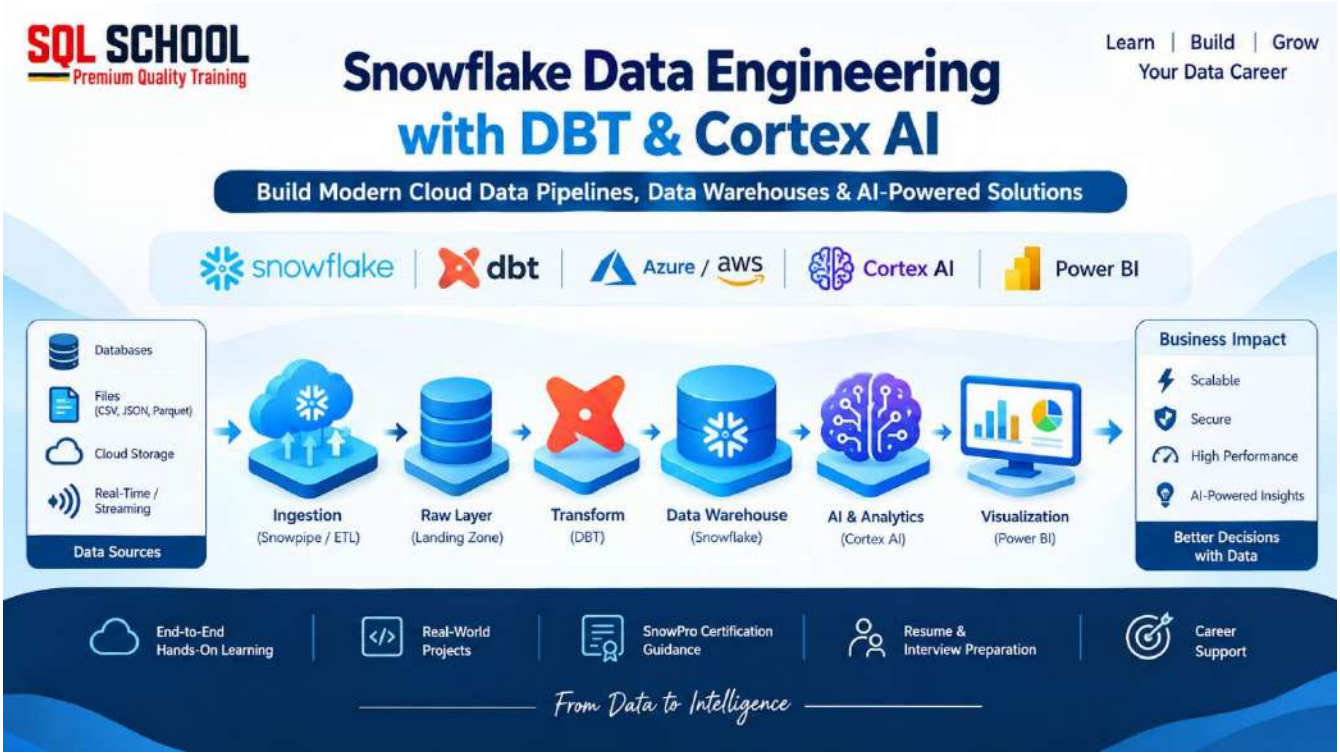



# Snowflake Data Engineering

**Snowflake | SQL | DBT | Azure | Python ETL | Snowpark | Cortex AI | Real-Time Projects**

| | Module / Inclusions | Number Of Real-Time Projects | Duration |
|---|---|---|---|
| Plan A | 1. SQL Concepts, Queries<br>2. Snowflake<br>3. DBT | One Real-Time Project | 2 Months |
| Plan B | 1. SQL Concepts, Queries<br>2. Snowflake<br>3. DBT<br>4. Python ETL, Snowpark<br>5. Cortex AI | Two Real-Time Projects | 3 Months |

**This course includes Complete Guidance for SnowPro Certification Exam.**

## Training Details:

- ✓ **100% Practical & Realtime**
- ✓ **Training Modes:**
  - **LIVE Online Training**
  - **Self-Paced Videos** (Detailed, step by Step, Latest Videos with Notes, Project Solution)

