Stripping Ratio Analysis 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

Stripping Ratio Analysis is a critical component of modern open-pit mining optimization, directly influencing mine profitability, operational efficiency, and long-term strategic planning. Stripping Ratio Analysis Training Course is designed to equip mining professionals, engineers, geologists, and planners with advanced skills in waste-to-ore ratio evaluation, pit optimization, cost modeling, and economic cut-off analysis. Participants will gain a deep understanding of how stripping ratios impact mine life, production scheduling, equipment utilization, and sustainability performance in large-scale mining operations.

With increasing global pressure on ESG compliance, cost efficiency, and digital mine planning transformation, accurate stripping ratio analysis has become a cornerstone of competitive mining operations. This course integrates practical methodologies, real-world case studies, and industry-standard tools such as Lerchs-Grossmann pit optimization, block modeling, and strategic mine design frameworks. By the end of the program, learners will be able to confidently analyze, interpret, and optimize stripping ratios to maximize ore recovery while minimizing waste extraction costs.

Programme Curriculum

Stripping Ratio Analysis Training Course

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Course Duration

5 days

Course Objectives

1. Master stripping ratio fundamentals in open-pit mining systems
2. Apply waste-to-ore ratio optimization techniques
3. Understand economic cut-off grade determination
4. Perform mine profitability and cost-benefit analysis
5. Implement Lerchs-Grossmann pit optimization principles
6. Evaluate strip ratio impact on mine planning and design
7. Develop strategic mine scheduling models
8. Analyze material movement and haulage cost structures
9. Integrate geological block modeling into strip analysis
10. Improve ore reserve classification and valuation accuracy
11. Apply advanced mine economics and feasibility assessment tools
12. Enhance digital mine planning and simulation capabilities
13. Support ESG-driven sustainable mining optimization strategies

Target Audience

1. Mining Engineers
2. Geologists and Resource Modelers
3. Mine Planning Engineers
4. Production Supervisors in Mining Operations
5. Project Evaluation and Feasibility Analysts
6. Mining Consultants and Technical Advisors
7. Equipment and Operations Managers
8. Students and Graduates in Mining Engineering & Geosciences

Course Modules

Module 1: Fundamentals of Stripping Ratio in Mining

- Definition of stripping ratio (SR) and types (BCM/tonne, LOM SR)
- Relationship between ore grade and waste removal
- Economic implications of SR in open-pit mining
- Bench and pit-scale ratio variations
- Role of SR in feasibility studies
- **Case Study:** Gold mine SR miscalculation leading to 18% cost overrun

Module 2: Mine Economics and Cost Modeling

- Direct and indirect mining cost structures

- Waste removal cost vs ore revenue balance
- Break-even stripping ratio concepts
- Cost sensitivity analysis
- Commodity price impact on SR
- **Case Study:** Copper mine shutdown due to rising stripping costs

Module 3: Cut-Off Grade Optimization

- Cut-off grade vs stripping ratio relationship
- Dynamic cut-off optimization methods
- Ore/waste boundary sensitivity
- Revenue factor adjustments
- Grade control strategies
- **Case Study:** Iron ore mine increasing profit by 22% via cut-off optimization

Module 4: Pit Optimization Techniques

- Introduction to Lerchs-Grossmann algorithm
- Whittle software-based optimization concepts
- Nested pits and pushback design
- Ultimate pit limit determination
- Geotechnical constraints integration
  Case Study: Coal mine pit redesign improving SR efficiency by 15%

Module 5: Block Modeling and Geological Interpretation

- 3D block model construction principles
- Grade estimation techniques
- Ore body geometry and variability
- Data validation and reconciliation
- Model uncertainty analysis
  Case Study: Nickel deposit model refinement improving resource accuracy

Module 6: Mine Scheduling and Production Planning

- Short-term vs long-term mine planning
- Scheduling impact on stripping ratio
- Fleet allocation and haul optimization
- Stockpile management strategies
- Production sequencing models
- **Case Study:** Open-pit limestone quarry improving throughput efficiency by 30%

Module 7: Equipment Productivity and Waste Management

- Haulage cycle optimization
- Dragline vs truck-shovel stripping systems
- Fuel efficiency and operational cost control
- Waste dump design optimization
- Equipment utilization metrics
- **Case Study:** Large-scale bauxite mine reducing waste handling costs by 20%

Module 8: Sustainability, ESG & Digital Mining Integration

- ESG compliance in stripping operations
- Environmental impact of waste stripping
- Water and land rehabilitation planning
- AI and machine learning in mine optimization
- Digital twin mining systems
- **Case Study:** ESG transformation in a platinum mine reducing environmental footprint

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
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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