LIVE

STUDY MART

Quest Intelligence

Modern Data Engineering Essentials

About the Course:

- Total class: 18 | 36 hours
- Two classes/wk at night
- Practical-based learning
- Course certificate
- Career guidelines
- Fees: 5000 taka/ 45 USD

Microsoft CERTIFIED FABRIC ANALYTICS ENGINEER ASSOCIATE

Microsoft CERTIFIED POWER BI DATA ANALYST ASSOCIATE

Course Instructor:

KH. Asif Anwar

10 years+ Industry Expert
Sr. Software Engineer – Data Engineering at IQVIA
Microsoft Certified: PL-300 & DP-600
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[Watch Course Plan](#) || [LinkedIn of Course Instructor](#)

কোর্সটি আধুনিক data professionals জন্য তৈরি, যেখানে আপনি হাতে-কলমে শিখবেন কীভাবে ডেটা সংগ্রহ, সংরক্ষণ, প্রক্রিয়াকরণ করা হয়। কোর্সে আপনি শিখবেন SQL ও NoSQL ডাটাবেস, Data Warehouse ও ETL/ELT প্রক্রিয়া, এবং Python ও PySpark ব্যবহার করে বাস্তব ডেটা প্রক্রিয়াকরণ। এছাড়াও Microsoft Azure-এ Cloud Database, Data Factory ও Power BI ইন্টিগ্রেশন প্র্যাকটিক্যালভাবে শেখানো হবে।

শেষে আপনি Microsoft Fabric-এর উপর একটি real প্রজেক্ট করবেন, যেখানে সম্পূর্ণ Data Pipeline তৈরি থেকে শুরু করে ডেটা ট্রান্সফরমেশন ও রিপোর্টিং পর্যন্ত সবকিছু নিজের হাতে করবেন। এই কোর্স আপনাকে আধুনিক ডেটা ইঞ্জিনিয়ারিং ইকোসিস্টেমের প্রয়োজনীয় স্কিল দেবে এবং Data Engineer, ETL Developer, Cloud Data Specialist বা BI Engineer হিসেবে ক্যারিয়ার গড়তে সহায়তা করবে।

Class 01: Introduction to Data Engineering (2 Hours)

- What is Data? Importance of data.
- Intro to SQL and NoSQL Databases
- Relational Vs. Non-Relational Databases
- Data Lake
- Data Warehouse
- Data Lakehouse
- What is Microsoft Fabric
- Introduction to Data Engineering
- Importance of Data-Driven Decision Making
- Data Engineering vs. Data Science vs. Data Analysis
- Skills required for Data Engineers
- Daily Role and Responsibilities of a Data Engineer
- Challenges and Opportunities in Data Engineering
- Data Engineering Lifecycle
- Course Plan Discussion**
- Question & Answer Session

Module 01: Mastering SQL & Database (8 Hours)

Introduction to SQL and Relational Database:

- Installation of Database
- Database Management Tools (SQL Server & SQL Server Management Studio/DBeaver).
- Import/Restore AdventureWorks Database

Understanding DDL & DML:

- Working with Data Definition Language (DDL):
    - CREATE, ALTER, TRUNCATE, DROP
- Working with Data Manipulation Language (DML):
    - INSERT, SELECT, UPDATE, DELETE, FILTER OPERATORS

Diving Deep into Advanced SQL:

- JOIN
- AGGREGATE FUNCTION

- GROUP BY, HAVING & ORDER BY
- SET OPERATOR
- SUB QUERY
- CTE
- SINGLE-ROW & WINDOW FUNCTIONS
- Data Type CASTING
- CASE Statement

Test Your Knowledge & Skills: Quiz/Assignment

Database Objects, Programmability & Reusability

- VIEW
- CUSTOM FUNCTION
- STORED PROCEDURE
- TRANSACTION

Performance Optimization, Database Normalization & ACID Properties:

- Understanding INDEX
- Understanding PARTITION
- Understanding Database Normalization
- Understanding ACID Properties

Test Your Knowledge & Skills: Quiz/Assignment

Module 02: Data Warehousing & ETL for Business Intelligence (8 Hours)

DWH in Modern Data World:

- Understanding the Theory of DWH
- Necessity of DWH:
    - Answers to Business Questions
    - Historical Analysis
    - Drive to Decision-Making Capability
- OLTP Vs. OLAP
- Data Lake Vs. Data Warehouse Vs. Data Mart
- Import/Restore AdventureWorks Data Warehouse

