Acid Mine Drainage (AMD) Control 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

Acid Mine Drainage (AMD) remains one of the most critical environmental and operational challenges facing the global mining industry. Modern mining operations are under growing pressure to implement sustainable water management, ESG compliance, decarbonization strategies, circular economy practices, and advanced environmental remediation technologies to meet regulatory standards and stakeholder expectations. Acid Mine Drainage Control Training Course provides participants with practical, technical, and strategic knowledge to prevent, monitor, treat, and manage AMD using industry-leading technologies and global best practices.

The course integrates cutting-edge concepts including sustainable mining, mine water treatment, passive and active remediation systems, environmental risk management, predictive geochemistry, tailings management, climate resilience, digital water monitoring, and resource recovery technologies. Participants will gain practical exposure to real-world case studies, regulatory frameworks, operational risk mitigation, and innovative treatment methodologies used across the mining sector. The program is designed to strengthen technical competencies, improve environmental stewardship, enhance operational efficiency, and support long-term sustainable mining performance in accordance with international environmental standards and ESG reporting frameworks

Programme Curriculum

Acid Mine Drainage (AMD) Control Training Course

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Course Duration

5 days

Course Objectives

By the end of this training course, participants will be able to:

1. Understand the fundamentals of Acid Mine Drainage generation and geochemical reactions.
2. Apply sustainable mining and ESG-driven AMD management strategies.
3. Conduct AMD risk assessments using predictive geochemistry techniques.
4. Implement advanced mine water treatment technologies and remediation systems.
5. Develop integrated water management and circular economy solutions.
6. Evaluate passive and active AMD treatment systems for operational efficiency.
7. Monitor water quality using digital monitoring, IoT, and smart environmental technologies.
8. Design AMD prevention and source control programs for mining operations.
9. Analyze tailings storage facility risks and seepage management systems.
10. Apply environmental compliance and international regulatory standards.
11. Improve climate resilience and environmental sustainability in mining projects.
12. Develop cost-effective remediation and resource recovery strategies.
13. Strengthen stakeholder engagement, environmental governance, and sustainability reporting.

Target Audience

This course is designed for:

1. Environmental Managers and Officers
2. Mining Engineers and Mine Managers
3. Water Treatment and Process Engineers
4. Geologists and Hydrogeologists
5. ESG and Sustainability Professionals
6. Government Environmental Regulators
7. Health, Safety, and Environmental (HSE) Personnel
8. Consultants and Environmental Scientists

Course Modules

Module 1: Fundamentals of Acid Mine Drainage

- Introduction to Acid Mine Drainage formation mechanisms

- Sulfide mineral oxidation processes
- Geochemistry of acidic water generation
- Environmental and socio-economic impacts of AMD
- Global AMD trends and emerging industry challenges
- **Case Study:** Analysis of AMD impacts from abandoned gold and coal mines.

Module 2: AMD Risk Assessment and Predictive Geochemistry

- Static and kinetic testing methods
- Acid-base accounting techniques
- Geochemical characterization of waste rock and tailings
- Hydrogeological risk assessment
- Predictive modeling and simulation tools
- **Case Study:** Predictive geochemical assessment for a copper mining project.

Module 3: AMD Prevention and Source Control

- Waste rock and tailings management
- Mine design strategies for AMD minimization
- Oxygen and water ingress control systems
- Covers, liners, and encapsulation technologies
- Sustainable mine closure planning
- **Case Study:** Implementation of dry cover systems in sulfide waste management.

Module 4: Active Treatment Technologies

- Neutralization and chemical treatment processes
- High-density sludge systems
- Membrane filtration and reverse osmosis
- Biological treatment technologies
- Sludge management and disposal
- **Case Study:** Operational optimization of an active water treatment plant.

Module 5: Passive Treatment Systems

- Constructed wetlands for AMD remediation
- Anoxic limestone drains
- Successive alkalinity-producing systems
- Permeable reactive barriers
- Long-term maintenance and performance evaluation
- **Case Study:** Passive treatment success in abandoned coal mining regions.

Module 6: Water Quality Monitoring and Environmental Compliance

- Water sampling and laboratory analysis
- Real-time monitoring and IoT technologies
- Environmental compliance frameworks
- ESG reporting and sustainability metrics
- Data interpretation and reporting systems
- **Case Study:** Digital water monitoring implementation in a large-scale mine.

Module 7: Climate Change, Sustainability, and ESG Integration

- Climate resilience strategies for mine water systems
- Circular economy opportunities in mining water reuse
- Carbon reduction initiatives in water treatment
- Stakeholder engagement and community relations
- Sustainable development goals in mining
- **Case Study:** Water reuse and sustainability integration in mining operations.

Module 8: Emerging Technologies and Innovation in AMD Management

- Artificial intelligence and predictive analytics
- Smart water management systems
- Resource recovery from AMD streams
- Advanced oxidation and nanotechnology applications
- Future trends in mine water management
- **Case Study:** Resource recovery from AMD using innovative treatment systems.

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:

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