

Google Cloud Fundamentals for Researchers

In this course you will learn how to use various tools in Google Cloud to ingest, manage and leverage your data to derive insights in your research. You will be introduced to tools used on Google Cloud by researchers, then you will learn how to ingest your unstructured and structured data into Cloud Storage and BigQuery respectively. Next, you will learn how to curate your data and understand costs in Google Cloud. Finally you will learn how to leverage notebook environments and other Google Cloud tools for descriptive and predictive analysis.

**DURATION**

1 day

**LEVEL**

100 - Introductory

**FORMAT**

Instructor-led

What you'll learn

- Configure and deploy High-Performance Computing (HPC) clusters on Google Cloud to support research workloads.

Overview	6 modules · 5 labs
Who this course is for	• Customers
Products	• Data Studio • BigQuery Studio • Gemini Enterprise Agent Platform Workbench • Storage Insights • Advanced Compute Images • Gemini Enterprise Agent Platform Model Garden • Compute Engine • Cloud Storage • BigQuery • Agent Platform Workbench • Agent Platform AutoML
Prerequisites	• Basic knowledge of data types and SQL • Basic programming knowledge • Machine learning models such as supervised versus unsupervised models

Module 01

Google Cloud Demos for Researchers

Topics	• Demo: Provision Compute Engine virtual machines • Demo: Query a billion rows of data in seconds using BigQuery • Demo: Train a custom vision model using AutoML Vision
Objectives	• Explore research use cases in Google Cloud through interactive demos.

Module 02

Google Cloud Project Concepts

Topics	• Organizing resources in Google Cloud • Controlling Access to projects and resources • Cost and billing management
Objectives	• Understand how resources in Google Cloud are managed across organizations, folders and projects. • Control access to projects and resources using IAM • Explore billing in Google Cloud

Module 03

Computing and Storage in Google Cloud

Topics	• Interacting with Google Cloud • Create and Manage Cloud Storage Buckets • Compute Engine virtual machines • Understanding computing costs • Introduction to HPC on Google Cloud
Objectives	• Understand the methods of interacting with Google Cloud • Store your data in Cloud Storage buckets • Provision Compute Engine virtual machines • Understand computing costs on Google Cloud • Explore how you can create HPC clusters on Google Cloud
Activities	• Optional Lab: Deploy an HPC Cluster with Slurm

Module 04

BigQuery

Topics

- BigQuery fundamentals
- Querying public datasets
- Importing and exporting data in BigQuery
- Connecting to Looker Studio

Objectives

- Understand the fundamentals of BigQuery
 - Query public datasets in BigQuery Studio
 - Manage datasets in BigQuery
 - Connect data in BigQuery to Looker Studio
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Module 05

Notebooks on Agent Platform

Topics

- Agent Platform
- Agent Platform Workbench
- Connecting Jupyter notebooks to BigQuery

Objectives

- Explore Agent Platform as a machine learning platform
 - Provision Jupyter notebooks using Agent Platform Workbench
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Module 06

Machine Learning on Google Cloud

Topics

- ML Options on Google Cloud
- Prebuilt ML APIs
- Agent Platform AutoML
- BigQuery ML

Objectives

- Explore machine learning options on Google Cloud
- Understand unstructured data using prebuilt ML APIs
- Create no-code custom ML models using Agent Platform AutoML
- Create custom ML models using SQL on BigQuery ML

Activities

- Optional Lab: Extract, Analyze, and Translate Text from Images with the Cloud ML APIs
- Optional Lab: Identify Damaged Car Parts with Agent Platform AutoML Vision
- Optional Lab: Getting Started with BigQuery Machine Learning