

Course Title: Full Stack Java Development

Course Description:

This course introduces students to full-stack development using Java, covering foundational skills in both front-end and back-end technologies. Students will learn to build dynamic web applications using Java frameworks, HTML, CSS, JavaScript, and databases.

Course Objectives:

- Understand the principles of web development.
- Develop proficiency in Java for backend programming.
- Gain fundamental knowledge of front-end technologies like HTML, CSS, and JavaScript.
- Build and deploy a full-stack web application.

Prerequisites:

- Basic understanding of programming concepts
- Prior experience with Java or another object-oriented programming language is recommended but not required.

Weekly Syllabus Outline:

Week 1: Introduction to Full Stack Development

- Overview of full-stack development
- Tools and environments for full-stack Java development
- Introduction to HTML and CSS

Week 2: Advanced HTML and CSS

- Responsive design with CSS frameworks
- Introduction to JavaScript for front-end development

Week 3: JavaScript Deep Dive

- JavaScript fundamentals: Variables, control structures, functions, and arrays
- Document Object Model (DOM) manipulation

Week 4: Introduction to Java

- Java syntax and basic constructs
- Object-oriented programming in Java

Week 5: Java for Web Applications

- Introduction to servlets and Java Server Pages (JSP)
- Setting up a Java development environment

Week 6: Spring Framework

- Introduction to Spring and Spring Boot
- Building RESTful APIs with Spring MVC

Week 7: Database Management

- Introduction to Relational Databases
- SQL basics
- Integrating Java applications with a database using JDBC

Week 8: Advanced Database Operations

- Advanced SQL queries
- Introduction to ORM with Hibernate

Week 9: Building Front-End with React (Optional)

- Introduction to React.js for building user interfaces
- Integrating React with Java backend

Week 10: Full Stack Integration

- Connecting front-end and back-end components
- Session management and authentication

Week 11: Advanced Topics in Spring

- Spring Security for authentication and authorization
- Transaction management

Week 12: Microservices with Spring Boot

- Building microservices using Spring Boot
- Introduction to Docker for deployment

Week 13: Testing and Deployment

- Unit testing and integration testing with JUnit and Mockito
- Continuous integration and deployment (CI/CD) basics

Week 14: Project Work

- Applying all learned skills to a project

Week 15: Presentations and Course Wrap-Up

- Student presentations of projects
- Review of course content
- Feedback and course completion

Assessment Methods:

- Weekly assignments
- Quizzes and exams for theoretical concepts
- Major project involving building a full-stack Java application