

BigQuery Course Syllabus

Section 1: Introduction to Google BigQuery

- What is BigQuery?
- Importance of BigQuery
- BigQuery architecture
- BigQuery Components
- Setting up BigQuery
- Cost Optimization

Section 2: Working with data sets and table schema

- Creating Data sets
- Creating Tables
- SQL command to load data
- Managing Tables
- Partitioning Tables
- Clustering Tables
- Working with Views

Section 3: Data Loading and Exporting

- Loading Data from CSV Files
- Loading Data from JSON Files
- Loading Data from Avro Files
- Google Cloud Storage to Load Data into BigQuery
- Exporting Data to Google Cloud Storage
- SQL Command to Export Data to Cloud Storage

Section 4: Querying Data in BigQuery

- Write SQL queries in BigQuery
- Filtering
- Sorting

- grouping data
- Aggregation functions - COUNT, AVG, SUM
- Understanding subqueries

Section 5: Advanced SQL concepts in BigQuery

- Window functions
- Understanding Nested queries
- Common Table Expressions
- Working with Array
- STRUCT data types
- BigQuery standard SQL syntax
- Legacy SQL syntax

Section 6: Data Analysis and Visualization with BigQuery

- Statistical Analysis
- Advanced Statistical Functions
- Understanding Hypothesis Testing
- What is Google Data Studio?
- Connecting BigQuery to BI Tools

Section 7: Learn BigQuery Storage Options

- Native BigQuery Storage
- External BigQuery Storage
- Google Cloud Storage (GCS)
- Bigtable and Cloud SQL
- Hybrid Storage Concepts

Section 8: Data Security and Access Control in BigQuery

- Data Encryption
- Identity and Access Management (IAM)
- Access Control Lists (ACLs)
- Table-Level Permissions

Section 9: Performance Optimization in BigQuery

- Use Partitioning
- Clustering
- Optimize Data Types
- Query Execution
- Query Caching

Section 10: BigQuery Machine Learning

- What is BigQueryML?
- Machine Learning models
- BigQuery ML functions
- Versioning

Section 11: BigQuery Data Transfer Service - BDTS

- Understanding BigQuery Data Transfer Service
- Key features of BDTS
- Use Cases for BigQuery Data Transfer Service

Section 12: BigQuery for Data Warehousing

- What is Data Warehousing?
- Why Use BigQuery in Data Warehousing?
- Using BigQuery for ETL (Extract, Transform, Load) processes
- Use Cases of BigQuery in Data Warehousing
- Integrating BigQuery with GCP tools

Section 13: BigQuery Automation and Scheduling

- Cloud Scheduler
- Automating data pipelines
- Overview of ETL automation

Section 14: Troubleshooting and Debugging in BigQuery

- Query execution plans
- Monitoring BigQuery jobs
- Handling Resource Limit Errors
- Query Stalls or Hanging Queries
- Export Issues check

