# core java – Syllabus

Generated on: 2025-08-03 13:39:31

1. \*\*📚 Introduction to Java Programming\*\*  
 \* 🔍 Setting up the Java Development Kit (JDK), IDEs (IntelliJ, Eclipse), basic syntax (variables, data types, operators), comments, input/output.  
 \* 🎯 Lab: "Hello, World!" program and basic calculations.  
  
2. \*\*📚 Control Structures\*\*  
 \* 🔍 Conditional statements (if-else, switch), loops (for, while, do-while), nested loops, break and continue statements.  
 \* 🎯 Quiz: On basic syntax and control structures.  
  
3. \*\*📚 Object-Oriented Programming (OOP) Concepts I\*\*  
 \* 🔍 Classes and objects, constructors, methods, access modifiers (public, private, protected), encapsulation.  
 \* 🎯 Lab: Creating simple classes and objects, method implementation.  
  
4. \*\*📚 OOP Concepts II\*\*  
 \* 🔍 Inheritance, polymorphism, method overriding, abstract classes, interfaces.  
 \* 🎯 Group Discussion: Real-world examples of inheritance and polymorphism.  
  
5. \*\*📚 Arrays and Collections\*\*  
 \* 🔍 Arrays (declaration, initialization, manipulation), ArrayList, LinkedList, HashSet, HashMap. Iterating through collections.  
 \* 🎯 Lab: Working with different collection types, implementing basic collection operations.  
  
6. \*\*📚 Exception Handling\*\*  
 \* 🔍 try-catch blocks, finally block, throwing exceptions, custom exceptions.  
 \* 🎯 Quiz: On OOP concepts and collections.  
  
7. \*\*📚 Strings and String Manipulation\*\*  
 \* 🔍 String class methods, StringBuilders, regular expressions (basic).  
 \* 🎯 Lab: String manipulation exercises, using regular expressions for pattern matching.  
  
8. \*\*📚 Input/Output (I/O) Operations\*\*  
 \* 🔍 File I/O (reading and writing to files), streams, buffered readers/writers.  
 \* 🎯 Lab: File processing exercise (e.g., reading data from a file, writing to a file).  
  
9. \*\*📚 Introduction to GUI Programming (Swing/JavaFX)\*\*  
 \* 🔍 Basic GUI components (buttons, labels, text fields), event handling. Introduction to either Swing or JavaFX (choose one based on curriculum).  
 \* 🎯 Lab: Creating a simple GUI application.  
  
10. \*\*📚 Advanced GUI Programming (Swing/JavaFX)\*\*  
 \* 🔍 Layout managers, more advanced components, event listeners. Continuation of previous week's GUI framework.  
 \* 🎯 Lab: Building a more complex GUI application.  
  
11. \*\*📚 Generics\*\*  
 \* 🔍 Generic classes, methods, and interfaces, type parameters, wildcards.  
 \* 🎯 Quiz: On I/O and basic GUI concepts.  
  
12. \*\*📚 Multithreading\*\*  
 \* 🔍 Threads, creating and running threads, thread synchronization, concurrency issues.  
 \* 🎯 Lab: Creating and managing multiple threads.  
  
13. \*\*📚 Networking (Sockets)\*\*  
 \* 🔍 Client-server architecture, sockets, communication between client and server applications.  
 \* 🎯 Lab: Developing a simple client-server application.  
  
14. \*\*📚 Databases and JDBC\*\*  
 \* 🔍 Introduction to SQL, JDBC API, connecting to a database, executing queries.  
 \* 🎯 Lab: Interacting with a database using JDBC.  
  
15. \*\*📚 Review and Project Presentation\*\*  
 \* 🔍 Review of key concepts, Q&A session. Students present their final projects.  
 \* 🎯 Final Project Presentation and Submission.

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