## What You Will Be Able to Build

**By the End of This Course, You Can Build**

- ✓ Cloud Data Warehouse: Design scalable Snowflake architectures.
- ✓ Data Engineering Pipelines: Ingest batch and incremental data from Azure/AWS.
- ✓ DBT Transformation Framework: Build tested, documented and reusable pipelines.
- ✓ Automated ELT Pipelines with SnowPipe, Streams, Tasks and incremental processing.
- ✓ AI-Powered Data Solutions: Use Cortex AI, Analyst, Search and LLM capabilities.
- ✓ Enterprise Analytics Platform: Deliver curated Snowflake data to Power BI.

## What Makes This Program Different?

- ✓ End-to-End Snowflake Data Engineering
- ✓ Snowflake + DBT Integration
- ✓ Azure Cloud Data Ingestion
- ✓ Power BI For Big Data Analytics
- ✓ Incremental & Automated Data Pipelines
- ✓ Performance & Cost Optimization
- ✓ Snowflake Security & RBAC
- ✓ Cortex AI & LLM Use Cases
- ✓ GIT & CI/CD Exposure
- ✓ SnowPro Certification & Resume

## Who can join this course?

- ✓ Analysts
- ✓ Developers
- ✓ Administrators
- ✓ IT Professionals
- ✓ Students

## What kind of Jobs you can apply from this Snowflake Training?

**After completion of this Job Oriented Hands-On Course, you can apply for:**

- ✓ Snowflake Data Engineer
- ✓ Snowflake Developer
- ✓ Snowflake ETL Developer
- ✓ DBT Developer / Analytics Engineer
- ✓ Cloud Data Engineer
- ✓ Data Warehouse Developer

# DETAILED COURSE CONTENT

## Module 1: SQL Concepts & Query Tuning

### Ch 1: SQL Database Job Roles

- ✓ Database Intro. OLTP, DWH, OLAP
- ✓ DBMS Basics & Technologies
- ✓ SQL Database Job Roles

### Ch 2: SQL Server Configurations

- ✓ SQL Server Installations
- ✓ Features, Instance & Collations.
- ✓ SSMS Tool. Connections, Authentications

### Ch 3: SQL Basics V1 (Commands)

- ✓ SQL Basics (DDL, DML, DQL)
- ✓ Creating Databases, Tables
- ✓ Data Inserts. Basic SELECT Queries

### Ch 4: SQL Basics V2 (Commands, Operators)

- ✓ Create, Alter, Drop, Add
- ✓ Insert, Update, Delete, Truncate
- ✓ Select Options. Basic Data Types

### Ch 5: Schemas & Data Imports

- ✓ Data Imports with Excel, CSV
- ✓ SQL Operators. Schemas, Table Grouping
- ✓ SQL Batches & 4 Part Naming

### Ch 6: Data Types & Variables

- ✓ Integer, Character, MAX Data Types
- ✓ Decimal & Boolean Data Types
- ✓ Date, Time, Other Data Types
- ✓ SQL_Variant Types, Variables

### Ch 7: Constraints, Keys & RDBMS

- ✓ Null, Not Null Constraints
- ✓ Unique Key & Primary Key Constraint
- ✓ Foreign Keys, Default, Check
- ✓ DB Diagrams & ER Models

### Ch 8: Normal Forms & RDBMS

- ✓ Normal Forms: 1 NF, 2 NF
- ✓ 3 NF, BCNF and 4 NF
- ✓ 1:1, 1:M, M:1 Cardinality
- ✓ Cascading Keys, Self Referencing Keys

### Ch 9: Joins & TSQL Queries

- ✓ Inner Joins & Matching Data
- ✓ Outer Joins: LEFT, RIGHT
- ✓ Full Outer Joins, Self Joins & Aliases

**Ch 10: Sub Queries**

- ✓ Basic Sub Queries. Aggregations
- ✓ Combining TSQL Queries
- ✓ Correlated Sub Queries, Union, Union All

