**Course Syllabus**

**CS 176 - Introduction to Computer Science II**

**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:**

Continuation in depth and breadth of problem-solving and algorithm development, using the same modern object-oriented language as in CS-175. More advanced, object-oriented design. Introduction to polymorphism and inheritance.

**Prerequisite:** CS-175 and CS-175L, both passed with a grade of C or higher

**Corequisite:** CS-176L

**Required or selected elective:** Required

**Course Goals:**

After completing this course, students will be able to:

• Use arrays and array lists.

• Design and implement classes and methods.

• Understand and implement inheritance and polymorphism .

• Declare and use interfaces.

• Use Input/output streams, including text files.

• Handle exceptions.

• Understand and implement recursion.

**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:**

Arrays

• Common array algorithms

• Two-dimensional arrays

• ArrayLists

Designing Classes

• Constructors

• Static variables and methods

• Method overloads

• Packages

Inheritance

• Superclasses and subclasses

• Constructor chaining

• Polymorphism

Interfaces

• Abstract classes

Input/Output

• File operations

Exception Handling

Recursion