

# Google Africa Developer Scholarship Phase II

## Google Cloud Practice Project

**Timeline: Friday, Aug 28 - Friday, Sept 11 2020 (2 weeks)**

### Description

During Learning Phase 2 participants in the Cloud track of the GADS 2020 program shall be encouraged to explore the possibilities and opportunities to work with the gcloud SDK more in detail.

Due to limitations in regards to accessing free Google Cloud Platform (GCP), the Google Cloud challenge is based on the available **hands-on labs on Qwiklabs** provided by Pluralsight. Learners in the Cloud track have free access to a selection of fundamental labs on GCP.

### The playground

All Google Cloud learners have access to multiple learning channels on Pluralsight. Each channel provides access to several video courses, and you have access to various labs through Qwiklabs.

The total of hands-on labs is 168 labs (as of writing). All links are provided below as an [annex](#).

### The challenge(s)

The Cloud challenge is divided in two parts:

1. Complete of 10-15 selected hands-on labs on Qwiklabs and submitting proof of such per screenshot based on the email received.
2. "Translation" of 2-3 selected labs from Console instructions to 100% command line instructions.

### Submission

- The result of both challenges shall be documented in a **Github repository**
  - ◆ How to get started with Github is an available course to learners via the Associate Cloud Engineer Foundational Deep Dive Channel (2020)
- Submit the documented github repo to the GADS Team here - [bit.ly/GADSPacticeProjectSubmission](https://bit.ly/GADSPacticeProjectSubmission)

## The learning aspects

Professional cloud engineers use a lot of automation and therefore scripting of solutions instead of clicking around in the UI of the web administration. Also using git and version control to store and monitor those scripts is a common use case.

Learners are gently guided towards this professional handling using both approaches. The translation of Cloud Console instructions to easy to use commands in the Cloud Shell helps to foster the understanding and knowledge of cloud computing in GCP.

Selection of labs shall be based on the curriculum and official study guide of the ACE exam as described by Google on their certification website.

Furthermore Qwiklabs hosts Speedrun competitions regularly and promotes them on Twitter and Medium. Without knowledge and use of CLI tools participants cannot compete in those Speedruns.

## Engagement of learners

Cloud learners are requested to complete the requested tasks and then finally submit their public repository on Github via Google Forms back to us. Well, the repository could be sent back to us first. ;-)

All three tasks are deemed to engage learners in the available Slack channels. Whether it's the general #cloud channel or their associated PLG channel. This shall lead to a vital exchange of knowledge and tips on how to handle instructions as written commands in the Cloud Shell.

## Available labs - Qwiklabs

### Associate Cloud Engineer: Learning Phase 1 Main Track Channel (2020)

#### **Course: Google Cloud Platform Fundamentals - Core Infrastructure**

##### **Module: Getting Started with Google Cloud Platform**

GCP Fundamentals: Getting Started with Cloud Marketplace -

[https://googlepluralsight.qwiklabs.com/focuses/10168771?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168771?parent=lti_session)

GCP Fundamentals: Getting Started with Compute Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10168816?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168816?parent=lti_session)

##### **Module: Storage in the Cloud**

GCP Fundamentals: Getting Started with Cloud Storage and Cloud SQL -

[https://googlepluralsight.qwiklabs.com/focuses/10168831?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168831?parent=lti_session)

##### **Module: Containers in the Cloud**

GCP Fundamentals: Getting Started with Kubernetes Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10168861?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168861?parent=lti_session)

##### **Module: Applications in the Cloud**

GCP Fundamentals: Getting Started with App Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10168901?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168901?parent=lti_session)

##### **Module: Developing, Deploying and Monitoring in the Cloud**

GCP Fundamentals: Getting Started with Deployment Manager and Stackdriver -

[https://googlepluralsight.qwiklabs.com/focuses/10168918?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168918?parent=lti_session)

##### **Module: Big Data and Machine Learning in the Cloud**

GCP Fundamentals: Getting Started with BigQuery -

[https://googlepluralsight.qwiklabs.com/focuses/10168937?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168937?parent=lti_session)

#### **Course: Essential Google Cloud Infrastructure: Foundation**

##### **Module: Introduction to Google Cloud**

Console and Cloud Shell -

[https://googlepluralsight.qwiklabs.com/focuses/10168999?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10168999?parent=lti_session)

Infrastructure Preview

[https://googlepluralsight.qwiklabs.com/focuses/10169005?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169005?parent=lti_session)

**Module:** Virtual Networks

VPC Networking

[https://googlepluralsight.qwiklabs.com/focuses/10169026?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169026?parent=lti_session)

