Module 1: Introduction to MySQL
- Overview of relational databases
- Introduction to MySQL and its features
- Installing MySQL
- Configuring MySQL server

Module 2: Getting Started with SQL
- Introduction to SQL and its role in MySQL
- Basic SQL syntax
- Creating databases and tables
- Inserting, updating, and deleting data

Module 3: Retrieving Data with SELECT
- SELECT statement and its variations
- Filtering data using the WHERE clause
- Sorting and limiting results
- Using functions and expressions

Module 4: Working with Multiple Tables
- Understanding table relationships (one-to-one, one-to-many, many-to-many)
- Joining tables using INNER JOIN, LEFT JOIN, and RIGHT JOIN
- Aliasing tables and columns
- Subqueries and correlated subqueries

Module 5: Data Manipulation and Transactions
- Updating data with an UPDATE statement
- Deleting data with DELETE statement
- Introduction to transactions and their importance
- ACID properties of transactions

Module 6: Database Design and Optimization
- Database normalization and denormalization
- Indexing and its impact on performance
- Query optimization techniques
- Analyzing and improving query execution plans

Module 7: Advanced Topics in MySQL
- Stored procedures, functions, and triggers
- Views and their usage
- User management and access control
- Backup and recovery strategies

Module 8: High Availability and Scalability
- Replication and its configuration
- Clustering and load balancing
- Implementing failover mechanisms
- Handling large-scale databases

Module 9: Security and Best Practices
- Securing MySQL server and databases

- User authentication and authorization
- Encryption and data privacy
- Best practices for database management

Module 10: MySQL and Application Integration
- Connecting MySQL with programming languages (e.g., PHP, Python, Java)
- Using MySQL connectors and APIs
- Building web applications with MySQL
- Case studies and real-world examples