SQL for Data Science and Research Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s data-driven world, SQL (Structured Query Language) remains the backbone of data management and analysis. Whether you are a budding data scientist, researcher, or analytics professional, mastering SQL enables you to extract, manipulate, and analyze large datasets with efficiency and precision. SQL for Data Science and Research Training Course equips participants with practical skills to query complex databases, optimize performance, and generate actionable insights for business, academic, and research applications.

This course emphasizes hands-on learning, real-world case studies, and industry-relevant techniques. Participants will gain expertise in data modeling, data cleaning, advanced querying, and reporting, empowering them to transform raw data into meaningful insights. By combining theoretical knowledge with practical exercises, this training ensures learners can confidently apply SQL in data analytics, machine learning, research projects, and business intelligence workflows.

Programme Curriculum

SQL for Data Science and Research Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Master SQL querying for efficient data retrieval and manipulation.
2. Understand relational database design and normalization principles.
3. Perform data cleaning and transformation for analytics and research.
4. Implement joins, subqueries, and aggregations for complex datasets.
5. Gain proficiency in data analysis using SQL functions.
6. Learn performance optimization techniques for large databases.
7. Apply SQL in real-world research scenarios and case studies.
8. Develop automated reporting and dashboards using SQL.
9. Integrate SQL with Python and R for data science workflows.
10. Build expertise in handling big data and cloud databases.
11. Understand data security and governance in SQL environments.
12. Translate business and research requirements into actionable queries.
13. Prepare for career growth in data analytics, research, and BI roles.

Target Audience

1. Aspiring data scientists and analysts
2. Research scholars in academia
3. Business intelligence professionals
4. Data engineers looking to strengthen SQL skills
5. Healthcare and finance researchers
6. Students in computer science and analytics
7. Project managers overseeing data-driven projects
8. Anyone seeking career growth in data analytics or research

Course Modules

Module 1: Introduction to SQL and Databases

- Understanding relational databases and SQL fundamentals
- Overview of database management systems (DBMS)
- Introduction to data types and constraints
- Hands-on setup with MySQL, PostgreSQL, or SQL Server
- Case Study: Exploring real-world research database structures

Module 2: Data Retrieval and Querying

- SELECT statements and filtering data
- Using WHERE, ORDER BY, and DISTINCT clauses
- Implementing conditional logic with CASE statements

- Sorting, grouping, and aggregating data efficiently
- Case Study: Querying COVID-19 research datasets

Module 3: Joins and Subqueries

- Mastering INNER, LEFT, RIGHT, FULL OUTER joins
- Writing nested subqueries for complex analysis
- Combining datasets for cross-functional insights
- Understanding self-joins and cross joins
- Case Study: Combining survey and experimental datasets

Module 4: Data Cleaning and Transformation

- Handling NULL values and duplicates
- Using string, date, and numeric functions for transformation
- Creating derived columns and computed fields
- Implementing data validation rules
- Case Study: Cleaning clinical trial datasets

Module 5: Advanced SQL Functions

- Aggregate functions
- Analytical functions
- Window functions for time-series and cohort analysis
- String manipulation and pattern matching with LIKE, REGEXP
- Case Study: Sales trend analysis in retail datasets

Module 6: Performance Optimization

- Indexing strategies for faster query execution
- Understanding query execution plans
- Using temporary tables and views efficiently
- Optimizing joins and subqueries
- Case Study: Optimizing large-scale e-commerce database queries

Module 7: SQL Integration with Data Science Tools

- Connecting SQL with Python
- Using SQL with R for statistical analysis
- Exporting SQL query results for machine learning pipelines
- Automating data pipelines with ETL processes
- Case Study: Predictive modeling using SQL-integrated Python workflows

Module 8: Reporting, Dashboards, and Research Applications

- Building dynamic reports with SQL queries
- Introduction to BI tools (Tableau, Power BI) integration
- Creating dashboards for real-time data visualization
- Using SQL for academic and market research analytics
- Case Study: Dashboard for healthcare research insights

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com