Water Recycling in Mines 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

Water scarcity, ESG compliance, and sustainable mining operations have made Water Recycling in Mines a critical competency for modern mining professionals. Water Recycling in Mines Training Course is designed to equip participants with advanced knowledge of mine water management, zero liquid discharge (ZLD), process water optimization, tailings water recovery, and circular water economy strategies. With increasing regulatory pressure and environmental accountability, mining companies are shifting toward smart water reuse systems, digital water monitoring, and sustainable dewatering technologies to reduce freshwater dependency and operational risks.

This course delivers practical and industry-aligned learning on hydrological modelling, wastewater treatment in mining, acid mine drainage (AMD) control, membrane filtration technologies, and IoT-based water tracking systems. Participants will gain hands-on insights into global best practices and real-world implementations that enhance cost efficiency, environmental sustainability, compliance readiness, and operational resilience in mining water systems.

Programme Curriculum

Water Recycling in Mines Training Course

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Course Duration

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Course Objectives

1. Understand mine water recycling systems and circular water economy models
2. Apply advanced wastewater treatment technologies in mining operations
3. Implement zero liquid discharge (ZLD) strategies in mines
4. Control and treat acid mine drainage (AMD) using modern solutions
5. Optimize process water reuse in mineral processing plants
6. Evaluate membrane filtration and reverse osmosis systems
7. Design sustainable tailings water recovery systems
8. Use IoT-based smart water monitoring and analytics
9. Improve water efficiency and ESG compliance reporting
10. Reduce freshwater consumption in mining operations
11. Integrate digital twin technology for water system optimization
12. Manage environmental risk and regulatory water compliance
13. Enhance cost savings through water recovery innovation

Target Audience

1. Mining Engineers
2. Environmental Engineers
3. Process Plant Managers
4. Sustainability & ESG Officers
5. Water Resource Engineers
6. Geologists working in mining operations
7. Health, Safety & Environment (HSE) Managers
8. Government Mining Regulators & Compliance Officers

Course Modules

Module 1: Fundamentals of Mine Water Management

- Water balance in mining operations
- Surface & groundwater interaction
- Mine dewatering systems
- Water risk assessment techniques
- Case Study: Water scarcity management in arid copper mines (Chile)

Module 2: Water Recycling Systems in Mining

- Closed-loop water systems
- Process water recycling techniques
- Slurry water recovery

- Reuse in mineral processing plants
- Case Study: Platinum mine water recycling optimization (South Africa)

Module 3: Acid Mine Drainage (AMD) Control

- AMD formation mechanisms
- Neutralization and treatment methods
- Passive vs active treatment systems
- Long-term environmental control
- Case Study: AMD remediation in coal mining regions (USA Appalachia)

Module 4: Advanced Water Treatment Technologies

- Reverse osmosis (RO) systems
- Ultrafiltration and nanofiltration
- Chemical dosing systems
- Sludge management in mining wastewater
- Case Study: Gold mine water treatment plant upgrade (Australia)

Module 5: Tailings Water Recovery Systems

- Tailings storage facility (TSF) water recovery
- Thickener and clarifier technologies
- Evaporation and seepage control
- Reprocessing of tailings water
- Case Study: Tailings dam water reuse system (Brazil iron ore mines)

Module 6: Smart Water Monitoring & Digital Solutions

- IoT sensors for water tracking
- SCADA systems in mining water control
- Predictive analytics for water usage
- Digital twin water modelling
- Case Study: Smart water management in automated diamond mine (Canada)

Module 7: Environmental Compliance & ESG Integration

- Water regulations in mining
- ESG reporting frameworks
- Environmental impact assessments (EIA)
- Water footprint reduction strategies
- Case Study: ESG water compliance transformation (EU mining sector)

Module 8: Sustainable Water Strategy & Circular Economy

- Circular water economy principles
- Zero liquid discharge (ZLD) implementation
- Renewable integration in water systems
- Long-term sustainability planning
- Case Study: Integrated ZLD system in large-scale phosphate mining (Middle East)

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
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

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