Training Course on Fundamentals of Geospatial Cloud Computing

Professional Development Training Course Outline

Category	GIS	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today's data-driven world, the convergence of **Geographic Information Systems (GIS)** and **Cloud Computing** has revolutionized how we process, analyze, and visualize spatial data. **Geospatial Cloud Computing** leverages scalable, on-demand cloud infrastructure to manage massive **geospatial datasets**, enabling unprecedented capabilities for **real-time spatial analysis**, **remote sensing**, and **location intelligence**. This paradigm shift liberates organizations from the burden of expensive on-premise hardware and complex software installations, fostering **enhanced collaboration**, **cost-efficiency**, and **global accessibility** for geospatial workflows.

Training Course on Fundamentals of Geospatial Cloud Computing will equip participants with the foundational knowledge and practical skills required to navigate the rapidly evolving landscape of geospatial cloud platforms. From understanding core **cloud architecture** and **data storage solutions** to implementing advanced **geospatial analytics** and **machine learning models** on the cloud, this program emphasizes hands-on experience with industry-leading tools and services. Participants will gain the confidence to design, deploy, and optimize cloud-native geospatial applications, unlocking the full potential of **big geospatial data** for diverse applications across various sectors.

Programme Curriculum

Training Course on Fundamentals of Geospatial Cloud Computing

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Course Duration

5 days

Course Objectives

1. Comprehend fundamental concepts of Cloud Computing, GIS, and their integration in Geospatial Cloud Platforms.
2. Identify and evaluate various cloud service models and their relevance to geospatial workloads.
3. Master data management strategies for large-scale geospatial datasets in the cloud, including data ingestion, storage and indexing.
4. Utilize key cloud services for geospatial data processing and analysis.
5. Perform advanced spatial analysis techniques using cloud-native geospatial tools and libraries
6. Implement remote sensing workflows on the cloud, including satellite imagery processing and Earth Observation data analytics with platforms like Google Earth Engine.
7. Develop and deploy web-based geospatial applications leveraging cloud APIs and mapping libraries
8. Apply machine learning (ML) and artificial intelligence (AI) techniques to geospatial data for predictive modeling and pattern recognition.
9. Understand cloud security best practices and data governance for sensitive geospatial information.
10. Optimize cloud resource utilization and manage costs effectively in geospatial projects.
11. Troubleshoot common issues encountered in geospatial cloud deployments.
12. Design scalable and resilient geospatial architectures for real-world applications.
13. Stay updated with emerging trends and future directions in geospatial cloud innovation.

Organizational Benefits

- Reduce IT Infrastructure Costs: Minimize capital expenditure on hardware and maintenance.
- Enhance Scalability & Performance: Handle massive geospatial datasets and complex analyses with on-demand resources.
- Foster Collaboration & Data Sharing: Enable seamless teamwork across distributed teams and stakeholders.
- Accelerate Innovation: Rapidly prototype and deploy new geospatial applications and services.
- Improve Decision-Making: Gain real-time insights from spatial data for more informed strategic choices.

- Increase Data Security & Resilience: Leverage robust cloud security features and disaster recovery capabilities.
- Optimize Workflow Efficiency: Automate repetitive geospatial tasks and streamline operations.
- Access Cutting-Edge Technologies: Utilize the latest advancements in AI/ML and big data analytics for geospatial applications.

Target Audience

1. GIS Professionals.
2. Data Scientists.
3. Software Developers.
4. Environmental Scientists & Researchers
5. Urban Planners & Smart City Innovators.
6. Remote Sensing Specialists.
7. IT Managers & Architects.
8. Anyone looking to understand and apply geospatial cloud computing for practical solutions.

Course Modules

Module 1: Introduction to Geospatial Cloud Computing

- Fundamentals of Cloud Computing: IaaS, PaaS, SaaS, Public, Private, Hybrid Clouds.
- Evolution of GIS: From Desktop to Web to Cloud.
- Why Cloud for Geospatial? Scalability, Cost-Efficiency, Accessibility, Collaboration.
- Key Cloud Providers & Geospatial Offerings: AWS, Google Cloud, Azure, Open-source alternatives.
- **Case Study:** Analyzing the benefits of migrating a traditional GIS infrastructure to a cloud-based solution for a large municipality.

