

Java Syllabus

<u>Java Basics</u>	<u>Control Statements</u>
<ul style="list-style-type: none"> ● Introduction to Java ● Features of Java ● JDK, JRE, JVM ● Installation & Setup ● First Java Program ● Program Structure ● Data Types (Primitive & Non-Primitive) ● Variables & Constants ● Type Casting ● Operators (Arithmetic, Logical, Relational, Bitwise) ● Input/Output (Scanner, System.out) 	<ul style="list-style-type: none"> ● If Statement ● If-Else ● Nested If ● Switch Case ● For Loop ● While Loop ● Do-While Loop ● Break Statement ● Continue Statement
<u>Arrays & Strings</u>	<u>Object-Oriented Programming (OOP)</u>
<ul style="list-style-type: none"> ● Array Introduction ● Single Dimensional Array ● Multi-Dimensional Array ● Array Operations ● String Class ● String Methods ● Immutable Strings ● StringBuffer ● StringBuilder ● String vs StringBuffer vs StringBuilder 	<ul style="list-style-type: none"> ● Class & Object ● Methods ● Constructors (Default & Parameterized) ● this Keyword ● Inheritance (Single, Multilevel, Hierarchical) ● Method Overloading ● Method Overriding ● Polymorphism ● Encapsulation ● Abstraction ● Interface ● Abstract Class ● Access Modifiers
<u>Exception Handling</u>	<u>Java Collections Framework</u>
<ul style="list-style-type: none"> ● Exception Types (Checked & Unchecked) ● Try-Catch Block ● Multiple Catch ● Finally Block 	<ul style="list-style-type: none"> ● Collection Framework Overview ● List (ArrayList, LinkedList) ● Set (HashSet, TreeSet) ● Map (HashMap, Hashtable) ● Iterator & ListIterator

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Computer Institute

<ul style="list-style-type: none"> ● Throw Keyword ● Throws Keyword ● Custom Exception 	
File Handling	Multithreading
<ul style="list-style-type: none"> ● File Class ● FileReader & FileWriter ● BufferedReader & BufferedWriter ● FileInputStream & FileOutputStream ● Serialization ● Deserialization 	<ul style="list-style-type: none"> ● Introduction to Threads ● Thread Class ● Runnable Interface ● Thread Lifecycle ● Thread Methods (sleep, join, etc.) ● Synchronization ● Inter-Thread Communication
JDBC (Java Database Connectivity)	Advanced Java (Web)
<ul style="list-style-type: none"> ● JDBC Architecture ● JDBC Drivers ● Database Connection ● Statement & PreparedStatement ● ResultSet ● CRUD Operations ● Transaction Management 	<ul style="list-style-type: none"> ● Servlet Basics ● Servlet Lifecycle ● JSP Basics ● JSP Elements ● Session Management ● Cookies ● MVC Architecture
Frameworks (Industry Level)	Build Tools & Version Control
<ul style="list-style-type: none"> ● Spring Core (IOC, DI) ● Spring Boot ● Spring MVC ● RESTful Web Services ● Hibernate ORM ● JPA Basics 	<ul style="list-style-type: none"> ● Maven ● Gradle ● Project Structure ● Git Basics ● GitHub Usage
Testing	Projects
<ul style="list-style-type: none"> ● JUnit Introduction ● Test Cases ● Assertions ● Unit Testing ● Debugging Techniques 	<ul style="list-style-type: none"> ● Console-Based Project ● File Handling Project ● JDBC Project ● Web Application (Spring Boot) ● REST API Project

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