Lithium Extraction Methods 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 global energy transition is accelerating demand for lithium extraction technologies, driven by the rapid expansion of electric vehicles (EVs), battery energy storage systems (BESS), and renewable energy infrastructure. Lithium, often referred to as “white gold,” is a critical mineral powering the clean energy revolution, making efficient, sustainable, and cost-effective extraction methods a strategic priority for mining companies, chemical engineers, and energy stakeholders. Lithium Extraction Methods Training Course delivers an in-depth exploration of modern and emerging lithium recovery technologies, including brine extraction, hard rock processing, direct lithium extraction (DLE), and geothermal lithium recovery systems.

Participants will gain advanced technical knowledge and practical insights into lithium brine evaporation ponds, solvent extraction, ion exchange systems, membrane separation technologies, and hydrometallurgical refining processes. The course emphasizes sustainability, ESG compliance, water efficiency, carbon footprint reduction, and resource optimization strategies. By integrating real-world industrial case studies and process simulations, learners will be equipped to evaluate, design, and optimize lithium extraction operations aligned with global demand and green mining standards.

Programme Curriculum

Lithium Extraction Methods Training Course

Introduction

The global energy transition is accelerating demand for lithium extraction technologies, driven by the rapid expansion of electric vehicles (EVs), battery energy storage systems (BESS), and renewable energy infrastructure. Lithium, often referred to as “white gold,” is a critical mineral powering the clean energy revolution, making efficient, sustainable, and cost-effective extraction methods a strategic priority for mining companies, chemical engineers, and energy stakeholders. Lithium Extraction Methods Training Course delivers an in-depth exploration of modern and emerging lithium recovery technologies, including brine extraction, hard

rock processing, direct lithium extraction (DLE), and geothermal lithium recovery systems.

Participants will gain advanced technical knowledge and practical insights into lithium brine evaporation ponds, solvent extraction, ion exchange systems, membrane separation technologies, and hydrometallurgical refining processes. The course emphasizes sustainability, ESG compliance, water efficiency, carbon footprint reduction, and resource optimization strategies. By integrating real-world industrial case studies and process simulations, learners will be equipped to evaluate, design, and optimize lithium extraction operations aligned with global demand and green mining standards.

Course Duration

5 days

Course Objectives

1. Understand global lithium supply chain dynamics and market demand trends
2. Analyze brine-based lithium extraction systems and evaporation technologies
3. Evaluate hard rock spodumene processing and beneficiation methods
4. Master Direct Lithium Extraction (DLE) technologies and innovations
5. Apply hydrometallurgical refining and lithium carbonate production techniques
6. Assess ion exchange and adsorption-based lithium recovery systems
7. Understand solvent extraction and chemical separation processes
8. Develop skills in membrane filtration and nanotechnology applications
9. Integrate sustainability, ESG compliance, and environmental impact reduction
10. Optimize water usage and energy efficiency in lithium operations
11. Interpret process flow diagrams (PFDs) and mass balance calculations
12. Evaluate pilot plant data and industrial scale-up strategies
13. Design cost-effective and high-yield lithium extraction workflows

Target Audience

1. Mining engineers and metallurgical engineers
2. Chemical and process engineers
3. Energy sector analysts and consultants
4. Lithium battery manufacturers and EV industry professionals
5. Environmental and sustainability specialists
6. Geological and exploration professionals
7. Government and regulatory mining authorities
8. Investors and project developers in critical minerals sector

Course Modules

Module 1: Global Lithium Industry & Resource Geology

- Lithium demand drivers
- Geological formation of lithium brines and pegmatites
- Global lithium reserves and production hubs
- Supply chain bottlenecks and geopolitical risks
- Case Study: Lithium Triangle (Chile, Argentina, Bolivia) brine dominance analysis

Module 2: Brine-Based Lithium Extraction

- Solar evaporation pond systems and design principles
- Chemical precipitation and impurity removal
- Magnesium-lithium separation challenges
- Brine concentration monitoring techniques
- Case Study: Salar de Atacama lithium brine operations

Module 3: Hard Rock Lithium Processing

- Spodumene mining and crushing techniques
- Calcination and acid roasting processes
- Flotation and beneficiation methods
- Conversion to lithium carbonate/hydroxide
- Case Study: Greenbushes lithium mine (Australia) processing efficiency

Module 4: Direct Lithium Extraction (DLE) Technologies

- Ion-selective sorbents and adsorption systems
- Membrane-based lithium separation
- Solvent extraction innovations
- Regeneration and reuse of extraction media
- Case Study: DLE pilot plants in North America geothermal brines

Module 5: Hydrometallurgy & Refining

- Leaching and purification processes
- Lithium carbonate vs lithium hydroxide production
- Crystallization and drying technologies
- Impurity control and product grading
- Case Study: Industrial lithium hydroxide refining in China

Module 6: Environmental & ESG Compliance

- Water footprint reduction strategies
- Tailings management and waste handling
- Carbon emissions in lithium production
- Regulatory frameworks and compliance standards
- Case Study: Sustainable lithium production in Europe ESG pilot projects

Module 7: Process Optimization & Digital Mining

- AI and machine learning in mineral processing
- Digital twins for lithium extraction plants
- Process control and automation systems
- Energy optimization strategies
- Case Study: Smart lithium plant optimization using predictive analytics

Module 8: Future Technologies & Circular Lithium Economy

- Lithium recycling from batteries
- Direct battery-to-material recovery systems
- Advanced nanomaterials in extraction
- Next-generation geothermal lithium extraction

- Case Study: Closed-loop lithium recycling facility in the USA

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