Total Station Surveying Training Course

Professional Development Training Course Outline

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

Course Introduction

Total Station Surveying Training Course is designed to develop advanced skills in modern land surveying, geospatial technology, digital mapping, and construction measurement solutions. This professional training equips participants with practical expertise in operating advanced total station instruments, electronic distance measurement (EDM), robotic surveying systems, coordinate geometry (COGO), field data collection, and survey data processing software. With the rapid growth of smart construction, infrastructure development, BIM integration, GIS applications, and precision engineering projects, skilled total station surveyors are highly demanded across the global surveying and construction industries.

This hands-on course combines theoretical concepts, field-based practical training, real-world project simulations, and industry case studies to help learners master high-accuracy surveying techniques, topographic surveys, boundary surveys, construction layout, road alignment surveys, and 3D coordinate measurement workflows. Participants gain the confidence to apply total station technology in civil engineering projects, urban development, mining operations, infrastructure planning, and geospatial data management, making them job-ready professionals in the evolving digital surveying sector.

Programme Curriculum

Total Station Surveying Training Course

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Course Duration

5 days

Course Objectives

1. Develop professional skills in advanced total station operation and precision surveying techniques.
2. Understand modern digital surveying workflows and geospatial data acquisition methods.
3. Master coordinate systems, control points, benchmarks, and survey network establishment.
4. Learn accurate distance measurement, angle measurement, and elevation determination techniques.
5. Apply construction surveying principles for infrastructure and engineering projects.
6. Gain expertise in topographic mapping and terrain modeling using total station data.
7. Understand CAD-based survey data processing and digital drafting workflows.
8. Develop skills in stakeout surveys, alignment setting, and construction monitoring.
9. Learn integration of Total Station, GPS/GNSS, GIS, and BIM technologies.
10. Improve capability in survey error analysis, accuracy control, and quality assurance.
11. Perform professional field data collection and survey reporting practices.
12. Understand applications of robotic total stations and automated surveying systems.
13. Prepare participants for careers in smart infrastructure, digital construction, and geospatial industries.

Target Audience

1. Civil Engineers seeking advanced surveying skills.
2. Land Surveyors upgrading to digital surveying technologies.
3. Construction Engineers and Site Supervisors.
4. GIS Professionals and Mapping Specialists.
5. Architects involved in construction coordination.
6. Mining and Infrastructure Project Professionals.
7. Students pursuing Civil Engineering and Geomatics careers.
8. Contractors and Technical Professionals requiring precision measurement skills.

Course Modules

Module 1: Fundamentals of Total Station Surveying

- Introduction to modern surveying technology and total station systems.
- Components, functions, and operating principles of total station instruments.
- Understanding EDM technology, electronic angles, and measurement accuracy.
- Setting up instruments, leveling, centering, and calibration procedures.
- Case Study: High-precision site survey preparation for a commercial building project.

Module 2: Total Station Instrument Operation and Field Techniques

- Practical operation of popular total station models and controllers.
- Creating projects, job files, and survey configurations.
- Field observations, point collection, and coding techniques.
- Managing survey data through digital controllers.
- Case Study: **Topographic data collection for urban road development**

Module 3: Coordinate Systems and Survey Control Networks

- Understanding local coordinates, global coordinates, and reference systems.
- Establishing control points and permanent survey markers.
- Traversing techniques and coordinate calculations.
- Error balancing and survey accuracy improvement.
- Case Study: **Establishing control networks for large infrastructure projects**.

Module 4: Construction Surveying and Setting Out

- Building layout, grid setting, and foundation positioning.
- Road alignment, bridge positioning, and structural layout surveys.
- Accurate stakeout procedures using total stations.
- Construction monitoring and deformation measurement.
- Case Study: **High-rise building construction alignment and monitoring project**

Module 5: Topographic Surveying and Digital Mapping

- Terrain data collection and surface modeling concepts.
- Contour generation and elevation analysis.
- Creating digital terrain models (DTM).
- Integration with CAD and GIS platforms.
- Case Study: **Topographic mapping for land development planning**.

Module 6: Data Processing, CAD Integration, and Survey Reports

- Downloading and managing field survey data.
- Processing coordinates and generating survey drawings.
- CAD drafting standards and digital documentation.
- Creating professional survey reports and deliverables.
- Case Study: **Infrastructure project survey documentation workflow**.

Module 7: Advanced Surveying Technologies

- Introduction to **robotic total stations and automated surveying**.
- Integration of Total Station with **GNSS, GIS, and BIM workflows**.
- 3D measurement techniques and digital construction monitoring.
- Smart surveying solutions using cloud-based platforms.
- Case Study: **BIM-enabled construction monitoring using robotic surveying**.

Module 8: Professional Survey Applications and Industry Projects

- Mining, roads, bridges, tunnels, and industrial surveying applications.
- Quality control procedures for engineering surveys.
- Safety practices and professional field management.
- Preparing survey teams for real-world projects.

- Case Study: **Large-scale infrastructure development survey management**

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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

Start Date	End Date	Location	Price
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
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