Government PG College, Ambala Cantt

# Course File(Session 2023-24) Name of Professor: Sangharsh Saini

**Class: BCA-III/6th Semester**

# Subject code and Name: BCA – 366 / PROGRAMMING IN CORE JAVA

## SYLLABUS

**Maximum Marks: 100 External: 80**

## Minimum Pass Marks: 35 Internal: 20

**Time: 3 hours**

**Note:** Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. A candidate will be required to answer five questions in all, selecting one question from each unit in addition to compulsory Question No. 1. All questions will carry equal marks.

## UNIT – I

Basic Principles of Object Oriented Programming, Introduction to Java, History and Features of Java, Java Virtual Machine (JVM), Java’s Magic Bytecode; The Java Runtime Environment; Basic Language Elements: Lexical Tokens, Identifiers, Keywords, Literals, Comments, Primitive Data types, Operators, Assignments; Input/output in Java: Basics, I/O Classes, Reading Console Input, Control Structures in Java: Decision and Loop Control Statements.

## UNIT –II

Class and Object in Java: Defining Class in Java, Creating Objects of a Class, Defining Methods,

Argument Passing Mechanism, Using Class and Objects, Constructors, Nested Class, Inner Class,

Abstract Class, Dealing with Static Members; Array & String in Java: Defining an Array, Initializing

& Accessing Array, Multi –Dimensional Array, Defining String, Operation on Array and String,

Creating Strings using String Class, Creating Strings using StringBuffer Class,; Polymorphism in Java: Basic Concept, Types, Overriding vs. Overloading, Implementation

## UNIT – III

Extending Classes and Inheritance in Java: Benefits of Inheritance, Types of Inheritance in Java, Access Attributes, Inheriting Data Members and Methods, Role of Constructors in Inheritance, Use of“super”; Packages & Interfaces: Basic Concepts of Package and Interface, Organizing Classes and

Interfaces in Packages, Defining Package, Adding Classes from a Package to Your Program, CLASSPATH Setting for Packages, Import Package, Naming Convention For Packages , Access

Protection in Packages, Standard Packages

**UNIT – IV**

Exception Handling in Java: The Idea behind Exception, Types of Exception, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions, Catching more than one Exception; Applet in Java: Applet Basics, Applet Architecture, Applet Life Cycle, Applet Tag, Parameters to Applet, Embedding Applets in Web page, Creating Simple Applets; GUI Programming: Designing Graphical User Interfaces in Java, Components and Containers, Using Containers, Layout Managers, AWT Components, AWT Classes, AWT Controls

**TEXT BOOKS:**

 Patrick Naughton and Herbert Schlitz,“JAVA-2 Complete Reference” ,TMH, New Delhi.

 Ivor Horton, “Beginning JAVA 2”, WROX Publications, New Delhi.

**REFERENCE BOOKS:**

 “JAVA 2 UNLEASHED”, Tech Media Publications, New Delhi.

 E Balaguruswamy,“Programming with Java”, TMH, New Delh

**Lesson Plan**

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| **Week****No** | **Scheduled Dates** | **Topics to be covered** |
| **1** | **1-6 January** | Basic Principles of Object Oriented Programming, Introduction to Java, History and Features of Java |
| **2** | **8-13 January** | Java Virtual Machine (JVM), Java’s Magic Bytecode; The Java Runtime Environment;  |
| **3** | **15-20 January** | Basic Language Elements: Lexical Tokens, Identifiers, Keywords, Literals, Comments, Primitive Data types, Operators  |
| **4** | **22-27 January** | Assignments; Input/output in Java: Basics, I/O Classes, Reading Console Input, Control Structures in Java: Decision and Loop Control Statements. |
| **5** | **29-3 February** | Class and Object in Java: Defining Class in Java, Creating Objects of a Class, Defining Methods, |
| **6** | **5-10 February** | Argument Passing Mechanism, Using Class and Objects, Constructors, Nested Class, Inner Class, Abstract Class, Dealing with Static Members; Array & String in Java: Defining an Array, Initializing & Accessing Array, Multi –Dimensional Array, Defining String,  |
| **7** | **12-17 February** | Operation on Array and String, Creating Strings using String Class, Creating Strings using StringBuffer Class,; Polymorphism in Java: Basic Concept, Types, Overriding vs. Overloading, Implementation |
| **8** | **19-24 February** | Extending Classes and Inheritance in Java: Benefits of Inheritance, Types of Inheritance in Java, Access Attributes,  |
| **9** | **26-2 March** | Inheriting Data Members and Methods, Role of Constructors in Inheritance, Use of“super”; Packages & Interfaces: Basic Concepts of Package and Interface,  |
| **10** | **4-9 March** | Organizing Classes and Interfaces in Packages, Defining Package, Adding Classes from a Package to Your Program,  |
| **11** | **11-16 March** | CLASSPATH Setting for Packages, Import Package, Naming Convention For Packages , Access Protection in Packages, Standard Packages. |
| **12** | **18-23 March** | Exception Handling in Java: The Idea behind Exception, Types of Exception, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions, Catching more than one Exception; |
| **13** | **1-6 April** | Applet in Java: Applet Basics, Applet Architecture, Applet Life Cycle, Applet Tag, Parameters to Applet, Embedding Applets in Web page, Creating Simple Applets;  |
| **14** | **8-13 April** | GUI Programming: Designing Graphical User Interfaces in Java, Components and Containers, Using Containers, Layout Managers, AWT Components, AWT Classes, AWT Controls |
| **15** | **15-20 April** | Final Test, Assignments and REVISION of Contents |
| **16** | **22-27 April** | Previous Year Question Papers Discussion |