

# From Data to Insights with Google Cloud

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<b>Code:</b>	GCP-DI
<b>Length:</b>	3 days
<b>URL:</b>	<a href="#">View Online</a>

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Want to know how to query and process petabytes of data in seconds? Curious about data analysis that scales automatically as your data grows? Welcome to the Data Insights course!

This two-day instructor-led class teaches course participants how to derive insights through data analysis and visualization using the Google Cloud. The course features interactive scenarios and hands-on labs where participants explore, mine, load, visualize, and extract insights from diverse Google BigQuery datasets. The course covers data loading, querying, schema modeling, optimizing performance, query pricing, data visualization, and machine learning.

## Skills Gained

This course teaches participants the following skills:

- Derive insights from data using the analysis and visualization tools on Google Cloud
- Load, clean, and transform data at scale with Google Cloud Dataprep
- Explore and Visualize data using Google Data Studio
- Troubleshoot, optimize, and write high performance queries
- Practice with pre-built ML APIs for image and text understanding
- Train classification and forecasting ML models using SQL with BQML

## Who Can Benefit

This class is intended for the following:

- Data Analysts, Business Analysts, Business Intelligence professionals
- Cloud Data Engineers who will be partnering with Data Analysts to build scalable data solutions on Google Cloud

## Prerequisites

To get the most out of this course, participants should have:

- Basic proficiency with ANSI SQL

## Course Details

The course includes presentations, demonstrations, and hands-on labs.

## Course Outline

### 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
- Walk through 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

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