Schedule of Topics
CSC 207, “Algorithms and Object-Oriented Design”
Department of Computer Science
Grinnell College
revised December 2, 2018

August 31: Object Orientation; the Elements of Java
Reading: Weiss, chapter 1 (pages 3–25).

September 3: Primitive Types and Operators; Control Structures
Reading: Weiss, from the beginning of chapter 2 through section 2.2 (pages 27–34).

September 5: References and Objects; Assignment and Parameters
Reading: Weiss, from the beginning of chapter 3 through section 3.2 and sections 3.4 through 3.7 (pages 69–73 and pages 76–90).

September 7: Objects, Classes, and Methods
Reading: Weiss, from section 3.8 to the end of chapter 3 (pages 90–107).

September 10: Packages and Visibility

September 12: The Java Virtual Machine; .class files
Reading: Weiss, sections 2.3 and 15.4 (pages 35–37 and page 584).

September 14: Strings and StringBuilders
Reading: Weiss, section 2.5 (pages 47–51).

September 17: Exceptions; try-Statements and Handlers
Reading: From the on-line documentation for Eclipse, the “Basic Tutorial” sections of the Workbench User Guide and the Development User Guide.

September 19: The Eclipse Integrated Development Environment
Reading: Weiss, from section 2.6 to the end of chapter 2 (pages 51–68).

September 21: Input and Output
Reading: Weiss, from the beginning of chapter 4 through section 4.1.8 (pages 109–121).

September 24: Inheritance, Polymorphism, and Overloading
Reading: Weiss, sections 4.2 through 4.5 (pages 125–141). (Note: I mistakenly prepared a lab for the September 26 session that depended on section 4.7 of Weiss. I presented some of the material from that section in class, but you should still read it. It’s assigned reading for the October 3 session, below.)

September 26: Generic Methods and Classes
Reading: Charles Duan, “Understanding Git Conceptually.”
The introduction is at https://www.sbf5.com/~cduan/technical/git/ and includes links to the other five pages.

September 28 and October 1: Version Control
Reading: Review Weiss, sections 4.2 through 4.5 and section 4.7 (pages 125–141 and 150–157).

October 3: Abstract Methods, Abstract Classes, and Interfaces
Reading: Weiss, section 2.4, sections 4.1.9 through 4.1.11, and from the beginning of chapter 6 through section 6.4 (pages 37–47, 121–124, and 229–248).

**October 5:** Array-Lists, Iterators, Comparators, and Collections
Reading: Weiss, section 6.5 (pages 248–258).

**October 8:** Linked Lists
Reading: Handout: “Assertions and Loop Invariants”

**October 10:** Assertions and Loop Invariants
Reading: Weiss, section 6.6 (pages 258–261).

**October 12:** Stacks and Queues
Reading: Weiss, from the beginning of chapter 8 through section 8.3 and section 8.5 (pages 351–357 and 361–364).

**October 15:** Mergesort
Reading: Weiss, from section 8.6 to the end of chapter 8 (pages 364–391).

**October 17:** Quicksort
Reading: Weiss, section 6.9 (pages 274–276).

**October 19:** Priority Queues
Reading: Weiss, chapter 17 (pages 619–650).

**October 29:** Doubly-Linked Lists and Circular Lists
Reading: Weiss, section 3.3 (pages 73–75).

**October 31:** Comments and Documentation; javadoc
Reading: Weiss, sections 6.7 and 6.8 and from section 6.10 to the end of chapter 6 (pages 261–274 and 277–292).

**November 2:** Dictionaries, Sets, and Maps
Reading: Weiss, chapter 9 (pages 393–417).

**November 5 and 7:** Random-Number Generation
Reading: Weiss, from the beginning of chapter 19 through 19.3 (pages 687–706).

**November 9:** Trees and Traversals
Reading: Handout: “Treesort”

**November 12:** Treesort
Reading: Weiss, sections 19.4 through 19.6 (pages 706–737).

**November 14 and 16:** Balancing Trees
Reading: Weiss, section 19.7 (pages 738–755).

**November 19:** Implementing Sets and Maps with Balanced Trees
Reading: Weiss, chapter 20 (pages 773–806).

**November 21:** Hashing and Hash Tables
Reading: Weiss, chapter 21 (pages 807–839).

**November 26:** Heaps and Heapsort
Reading: Weiss, from the beginning of chapter 14 through section 14.1 (pages 527–539).

**November 28:** Graphs
Reading: Weiss, section 14.2 (pages 539–545).

November 30: Breadth-First Graph Traversal

Reading: Weiss, section 14.3 (pages 545–552).

December 3: Paths; Dijkstra’s Algorithm


December 5: The Bellman–Ford Algorithm


December 7: Topological Sorting

Reading: Weiss, from the beginning of chapter 24 through section 24.5 (pages 893 through 912).

December 10: Disjoint Sets and the Union-Find Algorithm

December 12: Spanning Trees; Kruskal’s Algorithm

December 14: Review; Student Evaluations

Tuesday, December 18, 9 a.m.: Final Examination