Course Number: CSC 210

Course Title: Introduction to Computer Programming

Number of Credits: 3

Schedule: Three hours of lecture per week.

Catalog Description

Design, implementation, testing, debugging, maintenance, and documentation of Java programs. Algorithms, programming concepts, and data types in Java. Concepts of object-oriented programming; numerical and non-numerical problems. Required of computer science majors and minors. Concurrent enrollment in CSC 211 recommended.

Expanded Description

CSC 210 is the first programming course in the CS program for students who have no programming experience. Main topics include the following:

1. Data types: unsigned integers, signed integers, real numbers, and alphanumeric characters.
2. Number systems and binary coding: unsigned and signed integers, integer operations, floating point numbers
3. Problem solving using computers.
4. Java data types: int, float, double, short, long, unsigned, char, enum, bool.
5. Arithmetic operators, arithmetic expressions, and basic library functions.
6. The concept of stream input and output.
7. Java selections: if, if-else, switch-case. Programs with selections.
8. Java repetitions and jumps: while, do-while, and for loops, break, continue, exit, and return. Use of menus and sentinel loops.
9. Methods and their arguments. Local and global variables. The concept of scope. The concept of method overloading.
10. Arrays and array operations: search, sort, reduction, compression, expansion. Basic multi-dimensional arrays.
11. Java strings and text I/O.
12. Files: file streams, file open and close operations, reading from files and writing into files.
13. Classes and processing of objects: constructors, private and public objects, data

initialization, and class member functions. Problem solving techniques.

14. Programming problems with classes and files.
15. Sample algorithms: linear search, binary search, simple sorting algorithms
16. Simple GUI programming.

The material covered in CSC 210 is distributed during 16 weeks of semester as follows:

1. Introduction and simple Java programs.
2. Data types, expressions, streams.
3. Control structures. Selections and logic operations.
4. Selections (if-else, switch)
5. Repetitions (while, do, for)
6. Repetitions and jumps (break, continue, exit, return)
7. **Midterm review and exam.**
8. Functions and parameter passing
9. Arrays and array operations.
10. Strings and text I/O.
11. Files
12. Classes
13. Classes
14. Classes
15. Review and preparation for the final exam
16. **Final exam according to University schedule**

Course Objectives and Role in Program

CSC 210 is the first course in the sequence of mandatory software courses 210-220-340-413-600.

Objectives of this course include:

1. Presentation of fundamental concepts of programming languages and programming methods.
2. Presentation of syntax and semantics of Java.
3. Development of problem solving skills in the areas of procedural

programming and basic object-oriented programming.

4. Expose students to fundamental concepts of software engineering.
5. Promote good programming practices, performance and documenting of programs.
6. Presentation of simple algorithms.

Learning Outcomes

At the end of this course students will

1. Demonstrate basic programming skills in Java.
2. Demonstrate understanding of concepts of algorithmic problem solving and design of computer programs.
3. Demonstrate the ability to write, debug and execute small and medium-sized Java programs.
4. Demonstrate their readiness to continue the study of object-oriented programming and computer algorithms.

Method of Evaluation

Student learning will be evaluated on the basis of

1. Completeness and quality of program assignments
2. Grade on midterm examination(s)
3. Grade on final examination

Textbook: Y. Daniel Liang, *Introduction to Java Programming*, current edition, Pearson.

Prepared by: Bill Hsu and Ilmi Yoon

Last Revision Date: May 2017