Survey Design for Mining Research Training Course

Professional Development Training Course Outline

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

Course Introduction

Survey Design for Mining Research Training Course is developed to equip participants with advanced skills in geological data collection, mining feasibility surveys, mineral exploration analytics, and spatial data interpretation. The course integrates modern GIS applications, remote sensing technologies, geostatistical modeling, and digital field survey techniques to enhance decision-making in mining research environments. Participants will gain practical expertise in designing robust survey frameworks that improve accuracy, efficiency, and compliance in mineral resource evaluation.

With increasing demand for critical minerals, sustainable mining practices, ESG compliance, and data-driven exploration strategies, this training bridges the gap between academic research and real-world mining operations. It emphasizes survey accuracy, sampling methodologies, resource estimation, and exploration risk reduction, ensuring participants are prepared for both surface and underground mining research challenges in a highly competitive global mining industry.

Programme Curriculum

Survey Design for Mining Research Training Course

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Course Duration

5 days

Course Objectives

1. Master mining survey design principles for exploration projects
2. Apply geospatial data analysis (GIS & Remote Sensing) in mining research
3. Develop advanced mineral exploration survey frameworks
4. Understand geological sampling techniques and bias reduction
5. Enhance skills in resource estimation and ore body modeling
6. Implement digital field data acquisition systems
7. Improve survey accuracy and precision in mining operations
8. Apply geostatistics in mineral deposit evaluation
9. Design sustainable mining exploration strategies
10. Conduct risk assessment in mining surveys and exploration planning
11. Utilize drone mapping and LiDAR in geological surveys
12. Strengthen data interpretation for mining feasibility studies
13. Integrate AI-driven mining analytics and predictive modeling

Target Audience

1. Mining Engineers and Geological Engineers
2. Exploration Geologists
3. Surveying Technicians and Land Surveyors
4. Mining Project Managers
5. Environmental and ESG Consultants
6. Geospatial Analysts
7. Government Mining Regulators and Inspectors
8. Research Students in Geology and Mining Sciences

Course Modules

Module 1: Fundamentals of Mining Survey Design

- Principles of mining exploration surveys
- Types of surveys-surface, underground, and airborne
- Survey planning and project scoping
- Data quality standards and validation
- **Case Study:** Gold exploration survey planning in Witwatersrand Basin

Module 2: Geological Data Collection Techniques

- Rock, soil, and core sampling methods
- Drill hole logging techniques
- Sample contamination control

- Field documentation standards
- **Case Study:** Copper sampling errors in Chilean mining projects

Module 3: GIS and Remote Sensing in Mining

- Spatial data integration using GIS platforms
- Satellite imagery interpretation
- Remote sensing for mineral detection
- Map layering and spatial modeling
- **Case Study:** Iron ore mapping using satellite imagery in Australia

Module 4: Geostatistics and Resource Estimation

- Kriging and variogram analysis
- Ore body modeling techniques
- Grade estimation methods
- Uncertainty analysis in mineral deposits
- **Case Study:** Platinum resource estimation in Bushveld Complex

Module 5: Digital Survey Technologies

- Drone surveying and aerial photogrammetry
- LiDAR scanning applications
- GPS and GNSS in mining surveys
- Mobile data collection systems
- **Case Study:** Drone-based coal mine mapping in Mpumalanga

Module 6: Mining Risk and Feasibility Analysis

- Geological and operational risk mapping
- Economic feasibility assessment
- Environmental impact evaluation
- Regulatory compliance frameworks
- **Case Study:** Risk assessment failure in diamond exploration project

Module 7: Sustainable Mining & ESG Integration

- Environmental monitoring in mining surveys
- Social impact assessments
- Sustainable resource extraction strategies
- ESG reporting standards
- **Case Study:** ESG transformation in Scandinavian mining operations

Module 8: Advanced Mining Data Analytics

- AI and machine learning in mining data
- Predictive modeling for exploration success
- Big data integration in mining operations
- Visualization dashboards for decision-making
- **Case Study:** AI-driven mineral discovery in Canada

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

Start Date	End Date	Location	Price
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

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