MySQL Corporate Training – 40 Hours (10 Days × 4 Hours)

Day 1 – MySQL Overview & Architecture

- Introduction to MySQL & ecosystem
- MySQL architecture & components
- Storage engines (MyISAM, InnoDB, Archive, Memory, NDBCluster)
- Demo: Exploring storage engines
- **Lab:** Installing MySQL on a Linux VM

Day 2 – Installation & Configuration

- Installing MySQL (RPM, binaries)
- MySQL configuration files (my.cnf)
- Configuring InnoDB settings
- Configuring logs (slow log, general log, error log)
- SQL Modes & SHOW statements
- **Lab:** Configure MySQL settings & verify logs

Day 3 – InnoDB Engine Deep Dive

- InnoDB features: Transactions, ACID, referential integrity
- Tablespace configuration
- Log file & buffer configuration
- Monitoring with SHOW ENGINE INNODB STATUS
- **Lab:** Run transactions, test rollback, configure InnoDB tablespaces

Day 4 – MySQL Client Programs & Table Maintenance

- MySQL command-line tools: mysql, mysqladmin, mysqldump, mysqlpump, mysqlslap
- Table maintenance: CHECK, REPAIR, OPTIMIZE, ANALYZE
- Tools: myisamchk, repairing InnoDB tables

- **Lab:** Backup, restore, and optimize sample Sakila DB

Day 5 – User & Security Management

- User accounts & privilege system
- Creating, renaming, and dropping users
- Granting/revoking privileges
- SSL-based connections & passwordless logins
- Resource limits for users
- **Lab:** Create users, assign roles, test SSL connections

Day 6 – Backup & Recovery Techniques

- Backup requirements: hot vs cold, logical vs physical
- Backup with mysqldump & mysqlpump
- Percona XtraBackup: installation & full backup
- Incremental, compressed, encrypted backups
- Point-in-Time Recovery (PITR) with binary logs
- **Lab:** Perform full, incremental, and PITR backups

Day 7 – Replication Fundamentals

- Replication architecture & concepts
- Master-Slave replication setup
- GTID-based replication
- Semi-synchronous replication
- Using Percona XtraBackup for replication setup
- **Lab:** Configure GTID-based master-slave replication

Day 8 – Advanced Replication & High Availability

- Replication troubleshooting (SHOW SLAVE STATUS, Percona Toolkit)
- Handling replication errors (pt-table-checksum, pt-slave-restart)
- InnoDB Cluster concepts: MySQL Shell, Router, Group Replication
- Setting up a production-grade InnoDB Cluster
- **Lab:** Build & test 3-node InnoDB Cluster with automatic failover

Day 9 – Performance Tuning & Monitoring

- Monitoring MySQL with logs & Performance Schema
- Query optimization & indexing strategies
- Configuring buffer pool for large DBs
- Partitioning strategies (range, hash, list, composite)
- Tools for monitoring (Workbench, CLI, Prometheus/Grafana overview)
- **Lab:** Optimize queries & monitor using Performance Schema

Day 10 – Cloud Integration, Migration & Upgrades

- Migrating MySQL on-prem → AWS RDS, Aurora, Azure MySQL
- Aurora MySQL: setup, replication, backups
- Integrating Aurora with AWS services (CloudWatch, DMS)
- Cross-region replication with Aurora
- Upgrading MySQL 5.7 → 8.0+
- **Lab:** Simulate migration of Sakila DB from on-prem MySQL to Aurora

Training Summary

- **Total Duration:** 40 hours (10 days × 4 hours)
- **Format:** 50% theory + 50% hands-on labs
- **Audience:** DBAs, Cloud Engineers, DevOps, Developers

- **Final Outcome:** Participants can **install, configure, secure, backup, replicate, optimize, and migrate MySQL databases** both on-premises and in the cloud.