Advanced GIS for Climate Change Research Training Course

Professional Development Training Course Outline

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

Course Introduction

In an era of rapidly evolving climate conditions, the demand for cutting-edge geospatial solutions is more critical than ever. Advanced GIS for Climate Change Research Training Course empowers professionals and researchers with comprehensive knowledge and practical expertise in utilizing Geographic Information Systems (GIS) to assess, analyze, and predict climate change patterns. Through hands-on application of spatial analysis, remote sensing, and predictive modeling, participants will explore advanced GIS tools and techniques essential for climate monitoring, vulnerability mapping, and data-driven policy-making.

This training integrates climate science, environmental sustainability, and spatial data analysis to equip participants with the skills needed to tackle complex climate-related challenges. By leveraging tools such as ArcGIS, QGIS, and Google Earth Engine, participants will work with real-time climate datasets, conduct change detection analysis, and generate actionable insights to support climate adaptation, mitigation, and sustainable development strategies.

Programme Curriculum

Advanced GIS for Climate Change Research Training Course

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Course Objectives

Participants will:

1. Understand core concepts of advanced GIS and climate change modeling.
2. Master spatial data integration techniques for climate variables.
3. Conduct multitemporal remote sensing analysis for climate monitoring.
4. Utilize geospatial machine learning for predictive climate modeling.
5. Perform risk and vulnerability assessments using GIS.
6. Analyze land use/land cover (LULC) changes in relation to climate trends.
7. Apply cloud-based platforms like Google Earth Engine in climate research.
8. Create custom geoprocessing tools for environmental analysis.
9. Generate interactive climate dashboards and visualizations.
10. Utilize open-source geospatial tools for climate adaptation projects.
11. Understand policy applications and decision support systems using GIS outputs.
12. Apply field data collection tools integrated with GIS for climate analysis.
13. Implement climate change case studies using advanced spatial methodologies.

Target Audience

1. Climate change researchers and analysts
2. Environmental scientists and conservationists
3. GIS and remote sensing specialists
4. Urban planners and policy makers
5. Disaster risk management professionals
6. Government agencies and NGOs
7. Sustainable development and ESG professionals
8. Academic staff and postgraduate students in environmental fields

Course Duration: 5 days

Course Modules

Module 1: Fundamentals of Advanced GIS for Climate Studies

- Overview of GIS in climate research
- Climate data sources and formats
- Climate variables and spatial resolution
- Coordinate systems and georeferencing
- GIS software tools for climate analysis
- **Case Study:** Mapping historical drought patterns in Sub-Saharan Africa

Module 2: Remote Sensing and Climate Monitoring

- Satellite image acquisition and processing
- NDVI, LST, and precipitation indices
- Change detection and image classification
- Time-series analysis for climate trends
- Integration with GIS platforms
- **Case Study:** Assessing glacial retreat using Landsat imagery

Module 3: Climate Change Modeling and Predictive Analytics

- Climate modeling basics and data calibration
- Scenario simulation and climate forecasting
- Machine learning algorithms in GIS
- Downscaling global climate models
- Spatial interpolation and regression models
- **Case Study:** Predicting temperature rise in coastal megacities

Module 4: GIS for Risk, Hazard, and Vulnerability Mapping

- Risk assessment frameworks (IPCC, UNDRR)
- Hazard zoning and exposure mapping
- Social vulnerability indices and mapping
- Hotspot analysis and spatial autocorrelation
- GIS-based early warning systems
- **Case Study:** Flood risk vulnerability mapping in Bangladesh

Module 5: Land Use Change Detection and Environmental Impact

- Image differencing and classification techniques
- Urbanization and deforestation analysis
- Multi-date satellite image comparison
- Spatial metrics and fragmentation indices
- Integrating land use with climate variables
- **Case Study:** LULC change and carbon emissions in the Amazon Basin

Module 6: Google Earth Engine for Climate Applications

- Introduction to Google Earth Engine (GEE)
- GEE JavaScript and Python API basics
- Working with global climate datasets on GEE
- Time-series charting and visualization
- Exporting geospatial outputs from GEE
- **Case Study:** Monitoring global surface temperatures using GEE

Module 7: Policy Development and Climate Decision Support

- Translating GIS outputs into policy tools
- Climate-smart planning with GIS dashboards
- Multi-criteria decision analysis (MCDA)
- Stakeholder engagement using spatial data
- GIS support in international climate frameworks (e.g., Paris Agreement)
- **Case Study:** Urban climate resilience planning in Nairobi, Kenya

Module 8: Field Data Collection and Community Mapping

- Mobile GIS and participatory data collection tools
- Using drones and GPS for climate data collection
- Community vulnerability mapping techniques
- Integrating field data with spatial analysis
- Crowdsourced climate information platforms
- **Case Study:** Community-based adaptation mapping in rural India

Training Methodology

- Interactive lectures with multimedia presentations

- Hands-on sessions with real-world climate datasets
- Case studies and group-based problem solving
- Live demonstrations of GIS tools and platforms
- Practical exercises using ArcGIS, QGIS, and Google Earth Engine
- Continuous assessments and final project presentation

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
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500

Start Date	End Date	Location	Price
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:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com