

CSI 2300: Object Oriented Computing I

**Credits Hours:** 4 credits, 3.57 contact hours/week.

**Instructor:** Dae-Kyoo Kim, Ph.D.

**Text book:** Lewis & Loftus, Java Software Solutions: Foundations of Program Design, 8th Edition, Addison-Wesley, 2014, ISBN: 978-01335094959.

**Supplementary Text:** UML Distilled: A Brief Guide to the Standard Object Modeling Language, Third Edition (Paperback) by Martin Fowler, Addison-Wesley, Professional; 3 edition (September 19, 2003) ISBN: 0321193687.

### **Specific course information**

Introduction to object-oriented computer programming using a high-level programming language such as Java. Classes, member functions, inheritance, polymorphism and operator overloading. Design methodologies and introduction to software engineering principles and practices. Basic data structures are introduced.

**Prerequisites:** EGR 1400 or CSI 1300 or CSI 1420 or equivalent

**Required course** for CS and IT major

**Course Objectives:** Upon successful completion of this course, students should be able to

- Use the concepts of object-oriented programming to create Java programs that solve a variety of problems [ABET CS: (a, b, c, i), IT (a, b, c, i)]
- Incorporate the use of conditions, loops, and recursions in the design of object-oriented programs [ABET CS: (a, c), IT (a, c, k)]
- Apply fundamental Unified Modeling Language techniques to the design of object-oriented programs [ABET CS: (a, b, c, i), IT (a, b, c, i)]
- Incorporate the concepts of inheritance and polymorphism in the design of Java classes [ABET CS: (c), IT (c, k)]
- Incorporate the use of string and array objects in the design of Java classes [ABET CS: (c), IT (c)]
- Design Graphical User Interfaces (GUIs) using AWT/Swing or JavaFX [ABET CS: (c), IT (c)]

### **List of Topics:**

- Fundamental concepts of Object-Oriented Programming and Object-Oriented Design
- Java data and expressions
- Defining, creating and using classes and objects
- Overview of the Unified Modeling Language (UML)
- Control structures: conditions and loops
- Design and development of simple Java programs

- Designing Graphical User Interfaces (GUIs)
- Using arrays
- Class inheritance and polymorphism
- Exception handling
- Fundamental concepts of recursion