

Effective Object-Oriented Programming Using Java	
Outline	Learn OO concepts and fundamental design practices as well as Java 1.5 and its idioms. The course is lab based, with every new concept backed up by a comprehensive set of exercises that allow you to validate your understanding of the material. Participants will work in pairs.
Pre-requisites	Previous development experience with a procedural programming language
Duration	4 days
Daily Schedule	9.30am - 5.00pm
Maximum attendees	10

#	Module	Objectives	Minutes	Type
1	Object-Based Programming Introduction	<ul style="list-style-type: none"> Learn core concepts of object-based programming such as messages, collaboration and responsibility. 	30	Presentation
2	"Hello World" Object	<ul style="list-style-type: none"> Write your first Java program. Gain familiarity with the JUnit testing tool through writing the program tests first. 	30	Lab
3	Object Basics	<ul style="list-style-type: none"> Learn about OO basics such as: <ul style="list-style-type: none"> Concept of classes Object Constructors Object Identity Object life cycle Object fields vs. Local fields Pass by value vs. Pass by reference. 'null' object The Class object and static fields Java primitive types 	120	Lab
4	Encapsulation	<ul style="list-style-type: none"> Learn how hiding object features makes your code safer and more flexible. Learn how immutability and protective copying can be employed to assist encapsulation. 	60	Lab
5	Primitive Data Types	<ul style="list-style-type: none"> Learn Java primitive types and their associated valid literals and operators. Learn Java primitive wrapper classes. Learn about Java arrays. Become familiar with <code>java.lang.String</code> 	60	Lab
6	Essential Syntax	<ul style="list-style-type: none"> Learn the essential elements of Java syntax that will allow you to write loops and case logic. 	90	Lab
7	Object-Oriented Programming Introduction	<ul style="list-style-type: none"> Learn about a motivational context for inheritance and polymorphism. 	30	Presentation
8	Inheritance & Polymorphism	<ul style="list-style-type: none"> Learn about supertype/subtype relationship. Learn about Type coercion/Down Casting. Learn about superclass/subclass relationship. Learn about object constructors and 	180	Lab

		<p>inheritance.</p> <ul style="list-style-type: none"> Learn about basic inheritance pitfalls. Learn about the 'Object' class. 		
9	Class Packages	<ul style="list-style-type: none"> Learn why we need packages. Learn about package naming. Learn about packages and access modifiers. 	30	Lab
10	Exception Handling	<ul style="list-style-type: none"> Learn why we need exception handling Learn how Java deals with two basic types of exception. Learn about exceptions and assertions. Learn about exceptions and inheritance 	90	Lab
11	Collection Classes	<ul style="list-style-type: none"> Learn the importance of Collection classes. Learn about types of Collections. Learn about the Java Collections framework. 	90	Lab
12	Programming Assignment	<ul style="list-style-type: none"> Write a Java solution given a set of acceptance tests. Get feedback on your solution. 	120	Lab
13	Genericity	<ul style="list-style-type: none"> Learn what Genericity is and why it is needed. Learn about Java 1.5 support for Genericity. 	30	Presentation
14	Design Patterns	<ul style="list-style-type: none"> Learn what design patterns are. See how to apply a design pattern. 	90	Presentation
15	Java Idioms	<ul style="list-style-type: none"> Learn about Java Idioms: <ul style="list-style-type: none"> Applications and Applets Inner/Nested Classes The clone() method static factory methods Reflection Javabeans 	120	Lab
16	Object Persistence Overview	<ul style="list-style-type: none"> Learn about simple object serialization and how it can compromise encapsulation. Learn about JDBC Learn about Java Data Objects (JDO) 	60	Presentation
17	Distributed Objects	<ul style="list-style-type: none"> Learn about patterns for distribution: <ul style="list-style-type: none"> Remote Façade Data Transfer Objects 	30	Presentation
18	Concurrent Programming Fundamentals	<ul style="list-style-type: none"> Learn about Safety vs. Liveness Learn about key concepts such as thread and monitor Learn about Java and concurrency 	120	Lab
19	Summary	<ul style="list-style-type: none"> Ask questions and raise issues on what has been learnt during the course. 	30	Discussion

Updated: 17/11/03