LiDAR Surveying Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$3,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The LiDAR Surveying Training Course is designed to develop advanced skills in Light Detection and Ranging (LiDAR) technology, 3D laser scanning, geospatial intelligence, digital terrain modeling (DTM), point cloud processing, and high-accuracy mapping solutions. With the rapid growth of remote sensing, GIS automation, drone LiDAR, smart infrastructure, digital twins, and AI-powered geospatial analytics, LiDAR has become a critical technology for modern surveying, engineering, construction, environmental monitoring, and urban development projects. This course provides practical knowledge of LiDAR data acquisition, processing workflows, classification techniques, accuracy assessment, and professional mapping applications.

Participants will gain hands-on expertise in terrestrial LiDAR surveying, airborne LiDAR mapping, UAV LiDAR systems, GNSS integration, point cloud analysis, 3D visualization, and industry-standard software workflows. The program combines theoretical concepts with real-world project applications and case studies covering infrastructure development, mining, forestry, smart cities, transportation corridors, and environmental surveys. By completing this training, professionals will be equipped to deliver efficient, accurate, and technology-driven surveying solutions for the evolving geospatial and digital transformation industry.

Programme Curriculum

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Course Duration

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Course Objectives

1. Understand the fundamentals of LiDAR technology, laser scanning principles, and remote sensing applications.
2. Develop expertise in LiDAR data acquisition planning and survey workflow optimization.
3. Learn advanced point cloud processing, filtering, classification, and feature extraction techniques.
4. Master 3D terrain modeling, digital elevation models (DEM), and digital surface models (DSM) generation.
5. Gain practical knowledge of UAV LiDAR mapping and drone-based surveying technologies.
6. Apply GNSS, IMU, and sensor integration methods for high-precision LiDAR surveys.
7. Understand LiDAR accuracy assessment, quality control, and validation procedures.
8. Learn industry workflows for GIS integration and geospatial data management.
9. Develop skills in 3D visualization, digital twins, and smart city applications.
10. Explore LiDAR applications in construction monitoring, BIM integration, and infrastructure management.
11. Apply LiDAR techniques for forestry, environmental analysis, and natural resource mapping.
12. Analyze real-world LiDAR surveying case studies and project workflows.
13. Build professional capability in advanced geospatial technologies and future-ready surveying solutions.

Target Audience

1. Land Surveyors and Geomatics Professionals
2. GIS Specialists and Remote Sensing Analysts
3. Civil Engineers and Infrastructure Professionals
4. Drone Mapping and UAV Operators
5. Construction and BIM Professionals
6. Mining, Forestry, and Environmental Experts
7. Urban Planners and Smart City Professionals
8. Students and Researchers in Geospatial Science

Course Modules

Module 1: Introduction to LiDAR Technology and Applications

- Fundamentals of LiDAR sensors, laser pulses, and ranging principles
- Evolution of LiDAR technology in modern surveying
- Types of LiDAR systems

- Overview of LiDAR applications in engineering and geospatial industries
- AI-driven mapping, automation, and digital twins
- Case Study: Smart City 3D Mapping Project

Module 2: LiDAR Survey Planning and Data Acquisition

- Survey design and LiDAR mission planning strategies
- Sensor selection and flight planning for UAV LiDAR
- GNSS/IMU integration for accurate positioning
- Field data collection techniques and best practices
- Survey safety, standards, and quality requirements
- Case Study: Highway Corridor Mapping Project

Module 3: Point Cloud Processing and Management

- Introduction to LiDAR point cloud structure and formats
- Point cloud filtering and noise removal techniques
- Classification of ground, vegetation, buildings, and objects
- Automated and manual point cloud processing workflows
- Data management and optimization for large datasets
- Case Study: Urban Building Extraction Project

Module 4: Digital Terrain Modeling and 3D Mapping

- Creating Digital Elevation Models (DEM)
- Digital Surface Model (DSM) generation
- Contour generation and terrain analysis
- 3D visualization and geospatial modeling
- Integration with GIS platforms
- Case Study: Flood Risk Assessment Project

Module 5: UAV LiDAR Surveying and Drone Mapping

- UAV LiDAR system components and workflows
- Drone mission planning and flight optimization
- Combining UAV imagery with LiDAR data
- Processing drone-based point clouds
- Regulatory considerations and operational practices
- Case Study: Mining Volume Calculation Project

Module 6: Advanced LiDAR Applications

- LiDAR applications in BIM and construction monitoring
- Infrastructure inspection using 3D scanning
- Forestry inventory and biomass estimation
- Environmental monitoring using remote sensing
- Asset management and smart infrastructure solutions
- Case Study: Bridge Inspection Project

Module 7: LiDAR Software Tools and Industry Workflow

- Overview of professional LiDAR processing software

- Point cloud visualization and editing workflows
- GIS integration and spatial analysis
- Data export formats and interoperability
- Industry-standard project delivery procedures
- Case Study: Large-Scale Mapping Project

Module 8: LiDAR Project Implementation and Future Technologies

- Complete LiDAR project lifecycle management
- Accuracy reporting and quality assurance
- AI and machine learning in LiDAR analysis
- Digital twins and real-time geospatial monitoring
- Career opportunities and future trends in LiDAR surveying
- Case Study: Digital Twin Infrastructure 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
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
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:

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