Module 2: Geospatial Data in the Cloud

- Geospatial Data Formats: Vector (GeoJSON, Shapefile), Raster (GeoTIFF, NetCDF).
- Cloud Storage Solutions: Amazon S3, Google Cloud Storage, Azure Blob Storage for geospatial data.
- Data Ingestion & ETL for Geospatial: Tools and techniques for moving data to the cloud.
- Spatial Databases in the Cloud: PostGIS on RDS/Cloud SQL, BigQuery GIS.
- **Case Study:** Storing and querying petabytes of satellite imagery in AWS S3 for a global agricultural monitoring project.

Module 3: Core Geospatial Cloud Services & Tools

- Compute Services for Geospatial: EC2, Google Compute Engine, Azure VMs for heavy processing.
- Serverless Geospatial: AWS Lambda, Google Cloud Functions, Azure Functions for event-driven processing.
- Containerization for GIS: Docker and Kubernetes for reproducible geospatial workflows.
- Managed Geospatial Services: ArcGIS Online, Carto, Mapbox as cloud-based GIS platforms.
- **Case Study:** Building a serverless image processing pipeline for rapid disaster response using AWS Lambda and S3.

Module 4: Geospatial Analytics on the Cloud

- Vector Spatial Analysis: Buffering, Intersecting, Overlay operations at scale.
- Raster Spatial Analysis: Map algebra, image classification, change detection.
- Big Data Geospatial Frameworks: Dask-GeoPandas, Apache Spark with GeoSpark.
- Introduction to Cloud-native GIS Libraries: Fiona, Shapely, Rasterio.
- **Case Study:** Performing large-scale deforestation detection across a continent using Dask-GeoPandas on a cluster of cloud instances.

Module 5: Remote Sensing & Earth Observation in the Cloud

- Accessing Earth Observation Data: STAC (SpatioTemporal Asset Catalog), Copernicus, Landsat, Sentinel Hub.
- Google Earth Engine (GEE): Introduction, JavaScript API, Python API.
- Cloud-based Image Processing: Radiometric correction, atmospheric correction, mosaicking.
- Time-series Analysis of Satellite Imagery: Detecting trends and anomalies.
- **Case Study:** Monitoring urban expansion and land cover change over decades using Google Earth Engine's vast archive.

Module 6: Machine Learning & AI for Geospatial Data

- Fundamentals of GeoAI: Supervised, Unsupervised Learning in spatial context.
- Cloud ML Platforms: AWS SageMaker, Google AI Platform, Azure Machine Learning for geospatial.
- Feature Engineering for Spatial Data: Creating meaningful features from geographic information.
- Deep Learning for Remote Sensing: Object detection, semantic segmentation of imagery.
- **Case Study:** Building a machine learning model to predict crop yields based on satellite imagery and weather data using AWS SageMaker.

Module 7: Web GIS Development & Visualization

- Cloud-Native Web Mapping APIs: Mapbox GL JS, Leaflet with cloud data sources.
- Interactive Geospatial Dashboards: Building real-time visualizations with cloud-hosted data.
- Geospatial Data Streaming: Integrating live sensor data into cloud GIS.
- User Interface/User Experience (UI/UX) for Geospatial Applications.
- **Case Study:** Developing a real-time tracking dashboard for public transportation using live GPS data streamed to a cloud database and visualized with Mapbox GL JS.

Module 8: Advanced Topics & Best Practices

- Cloud Security & Compliance for Geospatial: IAM, encryption, data governance.
- Cost Optimization Strategies: Resource sizing, auto-scaling, reserved instances.
- DevOps for Geospatial: CI/CD pipelines for cloud-native GIS applications.
- Emerging Trends: Digital Twins, Edge Computing for GIS, Quantum GIS.
- **Case Study:** Implementing a secure and cost-effective cloud environment for sensitive government geospatial data, adhering to strict compliance regulations.

Training Methodology

- Instructor-Led Presentations.
- Hands-on Labs & Exercises
- Live Coding Demonstrations
- Case Studies & Discussions.
- Group Activities & Collaboration.

- Q&A Sessions.
- Access to Cloud Environments.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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