

Course Outcomes	CSC 1351
------------------------	-----------------

CSC 1351: Computer Science II for Majors

Credit Hours: 3 hours

Frequency: Fall and Spring semesters

Prerequisites:

Credit in CSC 1350 and MATH 1550.

Prerequisites by Topics:

Basic programming skills, basic math skills.

Catalog Course Description:

Credit will not be given for both this course and 1254. Develops solutions to problems using an object-oriented approach and emphasizes the concepts of: recursion; dynamic memory; data structures (lists, stacks, queues, trees); exception handling.

Course Outcomes

1. Master using the computing environment to complete programming assignments and electronically communicate with others.
2. Master designing and implementing simple data structures using classes.
3. Master building simple applications in Java.
4. Be familiar with object-oriented design and coding.
5. Be familiar with algorithm efficiency.
6. Be familiar with data abstraction.
7. Be familiar with recursion and recursive sorts.
8. Be familiar with using the Java API Documentation to learn about new classes.

Texts and Other Course Materials

Big Java - Horstmann Big Java 0-471-69703-6 PB Latest edition Wiley

Major Topics

- Binary files.
- Separate compilation.
- Recursion and recursive sorts (merge and quick sorts).
- Exception handling and assertions.
- Robust verification of input data.
- Data abstraction, ordered list, stack, queue, binary trees and binary search trees.
- Asymptotic efficiency of the operations associated with a data structure.

- Classes and inheritance.
- Advanced linked lists: doubly linked list, circular linked list.
- Simple graphical user interfaces.

Assignments/Projects/Laboratory Projects/Homework

- Translating postal bar codes into ZIP codes and vice versa.
- Plotting a regression line for mouse click coordinates.
- A simple search engine for finding words in web pages.
- A calculator for post-fix expressions.
- A calculator for polynomial expressions

Curriculum Category Content (estimated in semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms	8	3	Data Structures	12	4
Software Design	3	2	Prog. Languages	2	0
Computer Arch.	1	0			

Relationship to Criterion 3 Outcomes

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

Math Fundamentals:

Data Structures:

Design, implementation, and use of a variety of data structures (16 hrs).

Algorithms and Software:

Algorithm analysis (4 hrs), software design (12 hrs).

Computer Organization and Architecture:

Discussion of data representations (1 hr).

Concepts of Programming Languages:

Comparisons of C, C++, and Java syntax and programming style (2 hrs).

Social and Ethical Issues:

Credit author when reusing code.

Oral Communication (presentations) – none

Written Communication:

4 homeworks, 5 programming assignments.

Course Coordinator: Dr. Gerald Baumgartner

Last Modified: February 28, 2008.