

Diploma in Google Cloud (6 Months)

Duration: 6 Months (~240 Hours)

Mode: Live Online / Classroom

Tools & Technologies: Google Cloud Console, Cloud SDK, IAM, VPC, Compute Engine, Cloud Storage, Cloud SQL, Cloud Build, GKE, Cloud Run, Cloud Functions, Pub/Sub, Dataflow, Dataproc, BigQuery, Cloud Composer, Looker Studio

Certifications Prepared: Google Associate Cloud Engineer, Google Professional Cloud Architect, Google Professional DevOps Engineer, Google Professional Data Engineer

Course 1: Google Cloud Administration – Basics (3 Months)

Syllabus

Week 1: Introduction to Google Cloud

- Cloud computing models (IaaS, PaaS, SaaS), Shared Responsibility Model
- Google Cloud global infrastructure (Regions, Zones, Edge Locations)
- Navigating Cloud Console & Cloud SDK (gcloud CLI, gsutil)
- Resource Hierarchy: Organization, Folders, Projects
- Hands-on: Create & manage GCP project using Console + CLI
- Assignment

Week 2: Identity & Access Management (IAM)

- IAM basics: roles, permissions, service accounts
- Predefined vs custom roles
- IAM policies & hierarchy
- Hands-on: Configure IAM roles for users & service accounts
- Assignment

Week 3: Networking Fundamentals

- Virtual Private Cloud (VPC): subnets, routes, firewalls
- Shared VPC, VPC Peering
- Cloud NAT, Cloud VPN, Interconnect
- Hands-on: Build secure multi-tier VPC
- Assignment

Week 4: Compute Services

- Compute Engine (VMs): machine types, images, disks
- Instance Groups & Autoscaling
- Load Balancing (HTTP(S), TCP/UDP, Internal)
- Hands-on: Deploy scalable web app with load balancer
- Assignment
- Mock Interview 1

Week 5: Storage Services

- Cloud Storage: buckets, classes (Standard, Nearline, Coldline, Archive)
- Lifecycle policies & versioning
- Cloud Filestore basics
- Hands-on: Static website hosting in Cloud Storage
- Assignment

Week 6: Monitoring & Logging

- Cloud Monitoring: metrics, dashboards, alerts
- Cloud Logging basics
- Error Reporting & Trace
- Hands-on: Configure monitoring & alerting for VM instance
- Assignment

Week 7: Databases

- Cloud SQL (MySQL, PostgreSQL)
- Cloud Spanner overview
- Cloud Firestore basics (NoSQL)
- Hands-on: Deploy Cloud SQL & connect to web app
- Assignment

Week 8: Capstone Project & Interview Prep

- Project: Deploy 3-tier application (Compute Engine + Cloud Storage + Cloud SQL + Monitoring)
- Assignment
- Mock Interview 2

Course 2: Google Cloud Administration – Advanced / DevOps (3 Months)

Syllabus

Week 1: Infrastructure as Code (IaC)

- Deployment Manager basics
- Terraform on GCP: providers, state, modules
- Hands-on: Deploy VPC + VM using Terraform
- Assignment

Week 2: CI/CD with Google Cloud Build

- Cloud Source Repositories overview
- Cloud Build triggers, build steps
- Artifact Registry for container images
- Hands-on: CI pipeline for Node.js app
- Assignment

Week 3: Deployment Strategies

- Cloud Deploy pipelines
- Blue-Green, Rolling, Canary deployments
- Cloud Run deployment options
- Hands-on: Deploy containerized app with Cloud Deploy
- Assignment

Week 4: Kubernetes with GKE

- GKE cluster setup (zonal vs regional)
- Workload management (Deployments, Services)
- Scaling & autoscaling in GKE
- Hands-on: Deploy microservices in GKE with autoscaling
- Assignment
- Mock Interview 1

Week 5: Serverless Computing

- Cloud Functions: triggers, event-driven apps
- Cloud Run for containers (serverless containers)
- Pub/Sub for event distribution
- Hands-on: Event-driven workflow with Pub/Sub + Functions
- Assignment

Week 6: Monitoring & Security

- Cloud Monitoring deep dive

- Cloud Logging with log-based metrics
- Identity-Aware Proxy (IAP)
- Hands-on: Monitor GKE app with Cloud Monitoring
- Assignment

Week 7: Governance & Cost Management

- Budgets & Billing alerts
- Resource hierarchy policies
- Security Command Center basics
- Hands-on: Configure budget alerting
- Assignment

Week 8: Capstone Project & Interview Prep

- Project: CI/CD pipeline for GKE-based microservices app
- Assignment
- Mock Interview 2

Course 3: Google Cloud Data Engineering (3 Months)

Syllabus

Week 1: Data Storage & Lakehouse

- Cloud Storage for Data Lake
- Partitioning, lifecycle policies
- Best practices for Data Lakes in GCP
- Hands-on: Setup Data Lake in Cloud Storage
- Assignment

Week 2: BigQuery – Data Warehousing

- BigQuery datasets, tables, partitions
- Loading data from Cloud Storage
- SQL queries in BigQuery
- Partitioned & clustered tables
- Hands-on: Query structured & semi-structured data
- Assignment

Week 3: Data Integration with Dataflow

- Apache Beam concepts (batch & streaming pipelines)
- Dataflow pipelines for ETL
- Hands-on: Transform & load data from Pub/Sub → BigQuery
- Assignment

Week 4: Dataproc for Big Data

- Cluster setup (Spark, Hadoop)
- Submitting Spark jobs
- Integration with Cloud Storage & BigQuery
- Hands-on: ETL pipeline using Dataproc + Spark
- Assignment
- Mock Interview 1

Week 5: Real-Time Data Processing with Pub/Sub

- Pub/Sub topics & subscriptions
- Push vs pull delivery models
- Integrating Pub/Sub with Dataflow
- Hands-on: Real-time streaming pipeline (Pub/Sub → Dataflow → BigQuery)
- Assignment

Week 6: Orchestration with Cloud Composer

- Managed Apache Airflow overview
- DAGs in Airflow for data workflows
- Hands-on: Schedule BigQuery ETL job with Cloud Composer
- Assignment

Week 7: Visualization & BI

- Looker Studio basics (dashboards, data sources)
- Connecting Looker Studio to BigQuery
- Building reports for business insights
- Hands-on: Create interactive BI dashboard
- Assignment

Week 8: Capstone Project & Interview Prep

- Project: Real-time Data Pipeline (Pub/Sub → Dataflow → BigQuery → Looker Studio)
- Assignment
- Mock Interview 2

Learning Outcomes

- Administer GCP infrastructure (VMs, Storage, Networking, Databases)
- Implement DevOps workflows with Cloud Build, Cloud Deploy, GKE, and Functions
- Design and develop scalable data engineering pipelines with BigQuery, Dataflow, and Dataproc
- Implement real-time data solutions with Pub/Sub and Composer
- Prepare for Google Cloud certifications (Associate Cloud Engineer, Professional Cloud Architect, Professional DevOps Engineer, Professional Data Engineer)