Implement Private Google Access and Cloud NAT

[https://googlepluralsight.qwiklabs.com/focuses/10169034?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169034?parent=lti_session)

**Module:** Virtual Machines

Creating Virtual Machines

[https://googlepluralsight.qwiklabs.com/focuses/10169049?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169049?parent=lti_session)

Working with Virtual Machines

[https://googlepluralsight.qwiklabs.com/focuses/10169057?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169057?parent=lti_session)

**Course: Essential Google Cloud Infrastructure: Core Services**

**Module:** Cloud IAM

Cloud IAM -

[https://googlepluralsight.qwiklabs.com/focuses/10169099?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169099?parent=lti_session)

Storage and Database Services -

[https://googlepluralsight.qwiklabs.com/focuses/10169111?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169111?parent=lti_session)

Implementing Cloud SQL -

[https://googlepluralsight.qwiklabs.com/focuses/10169118?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169118?parent=lti_session)

**Module:** Resource Management

Examining Billing data with BigQuery -

[https://googlepluralsight.qwiklabs.com/focuses/10169165?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169165?parent=lti_session)

**Module:** Resource Monitoring

Resource Monitoring -

[https://googlepluralsight.qwiklabs.com/focuses/10169174?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169174?parent=lti_session)

Error Reporting and Debugging -

[https://googlepluralsight.qwiklabs.com/focuses/10169187?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169187?parent=lti_session)

## **Course: Elastic Google Cloud Infrastructure: Scaling and Automation**

**Module:** Interconnecting Networks

Virtual Private Networks (VPN) -

[https://googlepluralsight.qwiklabs.com/focuses/10169210?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169210?parent=lti_session)

**Module:** Load Balancing and Autoscaling

Configuring an HTTP Load Balancer with Autoscaling -

[https://googlepluralsight.qwiklabs.com/focuses/10169237?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169237?parent=lti_session)

Configuring an Internal Load Balancer -

[https://googlepluralsight.qwiklabs.com/focuses/10169243?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169243?parent=lti_session)

**Module:** Infrastructure Automation

Automating the Deployment of Infrastructure Using Deployment Manager -

[https://googlepluralsight.qwiklabs.com/focuses/10169259?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169259?parent=lti_session)

Automating the Deployment of Infrastructure Using Terraform -

[https://googlepluralsight.qwiklabs.com/focuses/10169267?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169267?parent=lti_session)

## **Course: Google Cloud Platform Fundamentals - Core Infrastructure**

**Module:** Getting Started with Google Cloud Platform

GCP Fundamentals: Getting Started with Cloud Marketplace -

[https://googlepluralsight.qwiklabs.com/focuses/10169395?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169395?parent=lti_session)

**Module:** Virtual Machines in the Cloud

GCP Fundamentals: Getting Started with Compute Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10169417?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169417?parent=lti_session)

**Module:** Storage in the Cloud

GCP Fundamentals: Getting Started with Cloud Storage and Cloud SQL -

[https://googlepluralsight.qwiklabs.com/focuses/10169431?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169431?parent=lti_session)

**Module:** Containers in the Cloud

GCP Fundamentals: Getting Started with Kubernetes Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10169442?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169442?parent=lti_session)

**Module:** Applications in the Cloud

GCP Fundamentals: Getting Started with App Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10169457?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169457?parent=lti_session)

**Module:** Developing, Deploying and Monitoring in the Cloud

GCP Fundamentals: Getting Started with Deployment Manager and Stackdriver -

[https://googlepluralsight.qwiklabs.com/focuses/10169478?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169478?parent=lti_session)

**Module:** Big Data and Machine Learning in the Cloud

GCP Fundamentals: Getting Started with BigQuery -

[https://googlepluralsight.qwiklabs.com/focuses/10169493?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169493?parent=lti_session)

## **Course: Architecting with Google Kubernetes Engine - Foundations**

**Module:** Introduction to Google Cloud Platform

AK8S-01 Accessing the GCP Console and Cloud Shell -

[https://googlepluralsight.qwiklabs.com/focuses/10169527?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169527?parent=lti_session)

**Module:** Containers and Kubernetes in GCP

AK8S-02 Working with Cloud Build -

[https://googlepluralsight.qwiklabs.com/focuses/10169540?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169540?parent=lti_session)

**Module:** Kubernetes Architecture

AK8S-03 Creating a GKE Cluster via GCP Console -

[https://googlepluralsight.qwiklabs.com/focuses/10169586?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169586?parent=lti_session)

## **Course: Architecting with Google Kubernetes Engine - Workloads**

**Module:** Kubernetes Operations

AK8S-04 Creating a GKE Cluster via Cloud Shell -

[https://googlepluralsight.qwiklabs.com/focuses/10169609?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169609?parent=lti_session)

