## (Dec. 2014)

## <u>Course Name :</u> Certificate Course in Java & Advance Java Programming Eligibility: 10+2 with relevant basic knowledge

## Duration: 6 months, 210 hrs

## **Objective:**

• To develop awareness, capability and confidence right from the beginning in the participant and to take up independent

assignment in computer field using Java technology and to work as Web Developer.

- To provide the practical and theoretical knowledge in Java programming language.
- To develop professional with the concept and technique in Java
- To make professional in Java programming

Module	Subject	Topics	Total Duration	Theory	Practical
B02-01	Programming Fundamentals of C#	Fundamentals of C# basics	25	10	15
B02-02	Core Java Programming	Fundamentals of OOPs, Core Java, Applets	110	40	70
B02-03	Advance Java	JDBC, RMI, Servlets, JSP, Beans, EJB	55	20	35
B02-04	Project Work Development of Web Application	Using Core & Advance Technologies of Java & Oracle/ SQL	20	-	20
	Total (Hrs)		210	70	140

Subject Code	Subject	Syllabus	Theo.	Prac.
B02-01	Programming Fundamentals of C#	Overview of C# - Evolution of c#,features of c#,Benefits of changing over to c#,Differences between C++ and C#	1	1
		.NET Framework and platform - Overview of the .NET platform,.NET components,Common language Runtime. Introduction to C# - General structure of a C# program,The main method,Namespace declaration Interactive Input/Output Arguments in main	1	1
		method,command line arguments,runtime arguments C# Basics - Value types,default constructors,struct types, Struct modifiers,Struct interfaces, enumeration types,Enum modifiers, reference types,class types,object type,string type, interface types,delegate types, Delegates vs Interfaces,Boxing and unboxing,array types,variables and parameters, Operands, Statements,expressions,	1	1
		operators,Directives Classes - C# classes,Objects,creating classes,using an object's member functions,Static Methods and new operator,creating an object,different types of class members ,inheritance,Access specifiers(Private,Public,Protected,package),cleaning up unused objects, garbage collector class library	1	2
		Methods – Structure of a method, Method overloading, implementing methods, Exception handling, Try and Catch	1	2
		Statements – Selection statements, Switch statement, Loops, jump statement, Break, continue, Goto, return statementAbstract and Base classes – Abstract modifier, abstract classes, virtual methods, base classes, introduction to .NET base classes.foreach statement	1	2
		Arrays and Strings – Array types based on dimensions,passing arrays as parameter,declaring array,initializing array,,creating array arrays as objects,System.Array type,Array members, array Covariance,array list, out and ref,String operations,converting objects to strings, String Builder, String formatting in .NET	2	2
		File handling – File and Folder operations, listing files in a folder, copying and deleting files, reading/writing text files and binary files	1	1
		Exceptions and error handling in C#- Common exception classes, statements(Try,Catch,Throw, Checked and Unchecked, Lock, Using, ), Hierchical Structure of Exception, Passing Exception to Caller,user defined exception class, Types of Exception handlers, The Exception object,Error handling using Exceptions		2
		Total	10	15
B02-02	CORE JAVA PROGRAMMING	FUNDAMENTALSOFOBJECT-ORIENTEDPROGRAMMING:Introduction;Object-OrientedParadigm;BasicConceptsofObject-OrientedProgramming(Objects and Classes, Data abstractionand encapsulation, Inheritance, Polymorphism, Dynamic	01	

