**CS 310 – Advanced Object-Oriented Programming and Design Syllabus**

**Course Number and Name:** CS 310 Advanced Object-Oriented Programming and Design

**Credits:** 3

**Contact Hours:** 3

**Instructor:** Dr.Ling Zheng

**Textbooks:**

Y. Daniel Liang, *Introduction to Programming with C++*,3rd Edition, Pearson, 2014.

Stanley B. Lippman, Josée Lajoie, and Barbara E. Moo. *C++ Primer*, 5th Edition, Addison-Wesley Professional, 2012.

**Catalog Description:**

Object-oriented programming and design, using a language different from that used on CS 176. Use of classes, inheritance, polymorphism, and libraries. Topics will include flexible system design for such requirements as globalization. This is a writing-intensive course.

**Prerequisite:**

CS-205 passed with a grade of C or higher and EN-101 and EN-102 or with permission of instructor.

**Course Type:** Required course.

**Course Goals:**

After completing this course, students will be able to:

* Understand, write, and maintain programs in a second object-oriented programming language
* Partition moderate-sized problems into cooperating classes
* Implement designs using user-defined and library classes
* Document both designs and implementations in a clear fashion
* Demonstrate an ability to analyze the local and global impact of computing on individuals, organizations, and society.

**Outcomes:**

* Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions
* Communicate effectively in a variety of professional contexts

**Brief List of Topics:**

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| Variables and Data Types |
| Constants, Operators |
| Basic Input & Output |
| Control Structure |
| Functions |
| Arrays |
| Pointers |
| Dynamic Memory Management |
| Structures |
| Classes |
| Strings |
| Friends |
| Inheritance |
| Polymorphism |
| File I/O |
| Templates |
| Vectors |