SQL for Advanced Data Wrangling and Database Management Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today's data-driven world, advanced SQL skills are essential for conducting ethical, accurate, and insightful research, especially when handling sensitive topics such as mental health, gender-based violence, refugee data, and medical histories. SQL for Advanced Data Wrangling and Database Management Training Course equips professionals with tools to manage, manipulate, and analyze sensitive data responsibly.

Participants will gain expertise in complex joins, CTEs, window functions, data anonymization, audit trails, and regulatory compliance—with every module contextualized through real-world case studies across humanitarian, health, legal, and social research domains. Through hands-on projects and interactive labs, learners will become proficient in structuring scalable databases, safeguarding personal information, and deriving impactful insights from sensitive datasets using SQL.

Programme Curriculum

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Introduction

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Training Objectives

1. Understand ethical frameworks in researching sensitive topics using data.
2. Apply advanced SQL querying techniques for complex data scenarios.
3. Design and implement privacy-compliant databases.
4. Perform sensitive data wrangling and transformation with SQL.
5. Develop data pipelines that support anonymization and masking.
6. Audit and log data access to ensure transparency and accountability.
7. Analyze structured and semi-structured sensitive datasets securely.
8. Apply data minimization principles in SQL-based queries.
9. Use role-based access control (RBAC) within SQL environments.
10. Integrate SQL-based ETL processes for restricted datasets.
11. Validate, clean, and visualize sensitive datasets using SQL tools.
12. Evaluate and mitigate risks of re-identification in datasets.
13. Conduct research that adheres to GDPR, HIPAA, and local laws.

Target Audiences

1. Academic researchers in social sciences
2. Public health data analysts
3. Humanitarian and NGO field researchers
4. Government data officers
5. Legal and compliance professionals
6. IT security analysts handling PII data
7. Clinical researchers and healthcare data staff
8. Market researchers working with consumer behavioral data

Course Duration: 10 days

Course Modules

Module 1: Ethics in Sensitive Data Research

- Ethical frameworks (Belmont, GDPR, HIPAA)
- Concepts of consent and anonymity
- Risks of re-identification
- Role of IRBs and ethical review boards
- Case Study: Mental Health Survey in High Schools
- Ethical decision mapping using SQL-based tools

Module 2: Advanced SQL Joins & Relationships

- INNER, OUTER, SELF, and CROSS JOINs
- Recursive queries for hierarchical data
- Entity-relationship modeling for sensitive data
- Data integrity through JOIN validation
- Case Study: Joining Refugee Camp Health Records
- Handling incomplete joins securely

Module 3: Common Table Expressions (CTEs) & Subqueries

- Writing and nesting CTEs
- Improving readability with named subqueries
- Recursive CTEs for time-series data
- Optimizing performance for large datasets
- Case Study: Recoding Violence Reports from Hotline Logs

- Managing temporary sensitive structures

Module 4: Window Functions & Aggregation

- Using RANK, DENSE_RANK, ROW_NUMBER
- Sliding window analysis for trends
- Sensitive trend reporting by category
- Partitioning by protected attributes
- Case Study: Gender-Based Violence Case Load Reporting
- Avoiding misleading aggregations

Module 5: Data Anonymization in SQL

- Masking vs tokenization techniques
- Dynamic data masking in SQL Server/PostgreSQL
- Differential privacy concepts
- Data pseudonymization practices
- Case Study: Anonymizing Sexual Health Clinic Data
- Implementing anonymization pipelines

Module 6: Database Design for Privacy

- Normalization with privacy in mind
- Designing for minimal exposure
- Audit tables and access logs
- Encryption at rest and in transit
- Case Study: Designing a Refugee Medical Database
- Incorporating privacy-by-design principles

Module 7: Secure Data Wrangling Techniques

- Cleaning sensitive data with SQL functions
- Handling NULLs and outliers ethically
- Dealing with sensitive text fields
- Data validation techniques
- Case Study: Trauma Report Data Cleaning
- Transformations preserving data integrity

Module 8: Role-Based Access Control (RBAC)

- User roles and permission granularity
- Implementing RBAC in PostgreSQL and MySQL
- Case Study: NGO Multi-level Access System
- Log auditing with SQL triggers
- Case Study: Access Control in Legal Aid Databases
- Conflict of interest management via roles

Module 9: Data Minimization Strategies

- Limiting query scope and result size
- Time-based and role-based access filtering
- Redacting fields dynamically
- Query rewriting to exclude sensitive patterns
- Case Study: Polling Data Aggregation for Elections
- Best practices in small-scope querying

Module 10: Logging and Audit Trails

- Implementing automated audit triggers
- Access logs and query tracking
- Managing logs for sensitive events
- Detecting breaches using SQL
- Case Study: Monitoring Access to Domestic Abuse Data
- Creating real-time audit dashboards

Module 11: ETL for Sensitive Data

- Secure Extract-Transform-Load (ETL) pipelines
- Staging environments for protected data
- Redacting during transformation
- Validation during load
- Case Study: Migrating Sensitive Clinic Data to the Cloud
- Managing metadata and schema evolution

Module 12: Structured and Semi-Structured Data Handling

- JSON and XML parsing in SQL
- Extracting nested sensitive elements
- Querying document stores with privacy concerns
- Secure joins on semi-structured data
- Case Study: Analyzing Counseling Chat Logs
- Managing schema drift in sensitive formats

Module 13: SQL Performance for Large Sensitive Datasets

- Indexing for anonymized columns
- Query plan optimization
- Partitioning and sharding
- Case Study: Large-scale Behavioral Health Data
- Reducing exposure in large queries
- Scaling secure querying environments

Module 14: Compliance and Legal Frameworks

- Comparing GDPR, HIPAA, and local laws
- Data retention and deletion policies
- Legal risk in SQL operations
- Consent tracking in SQL databases
- Case Study: Legal Review of SQL Data Pipelines
- Embedding compliance flags in databases

Module 15: Final Capstone Project

- End-to-end anonymized SQL pipeline build
- Group-based project on real dataset
- Ethical data sharing decision-making
- Presentation of insights with limitations
- Case Study: Multi-stakeholder Sensitive Data Collaboration
- Final feedback and review session

Training Methodology

- Instructor-led virtual or in-person workshops
- Hands-on SQL labs and sandbox environments

- Peer-based discussions and scenario analysis
- Real-world datasets and anonymized case studies
- Guided mini-projects and capstone evaluation
- Roleplay for ethical decision-making and compliance scenarios

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$12,000

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

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