GPS and GNSS Field Data and Software Applications Training Course

13 – 17 September 2027
Addis Ababa

AGILE LEADERS
Training Center

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Ref: 1678_226235 **Date:** 13 – 17 September 2027 **Location:** Addis Ababa **Fees:** 4500 Euro

Overview

GPS and GNSS Field Data and Software Applications Training Course is a one-week professional course for GIS specialists, survey technicians and field teams, who leave with a GNSS Field-to-Map Workflow and Quality Pack. The course connects positioning fundamentals, coordinate references, field planning, structured collection, correction, software processing, GIS integration and reporting. Participants document accuracy influences and validation evidence instead of relying on fixed accuracy claims. Agile Leaders Training Center develops practical geospatial data capability.

Who Should Attend

- GIS specialists importing and validating field observations
- Survey technicians collecting GPS and GNSS data
- Field engineers recording assets, sites and inspection locations
- Mapping professionals integrating points, tracks and attributes
- Asset and operations teams reviewing location-data quality

The course assumes basic computer and mapping literacy. It excludes advanced geodetic-network adjustment, hydrographic surveying, drone photogrammetry and single-vendor product certification.

Departments and Industries

The course supports organisations that collect and use location data for mapping, assets and field operations.

- Geographic information systems and spatial analytics
- Engineering, construction and infrastructure
- Utilities, transport and telecommunications
- Environmental, agricultural and land-management teams
- Emergency services, logistics and field inspection

Learning Objectives

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

- Explain GPS and GNSS positioning and major error sources
- Select coordinate systems, datums and reference-frame metadata
- Plan field observations around geometry and site constraints
- Capture points, tracks, attributes and observation records consistently
- Import, correct, process and validate field data in geospatial software
- Produce mapped outputs and a traceable field-data quality report

Course Agenda

Day 1: GPS and GNSS Positioning Fundamentals

- Satellite Ranging and Position Solution Diagram
- GPS, GNSS, Receiver and Antenna Function Map
- Satellite Geometry and Dilution of Precision Review
- Blockage, Multipath and Atmospheric Error Register
- Positioning Method and Accuracy Requirement Matrix

Day 2: Coordinate References and Field Planning

- Geographic and Projected Coordinate System Comparison
- Datum, Reference Frame, Epoch and Height Concepts
- Project Coordinate Reference and Metadata Sheet
- Observation Schedule and Site Constraint Assessment
- Receiver, Antenna and Field-Control Checklist

Day 3: Structured Field Data Collection

- Point, Waypoint, Track and Feature Collection Plan
- Attribute Schema and Data Dictionary Design
- Antenna Height, Setup and Observation Log
- Field Quality Indicators and Acceptance Checks
- Exception, Revisit and Evidence Register

Day 4: Correction and Software Processing

- Differential, RTK and Post-Processing Workflow Comparison
- Raw Observation and RINEX File Review
- Reference Data, Base Station and Correction Inputs
- Import, Transformation and Processing Sequence
- Residual, Precision and Quality-Control Evidence

Day 5: GIS Integration and Reporting Practice

- Exercise: Validate Coordinate Reference Metadata
- Exercise: Import and Inspect Field Features
- Exercise: Review Corrected Positions and Exceptions
- Exercise: Build a Map, Attribute Table and Quality Summary
- Capstone: GNSS Field-to-Map Workflow and Quality Pack

Practical Exercises

Suggested activities use asset inventory, infrastructure inspection and environmental field-data scenarios.

- Suggested activity: assess a site for blockage, multipath and geometry risks
- Suggested activity: create a field schema and observation log
- Suggested activity: compare uncorrected and processed position evidence
- Suggested activity: reconcile field metadata with mapped GIS output

FAQs

Who should take GPS software applications training?

GPS software applications training suits field, survey, GIS and asset professionals who need to move location observations from collection through processing, validation, mapping and reporting.

What factors affect GPS and GNSS accuracy?

Position quality depends on satellite geometry, signal blockage, multipath, atmospheric effects, receiver and antenna characteristics, setup, observation method, correction inputs and data-processing decisions.

Why do coordinate systems and datums matter?

Coordinate systems and datums define how positions relate to the earth and a map. Incorrect or missing reference metadata can shift features or make datasets appear inconsistent when combined.

Does the course teach one GPS software product?

No. The course teaches transferable steps for planning, collection, import, correction, processing, GIS integration and quality reporting. Interface details can vary between receiver and software products.

Conclusion

Participants take back a GNSS Field-to-Map Workflow and Quality Pack containing a coordinate-reference sheet, field plan, data dictionary, observation log, processing sequence, validation checks, mapped output and quality report. The pack helps teams make collection and software decisions traceable from the field observation to the final map.