
Advanced SQL & AI Workshop – 24 Hours

Course description

This advanced course combines SQL mastery with modern AI-driven analytics techniques, enabling data professionals to enhance query writing, optimization, and business analysis using AI tools. Participants learn how large language models (LLMs) support analytical workflows, apply prompt engineering techniques for SQL tasks, and leverage AI tools such as Copilot to generate, debug, and optimize queries.

The course focuses on translating real business questions into effective SQL queries, applying learning and optimization strategies such as zero-shot and few-shot prompting, and solving real-world analytical problems through hands-on case studies. Emphasis is placed on practical analytics, automation, and scalable data analysis using SQL and AI together.

What Participants Gain?

- Translating real business questions into optimized SQL queries using AI assistance
- Writing, optimizing, debugging, and troubleshooting SQL with Copilot and LLMs
- Applying advanced SQL analytics (window functions, ranking, cohort analysis, segmentation)
- Using prompt engineering and zero-/few-shot techniques for analytical workflows
- Automating SQL-based analysis and data scaffolding with tools like n8n
- Significantly improving speed, accuracy, and analytical depth in real-world SQL work

Prerequisites

- Solid understanding of SQL fundamentals (SELECT, WHERE, GROUP BY, JOIN)
- Experience working with relational databases
- Basic understanding of data analysis concepts
- No prior experience with AI or LLMs is required

Target Audience

- Data Analysts
- BI Analysts and BI Developers
- Data Scientists working with SQL-based analytics
- Data Engineers involved in analytical querying
- Professionals seeking to enhance SQL productivity using AI

Course Syllabus

Advanced SQL

- Window Functions
 - Ranking Functions
 - Row Number
 - Rank
 - Dense Rank
 - Ntile
 - Aggregative Window Functions
 - Offset Functions
 - Lead
 - Lag
- Window Functions: Controlling the Window
 - Rows Between
- Views
- CTE: Common Table Expression

SQL Mastery & AI Analytics

- Intro to LLM
- Prompt Engineering
- Optimization & Learning Techniques:
 - One-Shot Learning
 - Few-Shot Learning
 - Zero-Shot Learning
 - Zero-Shot CoT (Chain of Thoughts)
- Translating Business Questions into SQL Queries
 - Writing Queries with AI & Copilot
 - Optimizing, Debugging and Troubleshooting Queries using AI
- Case Studies: Real Business Analysis using SQL & AI
 - Cohort Analysis
 - Segmentation
 - Data Scaffolding
 - Automation with tool like n8n