# COMP110-001: Introduction to Programming, SSI'15

**Meeting time and place:** MTWRF 9:45am – 11:15am, FB009

**Course website:** http://cs.unc.edu/~yihong/COMP110/COMP110-001.html

**Instructor:** Yi Hong

- *Office:* SN226
- *Email:* yihong@cs.unc.edu
- *Office Hours:* MW 3:00 – 4:00pm, or by appointment

## Course Description and Target Audience

This is an introductory course to programming for students with no previous programming experience. There are two primary goals:

1) Learn fundamental computer programming skills, and
2) Improve problem solving and logical thinking skills.

The course is designed to use the Java programming language. Comp 116 is another introductory computer programming course, but with emphasis on scientific computing. Both COMP 110 and COMP 116 satisfy the prerequisite to continue with further programming courses, e.g., COMP 401. *Students can only receive credit for one of* **COMP 110**, *COMP116, or COMP 121.*

**Objectives:** By the end of the course, students should be able to

- Develop problem solving techniques
- Understand and develop basic algorithms
- Apply fundamental programming concepts, such as variables, loops, conditionals, functions, and arrays, in programming assignments
- Use pseudocode and Object Oriented design techniques for the planning and development of programming sequences
- Understand the basic components of computer programming in Java, which can be applied to other languages as well (C, C++, Python, etc.)
- Analyze existing programs to identify problems or potential improvements.

## Prerequisites and Course Requirements

- Although this course has no prerequisites, a basic background in math, especially algebra, is required.
- I assume basic computer skills (using a web browser, writing email, using word processing applications, downloading and installing software, etc.).
- If you are not comfortable using a computer, consider taking COMP 101 ("Power Tools for the Mind") before taking COMP 110.
- If you have previous programming experience, such as in a high school course, (especially, a Computer Science AP course) consider taking COMP 401

("Foundations of Programming") instead. If you are interested in taking COMP 401 without taking COMP 110, please see me first.

## Textbooks and Resources

- *Textbooks:* Java: An Introduction to Problem Solving and Programming: 6th Edition, by Walter Savitch and Kenrick Mock, Prentice Hall © 2011.
- The 5<sup>th</sup> edition is very similar to the 6<sup>th</sup> edition.
- You can also use the Kindle edition if you want.
- *URL:* http://cs.unc.edu/~yihong/COMP110/COMP110-001.html. Most of the course information will be posted on this website.
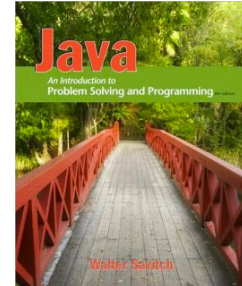
## Topics

- Introduction to computers and programming tools
- Variables, types, values and declarations
- Input and output
- Expressions and statements
- Flow of control: branching and loops
- Arrays, and some data structures
- Object-Oriented Programming

## What to Expect

- *Reading assignments*. These will be general directions for reading your textbook. It is a better idea to do them before coming to each class.
- *Assignments.* For the in-class labs and the out-class homework, they will all be programming assignments, which require the submission of a Java program that can generate the correct results.
- *Exams*. There will be an in-class written mid-term exam and an in-class written final exam during the (University) scheduled time slot.
- *Attendance.* Attendance is required for this class, and is a factor in your grade. This includes class participation.

## Grading Criteria

| Labs and Assignments | 60% |
|---|---|
| Midterm Exam | 15% |
| Final Exam | 20% |
| Participation | 5% |

## Late Policy

An assignment is considered late if it is submitted after **11:59pm** on the due date. Each student has 3 free "late days", which may be used at any time and in any combination.

Using a late day gives the student an extra 24 hours to turn in the assignment. Unused late days are each worth 2 extra credit points on the final exam. Once a student's late days have been exhausted, late assignments will not be accepted for credit.

## Attendance Policy

Class presence is required, and there will be 5 randomly chosen classes that students need to sign the attendance sheet when you come to the class. Missing one of them will lose 20 percent of your participation grades.

