# Mine Surveying Techniques Training Course

Professional Development Training Course Outline

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

## Course Introduction

Mine Surveying Techniques Training Course is designed to equip learners with advanced competencies in modern mine mapping, digital surveying systems, geospatial analytics, and underground positioning technologies. With the mining industry rapidly adopting automation, GIS integration, drone surveying, LiDAR scanning, and real-time data modeling, skilled mine surveyors are increasingly essential for operational accuracy, safety compliance, and resource optimization.

This training provides a comprehensive foundation in both theoretical principles and hands-on surveying applications used in surface and underground mining environments. Participants will gain exposure to cutting-edge surveying instruments, 3D mine modeling software, spatial data interpretation, and regulatory surveying standards. The course emphasizes real-world application through case studies, simulation exercises, and industry-based scenarios aligned with global mining best practices.

## Programme Curriculum

**Mine Surveying Techniques Training Course**

**Introduction**

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industry-based scenarios aligned with global mining best practices.

**Course Duration**

5 days

**Course Objectives**

1. Master modern mine surveying technologies and digital mapping systems
2. Apply GPS, GNSS, and total station operations in mining environments
3. Develop expertise in underground and surface mine spatial data acquisition
4. Implement 3D mine modeling and geological visualization techniques
5. Understand drone (UAV) surveying and aerial photogrammetry in mining
6. Utilize LiDAR scanning for high-precision terrain and mine mapping
7. Perform volume calculations and ore reserve estimations accurately
8. Integrate GIS-based mine planning and spatial data analytics
9. Ensure mine safety compliance through surveying accuracy standards
10. Interpret geotechnical and geological survey data effectively
11. Operate advanced surveying software
12. Apply real-time monitoring and digital twin mining technologies
13. Strengthen decision-making using data-driven mine survey reporting

**Target Audience**

1. Mining engineers and technicians
2. Mine surveyors
3. Geologists and geotechnical engineers
4. Quarry and open-cast mining personnel
5. Government mining inspectors and regulators
6. GIS and geospatial analysts
7. Mining project managers and planners
8. Engineering students specializing in mining or geosciences

**Course Modules**

**Module 1: Fundamentals of Mine Surveying**

- Principles of mine surveying and spatial measurement
- Surveying instruments overview
- Coordinate systems and mine mapping basics
- Surface vs underground surveying differences
- Case Study: Basic shaft alignment in underground mine setup

**Module 2: Advanced Surveying Instruments & Equipment**

- Total stations and digital levels operation
- GNSS/GPS applications in mining
- Calibration and error correction techniques
- Instrument maintenance and field accuracy checks
- Case Study: Precision alignment in open-pit mining

**Module 3: Underground Mine Surveying Techniques**

- Underground traverse systems and control networks
- Tunnel and shaft surveying methods
- Ventilation and excavation alignment surveying
- Safety protocols in confined mining environments
- Case Study: Deep-level gold mine tunnel mapping

**Module 4: Surface Mine Surveying & Mapping**

- Open-pit surveying workflows
- Bench design and slope stability measurements
- Stockpile volume estimation techniques
- Topographic mapping and contour generation
- Case Study: Coal mine pit expansion planning

**Module 5: Digital Mapping & GIS in Mining**

- GIS integration in mine planning
- Spatial data layering and analysis
- Digital terrain models (DTM) creation
- Mine cadastre systems and land management
- Case Study: GIS-based copper mine optimization

**Module 6: UAV, Photogrammetry & LiDAR Applications**

- Drone surveying principles in mining
- Aerial photogrammetry data processing
- LiDAR scanning and point cloud analysis
- 3D surface reconstruction techniques
- Case Study: Drone survey of large limestone quarry

**Module 7: Mine Planning & 3D Modeling**

- Mine design software tools
- Ore body modeling and reserve estimation
- Blast design coordination with survey data
- Digital twin mining systems
- Case Study: 3D modeling of platinum mine reserves

**Module 8: Compliance, Safety & Reporting**

- Mining regulations and surveying compliance standards
- Risk assessment in surveying operations
- Data validation and reporting accuracy
- Survey documentation and audit trails
- Case Study: Safety compliance audit in underground mine

## Training Methodology

- 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 |

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **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