1. Introduction to Databases:
   - What is a database and its importance in modern applications?
   - Comparison of different types of databases (Relational vs Non-Relational(NoSQL) etc.).
   - Overview of the database management system (DBMS) and its role.

2. Relational Database Concepts:
   - Understanding tables, rows, and columns.
   - Primary keys, foreign keys, and relationships between tables.
   - Normalization techniques to eliminate data redundancy and maintain data integrity.
   - SQL (Structured Query Language) fundamentals for data manipulation and querying.

3. Relational Database Design:
   - Entity-Relationship (ER) modeling and designing a database schema.
   - Entity relationship diagrams (ERDs) and their components.
   - Translating ERDs into relational database tables and defining relationships.

4. SQL and Database Operations:
   - Data definition language (DDL) statements for creating, altering, and dropping database objects.
   - Data manipulation language (DML) statements for inserting, updating, and deleting data.
   - Querying data using SELECT statements, filtering, sorting, and joining multiple tables.
   - Aggregating and grouping data with functions like COUNT, SUM, AVG, etc.

5. Indexing and Query Optimization:
   - Understanding indexes and their impact on query performance.
   - Creating and managing indexes for efficient data retrieval.
   - Analyzing query execution plans and optimizing SQL queries.

6. Database Security and Transactions:
   - User authentication, access control, and data privacy.
   - Database security best practices and techniques.
   - Introduction to ACID properties and transaction management.
   - Ensuring data consistency and integrity through transaction handling.

7. Non-Relational Databases:
   - Overview of NoSQL databases and their characteristics.
   - Types of NoSQL databases (document, key-value, columnar, graph) and their use cases.
   - Querying and data modeling in non-relational databases.

8. Database Administration and Performance Tuning:
   - Backup and recovery strategies.
   - Monitoring and optimizing database performance.
   - Database maintenance tasks and tools.

9. Advanced Database Topics:
   - Data warehousing concepts and dimensional modeling.
   - Introduction to data mining and data analytics.
   - Distributed databases and replication.
   - Big data and database technologies.