**Advanced Java Syllabus**

**🔹 1. Introduction to Advanced Java**

* Core Java vs. Advanced Java
* Need for Advanced Java
* Setting up an Advanced Java Development Environment

**🔹 2. Java Database Connectivity (JDBC)**

* JDBC Architecture
* Types of JDBC Drivers
* Connecting Java with MySQL/PostgreSQL
* CRUD Operations (Insert, Update, Delete, Select)
* PreparedStatement & CallableStatement
* Connection Pooling
* Transaction Management in JDBC

**🔹 3. Java Servlets**

* Introduction to Servlets
* Servlet Lifecycle (init(), service(), destroy())
* Handling HTTP Requests & Responses (GET, POST)
* RequestDispatcher & SendRedirect
* Session Management (Cookies, HttpSession, URL Rewriting)
* Servlet Filters & Listeners

**🔹 4. JavaServer Pages (JSP)**

* Introduction to JSP
* JSP vs. Servlets
* JSP Lifecycle
* JSP Directives (page, include, taglib)
* JSP Scripting Elements (Declaration, Expression, Scriptlet)
* JSP Implicit Objects
* JSP Exception Handling
* JSP Expression Language (EL)
* Custom Tags & JSTL (Java Standard Tag Library)

**🔹 5. Enterprise JavaBeans (EJB)**

* Introduction to EJB
* Types of EJB (Session Bean, Entity Bean, Message-Driven Bean)
* Stateful vs. Stateless Beans
* EJB Lifecycle
* EJB Transactions & Security

**🔹 6. Java Frameworks (Spring & Hibernate)**

**🔸 Hibernate (ORM Framework)**

* Introduction to ORM & Hibernate
* Hibernate Architecture
* Hibernate Configuration (hibernate.cfg.xml)
* Hibernate Annotations
* CRUD Operations in Hibernate
* Hibernate Query Language (HQL)
* Hibernate Caching

**🔸 Spring Framework (Dependency Injection & AOP)**

* Introduction to Spring
* Spring Modules (Spring Core, Spring MVC, Spring Boot)
* Dependency Injection (@Autowired, @Component, @Service, @Repository)
* Spring Bean Lifecycle
* Aspect-Oriented Programming (AOP) in Spring

**🔹 7. RESTful Web Services in Java**

* Introduction to RESTful Web Services
* Difference between SOAP & REST
* Building REST APIs using Spring Boot
* Consuming REST APIs (RestTemplate)
* Handling JSON & XML Data (Jackson Library)
* Implementing Authentication in REST APIs (JWT, OAuth)

**🔹 8. Microservices Architecture**

* Introduction to Microservices
* Spring Boot for Microservices
* Service Discovery using Eureka
* API Gateway using Zuul
* Circuit Breaker using Hystrix
* Containerization with Docker

**🔹 9. Java Messaging Service (JMS)**

* Introduction to JMS
* Point-to-Point Messaging Model
* Publish-Subscribe Messaging Model
* Using ActiveMQ & RabbitMQ

**🔹 10. Java Security & Authentication**

* Role-Based Authentication & Authorization
* Secure Java Applications with Spring Security
* JWT (JSON Web Token) Authentication
* OAuth 2.0 & OpenID Connect

**🔹 11. Java Multithreading & Concurrency**

* Thread Synchronization & Locks
* Executor Framework
* Fork/Join Framework
* CompletableFuture API

**🔹 12. Distributed Systems & Cloud Computing with Java**

* Cloud Deployment with AWS & Azure
* Serverless Functions in Java (AWS Lambda)
* Deploying Java Apps using Kubernetes

**🎯 Final Projects & Hands-on Practice**

* Employee Management System using Servlets & JSP
* E-commerce Application with Spring Boot & Hibernate
* RESTful Web Services with JWT Authentication
* Microservices-based Order Management System