AK8S-05 Upgrading Kubernetes Engine Clusters -

[https://googlepluralsight.qwiklabs.com/focuses/10169615?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169615?parent=lti_session)

**Module:** Deployments, Jobs, and Scaling

AK8S-06 Creating Kubernetes Engine Deployments -

[https://googlepluralsight.qwiklabs.com/focuses/10169627?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169627?parent=lti_session)

AK8S-07 Deploying Jobs on Kubernetes Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10169638?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169638?parent=lti_session)

AK8S-11 Configuring Pod Autoscaling and NodePools -

[https://googlepluralsight.qwiklabs.com/focuses/10169647?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169647?parent=lti_session)

AK8S-08 Deploying Kubernetes Engine via Helm Charts -

[https://googlepluralsight.qwiklabs.com/focuses/10169656?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169656?parent=lti_session)

**Module:** Google Kubernetes Engine Networking

AK8S-10 Creating Services and Ingress Resources -

[https://googlepluralsight.qwiklabs.com/focuses/10169670?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169670?parent=lti_session)

**Module:** Persistent Data and Storage

AK8S-12 Configuring Persistent Storage for Kubernetes Engine -

[https://googlepluralsight.qwiklabs.com/focuses/10169684?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169684?parent=lti_session)

AK8S-13 Working with Kubernetes Engine Secrets and ConfigMaps -

[https://googlepluralsight.qwiklabs.com/focuses/10169691?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169691?parent=lti_session)

**Course: Architecting with Google Kubernetes Engine - Production**

**Module:** Access Control and Security in Kubernetes and GKE

AK8S-14 Securing Kubernetes Engine with Cloud IAM and Pod Security Policies

[https://googlepluralsight.qwiklabs.com/focuses/10169723?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169723?parent=lti_session)

AK8S-15 Implementing Role-Based Access Control With Kubernetes Engine

[https://googlepluralsight.qwiklabs.com/focuses/10169727?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169727?parent=lti_session)

**Module:** GKE Logging and Monitoring

Configuring Kubernetes Engine native Stackdriver Monitoring and Logging

[https://googlepluralsight.qwiklabs.com/focuses/10169743?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169743?parent=lti_session)

Configuring Liveness and Readiness Probes

[https://googlepluralsight.qwiklabs.com/focuses/10169748?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169748?parent=lti_session)

**Module:** Using GCP Managed Storage Services with GKE

AK8S-18 Using Cloud SQL with Kubernetes Engine

[https://googlepluralsight.qwiklabs.com/focuses/10169787?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10169787?parent=lti_session)

### **Course: Hybrid Cloud Infrastructure Foundations with Anthos**

**Module:** Introduction to Service Mesh

AHYBRID030 Installing the Istio on GKE Add-On with Kubernetes Engine

[https://googlepluralsight.qwiklabs.com/focuses/10167414?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10167414?parent=lti_session)

OR

AHYBRID035 Installing Anthos Service Mesh on Google Kubernetes Engine

[https://googlepluralsight.qwiklabs.com/focuses/10167451?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10167451?parent=lti_session)

**Module:** Managing Hybrid Clusters using Kubernetes Engine

AHYBRID020 Managing Hybrid Clusters using Kubernetes Engine

[https://googlepluralsight.qwiklabs.com/focuses/10167555?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10167555?parent=lti_session)

### **Course: Hybrid Cloud Service Mesh with Anthos**

**Module:** Observing Services using Service Mesh Adapters

AHYBRID040 Observing Services using Prometheus, Grafana, Jaeger, and Kiali

**link has issues check again later**

**Module:** Managing Traffic Routing with Service Mesh

AHYBRID050 Traffic Management with Anthos Service Mesh

[https://googlepluralsight.qwiklabs.com/focuses/10208039?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10208039?parent=lti_session)

**Module:** Managing Policies and Security with Service Mesh

AHYBRID060 Managing Policies and Security with Istio and Citadel

[https://googlepluralsight.qwiklabs.com/focuses/10210574?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210574?parent=lti_session)



## Associate Cloud Engineer: Learning Phase 1 Deep Dive Channel (2020)

### **Course: Google Cloud Fundamentals for Azure Professionals**

**Module:** Getting Started with Google Cloud

GCP Fundamentals: Getting Started with Cloud Marketplace - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210644?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210644?parent=lti_session)

**Module:** Virtual Machines in the Cloud

GCP Fundamentals: Getting Started with Compute Engine - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210667?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210667?parent=lti_session)