## Important Dates

- *Last day of late registration:* Thursday, May 14
- *Midterm exam:* Friday, May 29
- *Final exam:* Wednesday, June 17

## Honor Code

- You may discuss general approaches for the assignments, but **all code must be your own**, and you must be able to explain your code.
- Exams are to be entirely your own work. You may not collaborate with other students or use any computers, books, notes, or previously completed assignments.
- Please be familiar with the UNC Honor Code (https://studentconduct.unc.edu/) and the Computer Science Honor Code (http://cs.unc.edu/academics/).
- You will be required to sign an honor code pledge to hand in with every assignment.

## Course Schedule

This is a tentative outline of the lectures and subject to changes as needed.

| Date | Lecture Topic(s) | Reading | Assignments |
|------|------------------|---------|-------------|
| Wed. May 13 | Lecture 1: Introduction<br>Lecture 2: Computer Basics | Chapter 1.1-1.2 | Homework 0 |
| Thurs. May 14 | Lecture 3: Programming Basics<br>Lecture 4: Primitive types | Chapter 1.3<br>Chapter 2.1 | |
| Fri. May 15 | Lab 0<br>Lab 1 | | Homework 0 Due<br>Homework 1 |
| Mon. May 18 | Lecture 5: String & Console I/O<br>Lecture 6: Review of Chapter 1 & 2 | Chapter 2.2-2.3 | Lab 0 & 1 Due |
| Tues. May 19 | Lecture 7: Branching 1<br>Lecture 8: Branching 2 | Chapter 3.1-3.3 | |
| Wed. May 20 | Lab 2<br>Lab 3 | | Homework 1 Due<br>Homework 2 |

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| Thurs. May 21 | Lecture 9: Loop Statements<br>Lecture 10: More Loops | Chapter 4.1-4.2 | Lab 2 & 3 Due |
| Fri. May 22 | Lecture 11: Classes<br>Lecture 12: More Classes | Chapter 5.1 | |
| Mon. May 25 | **HOLIDAY (Memorial Day), No Class** | | |
| Tues. May 26 | Lab 4<br>Lab 5 | | Homework 2 Due |
| Wed. May 27 | Lecture 13: Information Hiding and<br>Encapsulation<br>Lecture 14: Mid-Term Review | Chapter 5.2 | Lab 4 & 5 Due<br>Mid-Term Practice |
| Thurs. May 28 | Review Mid-Term Practice<br>Lecture 15: Objects and References | Chapter 5.3 | |
| Fri. May 29 | **Mid-Term Exam** | | Homework 3 |
| Mon. June 1 | Review Mid-Term Exam<br>Lecture 16: Constructors and Static<br>Methods | Chapter 6.1-6.2 | |
| Tues. June 2 | Lab 6 | | |
| Wed. June 3 | Lecture 17: Writing Methods and<br>Overloading<br>Lecture 18: Package & Review of<br>Classes | Chapter 6.3-6.4<br>Chapter 6.7 | Lab 6 Due |
| Thurs. June 4 | Lecture 19: Arrays Basics<br>Lecture 20: More Arrays | Chapter 7.1-7.2<br>Chapter 7.5 | |
| Fri. June 5 | Lab 7 | | Homework 3 Due<br>Homework 4 |
| Mon. June 8 | Lecture 21: Inheritance Basics<br>Lecture 22: Polymorphism | Chapter 8.1-8.2<br>Chapter 8.3 | Lab 7 Due |
| Tues. June 9 | Lecture 23: Exception Handling<br>Lecture 24: Streams and File I/O | Chapter 9.1, 9.3<br>Chapter 10.1-10.2 | |
| Wed. June 10 | Lab 8 | | |
| Thurs. June 11 | Lecture 25: Recursion<br>Lecture 26: Array-Based Data<br>Structures | Chapter 11.1<br>Chapter 12.1 | Lab 8 Due |
| Fri. June 12 | Lecture 27: Collections<br>Lecture 28: Linked Data Structures | Chapter 12.2-12.3 | Homework 4 Due |
| Mon. June 15 | **Final Exam Review** | | |
| Tues. June 16 | **Self-Review** | | |
| Wed. June 17 | **Final Exam** | | |