Design & Model Your Data Warehouse:

- Layers of DWH:
    - Source Layer
    - Staging Layer
    - Core Warehouse Layer
    - Data Marts/Presentation Layer
- Designing Dimensional Model: Fact and Dimension Tables
- Designing Schema: Star Schema & Snowflake Schema
- Designing SCD Type: Which SCD type fits best for your business

Know Data Governance and Security & DWH Performance Tuning:

- Data Quality and Master Data Management (MDM)
- Data Security Policies and Compliance (GDPR, HIPAA)
- User Access Control
- Query Optimization Strategies

Test Your Knowledge & Skills: Quiz/Assignment

ETL - Moving Your Data and Transforming Your Business:

- History, Importance & Use Case of ETL
- Steps of ETL
- Common Challenges and Transformations
- Popular Enterprise ETL Tools
- SSIS in ETL & Orchestration World - Some Common Activities (Demo)

Test Your Knowledge & Skills: Quiz/Assignment

Module 03: NoSQL - MongoDB (02 hours)

- Introduction to NoSQL Databases
    - Overview of NoSQL databases and their characteristics
    - Comparison between NoSQL and relational databases
- Introduction to MongoDB
    - Overview of MongoDB as a document-oriented NoSQL database
    - Features and advantages of MongoDB
    - Installation and setup of MongoDB

- MongoDB Data Model
    - Understanding the document-oriented data model
    - Collections and documents
- CRUD Operations in MongoDB
    - Basic CRUD operations (Create, Read, Update, Delete) using MongoDB
- Querying and Aggregation
    - Query operators and expressions in MongoDB
    - Aggregation pipeline

Module 04: Level Up Your Data Engineering Skills with Python & PySpark (06 Hours)

Fundamentals of Python:

- Setting up Environment: Jupyter Notebook
- Understanding Data Types
- Control Flow and Looping
- Data Structures: Lists, Tuples, Sets, Dictionaries

Python in Action:

- Data Ingestion and ETL: Working with Excel and CSV Files
- Data Manipulation and Analysis: Pandas & NumPy

PySpark in Action:

- DataFrame: Explore & Transform Data
- Converting File Format: CSV to Parquet
- Visualizing Your Data

Test Your Knowledge & Skills: Quiz/Assignment

Module 05: Azure - Cloud Computing (4 Hours)

- Introduction to Azure
- Azure Resources Management
- Pricing Tiers (DTU vs. vCore)
- Set up an Azure Server
- Azure SQL Database Management

Practical SQL Operations in Azure:

- DDL & DML Operations

- Loading Sample Data (AdventureWorks on Azure)
- Running Queries and Testing Performance

Data Integration & ETL:

- Blob Storage Management
- ETL Pipeline using Azure Data Factory
- Streamline and Manual Data Processing
- Integrating Local SSMS / Azure Data Studio / DBeaver
- Integrating Azure SQL with Power BI

Security & Governance:

- Azure Entra / Active Directory
- Firewall Setup & Access Control
- RBAC (Role-Based Access Control)
- Transparent Data Encryption (TDE)
- Auditing, Backup & Disaster Recovery

Module 06: MS Fabric: Real Life Project in Cloud Environment (4 Hours)

- Overview of Microsoft Fabric
- Different Components of Microsoft Fabric

Creating a Real-Life Project:

- **Data Ingestion:** Using Dataflows Gen2, pipelines, or notebooks to ingest structured and semi-structured data into Lakehouse.
- **Lakehouse Storage Architecture:** Organizing data into bronze, silver, and gold layers following the Medallion architecture.
- **Data Transformation:** Cleaning and enriching data using Spark or Python notebooks, applying business logic, and preparing for modeling.
- **Semantic Modeling:** Creating relationships, measures, and hierarchies to build a semantic layer for Power BI reporting.
- **Visualization:** Building interactive reports and dashboards in Power BI, connected directly to the Lakehouse using Direct Lake mode or SQL Endpoint.
- **Automation & Monitoring:** Scheduling refreshes, setting alerts, and monitoring pipeline health to ensure real-time insights and operational reliability.

Guidelines: Jobs & Microsoft PL-300, DP-600 Certification Exams * (2 hours)**

Final Project Submission for Certificate:

- Details will be discussed at the end of the course.

Note: *To receive the certificate, you must submit all assignments and the final project.*

Contact Details:

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