**Ch 11: Group By Queries**

- ✓ Group By, Distinct, Having
- ✓ Cube( ), Rollup( ), Grouping()
- ✓ IsNull(), Coalesce() in TSQL

**Ch 12: Joins with Group By, Sub Queries**

- ✓ 3 Table, 4 Table Joins
- ✓ Join & Group By, Sub Queries
- ✓ IIF(), CASE Statement. Exists
- ✓ Query Execution Order

**Ch 13: Views & RLS**

- ✓ Views: Realtime Usage. DML & SELECT
- ✓ WITH CHECK OPTION, Row Level Security (RLS)
- ✓ Important System Views

**Ch 14: Functions & Queries**

- ✓ UDF, Scalar, Table Value Functions
- ✓ Date-Time & String Functions
- ✓ Aggregated & Data Conversion Functions

**Ch 15: Advanced SQL & Window Functions**

- ✓ Window Functions (Rank)
- ✓ Row_Number, DenseRank
- ✓ Partition By & Order By. Lag & Lead Functions
- ✓ Running Totals. Moving Average

**Ch 16: Stored Procedures - 1**

- ✓ Stored Procedures: Realtime Use
- ✓ Parameters, SPs with Select, DML
- ✓ System Stored Procedures

**Ch 17: Stored Procedures - 2**

- ✓ Merge Statement (Upsert)
- ✓ Matched and Not Matched
- ✓ Merge & SP Recompilations

**Ch 18: Triggers & Automations**

- ✓ Need for Triggers in Real-world
- ✓ DDL & DML Triggers. For / After Triggers
- ✓ Instead Of Triggers. Disabling DMLs Triggers

**Ch 19: Transactions & ACID**

- ✓ Auto Commit Transaction
- ✓ Explicit, Implicit Transactions
- ✓ Commit, Rollback, Query Blocking
- ✓ Checkpoint, ReadPast & NoLock

### Ch 20: SQL Query Performance & Indexing

- ✓ Clustered vs Non-clustered Indexes
- ✓ Index Seek vs Scan. Tuning Queries
- ✓ Avoiding SELECT * .Query Optimization Examples

### Ch 21: CTEs & TSQL Tuning

- ✓ Common Table Expression
- ✓ CTEs for Data Retrieval, DML
- ✓ Data Cleansing in TSQL, Cursors
- ✓ Duplicate Detection/Removal

### Ch 22: Temp Tables, Cursors & Queries

- ✓ Local & Global Temp Tables
- ✓ SELECT...INTO Statement
- ✓ Cursors – When to Use & Avoid

## Module 2: Snowflake (Cloud ETL, DWH)

### Ch 1: Introduction to Snowflake

- ✓ Database, DWH & Big Data Intro. Cloud Components
- ✓ ETL, ELT & Cloud Computing Basics.
- ✓ Snowflake Cloud Intro. DBT & Cortex AI Purpose.
- ✓ Snowflake End to End Work Flow. Job Roles.

### Ch 2: Snowflake Concepts

- ✓ Snowflake Account. Components & Editions
- ✓ Snowflake UI. Accounts and Org Concepts.
- ✓ Basic Snowflake Usage. Databases versus Warehouse.
- ✓ VPS, Snowflake Pricing & Hosting

### Ch 3: Architecture, Warehouse

- ✓ Compute Architecture. Shared Disk Architecture
- ✓ Database Query & Data Cycle. Virtual Warehouse
- ✓ SnowSight, Massively Parallel Processing
- ✓ Query Executions, Multi-Cluster Scaling

### Ch 4: Snowflake Databases & Tables

- ✓ Snowflake Database Types. Table Types
- ✓ Retention Time, Connections. Permanent, Transient Types
- ✓ Iceberg Tables, Dynamic Tables, Table Selection Scenarios
- ✓ CREATE TABLE AS SELECT (CTAS).

