Here's a structured **Course Outline for SQL for Data Analysis**:

**Module 1: Introduction to SQL & Databases**

* Understanding Databases and SQL
* Types of Databases (Relational vs. NoSQL)
* Installing and Setting Up SQL Environment (MySQL, PostgreSQL, SQLite, etc.)
* Understanding Tables, Rows, and Columns
* Basics of SQL Syntax

**Module 2: Querying Data**

* Writing Basic SQL Queries (SELECT, FROM, WHERE)
* Filtering Data (AND, OR, NOT, IN, BETWEEN, LIKE)
* Sorting Results (ORDER BY, ASC, DESC)
* Limiting Results (LIMIT, OFFSET)

**Module 3: Aggregating and Summarizing Data**

* Using Aggregate Functions (COUNT, SUM, AVG, MIN, MAX)
* Grouping Data (GROUP BY, HAVING)
* Conditional Aggregations with CASE Statements
* Data Filtering in Aggregations

**Module 4: Working with Joins**

* Understanding Relationships Between Tables
* Inner Joins (INNER JOIN)
* Outer Joins (LEFT JOIN, RIGHT JOIN, FULL OUTER JOIN)
* Cross Joins and Self Joins
* Using ON vs USING in Joins

**Module 5: Subqueries & Common Table Expressions (CTEs)**

* Writing Subqueries for Data Filtering
* Using Subqueries in SELECT, FROM, and WHERE Clauses
* Understanding and Implementing CTEs (WITH Clause)
* Recursive CTEs

**Module 6: Data Cleaning and Transformation**

* Handling NULL Values (COALESCE, IFNULL, NULLIF)
* Data Type Conversions (CAST, CONVERT)
* String Functions (TRIM, LOWER, UPPER, SUBSTRING, REPLACE)
* Date & Time Functions (NOW, DATE, EXTRACT, DATEDIFF)

**Module 7: Advanced SQL for Data Analysis**

* Using Window Functions (ROW\_NUMBER, RANK, DENSE\_RANK, NTILE)
* Running Totals and Moving Averages (LAG, LEAD)
* Percentile and Distribution Functions
* Pivoting and Unpivoting Data (CASE, PIVOT, UNPIVOT)

**Module 8: Performance Optimization**

* Understanding Indexes and How They Improve Performance
* Optimizing Queries (EXPLAIN, ANALYZE, Indexing Strategies)
* Avoiding Performance Pitfalls (Using WHERE Properly, Indexing Best Practices)

**Module 9: Case Studies and Real-World Data Analysis**

* Performing Exploratory Data Analysis (EDA) with SQL
* Writing Complex SQL Queries for Insights
* Business Use Cases: Sales, Marketing, Financial Analysis
* Dashboarding and Reporting with SQL

**Module 10: SQL with BI Tools and Python**

* Connecting SQL with Python (Using pandas and SQLAlchemy)
* Using SQL in Business Intelligence (BI) Tools (Power BI, Tableau)
* Automating SQL Queries for Reporting

Would you like to customize this course for a specific audience (beginners, data analysts, business users, etc.)? 🚀