**Module:** Storage in the Cloud

GCP Fundamentals: Getting Started with Cloud Storage and Cloud SQL - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210682?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210682?parent=lti_session)

**Module:** Containers in the Cloud

GCP Fundamentals: Getting Started with Kubernetes Engine - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210696?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210696?parent=lti_session)

**Module:** Developing Deploying and Monitoring in the Cloud

GCP Fundamentals: Getting Started with Deployment Manager and Stackdriver - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210708?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210708?parent=lti_session)

**Module:** Big Data and Machine Learning in the Cloud

GCP Fundamentals: Getting Started with BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10211123?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10211123?parent=lti_session)

### **Course: Google Cloud Fundamentals for AWS Professionals**

**Module:** Getting Started with Google Cloud

GCP Fundamentals: Getting Started with Cloud Marketplace - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210644?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210644?parent=lti_session)

**Module:** Virtual Machines in the Cloud

GCP Fundamentals: Getting Started with Compute Engine - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210667?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210667?parent=lti_session)

**Module:** Storage in the Cloud

GCP Fundamentals: Getting Started with Cloud Storage and Cloud SQL - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210682?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210682?parent=lti_session)

**Module:** Containers in the Cloud

GCP Fundamentals: Getting Started with Kubernetes Engine - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210696?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210696?parent=lti_session)

**Module:** Developing Deploying and Monitoring in the Cloud

GCP Fundamentals: Getting Started with Deployment Manager and Stackdriver - Windows

[https://googlepluralsight.qwiklabs.com/focuses/10210708?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10210708?parent=lti_session)

**Module:** Big Data and Machine Learning in the Cloud

GCP Fundamentals: Getting Started with BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10211123?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10211123?parent=lti_session)

## **Associate Cloud Engineer - Learning Phase 2 Main Track Channel (2020)**

**Course: Google Cloud Platform Fundamentals - Core Infrastructure**

**Module:** Getting Started with Google Cloud Platform

GCP Fundamentals: Getting Started with Cloud Marketplace

[https://googlepluralsight.qwiklabs.com/focuses/10213528?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10213528?parent=lti_session)

**Module:** Virtual Machines in the Cloud

GCP Fundamentals: Getting Started with Compute Engine

Module: GCP Fundamentals: Getting Started with Cloud Storage and Cloud SQL

[https://googlepluralsight.qwiklabs.com/focuses/10213711?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10213711?parent=lti_session)

**Module:** Containers in the Cloud

GCP Fundamentals: Getting Started with Kubernetes Engine

[https://googlepluralsight.qwiklabs.com/focuses/10213746?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10213746?parent=lti_session)

**Module:** Applications in the Cloud

GCP Fundamentals: Getting Started with App Engine

[https://googlepluralsight.qwiklabs.com/focuses/10213761?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10213761?parent=lti_session)

**Module:** Developing, Deploying and Monitoring in the Cloud

GCP Fundamentals: Getting Started with Deployment Manager and Stackdriver

[https://googlepluralsight.qwiklabs.com/focuses/10213776?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10213776?parent=lti_session)

**Module:** Big Data and Machine Learning in the Cloud

GCP Fundamentals: Getting Started with BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10213821?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10213821?parent=lti_session)

**Course: Getting Started With Application Development on Google Cloud**

**Module:** Google Cloud Client Libraries, Google Cloud SDK, and Google Firebase SDK

[https://googlepluralsight.qwiklabs.com/focuses/10217231?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217231?parent=lti_session)

**Module:** Best Practices for Using Cloud Datastore

App Dev: Storing Application Data in Cloud Datastore v1.1

[https://googlepluralsight.qwiklabs.com/focuses/10217243?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217243?parent=lti_session)

**Module:** Best Practices for Using Cloud Storage

App Dev: Storing Image and Video Files in Cloud Storage v1.1

[https://googlepluralsight.qwiklabs.com/focuses/10217254?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217254?parent=lti_session)

**Course: Google Cloud Platform Big Data and Machine Learning Fundamentals**

**Module:** Introduction to Google Cloud Platform

[https://googlepluralsight.qwiklabs.com/focuses/10217293?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217293?parent=lti_session)

**Module:** Recommending Products using Cloud SQL and Spark

Lab: Recommend Products using ML with Cloud SQL and Dataproc

[https://googlepluralsight.qwiklabs.com/focuses/10217304?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217304?parent=lti_session)

**Module:** Predict Visitor Purchases Using BigQuery ML

Lab: Predict Visitor Purchases with a Classification Model with BigQuery ML

[https://googlepluralsight.qwiklabs.com/focuses/10217317?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217317?parent=lti_session)

