
ETL & DWH Fundamentals – 50 Hours

Course description

This course provides a comprehensive foundation in Business Intelligence, Data Warehousing, and ETL processes. Participants learn how to plan and design a BI project, model data warehouses using dimensional modeling techniques, and implement robust ETL pipelines using Microsoft SQL Server Integration Services (SSIS).

The course covers core data warehousing concepts such as star and snowflake schemas, slowly changing dimensions, surrogate keys, and historical data management, alongside hands-on development of ETL workflows including data extraction, transformation, loading, debugging, deployment, and monitoring. Emphasis is placed on best practices, data quality, and building scalable, maintainable data integration solutions.

Learning Outcomes

By the end of the course, participants will understand the principles of Business Intelligence and Data Warehousing and be able to plan and manage a data warehouse project. They will design dimensional data models using star and snowflake schemas, apply advanced modeling techniques such as surrogate keys and slowly changing dimensions, and manage historical data using snapshots and logs. Participants will be able to develop, debug, deploy, and monitor ETL processes using SSIS, design full and incremental loading strategies, ensure data integrity and validation, and build end-to-end ETL pipelines that support scalable and reliable BI solutions.

Prerequisites

- Basic knowledge of SQL
- Familiarity with relational databases
- Understanding of basic data concepts (tables, keys, relationships)
- Prior experience with SQL Server is an advantage but not mandatory

Target Audience

- BI Developers
- Data Engineers
- Data Warehouse Developers
- Data Analysts transitioning into BI / DWH roles
- Information Systems and BI Implementers
- Technical professionals working with SQL Server–based data platforms

Course Syllabus

Part 1: Data Warehouse Fundamentals

- Business Intelligence and Data Warehousing
 - Defining Data Warehouse Concepts and Terminology
 - Planning and Managing the Data Warehouse Project
- Designing a Dimensional Model
 - Normalization
 - Star & Snowflake Schemas
- Advanced Data Modelling
 - Surrogate keys
 - Snapshots and Logs
 - Slowly Changing Dimensions

Part 2: Integration Services 2016 (SSIS)

- Introduction to SQL Server 2016 Integration Services
 - Introduction to ETL architecture
 - Introduction to Microsoft SQL Server Integration Services.
 - Connection Manager Levels.
 - Basic Data Flow Task Transformations.
- Control Flow
 - Using Variables & Parameters
 - Control Flow Tasks
 - Control Flow Precedent Constraints
 - Control Flow Containers
- Debugging and Troubleshooting
 - Debugging
 - Logging & Event Handlers
- Deploying and Configuring SSIS Packages
 - Deploying Packages

Part 3: ETL Concepts and Techniques

- Designing the ETL process
- The Staging area
- Full and Incremental Loading Techniques
- Retaining Data Integrity
- QA and Validation
- ETL Administration and Monitoring