



Introduction to Java Backend

Course Title: Introduction to Java Backend

Course Overview: The course is generously sponsored by the Center for Continuing Education ([CED office, Govt. of Gujarat](#)) and is conducted by DA-IICT (Dhirubhai Ambani Institute of Information and Communication Technology) in collaboration with the industry partner, Rishabh Software Pvt Ltd., under the Anchor Institute Program. It is important to note that this course is provided free of charge.

Target Audience: Faculties from Computer Science & Engineering departments at engineering colleges in Gujarat.

Start Date and Time: 31st March 2023 10:30 AM

Venue: Online (with offline examinations at DA-IICT campus, Gandhinagar)

Industry Partner: Rishabh Software Pvt. Ltd. Instructors are software developers and architects having several years of production-ready Java backend development experience.

For more details, please visit [here](#)

Brief Course Description:

This course has been designed to provide participants with deep understanding and hands-on training on java backend technologies including object-oriented programming concepts, java essentials, java streams and files, generics, servlets, SOAP and REST API, spring MVC, spring boot and hibernate.

Outcomes of Course:

This course has been designed to train faculties in advanced skills of Java backend development that would help them to train their students in topics and technologies that are in immediate demand in the industry. Upon successfully completing the course, the participants would get a certificate of participation and an optional credit certificate carrying grades.

Lecture Schedule:

SI. No.	Description	Hours
1	Introduction: About Java History What is bytecode Class files and Compilation Java Virtual Machine Java Compilers JDKs IDEs Java universe (Applicability of Java in real world)	1
2	Core Java: Java Essentials Data types Operators Loops Syntax Annotations Comments Package & Introduction to Core packages Exception Handling Control Flow Packaging a Java application Exercise: Hello World application, package & run outside of IDE	1.5
3	Core Java: Java & Object Oriented Programming OOPS in Java Classes, Interfaces and Objects Attributes and Methods Constructors Inheritance Abstraction Encapsulation Polymorphism Final and Static Inner classes Access Specifiers Overloading Overriding Java Beans Assessment	1
4	Core Java: Java and I/O Byte Streams Character Streams Buffered Streams	3

	Data Streams Object Streams File I/O Path & Path operations File and File operations Reading and Writing Files Creating and Reading Directories Managing Links(Symbolic, hard links) Assessment	
5	Core Java: Generics Why Generics? Generic Types, Raw Types Generic Methods Bounded Parameters Inheritance and Subtypes Wildcards Type Erasure Restrictions Assessment Core Java: Features of Java 8 and Above Lambdas Functional Interfaces Streams Optionals	5
6	Web Programming: Basics JSP Servlets Basic SOAP and REST web services	3.5
7	Web Programming: Spring MVC Introduction to Spring Framework IOC Container Dependency Injection Transaction Management Spring Data JPA	5
8	Web Programming: Spring Boot Introduction Annotations Spring Boot Starters Spring Boot Actuator Dependencies and Bootstrapping Spring Boot - Properties Customization Persistence DevOps and Spring Boot	10
9	Persistence: Hibernate Architecture of Hibernate	10

	Mapping with annotation and XML file Database Operations: Insert/Update/Delete/Select Inheritance Collections Querying: HQL, Criteria Caching and Performance Management	
	Project: Web application case study Assessment -Demonstrate all topics taught -Demonstrate coding best practices -Demonstrate use of Gitlab -Demonstrate unit testing -Demonstrate build and deployment -Complete functional requirements of case study	10