Sustainable Tailings Reuse 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

Sustainable Tailings Reuse Training Course is designed to address the growing global demand for circular economy mining solutions, mine waste valorization, tailings reprocessing, and ESG-compliant resource recovery. As mining operations face increasing pressure to reduce environmental impact, this course equips professionals with advanced knowledge on transforming mine tailings into valuable secondary resources, supporting net-zero mining, sustainable beneficiation, and climate-resilient waste management systems. Participants will explore innovative technologies, regulatory frameworks, and engineering practices that enable safe, profitable, and environmentally responsible tailings reuse.

This training integrates real-world case studies, digital mining technologies, geometallurgy, hydrometallurgy, and tailings storage facility (TSF) rehabilitation strategies. It focuses on practical implementation of ESG reporting standards, decarbonization strategies, and circular mining business models. Learners will gain the ability to design and implement tailings reprocessing projects, critical mineral recovery systems, and sustainable mine closure solutions, aligning with global sustainability goals such as UN SDGs, climate-smart mining, and responsible mineral supply chains.

Programme Curriculum

Sustainable Tailings Reuse Training Course

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Course Duration

5 days

Course Objectives

1. Understand tailings valorization and circular mining economy principles
2. Apply sustainable mine waste management strategies
3. Evaluate tailings reprocessing and mineral recovery technologies
4. Design ESG-compliant tailings storage and reuse systems
5. Implement zero-waste mining and decarbonization frameworks
6. Analyze geotechnical stability of tailings storage facilities (TSFs)
7. Apply hydrometallurgical and bioleaching recovery techniques
8. Assess critical minerals recovery from legacy tailings
9. Develop environmental impact mitigation and remediation plans
10. Integrate digital mining, AI, and remote sensing for tailings analysis
11. Apply life cycle assessment (LCA) in tailings reuse projects
12. Design sustainable mine closure and post-mining land use systems
13. Align operations with global ESG reporting and sustainability standards

Target Audience

1. Mining engineers and metallurgists
2. Environmental and geotechnical engineers
3. ESG and sustainability managers
4. Mine planning and operations professionals
5. Mineral processing specialists
6. Government regulators and policy makers
7. Research scientists in mining and materials recovery
8. Consultants in circular economy and waste management

Course Modules

Module 1: Fundamentals of Tailings Management & Circular Mining

- Overview of tailings generation and composition
- Principles of circular economy in mining
- Tailings risk classification and management systems
- Global regulations and ESG frameworks
- **Case Study:** Iron ore tailings reuse in Brazil for construction materials

Module 2: Tailings Characterization & Geometallurgy

- Mineralogical and chemical characterization techniques
- Particle size distribution and recovery potential
- Geometallurgical modeling for reuse planning
- Sampling and laboratory analysis methods
- **Case Study:** Copper tailings reprocessing in Chile using advanced geometallurgy

Module 3: Tailings Reprocessing Technologies

- Gravity, flotation, and magnetic separation techniques
- Hydrometallurgical recovery systems
- Bioleaching and microbial extraction methods
- Process optimization for recovery efficiency
- **Case Study:** Gold recovery from historical tailings in South Africa

Module 4: Environmental Risk & TSF Stability

- Tailings dam safety and failure mechanisms
- Water balance and seepage control
- Risk assessment frameworks
- Rehabilitation of abandoned TSFs
- **Case Study:** Brumadinho disaster lessons and global reform initiatives

Module 5: ESG Compliance & Sustainability Reporting

- ESG metrics for mining operations
- Climate disclosure frameworks
- Stakeholder engagement strategies
- Environmental auditing and compliance tools
- **Case Study:** ESG transformation in Scandinavian mining operations

Module 6: Digital Mining & Smart Tailings Monitoring

- AI and machine learning in tailings prediction
- Remote sensing and drone surveillance
- IoT-based TSF monitoring systems
- Data analytics for predictive maintenance
- **Case Study:** Smart tailings dam monitoring in Australia’s Pilbara region

Module 7: Mine Closure & Land Rehabilitation

- Sustainable closure planning frameworks
- Ecosystem restoration techniques
- Post-mining land use planning
- Community engagement in closure projects
- **Case Study:** Ecological restoration of phosphate tailings in Florida, USA

Module 8: Circular Economy Business Models in Mining

- Economic valuation of tailings reuse
- Secondary resource markets
- Green financing and investment models
- Innovation in mining circular supply chains

- **Case Study:** Rare earth recovery from coal ash tailings in Europe

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