**Module:** Create Streaming Data Pipelines with Cloud Pub/sub and Cloud Dataflow

Lab: Create a Streaming Data Pipeline for a Real-Time Dashboard with Cloud Dataflow

[https://googlepluralsight.qwiklabs.com/focuses/10217325?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217325?parent=lti_session)

**Module:** Classify Images with Pre-Built Models using Vision API and Cloud AutoML

Lab: Classify Images with Pre-built ML Models using Cloud Vision API and AutoML

[https://googlepluralsight.qwiklabs.com/focuses/10217346?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217346?parent=lti_session)

## **Associate Cloud Engineer - Learning Phase 2 Deep Dive Channel (2020)**

**Course:** API Design and Fundamentals of Google Cloud's Apigee API Platform

Upgrade Plan to View Modules

**Course:** Getting Started With Application Development on Google Cloud

**Module:** Google Cloud Client Libraries, Google Cloud SDK, and Google Firebase SDK

App Dev: Setting up a Development Environment v1.1

[https://googlepluralsight.qwiklabs.com/focuses/10217535?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217535?parent=lti_session)

**Module:** Best Practices for Using Cloud Datastore

App Dev: Storing Application Data in Cloud Datastore v1.1

[https://googlepluralsight.qwiklabs.com/focuses/10217550?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217550?parent=lti_session)

**Module:** Best Practices for Using Cloud Storage

App Dev: Storing Image and Video Files in Cloud Storage v1.1

[https://googlepluralsight.qwiklabs.com/focuses/10217562?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217562?parent=lti_session)

**Course: Securing and Integrating Components of your Application on Google Cloud**

**Module:** Handling Authentication and Authorization

App Dev - Adding User Authentication to your Application: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217628?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217628?parent=lti_session)

App Dev - Adding User Authentication to your Application: Java

[https://googlepluralsight.qwiklabs.com/focuses/10217632?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217632?parent=lti_session)

App Dev - Adding User Authentication to your Application: Python

[https://googlepluralsight.qwiklabs.com/focuses/10217638?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217638?parent=lti_session)

**Module:** Using Cloud Pub/Sub

App Dev - Developing a Backend Service: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217651?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217651?parent=lti_session)

App Dev - Developing a Backend Service: Java

[https://googlepluralsight.qwiklabs.com/focuses/10217660?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217660?parent=lti_session)

App Dev - Developing a Backend Service: Python

[https://googlepluralsight.qwiklabs.com/focuses/10217666?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217666?parent=lti_session)

**Module:** Using Cloud Functions

App Dev - Processing Cloud Pub/Sub Data using Cloud Functions: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217691?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217691?parent=lti_session)

**Module:** Using Cloud Endpoints

App Dev - Deploying an API for the Quiz Application: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217708?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217708?parent=lti_session)

Course: App Deployment, Debugging, and Performance on Google Cloud

**Module:** Deploying Applications

App Dev - Deploying the Application into Kubernetes Engine: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217727?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217727?parent=lti_session)

App Dev - Deploying the Application into Kubernetes Engine: Java

[https://googlepluralsight.qwiklabs.com/focuses/10217737?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217737?parent=lti_session)

App Dev - Deploying the Application into Kubernetes Engine: Python

[https://googlepluralsight.qwiklabs.com/focuses/10217745?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217745?parent=lti_session)

**Module:** Execution Environments for your Application

App Dev - Deploying the Application into App Engine Flexible Environment: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217755?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217755?parent=lti_session)

App Dev - Deploying the Application into App Engine Flexible Environment: Java

[https://googlepluralsight.qwiklabs.com/focuses/10217760?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217760?parent=lti_session)

App Dev - Deploying the Application into App Engine Flexible Environment: Python

[https://googlepluralsight.qwiklabs.com/focuses/10217766?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217766?parent=lti_session)

**Module:** Debugging, Monitoring, and Tuning Performance

App Dev - Debugging Application Errors: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217775?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217775?parent=lti_session)

App Dev - Harnessing Stackdriver Trace and Monitoring: Node.js

[https://googlepluralsight.qwiklabs.com/focuses/10217785?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217785?parent=lti_session)

**Course: Google Cloud Platform Big Data and Machine Learning Fundamentals**

**Module:** Introduction to Google Cloud Platform

Lab: Explore a BigQuery Public Dataset

[https://googlepluralsight.qwiklabs.com/focuses/10217886?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217886?parent=lti_session)

**Module:** Recommending Products using Cloud SQL and Spark

Lab: Recommend Products using ML with Cloud SQL and Dataproc

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**Module:** Predict Visitor Purchases Using BigQuery ML

