Mine Production Data Analytics 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 Data Analytics Training Course is designed to equip mining professionals with advanced capabilities in data-driven decision-making, predictive analytics, and operational intelligence. In an era where Mining 4.0, digital transformation, IoT-enabled mining, and AI-driven optimization are reshaping the extractive industry, this course bridges the gap between traditional mining engineering and modern data science. Participants will learn how to transform raw mine production data into actionable insights that improve ore recovery, equipment utilization, safety performance, and cost efficiency.

This training emphasizes real-world mining environments such as open-pit and underground operations, integrating tools like Python analytics, Power BI dashboards, machine learning models, SCADA systems, and real-time production monitoring platforms. By combining domain-specific mining knowledge with advanced analytics, learners will develop the capability to optimize production cycles, reduce downtime, and enhance resource estimation accuracy, fleet management, and process optimization across the mining value chain.

Programme Curriculum

Mine Production Data Analytics Training Course

Introduction

Mine Production Data Analytics Training Course is designed to equip mining professionals with advanced capabilities in data-driven decision-making, predictive analytics, and operational intelligence. In an era where Mining 4.0, digital transformation, IoT-enabled mining, and AI-driven optimization are reshaping the extractive industry, this course bridges the gap between traditional mining engineering and modern data science. Participants will learn how to transform raw mine production data into actionable insights that improve ore recovery, equipment utilization, safety performance, and cost efficiency.

This training emphasizes real-world mining environments such as open-pit and underground operations, integrating tools like Python analytics, Power BI dashboards, machine learning models, SCADA systems, and real-time production monitoring platforms. By combining domain-specific mining knowledge with advanced analytics, learners will develop the capability to optimize production cycles, reduce downtime, and enhance resource estimation accuracy, fleet management, and process optimization across the mining value chain.

Course Duration

5 days

Course Objectives

1. Master Mining Data Analytics & Production Optimization Techniques
2. Apply Predictive Maintenance Models for Mining Equipment
3. Develop Real-Time Production Monitoring Dashboards
4. Improve Ore Grade Control and Mineral Recovery Analytics
5. Utilize Machine Learning for Mining Equipment Failure Prediction
6. Enhance Haul Truck and Fleet Utilization Efficiency Analytics
7. Implement Big Data Processing in Mining Operations
8. Strengthen Mine Safety Analytics and Risk Prediction Systems
9. Optimize Drilling and Blasting Performance using Data Insights
10. Build KPI-Based Mine Production Performance Systems
11. Integrate IoT Sensor Data into Mining Decision Systems
12. Enable Cost Reduction through Operational Analytics
13. Develop Data-Driven Strategic Mine Planning Models

Target Audience

1. Mining Engineers
2. Production and Operations Managers
3. Data Analysts in Mining and Resources Sector
4. Geologists and Geotechnical Engineers
5. Maintenance and Reliability Engineers
6. Mine Planning and Scheduling Specialists
7. Metallurgists and Process Engineers
8. Energy, ESG, and Sustainability Analysts in Mining

Course Modules

Module 1: Introduction to Mining Data Ecosystem

- Overview of Mining 4.0 and digital transformation
- Types of mining production data sources
- Data lifecycle in mining operations
- Introduction to analytics tools
- Data governance and mining data quality frameworks
- **Case Study:** Digital transformation of an open-pit copper mine improving data visibility by 40%

Module 2: Mine Production Data Collection & Integration

- Sensor-based data acquisition systems
- Real-time production tracking systems

- Data integration from multiple mining systems
- Data cleaning and preprocessing techniques
- Building unified mining data warehouses
- **Case Study:** Integration of fleet and production systems reducing reporting delays by 60%

Module 3: Descriptive Analytics for Mine Performance

- KPI development for mining operations
- Production efficiency analysis
- Equipment utilization reporting
- Shift performance analytics
- Downtime categorization models
- **Case Study:** Iron ore mine improving truck utilization by 22% using KPI dashboards

Module 4: Predictive Analytics & Machine Learning

- Predictive maintenance modeling
- Equipment failure forecasting
- Regression and classification models in mining
- Time series forecasting for production
- Anomaly detection in operations
- **Case Study:** Predictive maintenance system reducing shovel breakdowns by 30%

Module 5: Ore Grade & Geological Data Analytics

- Grade control modeling techniques
- Spatial data analytics and geostatistics
- Ore body modeling integration
- Variability analysis in ore quality
- Resource estimation improvements using AI
- **Case Study:** Gold mine improving ore recovery accuracy by 18%

Module 6: Fleet & Equipment Optimization Analytics

- Haul truck cycle time analysis
- Fuel efficiency optimization
- Equipment matching and dispatch systems
- Bottleneck identification in haulage systems
- Simulation-based optimization
- **Case Study:** Open-pit mine reducing fuel consumption by 15% through analytics

Module 7: Safety & Risk Analytics in Mining

- Incident prediction models
- Safety KPI dashboards
- Hazard detection using sensor data
- Workforce behavior analytics
- Compliance monitoring systems
- **Case Study:** Underground mine reducing safety incidents by 25% using predictive alerts

Module 8: Advanced Mine Production Optimization

- Integrated production planning models
- AI-driven scheduling systems
- Real-time decision support systems
- Cost-performance optimization models
- Digital twin applications in mining
- **Case Study:** Large-scale coal mine increasing output efficiency by 20% using digital twins

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- 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