binding, Message communication) Applications of OOP.	; Benefits of OOP;		
JAVA EVOLUTION: Java Hist (Compiled and interpreted, Platfor portable, Object-oriented, Rob Distributed, Simple, small and far and interactive, High performan extensible); How Java Differs fro and C, Java and C++); Java and World Wide Web, Web Browsers Navigator, Internet Explorer); Hard Requirements; Java Support Environment (Java development library).	ory; Java Features rm-independent and ust and secure, miliar, Multithreaded nce, Dynamic and m C and C++ (Java I Internet, Java and (Hot Java, Netscape ware and Software Systems, Java kit, Java standard	02	
OVERVIEW OF JAVA LANGUA Simple Java Program (Class of brace, The main line, The output (Use of math functions, Comments) Two Classes; Java Program Struct section, Package statement, Interface statements, Class defini class); Java Tokens (Java charao Identifiers, Literals, Operators, Statements; Implementing a Java P program, Compiling the program, R Machine neutral); Java Virtual Mac Arguments; Programming Style.	AGE: Introduction; leclaration, Opening line); More of Java ); An application with ure (Documentation Import statements, tions, Main method ster set, Keywords, Separators); Java rogram (Creating the sunning the program, hine; Command Line	04	08
CONSTANTS, VARIABLES AN Introduction; Constants (Integer constants, Single character constant Backlash character constants); Va (Integer types, Floating point typ Boolean type); Declaration of Varia to Variables (Assignment statement Scope of Variable; Symbolic Cont Understandability); Type Conversion); Getting Values of Default Values.	D DATA TYPES: er constants, Real hts, String constants, uriables; Data Types be, Character type, ables; Giving Values ht, Read statement); hstants (Modifiability, casting (Automatic Variables; Standard	03	06
OPERATORS AND EXPRESSI Arithmetic Operators (Integer arithmetic, Mixed-mode arith Operators; Logical Operators; Ass Increment and Decrement Op Operators; Bit-wise Operators; (instance of operator, Dot op Expressions; Evaluation of Express Arithmetic Operator; Type Convers (Automatic type conversion, Castin Precedence and Associativity; Math	<b>IONS:</b> Introduction; arithmetic , Real hmetic); Relational ignment Operators; erators; Conditional Special Operators perator); Arithmetic sions; Precedence of sions in Expressions ig a value); Operator ematical Functions.	03	06
DECISION MAKING AND BRANG Decision Making with if Statement; The ifelse Statement; Ne Statements; The else if Ladder; T	CHING: Introduction; Simple if Statement; esting of ifelse he switch statement;	02	02

The ?: Operator.		
<b>DECISION MAKING AND LOOPING:</b> Introduction; The while Statement; The do Statement; The for Statement (Additional features of for loop, Nesting of for loops); Jumps in Loops (Jumping out of a loop, Skipping a part of a loop); Labeled Loops.	02	04
CLASSES, OBJECTS AND METHODS :- Introduction; Defining a Class; Adding Variables; Adding Variables; Adding Methods; Creating Objects; Accessing Class Members; Constructors; Methods Overloading; Static Members; Nesting of Methods; Inheritance: Extending a Class (Defining a subclass, Subclass constructor, Multilevel inheritance, Hierarchical inheritance); Overriding Methods; Final Variables and Methods; Final Classes; Finalizer Methods; Abstract Methods and Classes; Visibility Control (public access, friendly access, protected access, private access, private protected access, Rules of Thumb).	04	08
ARRAYS, STRINGS AND VECTORS: Arrays; One- Dimensional Arrays; Creating an Array (Declaration of arrays, Creation of arrays, Initialization of arrays, Array length); Two-Dimensional Arrays (Variable size arrays); Strings (String arrays, String methods, StringBuffer class); Vectors; Wrapper Classes.	02	04
<b>INTERFACES:</b> Introduction; Defining Interfaces; Extending Interfaces; Implementing Interfaces; Accessing Interface Variables.	01	02
<b>PACKAGES:</b> Introduction; System Packages; Using System Packages; Naming Conventions; Creating Packages; Accessing a Package; Using a Package; Adding a Class to a Package; Hiding Classes.	01	02
MANAGING ERRORS AND EXCEPTIONS: Introduction; Types of Errors (Compile-time error, Run- time error); Exceptions; Syntax of Exception Handling Code; Multiple Catch Statements; Using finally Statement; Throwing Our Own Exceptions; Using Exceptions for Debugging.	02	04
APPLET PROGRAMMING: Introduction; How Applets Differ from Applications; Preparing to Write Applets; Building Applet Code; Applet Life Cycle (Initialization state, Running State, Idle or stopped state, Dead state, Display state); Creating an Executable Applet; Designing a Web Page (Comment Section, Head Section, Body Section); Applet Tag; Adding Applet to HTML File; Running the Applet; More About Applet Tag; Passing Parameters to Applets; Aligning the Display; More about HTML Tags; Displaying Numerical Values; Getting Input from the User (Program analysis).	04	08

