Surveying and Geospatial Information Systems (GIS)

Amsterdam

14 - 25 July 2025

UK Traininig
PARTNER

Surveying and Geospatial Information Systems (GIS)

Code: NC28 From: 14 - 25 July 2025 City: Amsterdam Fees: 8300 Pound

Introduction

Surveying and geospatial technologies are fundamental to modern infrastructure development, land management, and environmental monitoring. This comprehensive training course offers professionals a deep dive into traditional and modern surveying techniques, geographic information systems GIS, and remote sensing.
Combining theory, hands-on fieldwork, and lab-based exercises, the course equips participants with the skills to conduct accurate surveys, manage geospatial data, and apply spatial analysis tools across a variety of real-world projects.

Course Objectives

By the end of this course, participants will be able to:

- Conduct accurate land surveys using modern equipment like Total Stations and GNSS.
- Understand coordinate systems, geodesy, map projections, and data correction techniques.
- Use GIS tools e.g., ArcGIS, QGIS for spatial data analysis, visualization, and management.
- Integrate data from GPS, remote sensing, and other sources into GIS platforms.
- Apply geospatial technologies in land planning, infrastructure development, environmental monitoring, and more.

Course Outlines

Day 1: Introduction to Surveying and Geospatial Sciences

- Historical overview of surveying and GIS evolution.
- Basics of geodesy: datums, ellipsoids, and coordinate systems.
- Introduction to traditional surveying methods.
- Fundamentals of GIS: components, functions, and applications.
- Sectoral uses of geospatial technologies urban, environmental, utilities.

Day 2: Surveying Instruments and Field Operations

- Total station setup and measurement.
- GNSS/GPS surveying methods, including RTK.
- Best practices in field data recording.
- Control surveys and triangulation principles.
- Fieldwork safety and quality control.

Day 3: Leveling, Traversing, and Error Correction

- Concepts and methods of leveling.
- Vertical and horizontal control networks.

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- Traverse computations and closure.
- Identifying and correcting survey errors.
- Hands-on exercises in measurement and adjustment.

Day 4: Introduction to GIS and Spatial Data Collection

- Introduction to GIS platforms ArcGIS, QGIS.
- Raster vs. vector data models.
- Digitization and georeferencing techniques.
- Importing survey data into GIS.
- Data sources: satellite imagery, GPS, LiDAR.

Day 5: Coordinate Systems and Geospatial Data Management

- Coordinate reference systems and projections.
- Geospatial metadata and standardization.
- Ensuring data accuracy and integrity.
- Creating and maintaining spatial databases.
- File formats and data interoperability.

Day 6: Spatial Analysis and Mapping

- GIS spatial operations: buffering, overlay, spatial joins.
- Querying attribute and spatial data.
- Creating thematic maps with cartographic principles.
- Geospatial statistics and pattern analysis.
- Group exercises in spatial decision support.

Day 7: Remote Sensing and Image Processing

- Principles of remote sensing and sensor types.
- Interpreting satellite images and resolutions.
- Image classification: supervised and unsupervised.
- NDVI and other vegetation indices.
- Integrating RS and GIS for environmental projects.

Day 8: GIS and Survey Applications in Development

- GIS for land administration and cadastral mapping.
- Surveying infrastructure projects: roads, utilities, bridges.
- Urban planning with zoning and land-use analysis.
- Infrastructure asset management via GIS.
- Project case studies from the public and private sectors.

Day 9: Project Management, QA/QC, and Integration

- Planning geospatial projects: workflow and execution.
- QA/QC protocols for survey and GIS projects.
- Integration of GIS with CAD and BIM systems.

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- Mobile GIS and real-time data applications.
- Designing dashboards and reports with spatial insights.

Day 10: Final Practical Assessment and Wrap-up

- Group field project: survey + GIS map production.
- Data processing and final map presentation.
- Peer feedback and reflection on field outputs.
- Review of latest trends in GIS and geospatial tech.
- Final exam, certification, and closing remarks.

Why Attend This Course: Wins & Losses!

- Master both traditional and advanced geospatial techniques.
- Learn to use industry-standard tools like Total Stations, GPS, ArcGIS, and QGIS.
- Apply spatial analysis for decision-making in urban, environmental, and infrastructure projects.
- Gain practical experience through fieldwork and lab simulations.
- Increase your employability in government, construction, environmental, and urban planning sectors.

Conclusion

This course prepares professionals to excel in geospatial information systems and surveying. Through a combination of hands-on training, project-based learning, and expert guidance, participants will walk away with the skills and confidence to lead and support geospatial initiatives across sectors.

Whether in land use planning, environmental monitoring, or infrastructure development, this course offers a solid foundation for leveraging location-based technologies for impactful decision-making.

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