Course Design Document

Course Code	
Course Name	Core Java + Junit + Apache Maven

Duration (in days)	07	Proficiency Level	Fundamentals
Pre-requisites	None	Target Audience	Interns

Learning Outcome

At the end of the program, participants will be able to learn:

- Introduction to Java
- Wrapper Classes
- Object Oriented Programming
- Arrays and String
- Working with Exceptions
- Collections Framework
- Input & Output Streams
- Multi-Threading
- JDBC API
- Performing Unit Testing using JUnit4
- Maven Repositories & Dependency Management

Day-wise Session Plan

Day	Unit	Objective(s)	Hours
1	Introduction to Java	• Introduction to Java • JVM Architecture • Installation of Java • Configuring Eclipse • Understanding how JRE and JVM works	4
1	Wrapper Classes	• Java Class Structure • Java Keywords • Primitive data types • Creating primitive variables • Operators • If-else and switch statements • Iterating with loops: while, do-while, for, enhanced for • Wrapper Classes and Autoboxing	4
2	Object Oriented Programming	• Constructors • Encapsulation • Code Reusability via Inheritance • Polymorphism • Object class • Object Casting • Passing Objects as Arguments • Abstraction via Abstract Classes and Interfaces • Diamond Problem using Interfaces. • Static Classes and Static Methods	8
3	Arrays and String	• Single-Dimensional Array	8

		• Multi-Dimensional Arrays • Array of Objects • Arrays utility class • String Class • StringBuffer class • StringBuilder class • Regular Expression	
4	Working with Exceptions	• Java exceptions • Try and throw Statements. • Catch, multi-catch, and finally clauses • Autoclose resources • Common exception classes • Creating custom exceptions	8
5	Collections Framework	• Collections Overview • Type inference diamond • Collection by using generics • ArrayList, LinkedList, Vector • HashSet, TreeSet • HashMap, TreeMap, HashTable • Comparable & Comparator • Utility Classes	4
5	Input & Output Streams	• Input and output in Java • Read and write data from the console • Streams to read and write files • Writing and read objects using Serializable	4
6	Multi-Threading	• Operating system task scheduling • Creating worker threads using Runnable and Callable • Thread Life Cycle • Synchronization in Threads • InterThread Communication	4
6	JDBC API	• JDBC API • JDBC driver • Submitting queries and get results from the Database • Performing CRUD operations using the JDBC API • Statement & PreparedStatement • ResultSetMetaData and DatabaseMetaData	4
7	Performing Unit Testing using JUnit4	• Tests, Assertions, and Fixtures • Writing and Running Tests • Assertions • Test Fixtures, @Before and @After, @BeforeClass and @AfterClass • Test cases for Exception and Timeout • Parameterized Tests • Test Suites	4
7	Maven Repositories & Dependency Management	• Setting up Maven • Project Structure • POM File • Building, Testing, and Packaging a Project • Dependency Management and Repository • Maven Lifecycles and Phases • Archetypes	4
		Total	56