The following services will be discussed as part of this converged course.

Task Statement 1: GCP Core Services

Learning objectives:

- Compute Engine: Virtual machines on GCP
- Google Kubernetes Engine (GKE): Managing containerized applications
- App Engine: Building and deploying scalable web applications
- Cloud Functions: Serverless computing for event-driven applications

Task Statement 2: Data Storage and Databases

Learning objectives:

- Cloud Storage: Object storage for data storage and retrieval
- Cloud SQL: Managed relational databases on GCP
- BigQuery: Fully managed data warehouse for analytics
- Cloud Datastore and Firestore: NoSQL databases for scalable applications

Task Statement 3: Networking and Security

Learning objectives:

- Virtual Private Cloud (VPC): Isolating resources in the cloud
- Cloud Load Balancing: Distributing traffic across instances
- Cloud Identity and Access Management (IAM): Managing access control
- Security best practices and compliance on GCP

Task Statement 4: Big Data and Machine Learning

Learning objectives:

- Big Data solutions on GCP: Dataflow, Dataproc, and Pub/Sub
- TensorFlow and AI Platform: Building and deploying machine learning models
- AutoML: Leveraging machine learning without specialized expertise
- Data analytics and visualization with GCP tools

Task Statement 5: DevOps and Automation

Learning objectives:

- Cloud Deployment Manager and Terraform: Infrastructure as code
- Continuous integration and delivery (CI/CD) with Cloud Build

- Monitoring, logging, and error reporting with Stackdriver
- Best practices for automating and managing GCP resources

Task Statement 6: Advanced Topics and Use Cases

Learning objectives:

- Hybrid and multi-cloud architectures with Anthos
- Internet of Things (IoT) solutions on GCP
- High-performance computing (HPC) and scientific computing on GCP
- Real-world case studies and best practices from industry experts

Task Statement 7: GCP Certification Preparation

Learning objectives:

- Overview of GCP certification tracks and exams
- Tips and strategies for exam preparation
- Practice exams and quizzes to assess knowledge and readiness
- Guidance on scheduling and taking GCP certification exams

Task Statement 8: Hands-On Labs and Projects

Learning objectives:

- Guided hands-on labs covering key GCP services and features
- Project-based assignments to reinforce learning and practical skills
- Collaboration with peers and feedback from instructors
- Final project showcasing proficiency in GCP technologies

Task Statement 9: GCP Cost Management and Optimization

Learning objectives:

- Understanding GCP billing structure and pricing models
- Analyzing and optimizing costs using GCP Cost Management tools
- Implementing budget alerts and quotas to control spending
- Utilizing cost optimization strategies such as rightsizing, scheduling, and resource tagging

Task Statement 10: Monitoring, Logging, and Error Reporting

Learning objectives:

- Setting up Stack driver for monitoring GCP resources and services
- Creating custom metrics and dashboards for real-time monitoring
- Configuring logging and log-based metrics for centralized log management
- Implementing alerts and notifications for proactive monitoring and troubleshooting

Task Statement 11: Real-Time Projects and Case Studies in GCP Environment

Learning objectives:

- Working on real-world projects to apply theoretical knowledge in practical scenarios
- Analyzing case studies of successful GCP implementations in various industries
- Collaborating with peers to solve complex challenges and deliver solutions
- Presenting project outcomes and insights to instructors and peers for feedback and discussion.

Task Statement 12: Storage Options Cloud Storage, Cloud SQL, and Cloud Spanner

Learning objectives:

- Understanding different storage options and use cases in GCP.
- Setting up and managing Cloud Storage buckets for object storage.
- Exploring relational database options with Cloud SQL and horizontally scalable databases with Cloud Spanner.
- Integrating GCP storage services with computer and analytics workloads.

Task Statement 13: Virtual Machines and Compute Engine

Learning objectives:

- Creating and managing virtual machines (VMs) using Compute Engine.
- Understanding VM instance types, machine images, and disk options in Compute Engine.
- Exploring networking configurations for VMs including firewalls and VPNs.
- Scaling VMs horizontally and vertically based on workload demands.

Task Statement 14: GCP Fundamentals and Core Services

Learning objectives:

- Explanation of GCP core concepts such as projects, resources, and IAM.
- Overview of key GCP services like Compute Engine, Cloud Storage, and Big Query.
- Introduction to GCP's networking services including VPCs, subnets, and load balancing.
- Understanding GCP's regions and zones and their significance in deploying applications.