

# COMP 111 - INTRODUCTION TO COMPUTER SCIENCE AND OBJECT-ORIENTED PROGRAMING

Winter 2018

## General Information

### Description

This course provides an introduction to software construction using an object-oriented approach. The student learns and reflects on problem analysis, object-oriented design, implementation, and testing. To support the concepts and principles of software construction, the student will design, code, test, debug, and document programs using the Java programming language. Basic data types, control structures, methods, and classes are used as the building blocks for reusable software components. Automated unit testing, programming style, and industrial practice are emphasized in addition to the object-oriented techniques of abstraction, encapsulation, and composition.

### Prerequisites

- College Algebra (MATH 160)

### Course Outcomes

- Upon successful completion of this course, students will be able to:
  1. Apply the object-oriented principles of encapsulation, composition, and abstraction to analyze problems and design solutions.
  2. Use classes, objects, and methods to implement object-oriented designs in Java.
  3. Identify and use appropriate data types and control structures within class and method implementations.
  4. Incrementally test and document implementations using industry accepted approaches.
  5. Discuss relationships between the disparate topic areas addressed in this course.

## Course Materials

### Required Materials

- Horstmann, C. (2015). Big Java (6th ed.). Hoboken, NJ: John Wiley & Sons. Print ISBN: 9781119056447; eText ISBN: 9781119141594.
- Please take note of the "General Technology Requirements" and "Special Technology Requirements" identified in the Academic Bulletin, including the Windows XP operating system with Service Pack 2.
- Sun Java Development Kit (latest version) contains the Java compiler and libraries needed to create and execute Java-based programs on your computer.
- Sun Java Development Kit Documentation (latest version) contains the HTML-based API documentation needed as reference for the library classes.
- BlueJ 3.1.7 custom Franklin version is the Integrated Development Environment (IDE) in which the lab assignments and activities for this class will be edited, compiled, and run.
- BlueJ Learning Activity Projects are required for completing the Guided Learning Activities in select weeks. They contain pre-built BlueJ projects that you will modify and run.

## Obtaining Course Materials

- A digital copy of the textbook (e-textbook) for this course is accessible via VitalSource, an online platform for digital instructional materials. Clicking on any link to the book from within the course will direct you to an object from which a digital copy of the textbook can be opened in a new browser tab. For a detailed walkthrough on accessing the digital copy of the textbook, please refer to [this tutorial](#).

## Course Outline

### Course Topics

<b>Week 1</b>	Introduction
<b>Week 2</b>	Using Objects
<b>Week 3</b>	Implementing Classes
<b>Week 4</b>	Fundamental Data Types
<b>Week 5</b>	Decisions
<b>Week 6</b>	Decisions (Cont.)
<b>Week 7</b>	Loops
<b>Week 8</b>	Arrays and Array Lists
<b>Week 9</b>	Sorting and Searching
<b>Week 10</b>	Designing Classes
<b>Week 11</b>	Designing Classes (Cont.) and Object-Oriented Design
<b>Week 12</b>	Final Exam