Lab: Predict Visitor Purchases with a Classification Model with BigQuery ML

[https://googlepluralsight.qwiklabs.com/focuses/10217917?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217917?parent=lti_session)

**Module:** Create Streaming Data Pipelines with Cloud Pub/sub and Cloud Dataflow

Lab: Create a Streaming Data Pipeline for a Real-Time Dashboard with Cloud Dataflow

[https://googlepluralsight.qwiklabs.com/focuses/10217931?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217931?parent=lti_session)

**Module:** Classify Images with Pre-Built Models using Vision API and Cloud AutoML

Lab: Classify Images with Pre-built ML Models using Cloud Vision API and AutoML

[https://googlepluralsight.qwiklabs.com/focuses/10217945?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217945?parent=lti_session)

**Course: Modernizing Data Lakes and Data Warehouses with GCP**

**Module:** Introduction to Data Engineering

Using BigQuery to do Analysis

[https://googlepluralsight.qwiklabs.com/focuses/10217978?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217978?parent=lti_session)

**Module:** Building a Data Lake

Loading Taxi Data into Google Cloud SQL

[https://googlepluralsight.qwiklabs.com/focuses/10217985?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10217985?parent=lti_session)

**Module:** Building a data warehouse

Loading data into BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10218002?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218002?parent=lti_session)

Working with JSON and Array data in

BigQuery[https://googlepluralsight.qwiklabs.com/focuses/10218013?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218013?parent=lti_session)

### **Course: Building Batch Data Pipelines on GCP**

**Module:** Executing Spark on Cloud Dataproc

Running Apache Spark jobs on Cloud Dataproc

[https://googlepluralsight.qwiklabs.com/focuses/10218130?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218130?parent=lti_session)

**Module:** Manage Data Pipelines with Cloud Data Fusion and Cloud Composer

Building and Executing a Pipeline Graph with Data Fusion

[https://googlepluralsight.qwiklabs.com/focuses/10218141?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218141?parent=lti_session)[https://googlepluralsight.qwiklabs.com/focuses/10218141?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218141?parent=lti_session)

An Introduction to Cloud Composer

[https://googlepluralsight.qwiklabs.com/focuses/10218147?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218147?parent=lti_session)

**Module:** Serverless Data Processing with Cloud Dataflow

Serverless Data Analysis with Dataflow: A Simple Dataflow Pipeline (Java)

[https://googlepluralsight.qwiklabs.com/focuses/10218161?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218161?parent=lti_session)

Serverless Data Analysis with Dataflow: A Simple Dataflow Pipeline (Python)

[https://googlepluralsight.qwiklabs.com/focuses/10218180?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218180?parent=lti_session)

Serverless Data Analysis with Dataflow : MapReduce in Dataflow (Java)

[https://googlepluralsight.qwiklabs.com/focuses/10218169?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218169?parent=lti_session)

Serverless Data Analysis with Dataflow: MapReduce in Dataflow (Python)

[https://googlepluralsight.qwiklabs.com/focuses/10218193?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218193?parent=lti_session)

Serverless Data Analysis with Dataflow: Side Inputs (Python)

[https://googlepluralsight.qwiklabs.com/focuses/10218194?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218194?parent=lti_session)



Serverless Data Analysis with Dataflow: Side Inputs (Java)

[https://googlepluralsight.qwiklabs.com/focuses/10218204?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218204?parent=lti_session)

Course: Building Resilient Streaming Analytics Systems on GCP

Module: Serverless Messaging with Cloud Pub/Sub

Streaming Data Processing: Publish Streaming Data into PubSub

[https://googlepluralsight.qwiklabs.com/focuses/10218223?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218223?parent=lti_session)

**Module:** Cloud Dataflow Streaming Features

Streaming Data Processing: Streaming Data Pipelines

[https://googlepluralsight.qwiklabs.com/focuses/10218230?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218230?parent=lti_session)

**Module:** High-Throughput BigQuery and Bigtable Streaming Features

Streaming Data Processing: Streaming Analytics and Dashboards

[https://googlepluralsight.qwiklabs.com/focuses/10218253?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218253?parent=lti_session)

Streaming Data Processing: Streaming Data Pipelines into Bigtable

[https://googlepluralsight.qwiklabs.com/focuses/10218260?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218260?parent=lti_session)

**Module:** Advanced BigQuery Functionality and Performance

Optimizing your BigQuery Queries for Performance

[https://googlepluralsight.qwiklabs.com/focuses/10218269?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218269?parent=lti_session)

Partitioned Tables in Google BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10218275?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218275?parent=lti_session)