## Ch 5: Time Travel, Recovery

- ✓ Time Travel. Timestamp, Offset, Query ID
- ✓ Data Recovery, TIMESTAMP. Fail Safe and UNDROP, OFFSET
- ✓ Transient Tables & Real-Time Scenarios

## Ch 6: Schemas and Session Context

- ✓ Schema Creation. Permanent, Transient Schemas
- ✓ Managed Schemas. Cloning. Data Loads
- ✓ Session Context & Schema

## Ch 7: Snowflake Cloning

- ✓ Zero Copy, Schema Cloning. Snapshot, Metadata
- ✓ Storage & Metadata Layer. Transactions & Injection

## Ch 8: Procedures & Views

- ✓ Procedures and Functions. SQL and JavaScript & CALL
- ✓ sqlText:command. Cursoring Data and Operations
- ✓ Dynamic DML with SPs. RETURN, RETURNS Statements

## Ch 9: Security Management

- ✓ Users & Roles in Snowflake. Privileges and Groups
- ✓ Organization, Account, Users. Roles, Views, RBAC & DAC
- ✓ Masking Policies. Row Access Policy. Secure Data Sharing

## Ch 10: Snowflake Transactions

- ✓ ACID Properties. Implicit, Explicit and Auto
- ✓ to_timestamp_ltz and Failed Transactions
- ✓ Transactions and SPs. Scoped & Inner Transactions

## Ch 11: Snowflake Streams & Audits

- ✓ Snowflake Streams & DML Auditing. Snapshot Creation
- ✓ METADATA & Streams. Data Flow & Transient Tables
- ✓ CDC with INSERT, UPDATE, DELETE, MERGE and Stream Offsets

## Ch 12: Snowflake Tasks

- ✓ Tasks, Tasks Tree: Root and DAG. CRON Syntax
- ✓ RESUME. User & Snowflake Managed. Auto Scale
- ✓ Task graphs, scheduling, Dependency Management & Monitoring

## Ch 13: SnowSQL

- ✓ SnowSQL Configurations. DDL, DML & SELECT
- ✓ Variables. Batch Processing. Virtual Warehouse
- ✓ EXECUTE IMMEDIATE, FOR. Out Files

- ✓ Snowflake CLI and practical deployment workflows

### Ch 14: Snowflake Partitions, Stages

- ✓ Snowflake Partitions, Views. Micro Partition with DML, CDC
- ✓ Cluster Key, Depth. Overlap. Pruning, Clustering Depth, Query Profile
- ✓ List, Range and Hash Partitions. Internal and External Stages

### Ch 15: Azure External Stages

- ✓ Azure Storage Account, BLOB. SAS: Shared Access Signature
- ✓ Using SAS Key and FILE PATH. COPY INTO Command Usage
- ✓ Snowflake Patterns & RegEx. File Formats: Creation, Usage

### Ch 16: Snow Pipes & Incr Loads

- ✓ SnowPipe Incremental Loads. Azure Queues & Integrations
- ✓ Azure Active Directory. External Stage, Enterprise AD
- ✓ Snow Pipes and Data Loads. Incremental Data Loads
- ✓ File Format with Reg Expr. Snowpipe Streaming & Dynamic Tables

### Ch 17: Power BI with Snowflake

- ✓ Power BI: Big Data Analytics. Data Access, Views
- ✓ Datawarehouse Access, Big Data Analytics
- ✓ Import vs Direct Query, performance and secure access

### Ch 18: SnowPro Certification Exam Guidance

- ✓ SnowPro Certification Overview & Exam Structure
- ✓ Certification Domains & Key Topics
- ✓ Important Snowflake Concepts for the Exam
- ✓ Practice Questions & Scenario-Based Questions
- ✓ Mock Tests & Exam Readiness Assessment
- ✓ Time Management & Question-Solving Techniques
- ✓ Revision Checklist & Last-Minute Preparation
- ✓ Guidance on Certification Registration & Exam Process

## Module 3: Data Build Tool (DBT)

### Ch 1: DBT Fundamentals

- ✓ Data Build Tool. Data Transformations
- ✓ Importance of DBT in ELT workflows
- ✓ DBT Cloud for data transformations

### Ch 2: DBT Models and Materializations

- ✓ Building Models. Materializations
- ✓ Table, view, incremental materializations
- ✓ Model configurations

