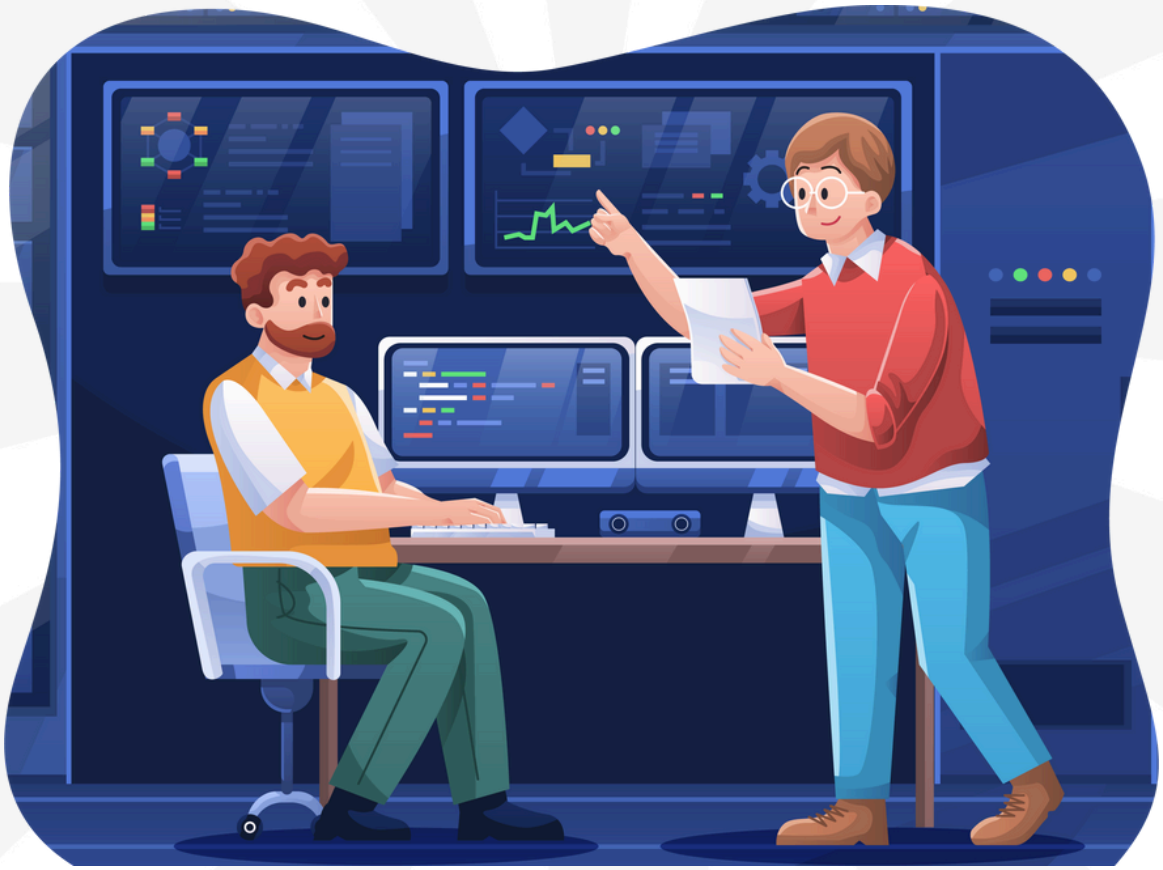
AZURE DATA ENGINEERING

COURSE CURRICULUM



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Azure Data Engineering Course Curriculum

ROAD MAP

What is Data Engineering?

Data Engineers build, maintain, and optimize infrastructure that helps organizations collect and manage large volumes of data. They bridge the gap between raw data and actionable insights.

How to Become a Data Engineer?

Programming Skills: Python, PySpark, Scala, SQL
Database Management: PostgreSQL, MySQL, MongoDB, Cassandra
ETL Tools: Apache NiFi, Apache Airflow
Cloud Platforms: AWS, Azure, GCP
Version Control: Git
Data Warehousing: Data Lake, Synapse Analytics
Big Data Technologies: Hadoop, Spark, Kafka

CAREER PATH

Junior Data Engineer

SQL, basic visualizations (Power BI, Tableau)
Understanding data management and warehousing

Data Engineer

Strong Python, SQL
Develop and maintain ETL pipelines

Senior Data Engineer

Complex architectures
Team mentoring

Data Engineering Manager

Team and project leadership

Solution Architect

End-to-end data infrastructure design

COURSE CONTENT

Week 1: Azure Introduction & Storage

- Azure vs. On-Prem
- IaaS, PaaS, SaaS
- VM & Storage
- Blob, Table, Queue
- Data Lake Gen1 & Gen2
- Tools: AzCopy, CLI, PowerShell

Week 2: Azure SQL & Databases

- Azure SQL Overview
- IaaS vs PaaS
- Elastic Pools
- Managed Instances
- Database Security
- High Availability vs Disaster Recovery
- PolyBase, External Tables
- Distribution Methods (ROUND ROBIN, HASH, REPLICATION)
- Cross-DB Queries

Week 3: Azure Synapse & DWH

- Synapse Architecture
- Data Sharding & Distribution
- Facts, Dimensions, Schemas
- Partitioning
- Data Warehouse Best Practices

Weeks 4–5: Azure Data Factory

- Linked Services, Pipelines
- Integration Runtime
- SSIS Migration & Runtime
- Data Flow Activities
- Debugging & Monitoring
- Logic Apps, Dynamic Parameters
- Alerts & Logging

Week 6: Synapse Analytics Integration

- Synapse Studio Overview
- Pool Creation & Management
- Data Integration & Orchestration
- Visualizations in Power BI
- HTAP with Synapse Link
- Modern DWH Architecture
- Data Storage & File Formats

Week 7: Azure Event Hub, IoT, Stream Analytics

- Stream Analytics Components
- Real-time Streaming
- Event Hub, IoT Hub Integration
- Windowing Functions (Tumbling, Hopping, Sliding, Session)

Weeks 8–9: Azure Databricks

- Spark & Databricks Basics
- Cluster Creation, Mounting Data Lake
- Read/Write in CSV, JSON, Parquet
- DataFrames, Views, Transformations
- Notebook Management
- Delta Lake, Time Machine, Optimization
- Structured Streaming
- Streaming with Event Hubs
- Bronze, Silver, Gold Layers
- Databricks-Synapse-ADF Integration
- Security, Admin, and Cluster Best Practices

Week 10: Azure Delta Lake

- Delta Lake Overview
- Data Lakehouse Architecture
- Reads/Writes, Upserts
- Transaction Log, Time Travel, Vacuum
- Convert Parquet to Delta

Thank you

Thank You for Going Through Azure Data Engineering Curriculum
We hope this guide has provided a clear and structured learning path to strengthen your skills in Azure Data Engineering.

📌 **NEXT STEPS**

- Start practicing with real-world use cases and hands-on exercises
- Build personal or client-based projects for your portfolio
- Keep exploring updates and best practices in the industry
- Join discussions and stay connected with the community

📞 Need Help or Guidance?

Feel free to contact our course support team:

Course Coordinator

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