# Google Cloud Fundamentals for Solutions Architect Course

**Course Duration: 8 Hours** **Course code: GCFSAC**

## 1. Course Overview

This one-day course provides a comprehensive introduction to Google Cloud Platform (GCP) for aspiring Solutions Architects. You will learn core GCP services, architecture design principles, networking, security, and deployment strategies. The course also focuses on building scalable, secure, and highly available solutions using GCP services.

## 2. What you'll learn?

**By the end of the course, you will be able to:**

- Understand core Google Cloud services and infrastructure
- Design scalable and highly available architectures on GCP
- Use Compute Engine, App Engine, and Kubernetes Engine
- Implement networking using VPC, subnets, and load balancing
- Manage storage solutions like Cloud Storage and Persistent Disks
- Apply IAM and security best practices
- Monitor and optimize cloud resources
- Design cost-effective and resilient cloud solutions

## 3. Target Audience

- Aspiring Solutions Architects
- Cloud Engineers and Administrators
- IT Professionals transitioning to cloud
- DevOps Engineers

- System Administrators and Network Engineers

## 4. Pre-Requisites

Before taking this course, you should have:

- Basic understanding of cloud computing concepts
- Familiarity with networking fundamentals
- Basic knowledge of operating systems (Linux/Windows)
- Some experience with command-line interfaces

## 5. Course content

Module 1: Course Introduction

- Course overview and objectives
- Introduction to Google Cloud Platform
- Understanding cloud computing models (IaaS, PaaS, SaaS)

Module 2: Overview of Google Cloud Infrastructure

- Google Cloud global infrastructure
- Regions, zones, and edge locations
- Resource hierarchy (Organization, Folder, Project)
- Billing and account setup

Module 3: Identity and Access Management (IAM)

- IAM concepts and roles
- Service accounts
- Policies and permissions
- Best practices for access control

Module 4: Virtual Machines and Compute Services

- Compute Engine fundamentals

- VM instance creation and management
- Machine types and custom configurations
- Managed instance groups

Module 5: Containers and Kubernetes

- Introduction to containers
- Google Kubernetes Engine (GKE)
- Deploying applications on GKE
- Container registry and artifact management

Module 6: App Development Services

- App Engine overview
- Cloud Run basics
- Choosing the right compute service
- Serverless architecture concepts

Module 7: Storage Services

- Cloud Storage classes and use cases
- Persistent disks and snapshots
- Filestore and storage options comparison
- Data lifecycle management

Module 8: Database Services

- Cloud SQL overview
- Firestore and Bigtable basics
- Spanner introduction
- Choosing the right database solution

Module 9: Networking in Google Cloud

- Virtual Private Cloud (VPC)

- Subnets and IP addressing
- Firewall rules
- Load balancing and traffic management

Module 10: Hybrid and Multi-Cloud Connectivity

- VPN and Cloud Interconnect
- Hybrid cloud architecture
- Multi-cloud strategies
- DNS and traffic routing

Module 11: Monitoring, Logging, and Operations

- Cloud Monitoring and Logging
- Alerts and dashboards
- Resource tracking and diagnostics
- Operations suite overview

Module 12: Security and Compliance

- Security best practices
- Encryption (at rest and in transit)
- Identity-aware proxy
- Compliance standards

Module 13: Cost Management and Optimization

- Pricing models
- Budgeting and billing alerts
- Cost optimization strategies
- Resource rightsizing

Module 14: Deployment and Automation

- Deployment Manager overview

- Infrastructure as Code (IaC) basics
- CI/CD pipelines in GCP
- Automation tools and strategies

Module 15: Architecting Solutions on GCP

- Designing for high availability
- Fault tolerance and disaster recovery
- Scalability and elasticity
- Architecture best practices

Module 16: Real-World Scenarios and Case Studies

- Designing enterprise solutions
- Common architecture patterns
- Migration scenarios
- Best practices and pitfalls