

Inver Hills Community College

CS 1110: Computer Science I with Java

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites:

MATH 1118 - College Algebra I (Minimum grade: 2.0 GPA equivalent and Number of Years Valid: 2)

Corequisites: None

MnTC Goals: None

Introduces students to computer science and programming with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes both object-oriented and imperative problem solving and design using the Java programming language.

B. COURSE EFFECTIVE DATES: 08/22/2002 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Introduction to objects and object-oriented program design (10%)
2. Program implementation including recursion, I/O, and storage (27%)
3. Program analysis: testing, debugging, exceptions, and algorithm analysis (10%)
4. Standard data structures including ints, bools, doubles, strings, arrays, classes, and lists (15%)
5. Data structure operations: traversals, insertions, deletions (10%)
6. System reliability, privacy, legal issues, intellectual property, social and ethical issues (2%)
7. Sequential and binary search (12%)
8. Insertion, selection, merge, and bubble sort (14%)

D. LEARNING OUTCOMES (General)

1. Apply consistent documentation and program style standards that contribute to the readability and maintainability of software.
2. Develop, design, analyze, and implement logic within a program that solves a problem with a finite number of operations.
3. Design and develop programs that implement fundamental logic structures of sequence, selection, and repetition.
4. Write programs that use file I/O to provide persistence across multiple executions.
5. Develop proficiency in specification and use of appropriate primitive data types and their aggregation into simple linear data structures.
6. Decompose problems into clearly defined sub-problems based on program requirements.
7. Implement algorithms utilizing recursive structures.
8. Create appropriate test cases and use debugging skills to verify correctness of output.
9. Write, run, test, and debug solutions in the Java programming language, utilizing standard Java library classes and interfaces.
10. Write solutions fluently in an object-oriented paradigm.
11. Read and understand programs consisting of several classes and interacting objects.
12. Read and understand a description of the design and development process leading to such a program.
13. Explain and understand the ethical and social implications of computer use.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted