Advanced Land Surveying Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Advanced Land Surveying has evolved significantly with the integration of GNSS/GPS surveying, drone mapping, LiDAR technology, GIS integration, Building Information Modelling (BIM), Artificial Intelligence (AI), Digital Twin technology, cloud-based geospatial platforms, machine control systems, and automated data processing. Modern surveying professionals require advanced competencies to deliver highly accurate spatial data for infrastructure development, smart cities, transportation networks, mining, oil and gas, construction, environmental management, and land administration. Advanced Land Surveying Training Course provides participants with the practical knowledge and technical skills required to operate state-of-the-art surveying equipment, analyse geospatial datasets, and produce industry-compliant survey deliverables using international best practices.

The course combines field-based practical exercises, real-world case studies, simulation projects, GIS analysis, UAV photogrammetry, 3D laser scanning, digital terrain modelling, cadastral surveying, engineering surveys, hydrographic surveying, and geospatial data management. Participants will learn how emerging technologies such as AI-powered surveying, cloud GIS, remote sensing analytics, BIM integration, digital twins, IoT-enabled surveying systems, and precision mapping are transforming the surveying profession. Upon completion, participants will be equipped to improve project accuracy, reduce operational risks, optimise workflows, ensure regulatory compliance, and support sustainable infrastructure development.

Programme Curriculum

Advanced Land Surveying Training Course

Introduction

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10 days

Course Objectives

Upon completion of this training, participants will be able to:

1. Master Advanced GNSS/GPS Surveying Techniques for high-precision positioning.
2. Apply Drone Surveying and UAV Photogrammetry for aerial mapping.
3. Conduct LiDAR Data Acquisition and Processing for 3D mapping.
4. Integrate GIS and Spatial Data Analytics into surveying projects.
5. Perform Digital Terrain Modelling (DTM) and Surface Analysis.
6. Execute Engineering and Construction Surveying using modern technologies.
7. Implement Building Information Modelling (BIM) Integration for infrastructure projects.
8. Apply AI and Machine Learning in Geospatial Data Processing.
9. Conduct Hydrographic and Marine Surveying using advanced equipment.
10. Perform Cadastral Surveying and Land Administration using digital workflows.
11. Utilise Cloud-Based Survey Data Management and Digital Twin Technologies.
12. Improve Survey Quality Assurance, Risk Management, and International Standards Compliance.
13. Develop complete Smart Surveying Project Management and Reporting capabilities.

Target Audience

1. Land Surveyors
2. Geospatial Engineers
3. Civil Engineers
4. GIS Specialists
5. Construction Project Managers
6. Mining Engineers
7. Urban and Regional Planners
8. Government Land Administration Officers

Course Modules

Module 1: Fundamentals of Advanced Land Surveying

- Evolution of modern surveying
- Survey accuracy and precision
- International surveying standards
- Digital surveying workflows
- Survey planning
- **Case Study:** Digital transformation of a national cadastral mapping project.

Module 2: Advanced GNSS/GPS Surveying

- RTK surveying
- Static GPS surveys
- Network RTK
- Control point establishment
- Error correction techniques
- **Case Study:** Highway alignment survey using RTK GNSS.

Module 3: Total Station and Robotic Surveying

- Robotic total stations
- Electronic data collection
- Automated stakeout
- Traverse adjustment
- Precision measurements
- **Case Study:** High-rise building layout survey.

Module 4: Drone Surveying and UAV Photogrammetry

- UAV mission planning
- Flight operations
- Image acquisition
- Orthophoto generation
- 3D reconstruction
- **Case Study:** Mining volume calculation using drone mapping.

Module 5: LiDAR Surveying Technology

- Airborne LiDAR
- Mobile LiDAR
- Terrestrial laser scanning
- Point cloud processing
- Feature extraction
- **Case Study:** Smart city 3D mapping project.

Module 6: Geographic Information Systems (GIS)

- Spatial database management
- GIS analysis
- Spatial modelling
- Geospatial visualisation
- GIS project integration

- **Case Study:** Utility infrastructure mapping.

Module 7: Digital Terrain Modelling

- DEM creation
- Contour generation
- Surface modelling
- Volume calculations
- Terrain analysis
- **Case Study:** Dam construction earthwork estimation.

Module 8: Engineering Surveying

- Route surveys
- Bridge surveys
- Tunnel surveys
- Industrial plant surveys
- Construction monitoring
- **Case Study:** Railway construction alignment.

Module 9: BIM Integration for Surveyors

- BIM concepts
- Survey-to-BIM workflow
- Data interoperability
- Clash detection
- Asset management
- **Case Study:** BIM implementation for commercial building construction.

Module 10: Hydrographic Surveying

- Bathymetric surveys
- Sonar systems
- Water level corrections
- Marine positioning
- Hydrographic mapping
- **Case Study:** Port expansion hydrographic survey.

Module 11: Cadastral Surveying and Land Administration

- Boundary surveys
- Parcel subdivision
- Land registration
- Digital cadastre
- Legal documentation
- **Case Study:** National digital land registration programme.

Module 12: AI and Emerging Survey Technologies

- AI-assisted mapping
- Machine learning applications
- Digital twins

- IoT-enabled surveying
- Automated feature extraction
- **Case Study:** AI-driven infrastructure monitoring.

Module 13: Survey Quality Assurance and Risk Management

- Survey validation
- Calibration procedures
- Risk assessment
- Quality control
- Compliance standards
- **Case Study:** Quality assurance in airport expansion surveying.

Module 14: Survey Project Management

- Resource planning
- Budget control
- Team coordination
- Stakeholder communication
- Project reporting
- **Case Study:** Multi-disciplinary infrastructure survey project.

Module 15: Integrated Capstone Survey Project

- Project planning
- Field data acquisition
- GIS processing
- Technical reporting
- Final project presentation
- **Case Study:** End-to-end smart city land surveying and digital mapping project.

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
07 Sep 2026	18 Sep 2026	Online	$2,000
07 Sep 2026	18 Sep 2026	Physical	$3,000
14 Sep 2026	25 Sep 2026	Online	$2,000
14 Sep 2026	25 Sep 2026	Physical	$3,000
21 Sep 2026	02 Oct 2026	Online	$2,000
21 Sep 2026	02 Oct 2026	Physical	$3,000
28 Sep 2026	09 Oct 2026	Online	$2,000
28 Sep 2026	09 Oct 2026	Physical	$3,000

Ready to enroll or request a customized program? Book online or contact us:

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