

SYLLABUS OF JAVA**Hour 1: Quick Java Basics Revision**

- Recap: Java syntax, variables, data types, if-else, loops
- Java Program Structure (class, main method)
- **Activity:** Create a simple program to check if a number is odd or even

Hour 2: Methods in Java

- Declaring and calling methods
- Method overloading
- **Activity:** Build a calculator using different overloaded methods

Hour 3: Arrays

- 1D arrays and basic operations
- Introduction to 2D arrays
- **Activity:** Store 5 student marks in an array and find average, max, min

Hour 4: Strings and String Methods

- String handling, comparison, substring, length, etc.
- **Activity:** Create a program that checks if a sentence is a palindrome

Hour 5: Classes and Objects

- Creating user-defined classes and objects
- **Activity:** Build a **Student** class with attributes and display details

Hour 6: Constructors and **this** keyword

- Default, parameterized constructors
- Use of **this** keyword
- **Activity:** Create a **Product** class with constructors for initialization

Hour 7: Inheritance

- Single and multilevel inheritance
- **super** keyword
- **Activity:** Create a base class **Employee** and child class **Manager**

Hour 8: Polymorphism

- Method Overloading vs Method Overriding
- Dynamic binding
- **Activity:** Show real-time examples using **Animal** base class and subclasses

Hour 9: Abstraction (Abstract Classes and Interfaces)

- Abstract classes, interface implementation
- **Activity:** Create a **Vehicle** interface and implement it in **Car** and **Bike** classes

Hour 10: Encapsulation and Access Modifiers

- private, public, protected
- Getters and setters
- **Activity:** Create a class with private attributes and controlled access

Hour 11: Exception Handling

- try, catch, finally
- **throw**, **throws**, custom exceptions
- **Activity:** Create a program to handle divide-by-zero and invalid input errors

Hour 12: Working with Collections – ArrayList

- Intro to Java Collections Framework
- ArrayList basics: add, remove, search
- **Activity:** Build a task list manager using ArrayList

Hour 13: HashMap and Iteration

- Key-value pairs, iterating over maps
- **Activity:** Store employee ID and name using HashMap and print all entries

Hour 14: File Handling

- Reading from and writing to files using `FileReader`, `FileWriter`
- **Activity:** Write a program that saves user input to a text file

Hour 15: Working with Java Packages

- Create and use custom packages
- **Activity:** Organize code into logical packages and use import statements

Hour 16: Intro to GUI

- JFrame, buttons, text fields (basics only)
- **Activity:** Build a small login form GUI (non-functional)

Hour 17: Java Date and Time (LocalDate, Date, Calendar)

- Formatting, parsing, comparison
- **Activity:** Create a program to calculate the number of days between two dates

Hour 18: Final Project Planning

- Guide interns to finalize a mini-project idea
- Break down project into smaller tasks
- Explain file structure and folder organization

Hour 19: Project Development

- Interns work on building the project
- Trainers provide support, debug issues, help with logic

Hour 20: Project Demo and Review

- Interns present their projects
- Trainer gives feedback
- Best projects are highlighted and certificates are awarded