Mine Production Optimization 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

Mine Production Optimization is a critical discipline in modern mining operations focused on maximizing throughput, reducing operational costs, improving equipment utilization, and enhancing overall resource recovery. As mining environments become increasingly complex due to ore variability, energy constraints, safety regulations, and digital transformation, the need for data-driven and technology-enabled production optimization has never been greater. Mine Production Optimization Training Course equips professionals with advanced competencies in mine planning optimization, production scheduling, operational efficiency, lean mining principles, and digital mining analytics to drive sustainable and high-performance mining operations.

The course integrates practical and theoretical knowledge covering drill-and-blast optimization, load-and-haul efficiency, fleet management systems, production bottleneck analysis, real-time mining analytics, and AI-driven decision-making tools. Participants will learn how to transform mining operations into agile, cost-effective, and production-focused systems using proven optimization frameworks and industry best practices. The training emphasizes real-world applications through case studies from open-pit and underground mining environments, enabling learners to directly apply optimization strategies that improve productivity, safety, and profitability.

Programme Curriculum

Mine Production Optimization Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Optimize mine production throughput using advanced scheduling techniques
2. Improve load-and-haul fleet efficiency and cycle time reduction
3. Apply real-time mining data analytics for decision-making
4. Enhance drill-and-blast fragmentation optimization strategies
5. Reduce operational bottlenecks in mining value chain
6. Implement lean mining and waste reduction principles
7. Strengthen equipment utilization and availability optimization
8. Develop production forecasting and short-term scheduling models
9. Apply AI and machine learning in mine optimization workflows
10. Improve ore recovery and dilution control techniques
11. Integrate fleet management systems (FMS) for productivity gains
12. Optimize energy consumption in mining operations
13. Strengthen continuous improvement culture in mining production systems

Target Audience

1. Mining Engineers
2. Mine Managers and Operations Supervisors
3. Drill and Blast Engineers
4. Open-Pit and Underground Mining Professionals
5. Production and Shift Supervisors
6. Mineral Resource and Planning Analysts
7. Heavy Equipment and Fleet Managers
8. Data Analysts in Mining and Operational Excellence Teams

Course Modules

Module 1: Fundamentals of Mine Production Systems

- Mining production value chain analysis
- Open-pit vs underground production systems
- Key performance indicators (KPIs) in mining
- Production flow mapping and optimization basics
- Constraints identification in mining systems

- **Case Study:** Optimization of production flow in a large open-pit copper mine using bottleneck analysis.

Module 2: Drill-and-Blast Optimization

- Blast design parameters and fragmentation control
- Powder factor optimization techniques
- Vibration and environmental impact reduction
- Advanced drilling pattern optimization
- Cost-performance trade-off analysis
- **Case Study:** Improving ore fragmentation efficiency to reduce crushing costs in a gold mining operation.

Module 3: Load and Haul Optimization

- Truck-shovel matching principles
- Cycle time reduction strategies
- Queue management in haul roads
- Payload optimization and monitoring
- Fuel efficiency improvement strategies
- **Case Study:** Reducing haul cycle time by 18% through optimized dispatching in an iron ore mine.

Module 4: Fleet Management Systems (FMS) & Automation

- Digital dispatch systems and tracking tools
- Autonomous haulage systems overview
- Equipment utilization analytics
- Real-time fleet coordination
- Maintenance integration for uptime optimization
- **Case Study:** Implementation of FMS improving fleet productivity in a large-scale coal mine.

Module 5: Production Scheduling & Mine Planning

- Short-term vs long-term scheduling
- Stochastic mine planning methods
- Constraint-based scheduling models
- Grade control integration
- Scenario planning and simulation
- **Case Study:** Improving ore blending and scheduling efficiency in a polymetallic mine.

Module 6: Operational Efficiency & Bottleneck Management

- Theory of constraints in mining
- Identification of production bottlenecks
- Process optimization tools
- Lean mining applications
- Continuous improvement frameworks
- **Case Study:** Eliminating processing plant bottlenecks to increase throughput by 22%.

Module 7: Digital Mining & Data Analytics

- Mining data acquisition systems
- Real-time monitoring dashboards
- Predictive analytics for equipment performance

- AI-driven production optimization
- Digital twin applications in mining
- **Case Study:** Using predictive analytics to reduce equipment downtime in an underground mine.

Module 8: Sustainable & Energy-Efficient Mining

- Energy optimization strategies
- Carbon footprint reduction in mining operations
- Water and waste management efficiency
- Sustainable production planning
- ESG integration in mine optimization
- **Case Study:** Reducing diesel consumption through energy-efficient haulage optimization.

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:

Register Online Now

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