Week 1: Introduction to SQL and Basic Commands

1. **Overview of Databases**
    - Introduction to databases
    - Types of databases: relational vs. non-relational
2. **SQL Basics**
    - What is SQL?
    - SQL syntax and conventions
3. **Setting Up Your Environment**
    - Installing MySQL/PostgreSQL/SQLite
    - Connecting to the database
4. **Basic DDL Commands**
    - CREATE TABLE
    - ALTER TABLE
    - DROP TABLE

Week 2: Data Manipulation and Basic Queries

5. **Basic DML Commands**
    - SELECT statement
    - INSERT statement
    - UPDATE statement
    - DELETE statement
6. **Basic Queries**
    - Filtering data with WHERE clause
    - Sorting data with ORDER BY
7. **Practice: Creating and populating tables, performing basic queries**

Week 3: Advanced Filtering and Aggregation

8. **Advanced Filtering**
    - Using AND, OR, and NOT
    - BETWEEN, IN, and LIKE operators
9. **Aggregation Functions**
    - COUNT, SUM, AVG, MAX, MIN
    - GROUP BY and HAVING clauses
10. **Practice: Complex filtering and aggregation queries**

Week 4: Joins and Subqueries

11. **Joins**
    - INNER JOIN
    - LEFT JOIN
    - RIGHT JOIN
    - FULL OUTER JOIN
12. **Subqueries**
    - Basic subqueries
    - Correlated subqueries
13. **Practice: Writing complex joins and subqueries**

Week 5: Set Operations and Working with Null Values

14. **Set Operations**
    - UNION
    - INTERSECT
    - EXCEPT
15. **Working with Null Values**
    - Understanding NULL
    - Handling NULL values with IS NULL and IS NOT NULL
    - COALESCE function
    - IFNULL and NVL functions (depending on DBMS)
16. **Practice: Set operations and null value handling**

Week 6: Data Integrity and Constraints

17. **Primary and Foreign Keys**
    - Defining primary keys
    - Defining foreign keys
18. **Other Constraints**
    - NOT NULL
    - UNIQUE
    - CHECK
    - DEFAULT
19. **Practice: Implementing constraints in table creation**

Week 7: Indexes and Performance Optimization

20. **Indexes**
    - Creating and using indexes
    - Pros and cons of indexes
21. **Query Optimization**
    - Analyzing query performance
    - Using EXPLAIN and ANALYZE
22. **Practice: Creating indexes and optimizing queries**

Week 8: Advanced Data Types and Functions

23. **Advanced Data Types**
    - DATE, TIME, and TIMESTAMP
    - JSON and ARRAY (PostgreSQL)
24. **Advanced Functions**
    - String functions
    - Date functions
    - Window functions
25. **Practice: Using advanced data types and functions in queries**

Week 9: Transactions and Concurrency Control

26. **Transactions**
    - ACID properties
    - BEGIN, COMMIT, and ROLLBACK
27. **Concurrency Control**
    - Locking mechanisms
    - Isolation levels
28. **Practice: Implementing transactions and handling concurrency**

Week 10: Views and Stored Procedures

29. **Views**
    - Creating and using views
    - Updating data through views
    - Dropping views
30. **Stored Procedures**

- Creating and calling stored procedures
- Parameters in stored procedures

31. **Practice: Creating and using views and stored procedures**

Week 11: Triggers and Advanced Stored Procedures

32. **Triggers**
    - Creating and using triggers
    - Applications of triggers
33. **Advanced Stored Procedures**
    - Complex logic in stored procedures
    - Error handling and transaction management in stored procedures
34. **Practice: Writing advanced stored procedures and triggers**

Week 12: Database Design and Normalization

35. **Database Design Principles**
    - ER diagrams
    - Normalization and denormalization
36. **Normalization**
    - 1NF, 2NF, 3NF, and BCNF
37. **Practice: Designing a database schema and normalizing tables**

Week 13: Practical SQL Projects

38. **Real-world Applications**
    - Building a simple application database
    - Advanced queries on real datasets
39. **Case Studies**
    - Analysis of industry-specific database systems
40. **Project: Develop a database solution for a specific use case**

Week 14: SQL in Data Analysis and Business Intelligence

41. **Integration with BI Tools**
    - Using SQL with Power BI
    - Importing and transforming data
42. **Data Analysis Techniques**

- Advanced querying for data analysis
- Visualizing SQL query results

43. Practice: Perform data analysis using SQL and visualize results in Power BI

Week 15: Review and Final Project

44. Review of Key Concepts

- Recap of important topics
- Common pitfalls and best practices

45. Final Project

- Apply all learned concepts to a comprehensive project
- Present and document the project