Gold Leaching 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

Gold leaching remains one of the most critical and economically significant processes in the global mining industry, enabling the efficient extraction of gold from low-grade and complex ores. With increasing demand for precious metals, declining ore grades, stricter environmental regulations, and the adoption of digital mining technologies, modern gold processing facilities require advanced expertise in cyanide leaching, heap leaching, agitated tank leaching, carbon adsorption technologies, metallurgical optimization, process automation, and sustainable mineral processing. Effective gold leaching operations directly influence plant profitability, recovery efficiency, operational costs, and environmental performance.

Gold Leaching Training Course provides participants with comprehensive knowledge of gold dissolution chemistry, leaching kinetics, reagent optimization, carbon management systems, process troubleshooting, environmental stewardship, and plant optimization strategies. The program integrates international best practices, operational case studies, and practical problem-solving techniques to help professionals maximize gold recovery, improve process stability, reduce operating costs, and ensure compliance with modern mining and environmental standards.

Programme Curriculum

Gold Leaching Training Course

Introduction

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Course Duration

10 Days

Course Objectives

Upon successful completion of this course, participants will be able to:

1. Understand advanced gold leaching principles and extraction mechanisms.
2. Optimize cyanide utilization for maximum gold recovery.
3. Evaluate ore mineralogy and its impact on leaching performance.
4. Apply metallurgical testing techniques for process improvement.
5. Analyze gold dissolution kinetics and reaction control parameters.
6. Design and optimize heap leach and tank leach operations.
7. Improve Carbon-in-Pulp (CIP) and Carbon-in-Leach (CIL) performance.
8. Implement advanced process monitoring and digital analytics tools.
9. Minimize gold losses through effective troubleshooting methods.
10. Develop sustainable and environmentally responsible leaching strategies.
11. Improve metallurgical accounting and recovery reporting systems.
12. Assess economic drivers affecting leaching plant profitability.
13. Apply industry best practices for operational excellence and continuous improvement.

Target Audience

1. Metallurgical Engineers
2. Process Engineers
3. Mining Engineers
4. Gold Plant Managers
5. Production Supervisors
6. Laboratory and Assay Personnel
7. Environmental and Compliance Officers
8. Mineral Processing Consultants

Course Modules

Module 1: Fundamentals of Gold Leaching Technology

- Gold occurrence and mineralogy
- Overview of gold extraction methods
- Hydrometallurgical processing principles
- Gold dissolution mechanisms
- Factors influencing leaching efficiency
- **Case Study:** Comparative analysis of gold recovery routes in different ore types.

Module 2: Gold Ore Characterization and Metallurgical Testing

- Ore sampling methodologies
- Mineralogical investigations
- Liberation analysis
- Bottle roll testing
- Diagnostic leach testing
- **Case Study:** Ore characterization program for a new gold deposit.

Module 3: Chemistry of Cyanide Leaching

- Cyanide chemistry fundamentals
- Gold-cyanide complex formation
- Role of oxygen in leaching
- pH and alkalinity control
- Cyanide consumption mechanisms
- **Case Study:** Cyanide optimization project in a processing plant.

Module 4: Leaching Kinetics and Process Variables

- Reaction kinetics fundamentals
- Temperature effects
- Particle size optimization
- Retention time management
- Mass transfer considerations
- **Case Study:** Increasing recovery through kinetic optimization.

Module 5: Agitated Tank Leaching Systems

- Tank leach design principles
- Mixing and agitation requirements
- Residence time distribution
- Aeration systems
- Performance monitoring
- **Case Study:** Troubleshooting poor tank leach performance.

Module 6: Heap Leaching Technology

- Heap design and construction
- Ore preparation and agglomeration
- Irrigation systems
- Pregnant solution collection
- Recovery enhancement strategies
- **Case Study:** Improving heap leach recovery in low-grade ore operations.

Module 7: Carbon-in-Pulp (CIP) Operations

- Carbon adsorption fundamentals
- Carbon movement strategies
- Adsorption kinetics
- Carbon screening systems
- Recovery optimization techniques

- **Case Study:** Increasing adsorption efficiency in a CIP circuit.

Module 8: Carbon-in-Leach (CIL) Operations

- Integration of leaching and adsorption
- Circuit design considerations
- Carbon inventory control
- Process optimization
- Operational troubleshooting
- **Case Study:** Improving gold recovery in a CIL plant.

Module 9: Refractory Gold Ore Treatment

- Types of refractory ores
- Sulfide encapsulation challenges
- Oxidation pretreatment technologies
- Bio-oxidation applications
- Pressure oxidation processes
- **Case Study:** Recovery improvement from refractory ore deposits.

Module 10: Gold Recovery from Pregnant Solutions

- Solution clarification methods
- Merrill-Crowe process
- Zinc precipitation systems
- Electrowinning technology
- Recovery efficiency optimization
- **Case Study:** Enhancing electrowinning performance.

Module 11: Carbon Regeneration and Gold Elution

- Carbon fouling mechanisms
- Elution technologies
- Thermal regeneration processes
- Carbon activity monitoring
- Operating cost reduction
- **Case Study:** Restoring carbon efficiency through regeneration optimization.

Module 12: Environmental Management and Cyanide Stewardship

- International Cyanide Management Code
- Cyanide destruction technologies
- Tailings management practices
- Environmental monitoring systems
- Regulatory compliance requirements
- **Case Study:** Environmental risk reduction in gold processing operations.

Module 13: Process Control, Automation and Digital Technologies

- Instrumentation systems
- Online analyzers
- SCADA integration

- Data-driven process optimization
- Predictive maintenance tools
- **Case Study:** Digital transformation of a gold processing facility.

Module 14: Troubleshooting and Plant Optimization

- Root cause analysis techniques
- Recovery loss investigations
- Bottleneck identification
- Process auditing methodologies
- Continuous improvement programs
- **Case Study:** Recovery improvement through operational excellence initiatives.

Module 15: Integrated Gold Leaching Plant Performance Improvement

- Plant-wide optimization strategies
- Metallurgical accounting systems
- Economic performance indicators
- Risk management techniques
- Benchmarking against industry best practices
- **Case Study:** Comprehensive optimization of a large-scale gold processing plant.

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
21 Sep 2026	02 Oct 2026	Online	$2,000
21 Sep 2026	02 Oct 2026	Physical	$3,000
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0

Ready to enroll or request a customized program? Book online or contact us:

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