Professional Civil Surveyor: Total Station, GPS & Layout

22 – 26 February 2027
Addis Ababa

AGILE LEADERS
Training Center

AGILE LEADERS
Training Center

Professional Civil Surveyor: Total Station, GPS & Layout

Ref: 103600474_225285 **Date:** 22 – 26 February 2027 **Location:** Addis Ababa **Fees:** 6000 Euro

Course Overview

This comprehensive program provides a practice-oriented journey into civil surveying skills, enabling participants to strengthen their capabilities in surveying field techniques, total station training, GPS surveying training, geomatics training program methods, and site surveying skills. Designed for professionals seeking mastery in land surveying, advanced land surveying, and cadastral surveying, this course equips learners with the knowledge required for surveying for construction projects and modern engineering workflows.

Throughout the training, participants develop strong technical foundations in measurement, control networks, leveling, traversing, boundary surveying, and topographic data collection. The course emphasizes both classical and contemporary techniques, offering exposure to the functions and limitations of surveying equipment, digital tools, and field data workflows. By applying structured surveying methods to real-world scenarios, learners gain the confidence to support complex site developments, infrastructure layout, land subdivision, and construction site planning.

This program focuses on accuracy, data validation, field efficiency, and technical interpretation—essential aspects for surveyors working within construction, engineering, utilities, and planning environments. By combining theoretical explanation with practical insights, the course builds reliable competencies that participants can apply immediately on active project sites.

Target Audience

- Civil surveyors
- Land surveying technicians
- Site engineers and construction engineers
- GIS and geomatics technicians
- Cadastral surveying assistants
- Infrastructure and road surveying teams
- Junior to mid-level civil engineers
- Professionals transitioning into civil surveyor training

AGILE LEADERS
Training Center

Targeted Organizational Departments

- Engineering and construction departments
- Land development and urban planning
- Infrastructure projects sections
- Roads and highways departments
- Surveying and geomatics divisions
- Real estate and cadastral departments
- GIS and mapping units
- Quality control and inspection departments

Targeted Industries

- Construction and infrastructure
- Real estate and land development
- Roadworks and transportation
- Oil and gas facilities
- Utilities and public works
- Mining and environmental projects
- Surveying and mapping firms
- Government cadastral and municipal agencies

Course Offerings

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

- Apply surveying field techniques for topographic and construction tasks
- Perform total station training tasks including traversing, layout, and resection
- Conduct GPS surveying training using RTK and GNSS equipment
- Perform cadastral surveying for legal and property boundary purposes
- Use site surveying skills for excavation, leveling, utilities, and grading
- Solve coordinate geometry problems for civil surveying tasks
- Integrate geomatics training program workflows into surveying operations
- Produce accurate survey reports, maps, and topographic deliverables
- Support surveying for construction projects from start to completion
- Execute advanced land surveying for difficult terrain and complex sites

Training Methodology

The course uses a practical, interactive approach that blends conceptual explanation with hands-on field-oriented activities. Learners engage in case discussions, scenario-based exercises, coordinate geometry practice, and layout problem-solving to strengthen civil surveying skills. Each module offers examples demonstrating surveying field techniques, total station training, GPS surveying training, and advanced land surveying applications. Although tools are not provided, participants receive detailed walkthroughs, demonstrations, and field-relevant examples to help them apply site surveying skills directly to real project environments.

Course Toolbox

- Survey task checklists
- Coordinate geometry templates
- Topographic fieldwork forms
- Control point setup guide
- Data collection templates
- Stakeout and site layout workflow sheets
- Sample drawings and mapping structures
- Survey accuracy reference sheets

AGILE LEADERS
Training Center

Course Agenda

Day 1: Foundations of Civil & Land Surveying

- **Topic 1:** Core surveying field techniques and fundamentals of civil surveying skills
- **Topic 2:** Understanding survey measurements: distances, angles, elevations, and coordinates
- **Topic 3:** Establishing control networks, benchmarks, and traverses for land surveying
- **Topic 4:** Introduction to cadastral surveying and legal boundary identification
- **Topic 5:** Essential site surveying skills for construction preparation and alignment
- **Topic 6:** Accuracy principles, error sources, and measurement validation techniques
- **Reflection & Review:** Summary of foundational surveying principles and key learning points

