

G.L. Bajaj Institute of Technology and Management, Greater Noida

Career Development Centre

Modules - Technical Training

Module 4 – System Design

Course Outcomes:

1. Apply system design principles to build scalable and maintainable software solutions.
2. Evaluate different data storage and retrieval strategies for performance optimization.
3. Design large-scale systems considering fault tolerance, redundancy, and load balancing.
4. Implement practical solutions such as messaging systems, e-commerce platforms, and parking management systems.
5. Collaborate on real-world projects by applying best practices in software architecture and design patterns.

List of topics:

Sr. No.	Name of Topic	Industry Application	No. of Lectures
1	Introduction to System Design	Designing scalable applications, cloud architecture, fault tolerance	2
2	Scaling from Scratch	Growing from startup to enterprise, performance optimization	2
3	System Design Strategies	Architecture patterns, load balancing, redundancy planning	3
4	Data Stores	Choosing DBs, caching, consistency models, replication	2
5	Large-Scale System Design Examples	Building resilient, high-availability systems, distributed architecture	3
6	Practice and Example: Messaging & E-commerce	Real-time communication, order processing, recommendation systems	1
7	Practice and Example: Database Sharding	Handling massive datasets, partitioning, distributed storage	2
8	Practice and Example: Design and Implement Multilevel Parking System	IoT integration, real-time monitoring, access control, automation	2