

145 Topical Outline

Java Language and Object Oriented Programming

Java Software Solutions -- Foundations of Program Design
by J. Lewis and W. Loftus, Seventh Edition, Addison-Wesley

Approved: Fall 13

Effective: Spring 2014

Topics	Sections	Time
Computer Systems: basic computer processing, software, hardware, networks, the Java programming language, program development, object-oriented programming	1.1 – 1.6	2.5 hours
Data and Expressions: strings, variables and assignment, primitive data types (int, float, double, char, and Boolean), expressions, data conversion, interactive programs, applets, drawing shapes, graphics	2.1 – 2.9	4 hours
Classes and Objects: packages, the Random class, the Math class, formatting output, enumerated types, wrapper classes, anatomy of a class, anatomy of a method, instance data, encapsulation, parameters, constructors, local data and scope, UML, GUI components	3.1 – 3.11 4.1 – 4.9	6 hours
Conditionals and Loops: control flow, selection (if, if/else, and switch), repetition (while, for, do/while), relational operators, logical operators, comparing data, conditional operators, iterators, reading text files, ArrayList class, event sources	5.1 – 5.8 6.1 – 6.6	5 hours
Object-Oriented Design: interfaces, software development activities, software testing, class relationships, GUI design, layout managers, containment hierarchies, event handling	7.1 – 7.13	4 hours
Arrays: one-dimensional and multidimensional arrays, arrays of objects, arrays and graphics, mouse and key events	8.1 – 8.9	4 hours
Inheritance and Polymorphism: base class and derived classes, protected members, the “super” reference, overriding methods, class hierarchies, abstract classes, abstract methods, polymorphism via inheritance and interface, sorting and searching, designing for polymorphism	9.1 – 9.8 10.1 – 10.10	6 hours
Exceptions: error-handling techniques, basics of Java exception handling (try, throw, catch, and finally), exception propagation, the Exception class hierarchy, checked and unchecked exceptions, writing text files, threads	11.1 – 11.10 Supplement for threads	4 hours
Recursion: recursive thinking, recursive methods, recursion vs. iteration, applications	12.1 – 12.4	2.5 hours
Data Structures: linked lists, stacks, queues, trees, and graphs	13.1 – 13.5	2 hours

Submitted by: Vo, McMullin, and Pop
Notes:

- 1 hour = 1 hour of face time
- 16-week Term: 1 week = 2.8333 hours face time)
- 6-week Term: 1 week = 7.5 hours + 7.5 hours (face time)
- The above outline allows 3 hours for exams