**Course Syllabus**

**CS 175 - Introduction to Computer Science I**

**Credits:** 3 **Contact hours:** 3

**Instructor’s or course coordinator’s name:** Dr. Ling Zheng

**Required Textbook and Other Materials:**

Cay Horstmann, Java Concepts: Early Objects, 8th Edition, 2015

**Course Description:**

Introduction to the basic concepts of program development in a modern object-oriented language; problem-solving methods and algorithm development; basic data types; language syntax; style and documentation; and coding and testing of programs.

**Prerequisite:** CS-104 **Corequisite:** CS-175L

**Required or selected elective:** Required

**Course Goals:**

After completing this course, students will be able to:

• Create simple classes, methods, and programs in an object-oriented language.

• Correctly use and identify appropriate primitive data types.

• Use selection and repetition control statements.

• Be able to explain and demonstrate the concepts of encapsulation and information hiding.

• Create self-explanatory code through use of comments.

**Relationship of course to student outcomes listed in criterion 3:**

In this course students are given an opportunity to:

• Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

• Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

**Topics Covered:**

Using Objects

• Objects and Classes

• Variables

• Calling Methods

• Constructing Objects

• Accessor and Mutator Methods

• The API Documentation

• Implementing a Test Program

• Object References

Implementing Classes

• Instance Variables and Encapsulation

• Specifying the Public Interface of a Class

• Providing the Class Implementation

• Local Variables

• The this Reference

Fundamental Data Types

• Numbers

• Arithmetic

• Input and Output

• Strings

Decisions

• The if Statement

• Comparing Values

• Multiple Alternatives

• Nested Branches

• Boolean Variables and Operators

Loops

• The while Loop

• The for Loop

• The do Loop

• Common Loop Algorithms

• Nested Loops