Tailings Processing 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

Tailings Processing Methods represent a critical discipline within modern mining engineering, mineral processing, and sustainable waste management systems. As global mining operations expand, the volume of tailings generated from beneficiation plants continues to rise, making tailings storage, dewatering, thickening, filtration, and reprocessing technologies essential for environmental compliance and operational efficiency. Tailings Processing Methods Training Course provides a comprehensive understanding of advanced tailings management strategies, slurry handling systems, geotechnical stability, and water recovery optimization techniques used in mining, metallurgical, and mineral processing industries.

With increasing emphasis on ESG compliance, zero liquid discharge (ZLD), circular economy in mining, and sustainable tailings reprocessing, organizations are investing heavily in innovative technologies such as paste thickening, dry stacking, filtered tailings disposal, and AI-based tailings monitoring systems. This course equips professionals with practical and theoretical expertise to design, operate, and optimize tailings facilities while minimizing environmental risks such as dam failure, seepage contamination, and water loss. Participants will gain exposure to industry best practices, real-world case studies, and cutting-edge innovations shaping the future of tailings engineering and sustainable mining operations.

Programme Curriculum

Tailings Processing Methods Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Understand fundamentals of tailings characterization and slurry behavior
2. Apply principles of mineral processing waste management systems
3. Analyze tailings dam design and geotechnical stability
4. Evaluate thickening, dewatering, and sedimentation technologies
5. Implement paste tailings and high-density slurry systems
6. Optimize water recovery and recycling in processing plants
7. Assess environmental risks and tailings failure mechanisms
8. Develop expertise in filtered tailings and dry stacking methods
9. Apply ESG compliance frameworks in tailings management
10. Integrate real-time monitoring and digital twin technologies
11. Improve cost efficiency in tailings disposal operations
12. Design strategies for tailings reprocessing and mineral recovery
13. Strengthen knowledge of global mining safety and regulatory standards

Target Audience

1. Mining Engineers
2. Metallurgical Engineers
3. Mineral Processing Professionals
4. Tailings Storage Facility (TSF) Operators
5. Environmental Engineers
6. Geotechnical Engineers
7. HSE (Health, Safety & Environment) Managers
8. Mining Project Consultants

Course Modules

Module 1: Fundamentals of Tailings Processing

- Overview of tailings generation in mineral processing plants
- Types of tailings-slurry, coarse, fine, and paste
- Physical and chemical properties of tailings materials
- Tailings classification and characterization techniques
- Case Study: Iron ore tailings management in large-scale beneficiation plants

Module 2: Tailings Storage Facilities (TSF) Design

- TSF design principles and engineering standards
- Embankment construction methods
- Water balance and pond management systems
- Stability analysis and failure modes
- Case Study: Brumadinho dam failure analysis and lessons learned

Module 3: Thickening and Dewatering Technologies

- Gravity thickening principles
- High-rate and high-density thickeners
- Filtration systems and belt filters
- Paste thickening technology
- Case Study: Copper tailings dewatering optimization in Chile

Module 4: Tailings Transportation Systems

- Slurry pipeline design and hydraulic transport
- Pumping systems and energy optimization
- Wear and corrosion management in pipelines
- Pressure monitoring and control systems
- Case Study: Gold mine tailings pipeline transport efficiency improvement

Module 5: Dry Stacking and Filtered Tailings

- Principles of dry stacking technology
- Vacuum and pressure filtration systems
- Advantages of filtered tailings disposal
- Land use and environmental impact reduction
- Case Study: Dry stacking implementation in Australian mining operations

Module 6: Environmental and ESG Compliance

- Environmental impact assessment (EIA) for tailings facilities
- Water contamination and seepage control
- ESG reporting frameworks and sustainability metrics
- Regulatory compliance in global mining operations
- Case Study: ESG transformation in Canadian mining tailings management

Module 7: Tailings Reprocessing and Resource Recovery

- Secondary mineral recovery from tailings
- Hydrometallurgical and flotation reprocessing methods
- Economic feasibility of tailings re-mining
- Circular economy applications in mining
- Case Study: Rare earth recovery from phosphate tailings

Module 8: Digitalization and Smart Tailings Management

- IoT sensors for tailings monitoring
- AI-based predictive failure analysis

- Digital twins for TSF operations
- Remote sensing and drone surveillance
- Case Study: Smart tailings monitoring system in South African 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

Start Date	End Date	Location	Price
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:

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Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com