

JAVA FULL STACK SYLLABUS COPY

Engineered for skill enhancement

PROGRAM HIGHLIGHTS

Module 1: Introduction to Full Stack Development

- Overview of Full Stack Development
- Introduction to Java Full Stack
- Technologies and Tools Used
- Architecture: MVC, Microservices
- Setting Up Development Environment
 - JDK, IntelliJ/Eclipse
 - Version Control (Git, GitHub)

Module 2: Core Java

- Introduction to Java
- OOP Concepts
 - Classes and Objects
 - Inheritance, Polymorphism, Encapsulation
 - Abstraction and Interfaces
- Exception Handling
- Collections Framework
- Multithreading and Concurrency
- File Handling and I/O
- Java 8 Features: Streams, Lambda, Functional Interfaces
- JDBC (Java Database Connectivity)

Module 3: Frontend Technologies

HTML, CSS, and Bootstrap

- HTML5 Basics and Semantic Elements
- CSS3 and Responsive Design
- Bootstrap 5 for UI Enhancement

JavaScript and DOM Manipulation

- JavaScript Basics and ES6 Features
- DOM Manipulation and Events
- AJAX and Fetch API
- Introduction to jQuery

React.js (Optional / Modern Approach)

- Introduction to React.js
- Components, Props, and State
- React Router and Hooks
- REST API Integration with React
- State Management with Redux

Module 4: Database Management

SQL and Relational Databases

- Introduction to Databases
- SQL Basics: CRUD Operations
- Joins, Views, Stored Procedures
- Database Normalization

MongoDB (Optional / NoSQL)

- Introduction to NoSQL
- CRUD Operations with MongoDB
- Schema Design and Best Practices

Module 5: Backend with Java

Spring Framework

- Introduction to Spring Framework
- Spring Boot Basics
- Dependency Injection and IoC
- RESTful APIs with Spring Boot
- Spring MVC and Request Handling
- Spring Data JPA and Hibernate
- Exception Handling and Validation
- CRUD Operations Using REST APIs
- Swagger Documentation

Security and Authentication

- Spring Security Basics
- JWT Authentication and Authorization
- OAuth2 (Optional)

Module 6: API Development and Integration

- RESTful API Concepts
- Consuming APIs in Frontend
- Testing APIs Using Postman
- API Security Best Practices

Module 7: Advanced Backend Concepts

- Microservices Architecture
- Building Microservices Using Spring Boot
- API Gateway and Service Discovery
- Docker and Containerization
- Kubernetes (Optional)
- Message Brokers: RabbitMQ/Kafka (Optional)

Module 8: Deployment and DevOps

- CI/CD Pipelines with Jenkins/GitHub Actions
- Deployment on AWS/Heroku
- Monitoring and Logging
- Version Control with Git and GitHub

Module 9: Project Work

- Developing a Full Stack Application
 - Frontend with React/JavaScript
 - Backend with Spring Boot
 - Database Integration (MySQL/MongoDB)
 - API Integration and Security
- Deployment on Cloud Platforms