

## **COURSE CS 1.2: Object Oriented Programming with Java**

### **Block-1: Elementary Programming**

**Unit 1:** Introduction, identifiers, variables, assignment statements and assignment expressions, constants, Numeric data types and operations, Numeric type conversions, character data type and operations, The String type, console input using the scanner class.

**Unit 2:** Selection: Introduction, Boolean data type and operations, if statements, switch statement, conditional expressions, formatting console output, operator precedence and associativity, GUI confirmation dialogs,

**Unit 3:** Loops – while, do-while and for loop, nested loops. Methods: Introduction, defining a method, calling a method, void method, passing parameters by values.

### **Block-II:**

**Unit-1:** Modularizing code, overloading methods, scope of variables, Math class, Arrays, copying arrays, passing arrays to methods.

**Unit 2:** Variable length argument lists, searching arrays, sorting arrays.

**Unit 3:** Objects and classes Introduction, defining classes for objects, constructing objects using constructors, accessing objects via reference variables, using classes from the Java library, static variables, constants and methods. Visibility modifiers, data field encapsulation, passing objects to methods, array of objects.

### **Block-III: Strings.**

**Unit 1:** Introduction, The String class, Character Class, String Builder / String Buffer Class.

**Unit 2:** Command line arguments, file class, file Input and output.

**Unit 3:** Objects The scope of variables, this reference, class abstraction and encapsulation,

object-oriented overview, Inheritance and polymorphism – introduction,

super classes and Subclasses, extending the JFrame class, using super keyword.

Overriding methods, overriding and overloading , polymorphism , dynamic binding

and generic programming, casting objects, instanceof operator, protected data and

methods. Introduction, abstract classes, Interfaces. Wrapper classes. GUI basics:

Introduction, swing vs AWT , The java GUI API , Frames. Layout manager, color

class, font class , using panels as sub containers.

### **Block-VI: Strings.**

**Unit 1:** Applets: Introduction, Applet class, The Japplet class, The HTML file and the <applet> tag, enabling applets to run as application.

**Unit 2:** Exception handling: Introduction, exception handling, advantages, exceptions types finally clause, How to exception, chained exceptions.

**Unit 3:** Recursion: Introduction, Computing factorial, Fibonacci numbers, Tower of Hanoi,

Eight queens problem. File handling: Introduction, Text I/o and Binary I/o, copying files, random access files.