Leaching Processes in Mining 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

The Leaching Processes in Mining Training Course is a cutting-edge, industry-focused program designed to build advanced technical competence in hydrometallurgy, mineral extraction, and sustainable mining operations. As global demand increases for efficient and eco-friendly metal recovery, leaching technologies such as heap leaching, in-situ leaching, bioleaching, and pressure leaching have become critical in modern mining. Leaching Processes in Mining Training Course equips learners with practical and theoretical expertise in optimizing metal recovery while minimizing environmental impact, water usage, and operational costs. It integrates data-driven mining, process optimization, ESG compliance, and digital mining technologies to meet current industry 4.0 standards.

Participants will gain in-depth knowledge of chemical leaching kinetics, reagent selection, ore characterization, process control, and recovery optimization techniques used in gold, copper, uranium, and rare earth element extraction. The training emphasizes real-world applications, advanced simulation tools, and case-based learning from global mining operations. By the end of the course, learners will be capable of designing, operating, and optimizing leaching systems aligned with sustainable mining, green metallurgy, and digital transformation in mining engineering.

Programme Curriculum

Leaching Processes in Mining Training Course

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Course Duration

5 days

Course Objectives

1. Master hydrometallurgical extraction techniques
2. Understand heap leaching optimization strategies
3. Apply bioleaching and microbial mining technologies
4. Analyze ore mineralogy and geochemical behavior
5. Improve metal recovery efficiency and yield maximization
6. Implement ESG-compliant mining operations
7. Optimize cyanide and acid leaching processes
8. Use process simulation and digital twin mining models
9. Evaluate kinetic modeling of leaching reactions
10. Reduce environmental footprint in mineral processing
11. Apply automation and AI in leaching plants
12. Enhance cost-effective mineral beneficiation systems
13. Develop expertise in sustainable circular mining economy

Target Audience

1. Mining Engineers
2. Metallurgical Engineers
3. Process Plant Operators
4. Geologists and Geochemists
5. Environmental Engineers
6. Chemical Engineers
7. Mining Supervisors and Managers
8. Graduate Students in Mining & Metallurgy

Course Modules

Module 1: Fundamentals of Leaching in Mining

- Overview of hydrometallurgy and extractive metallurgy
- Types of leaching-heap, dump, vat, in-situ
- Ore mineralogy influence on leaching efficiency
- Chemical principles-dissolution and reaction kinetics
- Case Study: Gold heap leaching in Nevada mining operations

Module 2: Ore Characterization & Pre-Leaching Preparation

- Mineralogical and geochemical analysis techniques
- Crushing, grinding, and particle size optimization
- Permeability and permeability enhancement methods
- Role of liberation size in metal recovery
- Case Study: Copper ore preparation in Chile’s Escondida mine

Module 3: Chemical Reagents & Solution Chemistry

- Cyanide, acid, alkaline, and chloride leaching systems
- pH control and redox potential optimization
- Reagent consumption and cost control strategies
- Toxicity management and environmental safety
- Case Study: Cyanide management in Australian gold mines

Module 4: Heap Leaching Design & Operation

- Heap construction and irrigation systems
- Solution flow dynamics and distribution control
- Recovery optimization techniques
- Monitoring leach pad performance
- Case Study: Heap leaching operations in Peru copper mines

Module 5: Bioleaching & Microbial Mining

- Role of bacteria in metal extraction
- Bio-oxidation of sulfide ores
- Reactor design for microbial systems
- Environmental benefits of bioleaching
- Case Study: Bioleaching at South African gold tailings operations

Module 6: Pressure & In-Situ Leaching Techniques

- High-pressure autoclave systems
- In-situ uranium leaching methods
- Fluid injection and recovery systems
- Safety and geological considerations
- Case Study: Uranium in-situ leaching in Kazakhstan

Module 7: Process Control, Automation & AI

- SCADA systems in leaching plants
- Real-time monitoring and sensor integration
- AI-driven predictive optimization
- Digital twin simulation in mining operations
- Case Study: Smart leaching plant automation in Canada

Module 8: Environmental Management & Sustainability

- Waste management and detoxification
- Water recycling and reuse systems

- Tailings management best practices
- ESG compliance in mining operations
- **Case Study: Sustainable leaching practices in Scandinavian mines**

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

Start Date	End Date	Location	Price
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