:

Individual work on non-team assignments (30 minutes)

Oral Communication (presentations) – none

Written Communication:

Homeworks and projects 5 pages per assignment including intensive documentation (6-8 hrs)

Course Coordinator: William Duncan
Last Modified: April 30, 2007