**Course: Smart Analytics, Machine Learning, and AI on GCP**

**Module:** Prebuilt ML model APIs for Unstructured Data

Using the Natural Language API to classify unstructured text

[https://googlepluralsight.qwiklabs.com/focuses/10218298?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218298?parent=lti_session)

**Module:** Big Data Analytics with Cloud AI Platform Notebooks

BigQuery in Jupyter Labs on AI Platform

[https://googlepluralsight.qwiklabs.com/focuses/10218314?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218314?parent=lti_session)

**Module:** Productionizing Custom ML Models

Running AI models on Kubeflow

[https://googlepluralsight.qwiklabs.com/focuses/10218322?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218322?parent=lti_session)

**Module:** Custom Model building with SQL in BigQuery ML

Predict Bike Trip Duration with a Regression Model in BQML

[https://googlepluralsight.qwiklabs.com/focuses/10218330?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218330?parent=lti_session)

Movie Recommendations in BigQuery ML

[https://googlepluralsight.qwiklabs.com/focuses/10218332?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218332?parent=lti_session)

**Course: Google Cloud Platform Big Data and Machine Learning Fundamentals**

**Module:** Introduction to Google Cloud Platform

Lab: Explore a BigQuery Public Dataset

[https://googlepluralsight.qwiklabs.com/focuses/10218351?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218351?parent=lti_session)

**Module:** Recommending Products using Cloud SQL and Spark

Lab: Recommend Products using ML with Cloud SQL and Dataproc

[https://googlepluralsight.qwiklabs.com/focuses/10218366?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218366?parent=lti_session)

**Module:** Predict Visitor Purchases Using BigQuery ML

Lab: Predict Visitor Purchases with a Classification Model with BigQuery ML

[https://googlepluralsight.qwiklabs.com/focuses/10218376?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218376?parent=lti_session)

**Module:** Create Streaming Data Pipelines with Cloud Pub/sub and Cloud Dataflow

Lab: Create a Streaming Data Pipeline for a Real-Time Dashboard with Cloud Dataflow

[https://googlepluralsight.qwiklabs.com/focuses/10218391?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218391?parent=lti_session)

**Module:** Classify Images with Pre-Built Models using Vision API and Cloud AutoML

Lab: Classify Images with Pre-built ML Models using Cloud Vision API and AutoML

[https://googlepluralsight.qwiklabs.com/focuses/10218403?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218403?parent=lti_session)

**Course: Exploring and Preparing your Data with BigQuery**

**Module:** Big Data Tools Overview

Explore a BigQuery Public Dataset

[https://googlepluralsight.qwiklabs.com/focuses/10218437?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218437?parent=lti_session)

**Module:** Exploring your Data with SQL

Troubleshooting Common SQL Errors with BigQuery v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218452?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218452?parent=lti_session)

**Module:** Cleaning and Transforming your Data

Exploring and Creating an Ecommerce Analytics Pipeline with Cloud Dataprep v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218470?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218470?parent=lti_session)

**Course: Modernizing Data Lakes and Data Warehouses with GCP**

**Module:** Introduction to Data Engineering

Using BigQuery to do Analysis

[https://googlepluralsight.qwiklabs.com/focuses/10218503?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218503?parent=lti_session)

**Module:** Building a Data Lake

Loading Taxi Data into Google Cloud SQL

[https://googlepluralsight.qwiklabs.com/focuses/10218515?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218515?parent=lti_session)

**Module:** Building a data warehouse

Loading data into BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10218554?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218554?parent=lti_session)

Working with JSON and Array data in BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10218563?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218563?parent=lti_session)

**Course: Exploring and Preparing your Data with BigQuery**

**Module:** Big Data Tools Overview

Explore a BigQuery Public Dataset

[https://googlepluralsight.qwiklabs.com/focuses/10218587?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218587?parent=lti_session)

Troubleshooting Common SQL Errors with BigQuery v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218599?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218599?parent=lti_session)

**Module:** Cleaning and Transforming your Data

Exploring and Creating an Ecommerce Analytics Pipeline with Cloud Dataprep v1.5  
[https://googlepluralsight.qwiklabs.com/focuses/10218611?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218611?parent=lti_session)

New Lab! Cloud Data Fusion [Ling to videos with optional qwiklabs]

[https://s2.pluralsight.com/links/1808ea18-f2e4-4687-abaf-0de1beb27363\\_file-new-lab-cloud-data-fusion.pdf](https://s2.pluralsight.com/links/1808ea18-f2e4-4687-abaf-0de1beb27363_file-new-lab-cloud-data-fusion.pdf)

Building Transformations and Preparing Data with Wrangler in Cloud Data Fusion

[https://googlepluralsight.qwiklabs.com/focuses/10218639?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218639?parent=lti_session)

