Tailings Management Systems 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 Tailings Management Systems Training Course is designed to equip professionals with advanced knowledge of Tailings Storage Facilities (TSFs), mine waste management, and globally recognized frameworks such as the Global Industry Standard on Tailings Management (GISTM). As mining operations expand globally, the demand for safe, sustainable, and compliant tailings dam management, risk mitigation strategies, and ESG-aligned mining practices has intensified. This training provides participants with cutting-edge insights into tailings facility design, monitoring systems, geotechnical stability, and environmental stewardship, ensuring alignment with international best practices from organizations such as the ICMM (International Council on Mining and Metals) and regulatory compliance standards.

Participants will gain practical and strategic competencies in tailings risk governance, dam safety engineering, real-time monitoring technologies, failure prevention systems, and emergency preparedness planning. The course integrates real-world case studies of tailings dam failures and successes, enabling learners to understand both technical and managerial dimensions of tailings lifecycle management. With a strong focus on sustainable mining, climate resilience, ESG reporting, and digital mining innovation, this program prepares professionals to lead safe and compliant tailings operations in high-risk mining environments.

Programme Curriculum

Tailings Management Systems Training Course

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5 days

Course Objectives

1. Understand Tailings Storage Facility (TSF) design principles and structural integrity standards
2. Apply Global Industry Standard on Tailings Management (GISTM) requirements effectively
3. Evaluate geotechnical stability and slope failure risks in tailings dams
4. Implement real-time tailings monitoring systems and IoT-based sensor technologies
5. Develop tailings risk assessment and hazard classification frameworks
6. Strengthen environmental impact mitigation and water management strategies
7. Design emergency preparedness and dam breach response plans
8. Improve ESG compliance and sustainability reporting in mining operations
9. Analyse historical tailings dam failure case studies and lessons learned
10. Integrate digital twins and predictive analytics in tailings management systems
11. Ensure compliance with ICMM and international mining safety standards
12. Enhance stakeholder engagement and community risk communication strategies
13. Build competency in long-term tailings closure and rehabilitation planning

Target Audience

1. Mining engineers and geotechnical engineers
2. Tailings facility managers and supervisors
3. Environmental scientists and ESG analysts
4. Mining health and safety officers
5. Civil engineers involved in dam design
6. Mining project managers and operations leaders
7. Government mining regulators and inspectors
8. Sustainability and risk management professionals

Course Modules

Module 1: Introduction to Tailings Management Systems

- Overview of TSFs and mining waste streams
- Tailings classification and material behavior
- Lifecycle of tailings facilities
- Global regulatory frameworks

- **Case Study:** Samarco Dam disaster overview and systemic failures

Module 2: Tailings Storage Facility (TSF) Design Principles

- Design methodologies: upstream, downstream, centerline
- Stability and structural integrity analysis
- Hydraulic and seepage control systems
- Design safety factors and geotechnical modeling
- **Case Study:** Successful engineered TSF in Canada’s oil sands operations

Module 3: Geotechnical Stability and Risk Assessment

- Soil mechanics and embankment stability
- Liquefaction risk analysis
- Failure mode and effects analysis (FMEA)
- Risk classification systems
- **Case Study:** Brumadinho dam failure geotechnical breakdown

Module 4: Tailings Monitoring and Instrumentation Systems

- Piezometers, inclinometers, and radar systems
- Remote sensing and satellite monitoring
- IoT-based dam surveillance systems
- Data integration and alert systems
- **Case Study:** Australian mines using AI-based TSF monitoring

Module 5: Water Management and Environmental Control

- Water balance in tailings facilities
- Decant systems and recycling processes
- Acid mine drainage prevention
- Environmental compliance frameworks
- **Case Study:** Water recovery success in Chilean copper mines

Module 6: Tailings Risk Governance and Emergency Response

- Risk governance structures and accountability
- Emergency Action Plans (EAPs)
- Disaster response coordination
- Community evacuation protocols
- **Case Study:** Mount Polley tailings breach response strategy

Module 7: ESG, Sustainability & Regulatory Compliance

- ESG frameworks in mining
- Sustainability reporting standards
- Corporate accountability in tailings management
- Stakeholder engagement strategies
- **Case Study:** ICMM member compliance transformation programs

Module 8: Tailings Closure, Rehabilitation & Future Technologies

- Mine closure planning and land rehabilitation

- Long-term environmental monitoring
- Circular economy approaches to tailings reuse
- Digital twins and predictive maintenance
- **Case Study:** Re-mining tailings for rare earth recovery in Africa

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
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