

AWS Data Engineering-Course Syllabus

Section 1: Introduction to AWS & Data Engineering

- What is Data Engineering?
- Importance of Data Engineering on the Cloud
- Overview of AWS Services
- Setting up AWS Free Tier
- AWS Global Infrastructure

Section 2: AWS Storage & Data Ingestion

- Amazon S3 – Basics, Buckets, Permissions
- Data Ingestion Tools Overview
- AWS DataSync
- AWS Transfer Family (SFTP, FTPS)
- Kinesis Data Streams – Real-time Ingestion

Section 3: AWS Databases for Data Engineering

- Amazon RDS – PostgreSQL, MySQL
- Amazon DynamoDB – NoSQL Basics
- Amazon Redshift – Data Warehousing
- Aurora – High-performance DB
- Best Practices for Data Modeling

Section 4: Data Transformation with AWS Glue

- Introduction to AWS Glue
- Glue Crawlers & Data Catalog
- ETL Jobs with PySpark
- Glue Studio (Visual ETL)

Section 5: Data Pipeline Orchestration

- AWS Glue Workflows
- AWS Step Functions
- Apache Airflow on AWS MWAA (Managed Workflows)
- Event Bridge for Scheduling
- Integrating Lambda for Task Automation

Section 6: Real-time Data Processing

- Kinesis Data Firehose
- Kinesis Data Analytics (SQL & Flink)
- Lambda for Stream Processing
- Integration with S3 and Redshift
- Use Case: IoT Data Pipeline

Section 7: Data Lake Architecture

- What is a Data Lake?
- Building a Data Lake with S3 + Glue
- Lake Formation – Permissions & Security
- Querying with Athena
- Data Catalog Best Practices

Section 8: Data Warehousing with Redshift

- Redshift Clusters & Architecture
- Copying Data from S3 to Redshift
- Redshift Spectrum for Querying S3
- Performance Tuning & Optimization
- Security & Access Control

Section 9: Monitoring, Logging & Security

- CloudWatch – Logs, Metrics, Alarms
- AWS CloudTrail for Audit Logs
- IAM Roles & Policies for Data Engineers
- KMS – Encryption Best Practices
- VPC, Subnets, and Data Security

Section 10: Final Project & Interview Preparation

- Capstone Project: Build End-to-End Pipeline
- AWS Certification Guide (Specialty & Associate)
- Mock Interviews & Scenario-based Q&A
- Common Interview Questions for AWS Data Engineers