		<b>GRAPHICS PROGRAMMING:</b> Introduction; The Graphics Class; Lines and Rectangles; Circles and Ellipses; Drawing Arcs; Drawing Polygons; Line Graphs; Using Control Loops in Applets; Drawing Bar Charts.	02	04
		<b>JAVA AWT</b> : java AWT package Containers (Component, Container, Panel, Window, Frame, Canvas), Basic User Interface components (Labels, Buttons, Check Boxes, Radio Buttons, Choice, Text Fields, Text Areas, Scrollbars), Layouts (Flow Layout, Grid Layout, Border Layout, Card Layout).	02	04
		<b>EVENT HANDLING:</b> Event delegation Approach, ActionListener, AdjustmentListener, MouseListener and MouseMotionListener, WindowListener, KeyListener	01	02
		<b>JAVA I/O HANDLING</b> : I/O File Handling(InputStyream & OutputStreams, FileInputStream & FileOutputStream, Data I/P and O/P Streams, Buffered I/P and O/P Streams, File Class, Reader and Writer Streams, RandomAccessFile)	02	04
		<b>MULTITHREADING</b> : Overview of Multithreading, The Thread control methods, Thread life cycle, Newly created threads, Main thread, Creating a Thread (Implementing Runnable Interface, Extending the Thread Class), Thread Synchronization, Writing Applets with Threads.	02	04
		Total	40	70
B02-03	ADVANCE JAVA	Total SOCKET PROGRAMMING: Introduction, TCP/IP Protocol, UDP Protocol, Ports, Using TCP/IP Sockets, Using UDP Sockets.	<b>40</b> 01	<b>70</b> 03
B02-03	ADVANCE JAVA	Total SOCKET PROGRAMMING: Introduction, TCP/IP Protocol, UDP Protocol, Ports, Using TCP/IP Sockets, Using UDP Sockets. JAVA DATABASE CONNECTIVITY (JDBC): Introduction to JDBC, JDBC Drivers Type, Connection, JDBC URLs, Driver Manager, Statements-Creating Executing Closing, Result Set-Data Types and Conversions, Prepared Statement, Caliable Statement, Mapping SQL and Java Types, JDBC-ODBC Bridge Driver. DriverManager Class, Java.SQL Package (Connection Interface, Statement Interface, Prepared Statement Interface, ResultSet Interface, ResultSetMetaData Interface), SQL Exception class.	<b>40</b> 01 04	<b>70</b> 03 06
B02-03	ADVANCE JAVA	Total SOCKET PROGRAMMING: Introduction, TCP/IP Protocol, UDP Protocol, Ports, Using TCP/IP Sockets, Using UDP Sockets. JAVA DATABASE CONNECTIVITY (JDBC): Introduction to JDBC, JDBC Drivers Type, Connection, JDBC URLs, Driver Manager, Statements-Creating Executing Closing, Result Set-Data Types and Conversions, Prepared Statement, Caliable Statement, Mapping SQL and Java Types, JDBC-ODBC Bridge Driver. DriverManager Class, Java.SQL Package (Connection Interface, Statement Interface, Prepared Statement Interface, ResultSet Interface, ResultSetMetaData Interface), SQL Exception class. REMOTE METHOD INVOCATION (RMI): N-tier Architecture, Distributed object technologies, Locating & loading Remote classes, Locating remote objects & providing references to them, Enabling remote method class, RMI Architecture(Application Layer, Proxy Layer, Remote Interface, Unicast Remote Object, Socket Vs RMI programming Corba: Distributed Applications . CORBA-An	<b>40</b> 01 04	70 03 06

		Services, CORBA Products, JAVA IDL.		
		JAVA SERVLETS: Introduction to Server Side Technologies, Servlet Life cycle, HttpServlets, GenericServlets, init(),service(), doGet(), doPost(), destroy(), Servlets & JDBC. Movement to Server Side JAVA, Overview of Servlets, Common Gateway Interface (CGI), The JAVA Servlet Architecture, Generic Servlet and HTTP Servlet, The Servlet Interface, Requests and Responses, The Life Cycle of a Servlet, Retrieving Form Data in a Servlet, Session Tracking Cookies.	04	06
		Java Server Pages (JSP): Compare and Contrast JSP with CGI and Servlet Technologies, Develop a basic JavaServer Pages, Deploy JavaServlet Pages, List JSP Directives, Intergrate JSP with Java Beans Components, Handle JSP exceptions, Compare two-tier and multi-tier web application architectures	04	06
		<b>Java Beans</b> : Java Beans Concepts and the Beans Development Kit, Using the Bean Box, Writing a Simple Bean Properties, Manipulating Events in the Bean Box, The Beaninfo interface, Bean customization, Bean Persistence.	01	04
		<b>Enterprise Java Beans (EJB):</b> Introduction, Architecture of EJB, EJB Servers, Containers, EJB Implementation, Remote Interface of Beans, EJB Sessions Beans, Transactions and EJB Deployment, Writing EJB Clients.	02	04
		Total	20	35
B02-04	Project Work	Development of Web Application: Using Core & Advance Technologies of Java & Oracle/ SQL		20
		Total		20