### Ch 3: DBT Jinja Templating

- ✓ Jinja with DBT. Macros and reusable code
- ✓ Implementing Dynamic SQL

### Ch 4: DBT Testing and Documentation

- ✓ Writing and Executing Tests. Data Quality Checks. DBT Docs
- ✓ DBT Documentation, Lineage Graphs

### Ch 5: DBT Seeds and Sources

- ✓ Seeds for static data. Defining and using sources
- ✓ Source freshness checks. Integrating external data

### Ch 6: DBT Deployment and CI/CD

- ✓ Deployment Strategies. Continuous Integration and Deployment
- ✓ Automating DBT Workflows. Version Control with Git

### Ch 7: DBT Best Practices

- ✓ Project Structure Recommendations
- ✓ Coding Standards & Guidelines
- ✓ DBT Project Optimization. Performance Tuning

### Ch 8: Hooks in DBT

- ✓ Custom scripts. Additional Streamline logic
- ✓ Analyses and exploratory data workflows
- ✓ Ad-hoc analyses that do not get materialized

### Ch 9: DBT Snapshots

- ✓ Managing historical data. Implementing DBT snapshots
- ✓ Snapshot configuration. Strategies for handling changes

### Ch 10: DBT Packages and Extensions

- ✓ Leveraging DBT packages. Community Packages
- ✓ Extending DBT functionality. Integrations with other data tools

## Module 4: Python ETL, SnowPark

### Ch 1: Python Introduction, Installations

- ✓ Python Introduction
- ✓ Python Versions
- ✓ Anaconda Web
- ✓ Jupyter Notebooks, IDE

### Ch 2: Python Concepts

- ✓ print() , display()
- ✓ Variable Declarations
- ✓ Variable Rules
- ✓ Common Value Variables

### Ch 3: Python Operators

- ✓ Athematic, String Operators
- ✓ Bit, Comparison Operators
- ✓ Binary Operators
- ✓ Indexing Operators

## Ch 4: Python Data Types

- ✓ Integer, Float
- ✓ String Data Types
- ✓ Type Casting
- ✓ Type Identification
- ✓ Lists, Dict, Tuples

## Ch 5: Python Control Statements

- ✓ If..Else conditions
- ✓ if..elif..else, range
- ✓ Shorthand if
- ✓ in & negation operators

## Ch 6: Python Loops

- ✓ For Loop, Range
- ✓ While Loop
- ✓ Exit Conditions
- ✓ Break, Continue, Paas

## Ch 7: Dataframe Transformations

- ✓ Pandas Dataframe
- ✓ Concat, Merge
- ✓ dropna(), fillna() Functions

## Ch 8: SnowPark Concepts

- ✓ Snowpark Concepts
- ✓ Architecture and Benefits
- ✓ Connections to Snowflake

## Ch 9: Snowpark Operations

- ✓ Snowpark Python Libraries
- ✓ Snowpark DataFrames
- ✓ DataFrame Operations

## Ch 10: Snowpark Transformations

- ✓ Select, Filter, Sort, GroupBy
- ✓ Joins, Aggregations, Window Functions
- ✓ Handling NULL Values, Duplicates & Data Types
- ✓ Read, Write Snowflake Tables

## Ch 11: Snowpark Python Functions & Advanced Processing

- ✓ Built-in Snowpark Functions and Expressions
- ✓ Creating Python User-Defined Functions (UDFs)
- ✓ User-Defined Table Functions (UDTFs)
- ✓ Python Stored Procedures Using Snowpark
- ✓ Exception Handling, Logging and Debugging

### Ch 12: Building ETL Pipelines Using Snowpark

- ✓ Extracting and Loading Data into Snowflake
- ✓ Building ETL/ELT Pipelines with Snowpark Python
- ✓ Incremental Data Loading and CDC Concepts
- ✓ Automating Pipelines Using Snowflake Tasks
- ✓ Performance Optimization and Best Practices

## Module 5: Snowflake Cortex AI

### Ch 1: Cortex AI Fundaments

- ✓ AI Fundamentals. Snowflake Data Engineering
- ✓ Snowflake ETL Operations. Snowflake DWH Operations
- ✓ Need for AI Extensions

