Laser Scanning for Buildings Training Course

Professional Development Training Course Outline

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

Course Introduction

Laser Scanning for Buildings is a cutting-edge Reality Capture, LiDAR (Light Detection and Ranging), and Digital Construction Technology training program designed to equip professionals with advanced skills in 3D laser scanning, point cloud processing, BIM integration, and digital twin creation. Laser Scanning for Buildings Training Course focuses on modern workflows used in AEC (Architecture, Engineering & Construction), infrastructure mapping, heritage documentation, and smart building development, enabling high-precision spatial data acquisition for informed decision-making.

With the rapid adoption of Scan-to-BIM, Construction Digitization, and Smart City Technologies, laser scanning has become a critical tool for improving accuracy, reducing rework, and enhancing project efficiency. Participants will gain hands-on expertise in terrestrial laser scanning (TLS), mobile LiDAR, drone-based scanning, and point cloud modeling software, preparing them for real-world applications in construction surveying, facility management, and as-built documentation.

Programme Curriculum

Laser Scanning for Buildings Training Course

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Course Duration

5 days

Course Objectives

1. Master 3D Laser Scanning Technology for building documentation and surveying
2. Understand LiDAR Data Acquisition Techniques for construction environments
3. Develop expertise in Point Cloud Processing and Registration workflows
4. Apply Scan-to-BIM Conversion Techniques for digital construction modeling
5. Utilize Reality Capture Systems for accurate as-built documentation
6. Integrate Digital Twin Technology in smart building projects
7. Perform Geospatial Data Analysis using advanced scanning datasets
8. Implement Terrestrial Laser Scanning (TLS) Operations in field projects
9. Use Mobile Mapping Systems (MMS) for large-scale infrastructure scanning
10. Analyze Construction Deviation and Clash Detection using point clouds
11. Optimize workflows with BIM Software Integration (Revit, Navisworks)
12. Enhance project delivery through As-Built Modeling and Verification
13. Apply AI-driven Construction Analytics for smart infrastructure planning

Target Audience

1. Civil Engineers and Structural Engineers
2. Architects and BIM Modelers
3. Surveyors and Geospatial Professionals
4. Construction Project Managers
5. Infrastructure Developers and Contractors
6. Facility and Asset Management Professionals
7. GIS Specialists and Urban Planners
8. Students and Researchers in AEC and Geomatics

Course Modules

Module 1: Fundamentals of Laser Scanning & LiDAR Technology

- Principles of laser scanning and electromagnetic wave reflection
- Introduction to LiDAR systems and components
- Types of scanners: TLS, MMS, and aerial LiDAR
- Accuracy, resolution, and scanning range concepts
- Data acquisition workflow in construction environments
- **Case Study:** High-precision scanning of a commercial office building for structural assessment and renovation planning

Module 2: Reality Capture & Data Acquisition Techniques

- Site preparation for scanning operations

- Scan planning and control point setup
- Terrestrial and drone-based scanning methods
- Environmental challenges in data capture
- Safety protocols in field scanning operations
- **Case Study:** Reality capture of a high-rise construction site for progress monitoring

Module 3: Point Cloud Processing & Registration

- Importing and managing point cloud datasets
- Registration techniques (target-based & cloud-to-cloud)
- Noise removal and data cleaning
- Coordinate system alignment and georeferencing
- Data optimization for BIM workflows
- **Case Study:** Point cloud registration of a hospital building for structural validation

Module 4: Scan-to-BIM Workflow Integration

- Converting point clouds to BIM models
- Revit and Navisworks integration techniques
- As-built modeling standards
- Parametric modeling from scan data
- Clash detection and model validation
- **Case Study:** Scan-to-BIM conversion of an industrial warehouse for retrofit design

Module 5: Digital Twin & Smart Construction Applications

- Introduction to digital twin ecosystems
- Real-time data integration from sensors and scans
- Lifecycle asset management
- Smart infrastructure monitoring
- Predictive maintenance using scan data
- **Case Study:** Digital twin creation of a smart campus for facility management

Module 6: Infrastructure & Large-Scale Surveying

- Highway, bridge, and tunnel scanning techniques
- Mobile mapping systems for corridor projects
- Topographic modeling from LiDAR data
- Volume calculations and earthwork analysis
- GIS integration for infrastructure planning
- **Case Study:** Road corridor mapping for highway expansion planning

Module 7: Advanced Analysis & Quality Control

- Deformation and structural analysis using scans
- As-built vs design comparison
- Tolerance checking and deviation reports
- Automated quality control workflows
- AI-assisted anomaly detection
- **Case Study:** Structural deformation analysis of a bridge under load conditions

Module 8: Software Tools & Industry Applications

- Autodesk ReCap, Revit, and Navisworks usage
- CloudCompare and Leica Cyclone workflows
- Faro Scene and Trimble RealWorks overview
- Data export and interoperability standards
- Industry applications in AEC, mining, and oil & gas
- **Case Study:** Multi-software workflow integration for a mixed-use development 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:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com