Stratigraphy for Mining Engineers Training Course

Professional Development Training Course Outline

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

Course Introduction

Stratigraphy for Mining Engineers Training Course is designed to build advanced competence in mineral deposit stratification, sedimentary basin analysis, rock layer interpretation, and geological modelling for mining optimization. The course equips mining professionals with critical skills in lithostratigraphy, biostratigraphy, sequence stratigraphy, core logging, and geospatial geological correlation, enabling accurate resource estimation and safer, more efficient mine planning. With increasing global demand for data-driven mining, AI-assisted geological modeling, and sustainable resource extraction, stratigraphic expertise has become a cornerstone of modern mining engineering.

This training program integrates practical and theoretical frameworks used in exploration geology, ore body delineation, mine feasibility studies, and geotechnical risk assessment. Participants will gain hands-on knowledge of stratigraphic mapping, depositional environments, structural geology integration, and 3D geological modelling software applications. The course is aligned with global mining standards and supports professionals working in gold, platinum, coal, diamond, and rare earth element mining operations, ensuring high-impact decision-making in exploration and production environments.

Programme Curriculum

Stratigraphy for Mining Engineers Training Course

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Course Duration

10 Days

Course Objectives

1. Master stratigraphic correlation techniques for mining exploration
2. Apply sequence stratigraphy in ore body prediction
3. Interpret sedimentary depositional environments for mineral targeting
4. Develop competency in core logging and lithological classification
5. Use 3D geological modelling software for mine planning
6. Enhance skills in mineral resource estimation and reserve classification
7. Integrate geophysical and geochemical data with stratigraphy
8. Improve accuracy in basin analysis and structural interpretation
9. Apply AI-assisted geological modelling tools in mining workflows
10. Understand ore genesis linked to stratigraphic sequences
11. Conduct stratigraphic risk analysis for mining safety
12. Support exploration drilling strategy using stratigraphic data
13. Optimize sustainable mining practices through geological intelligence

Target Audience

1. Mining Engineers
2. Exploration Geologists
3. Geological Engineers
4. Mine Geologists
5. Geotechnical Engineers
6. Resource Estimation Specialists
7. Mining Project Managers
8. Graduate Geology and Mining Students

Course Modules

Module 1: Introduction to Stratigraphy in Mining

- Principles of stratigraphy in mining systems
- Importance of geological layering in resource exploration
- Stratigraphy vs structural geology integration
- Role in mine planning and feasibility
- Geological time scale application
- **Case Study:** Coal basin stratigraphy in South Africa

Module 2: Lithostratigraphy Fundamentals

- Rock unit classification systems
- Lithological mapping techniques
- Sedimentary vs igneous layering
- Stratigraphic column construction
- Field identification methods
- **Case Study:** Iron ore lithostratigraphy in Pilbara Basin

Module 3: Biostratigraphy Applications

- Fossil-based correlation methods
- Index fossils in mining exploration
- Paleoenvironment reconstruction
- Correlation of sedimentary layers
- Stratigraphic dating techniques
- **Case Study:** Gold-bearing sedimentary sequences in Witwatersrand Basin

Module 4: Sequence Stratigraphy

- Systems tracts identification
- Sea level change interpretation
- Depositional sequence modelling
- Basin fill analysis
- Stratigraphic architecture concepts
- **Case Study:** Offshore sedimentary basins for hydrocarbons and minerals

Module 5: Depositional Environments

- Fluvial, marine, and deltaic systems
- Sediment transport processes
- Energy conditions and deposition
- Facies analysis techniques
- Environmental reconstruction
- **Case Study:** Diamond placer deposits in alluvial systems

Module 6: Core Logging Techniques

- Drill core description standards
- Lithology and mineral content logging
- Structural feature recording
- Sampling best practices
- QA/QC protocols
- **Case Study:** Platinum reef core logging in Bushveld Complex

Module 7: Stratigraphic Correlation

- Correlation principles and methods
- Marker beds and key horizons
- Cross-section construction
- Regional correlation techniques
- Data integration methods
- **Case Study:** Correlation of coal seams in Karoo Basin

Module 8: Basin Analysis

- Tectonic setting interpretation
- Basin evolution models
- Sediment supply and accommodation space
- Structural controls on deposition
- Hydrocarbon/mineral basin comparison
- **Case Study:** Rift basin mineralization systems

Module 9: Structural Stratigraphy

- Faulting and folding impact
- Deformation of sedimentary layers
- Stress-strain relationships
- Structural traps in ore systems
- Geomechanical implications
- **Case Study:** Folded gold reefs in underground mining

Module 10: Geophysical Integration

- Seismic stratigraphy basics
- Magnetic and gravity data interpretation
- Electrical resistivity methods
- Subsurface modelling integration
- Data calibration with core logs
- **Case Study:** Iron ore detection using magnetic surveys

Module 11: Geochemical Stratigraphy

- Element distribution in layers
- Geochemical anomaly detection
- Soil and rock sampling techniques
- Pathfinders in exploration
- Data interpretation methods
- **Case Study:** Rare earth element stratigraphic profiling

Module 12: 3D Geological Modelling

- Software platforms overview
- Digital terrain modelling
- Stratigraphic surface modelling
- Ore body visualization
- Resource estimation workflows
- **Case Study:** 3D modelling of gold reef systems

Module 13: Mineral Resource Estimation

- Resource classification systems (JORC/NI 43-101)
- Grade distribution analysis
- Block modelling techniques
- Uncertainty and risk analysis
- Reporting standards

- **Case Study:** Copper deposit resource estimation

Module 14: Exploration Drilling Strategy

- Drill planning and design
- Target identification using stratigraphy
- Cost optimization techniques
- Data acquisition methods
- Sampling strategy design
- **Case Study:** Deep drilling in kimberlite pipes

Module 15: Sustainable Mining & Stratigraphy

- Environmental stratigraphic assessment
- Mine rehabilitation planning
- Waste rock stratification
- Water table interaction studies
- ESG compliance in mining
- **Case Study:** Post-mining land restoration in coal regions

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
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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