Advanced SQL for Analytics Training Course

Professional Development Training Course Outline

Category	Business Intelligence	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

SQL is the backbone of data analytics, empowering professionals to extract actionable insights from complex datasets. Advanced SQL techniques allow analysts and data engineers to optimize query performance, perform predictive analytics, and drive strategic decision-making across organizations. Advanced SQL for Analytics Training Course equips participants with the practical skills and analytical mindset to manipulate large-scale databases, design efficient queries, and leverage advanced SQL functions for business intelligence.

As organizations increasingly rely on data-driven strategies, mastering advanced SQL ensures competitive advantage in analytics roles. Participants will gain expertise in complex joins, window functions, stored procedures, and optimization strategies, allowing them to transform raw data into valuable insights. By combining theory, hands-on exercises, and real-world case studies, this course prepares professionals to solve challenging data problems efficiently.

Programme Curriculum

Advanced SQL for Analytics Training Course

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Course Objectives

1. Gain expertise in complex SQL queries and subqueries
2. Master advanced joins including self-joins and cross joins
3. Utilize window functions for analytical insights
4. Optimize SQL performance and improve query efficiency
5. Implement stored procedures and functions in real-world scenarios
6. Develop dynamic SQL for flexible data manipulation
7. Analyze large datasets using aggregation and ranking techniques
8. Perform data cleansing and transformation for analytics projects
9. Integrate SQL with BI tools for visual analytics
10. Handle transactional and analytical database operations
11. Apply indexing strategies to enhance performance
12. Explore advanced SQL in cloud-based databases
13. Solve real-world analytics problems using SQL case studies

Organizational Benefits

1. Accelerated decision-making through optimized queries
2. Enhanced data accuracy and consistency
3. Improved operational efficiency using automation
4. Stronger data governance and compliance
5. Reduction in query execution time
6. Scalable solutions for large datasets
7. Empowered teams with analytical capabilities
8. Cost savings through optimized database performance
9. Enhanced reporting and visualization accuracy
10. Data-driven culture development within the organization

Target Audiences

1. Data analysts seeking advanced SQL skills
2. Business intelligence professionals
3. Data engineers and database administrators
4. Analytics managers and project leads
5. Software developers working with databases
6. Financial analysts requiring complex data analysis
7. Marketing analysts handling large datasets
8. Students and professionals aspiring for data analytics roles

Course Duration: 10 days

Course Modules

Module 1: Advanced SQL Queries and Subqueries

- Nested and correlated subqueries
- Multi-level query execution strategies

- Combining subqueries with joins
- Optimizing subquery performance
- Practical exercises on analytical problem-solving
- Case study: Retail sales data analysis using nested queries

Module 2: Advanced Joins and Set Operations

- Inner, outer, self, and cross joins
- Union, intersect, and minus operations
- Join optimization techniques
- Handling NULLs in joins
- Real-world scenarios for set operations
- Case study: Customer segmentation using complex joins

Module 3: Window Functions for Analytics

- ROW_NUMBER, RANK, DENSE_RANK, and NTILE
- Aggregate functions over partitions
- Moving averages and cumulative calculations
- Performance considerations for window functions
- Analytical scenarios in sales and marketing
- Case study: Financial performance tracking using window functions

Module 4: Stored Procedures and Functions

- Creating and using stored procedures
- Functions vs procedures
- Parameters, error handling, and transactions
- Automating repetitive tasks
- Security and permissions for procedures
- Case study: Automating payroll data processing

Module 5: Query Optimization Techniques

- Understanding query execution plans
- Indexing strategies for performance
- Avoiding common performance bottlenecks
- Using EXPLAIN and profiling queries
- Optimizing joins and subqueries
- Case study: Optimizing e-commerce database queries

Module 6: Data Aggregation and Ranking

- Advanced GROUP BY techniques
- HAVING vs WHERE for filtering aggregated data
- Ranking and top-N queries
- Combining aggregation with window functions
- Performance tuning for aggregation
- Case study: Sales performance ranking for top products

Module 7: Dynamic SQL and Parameterized Queries

- Constructing dynamic queries
- Using parameters for flexibility
- Avoiding SQL injection risks
- Debugging and performance tuning
- Integration with applications
- Case study: Dynamic reporting for multi-regional sales data

Module 8: Data Transformation and Cleansing

- Identifying and correcting data inconsistencies
- Using CASE statements for transformations
- Converting data types and formats
- Advanced string and date manipulation
- Validating and auditing transformed data
- Case study: Cleaning customer feedback data for sentiment analysis

Module 9: Integration with BI Tools

- Connecting SQL databases with BI platforms
- Data extraction and preparation
- Performance considerations for dashboards
- Custom SQL in reporting tools
- Automating report generation
- Case study: Building a real-time sales dashboard

Module 10: Transactional and Analytical Operations

- OLTP vs OLAP databases
- Managing transactions and concurrency
- Isolation levels and locks
- Using analytical queries in transactional systems
- Monitoring and auditing operations
- Case study: Inventory tracking in an e-commerce platform

Module 11: Indexing Strategies for Large Databases

- Types of indexes: B-tree, bitmap, composite
- Index selection and maintenance
- Query performance impact
- Avoiding excessive indexing
- Using indexed views
- Case study: Optimizing search queries for a banking database

Module 12: Advanced SQL in Cloud Databases

- Cloud-based SQL platforms overview
- Scaling SQL in cloud environments
- Cloud-specific functions and optimization
- Security and access controls
- Integrating cloud SQL with analytics tools
- Case study: Cloud-based sales data analytics

Module 13: Advanced Analytics with SQL

- Predictive analytics using SQL
- Trend and pattern identification
- Cohort and retention analysis
- Time-series data handling
- Integrating SQL with statistical tools
- Case study: Customer churn prediction

Module 14: Real-world Analytical Problem Solving

- End-to-end analytics workflow
- Combining multiple SQL techniques
- Handling messy and large datasets
- Performance considerations for complex queries
- Data visualization and interpretation
- Case study: Marketing campaign ROI analysis

Module 15: Capstone Project and Evaluation

- Designing analytical solutions from scratch
- Implementing complex queries
- Performance tuning and optimization
- Generating insights and actionable reports
- Peer review and discussion
- Case study: Comprehensive analytics project with multiple datasets

Training Methodology

- Instructor-led interactive sessions
- Hands-on exercises and real-life datasets
- Case studies from multiple industries
- Group discussions and problem-solving sessions
- Continuous assessment through exercises and quizzes
- Capstone project for practical implementation

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
23 Nov 2026	04 Dec 2026	Physical	$12,000

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