Day 2: Total Station Operations & Advanced Layout

- **Topic 1:** Total station setup, calibration, and equipment handling
- **Topic 2:** Angle measurement, EDM, traversing, and resection workflows
- **Topic 3:** Construction layout tasks: axes, offsets, levels, and stakeout procedures
- **Topic 4:** Error detection and correction in total station operations
- **Topic 5:** Using robotic and reflectorless total stations in advanced land surveying
- **Topic 6:** Recording, storing, and transferring field data for construction projects
- **Reflection & Review:** Review of applied total station methods and layout accuracy

Day 3: GPS/GNSS Surveying & Geomatics Integration

- **Topic 1:** Fundamentals of GPS surveying training and satellite positioning concepts
- **Topic 2:** RTK GNSS surveying workflows and site calibration procedures
- **Topic 3:** Techniques for integrating GPS data with geomatics training program tools
- **Topic 4:** Quality assurance for GNSS positioning, multipath avoidance, and error mitigation
- **Topic 5:** Using GNSS for topographic data collection, utility mapping, and route surveys
- **Topic 6:** Data processing, coordinate conversion, and integration into digital maps
- **Reflection & Review:** Comparison of GPS vs total station workflows and best applications

AGILE LEADERS
Training Center

Day 4: Topographic, Cadastral & Construction Surveying

- **Topic 1:** Performing topographic surveying and creating terrain models
- **Topic 2:** Cadastral surveying for property boundaries, parcel divisions, and documentation
- **Topic 3:** Surveying for construction projects including earthwork control and utilities layout
- **Topic 4:** Capturing and coding field features for mapping and design applications
- **Topic 5:** Creating topographic drawings, layers, and field-to-office workflows
- **Topic 6:** Quality control, accuracy checks, and final verification techniques
- **Reflection & Review:** Integrating topographic and cadastral data for construction decision-making

Day 5: Applied Surveying, CoGo Computations & Field Synthesis

- **Topic 1:** Coordinate geometry CoGo computations for layout planning and problem solving
- **Topic 2:** Managing site surveying skills in advanced and constrained environments
- **Topic 3:** End-to-end surveying workflow from reconnaissance to final mapping
- **Topic 4:** Practical challenges: obstructions, safety, weather, and real-world complexities
- **Topic 5:** Advanced land surveying techniques for multi-phase project coordination
- **Topic 6:** Final field application: planning, executing, and documenting a full survey task
- **Reflection & Review:** Competency evaluation, project debrief, and course closure

FAQ

What specific qualifications or prerequisites are needed for participants before enrolling in the course?

Participants benefit from having a basic understanding of construction or engineering principles. Prior experience with field measurements or site work is helpful but not required.

How long is each day's session, and is there a total number of hours required for the entire course?

Each day is structured for 4–5 hours of training with breaks and interactive elements. The course runs for 1 week, totaling 20–25 hours of training.

Why do measurements sometimes differ between GPS and total station outputs?

Differences arise due to satellite geometry, atmospheric factors, line-of-sight restrictions, and instrument calibration. These variations are normal and manageable when proper field procedures are followed.

AGILE LEADERS
Training Center

How This Course is Different from Other Professional Civil Surveyor Courses

This program focuses on real-world readiness by blending surveying field techniques, GPS surveying training, and total station training into a practical framework that mirrors on-site conditions. Unlike typical land surveying courses that emphasize theory alone, this training connects every topic to real construction environments, enabling participants to directly apply site surveying skills to excavation, utilities, grading, layout, and boundary applications.

The course also provides advanced exposure to geomatics training program practices, preparing participants to work confidently with both traditional and digital survey workflows. Throughout the sessions, participants engage in analytical tasks, data validation, and decision-making challenges commonly encountered in surveying for construction projects.
By the end of this course, participants can independently plan, execute, and verify complete surveying tasks—making this program stand out as a higher-level, practice-based civil surveyor training experience.