Client-Server Architectures Module Roadmap

Date	Week	Tutorials	Lectures
Tutorials: 20/01/2025-21/01/2025 **Lecture:** **23/01/2025**	1	- Comprehensive Exercises on Java Class Implementations - Exception Handling Techniques - Effective Logging Practices	- Computer Networks - Client-Server Architecture Components - Types of Client-Server Models - Server Types
Tutorials: 27/01/2025-28/01/2025 **Lecture:** **30/01/2025**	2	Comprehensive Exercises Focused on the Analysis and Evaluation of Client-Server Model Architectures	Networking Concepts (Protocols, OSI Model, TCP/IP, IP classes, Subnets, ARP, NAT, Sockets, Socket Programming)
Tutorials: 03/02/2025-04/02/2025 **Lecture:** **06/02/2025**	3	Learn the fundamentals of network programming in Java by creating simple client and server classes. You'll establish connections, send messages, and receive responses using sockets to build a basic chat application.	- Introduction to HTTP - HTTP Methods, Requests and Responses - Cookies and Caching - DNS - HTTP in JAVA
Tutorials: 10/02/2025-11/02/2025 **Lecture:** **13/02/2025**	4	Understanding HTTP methods and status codes in the context of Java programming.	- Introduction to Web Services - Web Services Architecture - SOAP-based Web Services, WSDL, UDDI - RESTful Web Services
Tutorials: 17/02/2025-18/02/2025 **Lecture:** **20/02/2025**	5	Hands-on exercises for implementing a chat application using Java Socket programming, focusing on message broadcasting and multi-threading. Additionally, enabling private chats for clients.	- Introduction to REST API JAX-RS - JAX-RS Annotations - Tools for JAX-RS
Engagement Week	6	No Tutorials (Engagement Week)	No Lecture (Engagement Week)
Tutorials: 03/03/2025-04/03/2025 **Lecture:** **06/03/2025**	7	- Hands-on exercises for developing a simple RESTful service using JAX-RS. - Understanding how to use Apache Tomcat to deploy and run Java web applications. - Adding the necessary dependencies to deploy and run JAX-RS in NetBeans. - Testing RESTful services with POSTMAN.	- Advanced topics in JAX-RS - Mapping Request and Response Body to Java Objects in JAX-RS - Exception Handling in JAX-RS - Loggin in JAX-RS - Filters in JAX-RSJPA and DAO principles - Best Practices for RESTful Service Design
Tutorials: 10/03/2025-11/03/2025 **Lecture:** **13/03/2025**	8	Hands-on exercise in developing a simple RESTful student management system using JAX-RS	- Introduction to REST API security - Exploring OWASP's top 10 security Vulnerabilities - RESTful API Authentication Basics - JAX-RS Security
Tutorials: 17/03/2025-18/03/2025 **Lecture:** **20/03/2025**	9	Hands-on exercises to implement CRUD operations using DAO classes and the related methods inside the resource classes.	- Introduction to vistualisation - Understanding the concepts for Hypervisor, vSphere, ESXi, cloud computing and deployment models
Tutorials: 24/03/2025-25/03/2025 **Lecture:** **27/03/2025**	10	Hands-on exercise in Implementing JAX-RS exceptions considering ExceptionMapper class and completing outstanding parts of tutorial week 9	- Introduction to Serverless Computing - Serverless Architecture - Microservices and Serverless Architecture - Serverless Providers including Amazon AWS, Microsoft Azure, and Google GCP - Serverless computing usecases
Tutorials: 31/03/2025-01/04/2025 **Lecture:** **03/04/2025**	11	Mock test for lab-based practical	Review mock test
Tutorials: 07/04/2025-08/04/2025 **Lecture:** **10/04/2025**	12	**The lab-based practical actual test**	Revisions and interview questions