**Course: Creating New BigQuery Datasets and Visualizing Insights**

Data to Insights: Creating new Permanent Tables v1.1

<https://googlepluralsight.qwiklabs.com/focuses/39190>

**Module:** Ingesting New Datasets into Google BigQuery

Data to Insights: Ingesting and Querying New Datasets v1.1

<https://googlepluralsight.qwiklabs.com/focuses/39192>

Creating Date-Partitioned Tables in BigQuery v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218676?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218676?parent=lti_session)

**Module:** Joining and Merging Datasets

Data to Insights: Unioning and Joining Datasets v1.1

[https://googlepluralsight.qwiklabs.com/focuses/10218703?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218703?parent=lti_session)

Module: Data Visualization

Data to Insights: Exploring a Dataset in Google Data Studio v1.1

<https://googlepluralsight.qwiklabs.com/focuses/39199>

### **Course: Achieving Advanced Insights with BigQuery**

Module: Advanced Functions and Clauses

Deriving Insights from Advanced SQL Functions v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218827?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218827?parent=lti_session)

Module: Schema Design and Nested Data Structures

Data to Insights: Practicing Querying Nested and Repeated Fields v1.1

<https://googlepluralsight.qwiklabs.com/focuses/39203>

Module: Optimizing for Performance

Data to Insights: Optimizing and Troubleshooting Query Performance v1.1

<https://googlepluralsight.qwiklabs.com/focuses/39204>

### **Course: Applying Machine Learning to your Data with GCP**

Module: Pre-trained ML APIs

Practice with ML APIs in Cloud Datalab v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218938?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218938?parent=lti_session)

Module: Creating ML Datasets in BigQuery

Creating Repeatable Dataset Splits in BigQuery v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218984?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218984?parent=lti_session)

Module: Creating ML Models in BigQuery

Predict Visitor Purchases with a Classification Model in BQML v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10218997?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10218997?parent=lti_session)

Predict Taxi Fare with a BigQuery ML Forecasting Model v1.5

[https://googlepluralsight.qwiklabs.com/focuses/10219010?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219010?parent=lti_session)

## **Course: Modernizing Data Lakes and Data Warehouses with GCP**

**Module:** Introduction to Data Engineering

Using BigQuery to do Analysis

[https://googlepluralsight.qwiklabs.com/focuses/10219025?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219025?parent=lti_session)

**Module:** Building a Data Lake

Loading Taxi Data into Google Cloud SQL

[https://googlepluralsight.qwiklabs.com/focuses/10219049?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219049?parent=lti_session)

**Module:** Building a data warehouse

Loading data into BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10219066?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219066?parent=lti_session)

Working with JSON and Array data in BigQuery

[https://googlepluralsight.qwiklabs.com/focuses/10219076?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219076?parent=lti_session)

## **Course: Building Batch Data Pipelines on GCP**

**Module:** Executing Spark on Cloud Dataproc

Running Apache Spark jobs on Cloud Dataproc

[https://googlepluralsight.qwiklabs.com/focuses/10219095?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219095?parent=lti_session)

**Module:** Manage Data Pipelines with Cloud Data Fusion and Cloud Composer

Building and Executing a Pipeline Graph with Data Fusion

[https://googlepluralsight.qwiklabs.com/focuses/10219109?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219109?parent=lti_session)

**Module:** Serverless Data Processing with Cloud Dataflow

Serverless Data Analysis with Dataflow: A Simple Dataflow Pipeline (Java)

[https://googlepluralsight.qwiklabs.com/focuses/10219131?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219131?parent=lti_session)

Serverless Data Analysis with Dataflow: A Simple Dataflow Pipeline (Python)

[https://googlepluralsight.qwiklabs.com/focuses/10219137?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219137?parent=lti_session)

Serverless Data Analysis with Dataflow : MapReduce in Dataflow (Java)

[https://googlepluralsight.qwiklabs.com/focuses/10219145?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219145?parent=lti_session)

Serverless Data Analysis with Dataflow: MapReduce in Dataflow (Python)

[https://googlepluralsight.qwiklabs.com/focuses/10219156?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219156?parent=lti_session)

Serverless Data Analysis with Dataflow: Side Inputs (Python)

[https://googlepluralsight.qwiklabs.com/focuses/10219162?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219162?parent=lti_session)

Serverless Data Analysis with Dataflow: Side Inputs (Java)

[https://googlepluralsight.qwiklabs.com/focuses/10219174?parent=lti\\_session](https://googlepluralsight.qwiklabs.com/focuses/10219174?parent=lti_session)