### Ch 2: Introduction to Cortex AI

- ✓ Cortex AI. Why Cortex AI in Snowflake?
- ✓ Benefits of AI inside Data Cloud
- ✓ Cortex AI Architecture. AI Use Cases in Modern Organizations
- ✓ Cortex AI Components. Snowflake AI Ecosystem

### Ch 3: Cortex AI Concepts

- ✓ Cortex AI Setup and Configuration. Security & Access Management
- ✓ Required Roles and Privileges. Creating Sample AI Environment
- ✓ Cost Considerations and Best Practices

### Ch 4: Snowflake Cortex Functions

- ✓ Introduction to Cortex Functions. AI-Powered SQL Queries
- ✓ Text Analysis Functions. Text Summarization
- ✓ Sentiment Analysis. Information Extraction
- ✓ Named Entity Recognition (NER)

### Ch 5: Large Language Models (LLMs) in Cortex

- ✓ LLM Concepts. Models Supported by Snowflake
- ✓ Prompt Engineering Fundamentals. Effective Prompt Design
- ✓ Zero-shot Learning. Few-shot Learning
- ✓ Chain-of-Thought Prompting.

### Ch 6: Cortex Complete

- ✓ Cortex Complete. Text Generation with SQL
- ✓ Content, Email Creation. Ticket Resolution Suggestions
- ✓ Business Intelligence Narratives

### Ch 7: Cortex Analyst

- ✓ Cortex Analyst? Natural Language to SQL
- ✓ Conversational Analytics. Semantic Models

- ✓ **Dashboard Integration. AI-Powered Self-Service Analytics**

**Ch 8: Cortex Search Service**

- ✓ **Vector Search. Semantic Search Concepts**
- ✓ **Search Service Architecture. Creating Search Indexes**
- ✓ **Enterprise Knowledge Search**

**Ch 9: Cortex Agents**

- ✓ **AI Agents. Agent Architecture**
- ✓ **Multi-Step Reasoning. Workflow Automation**
- ✓ **Building Intelligent Agents. Enterprise AI Assistants**

**Ch 10: Document AI**

- ✓ **Introduction to Document AI.**
- ✓ **PDF Data Extraction. Contract Analysis**

## Real-time Project – 1

**Domain: E-Commerce**

- ✓ **Project Planning and ETL, ELT Requirements**
- ✓ **Snowflake Deployments, Accounts & Security**
- ✓ **Data Flow Artifacts, Tasks, Automations**
- ✓ **Snowflake Datasets, Data Engineering Solutions**
- ✓ **GITHU Integrations, Azure Integrations & Power BI**
- ✓ **Resume Points. Interview FAQs and Answers**

**Technologies**: **Snowflake | Azure | Power BI**

## Real-time Project - 2

- ✓ **Finance / Accounting / HealthCare Domain**
- ✓ **Defining Project and AI Requirements**
- ✓ **Initial Project Setup. DBT Configuration**
- ✓ **Project Deployment & Monitoring**
- ✓ **ETL, ELT with DBT & Cortex AI**
- ✓ **Solution Explanation. Interview FAQs and Answers**

**Technologies:** Snowflake | Cortex AI | DBT | Azure | Power BI

## Key Features of this 100% Practical Snowflake Training Course

- **Data Ingestion from Azure/AWS**
- **DBT Data Transformation**
- **Sentiment Analysis using Cortex AI**
- **Automated Data Pipelines**

**Our Snowflake Data Engineering Training is designed to take learners from core concepts to real-world, job-ready implementation.**
**By the end of the training, participants will be able to:**

- **Design and build end-to-end Snowflake data pipelines**
- **Implement ETL/ELT and Data Warehousing solutions**
- **Work with DBT for modern data transformation**
- **Explore Snowflake Cortex AI capabilities**
- **Work confidently on real-time, industry-oriented projects**
- **Prepare for SnowPro Certification**
- **Strengthen their resume, project presentation, and interview skills**

## BUILD REAL SKILLS. WORK ON REAL PROJECTS. BECOME JOB READY.

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