

From Data to Insights with Google Cloud Platform

Module 1: Introduction to Data on the Google Cloud Platform

- Highlight Analytics Challenges Faced by Data Analysts.
- Compare Big Data On-Premise vs on the Cloud.
- Learn from Real-World Use Cases of Companies Transformed through Analytics on the Cloud.
- Navigate Google Cloud Platform Project Basics.
- Lab: Getting started with Google Cloud Platform.

Module 2: Big Data Tools Overview

- Walkthrough Data Analyst Tasks, Challenges, and Introduce Google Cloud Platform Data Tools.
- Demo: Analyze 10 Billion Records with Google BigQuery.
- Explore 9 Fundamental Google BigQuery Features.
- Compare GCP Tools for Analysts, Data Scientists, and Data Engineers.
- Lab: Exploring Datasets with Google BigQuery.

Module 3: Exploring your Data with SQL

- Compare Common Data Exploration Techniques.
- Learn How to Code High Quality Standard SQL.
- Explore Google BigQuery Public Datasets.
- Visualization Preview: Google Data Studio.
- Lab: Troubleshoot Common SQL Errors.

Module 4: Google BigQuery Pricing

- Walkthrough of a BigQuery Job.
- Calculate BigQuery Pricing: Storage, Querying, and Streaming Costs.
- Optimize Queries for Cost.
- Lab: Calculate Google BigQuery Pricing.

Module 5: Cleaning and Transforming your Data

- Examine the 5 Principles of Dataset Integrity.
- Characterize Dataset Shape and Skew.
- Clean and Transform Data using SQL.
- Clean and Transform Data using a new UI: Introducing Cloud Dataprep.
- Lab: Explore and Shape Data with Cloud Dataprep.

Module 6: Storing and Exporting Data

- Compare Permanent vs Temporary Tables.
- Save and Export Query Results.
- Performance Preview: Query Cache.
- Lab: Creating new Permanent Tables.

Module 7: Ingesting New Datasets into Google BigQuery

- Query from External Data Sources.
- Avoid Data Ingesting Pitfalls.
- Ingest New Data into Permanent Tables.
- Discuss Streaming Inserts.
- Lab: Ingesting and Querying New Datasets.

Module 8: Data Visualization

- Overview of Data Visualization Principles.
- Exploratory vs Explanatory Analysis Approaches.
- Demo: Google Data Studio UI.
- Connect Google Data Studio to Google BigQuery.
- Lab: Exploring a Dataset in Google Data Studio.

Module 9: Joining and Merging Datasets

- Merge Historical Data Tables with UNION.
- Introduce Table Wildcards for Easy Merges.
- Review Data Schemas: Linking Data Across Multiple Tables.
- Walkthrough JOIN Examples and Pitfalls.
- Lab: Join and Union Data from Multiple Tables.

Module 10: Advanced Functions and Clauses

- Review SQL Case Statements.
- Introduce Analytical Window Functions.
- Safeguard Data with One-Way Field Encryption.
- Discuss Effective Sub-query and CTE design.
- Compare SQL and Javascript UDFs.
- Lab: Deriving Insights with Advanced SQL Functions.

Module 11: Schema Design and Nested Data Structures

- Compare Google BigQuery vs Traditional RDBMS Data Architecture.
- Normalization vs Denormalization: Performance Tradeoffs.
- Schema Review: The Good, The Bad, and The Ugly.
- Arrays and Nested Data in Google BigQuery.
- Lab: Querying Nested and Repeated Data.

Module 12: More Visualization with Google Data Studio Create Case Statements and Calculated Fields.

- Avoid Performance Pitfalls with Cache considerations.
- Share Dashboards and Discuss Data Access considerations.

Module 13: Optimizing for Performance

- Avoid Google BigQuery Performance Pitfalls.
- Prevent Hotspots in your Data.
- Diagnose Performance Issues with the Query Explanation map.
- Lab: Optimizing and Troubleshooting Query Performance.

Module 14: Data Access

- Compare IAM and BigQuery Dataset Roles.
- Avoid Access Pitfalls.
- Review Members, Roles, Organizations, Account Administration, and Service Accounts.

Module 15: Notebooks in the Cloud

- Cloud Datalab.
- Compute Engine and Cloud Storage.
- Lab: Rent-a-VM to process earthquakes data.
- Data Analysis with BigQuery.

Module 16: How Google does Machine Learning

- Introduction to Machine Learning for analysts.
- Practice with Pretrained ML APIs for image and text understanding.
- Lab: Pretrained ML APIs.

Module 17: Applying Machine Learning to your Datasets (BQML)

- Building Machine Learning datasets and analyzing features.
- Creating classification and forecasting models with BQML.
- Lab: Predict Visitor Purchases with a Classification Model in BQML.
- Lab: Predict Taxi Fare with a BigQuery ML Forecasting Model.