Gravity Separation 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

Gravity Separation Methods Training Course is designed to equip learners with advanced skills in mineral processing, ore beneficiation, and physical separation techniques used in modern mining operations. This training emphasizes high-performance gravity concentration methods such as jigging, shaking tables, spiral concentrators, and dense media separation, enabling participants to efficiently recover valuable minerals based on differences in specific gravity.

In today’s competitive mining and metallurgical industry, optimizing recovery rates and reducing operational costs are critical. This course integrates practical and theoretical knowledge of gravity separation systems, mineral density behavior, particle classification, and process optimization strategies, ensuring learners gain hands-on expertise aligned with global mining standards and sustainable mineral processing practices.

Programme Curriculum

Gravity Separation Methods Training Course

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Course Duration

5 days

Course Objectives

1. Understand fundamentals of gravity separation in mineral processing
2. Apply principles of specific gravity and particle settling velocity
3. Operate jigging separation equipment effectively
4. Optimize performance of spiral concentrators in mineral recovery
5. Analyze performance of shaking tables for fine mineral separation
6. Implement dense media separation (DMS) techniques
7. Improve ore beneficiation and recovery efficiency
8. Reduce mineral loss through process optimization techniques
9. Interpret particle size distribution in separation efficiency
10. Conduct gravity separation circuit design and evaluation
11. Identify and troubleshoot gravity separation plant inefficiencies
12. Apply sustainable mineral processing practices
13. Enhance production using advanced metallurgical recovery systems

Target Audience

1. Mining engineers and metallurgical engineers
2. Mineral processing plant operators
3. Geology and earth science graduates
4. Mineral beneficiation technicians
5. Mining industry trainees and interns
6. Process control and plant supervisors
7. Chemical and industrial engineering students
8. Consultants in mining and mineral recovery

Course Modules

Module 1: Fundamentals of Gravity Separation

- Principles of gravity and density-based separation
- Particle behavior in fluid medium
- Role of specific gravity in mineral processing
- Liberation size and mineral classification
- **Case Study:** Gold particle recovery in alluvial deposits using basic gravity methods

Module 2: Ore Characterization and Feed Preparation

- Ore mineralogy and physical properties
- Crushing and grinding fundamentals
- Screening and classification techniques
- Feed size optimization for separation efficiency
- **Case Study:** Iron ore feed preparation optimization in beneficiation plant

Module 3: Jigging Technology and Applications

- Working principle of jig separation

- Hydraulic pulsation mechanism
- Stratification of mineral layers
- Industrial jig plant operations
- **Case Study:** Coal beneficiation using continuous jigging system

Module 4: Spiral Concentrator Systems

- Spiral flow dynamics
- Particle stratification in spiral troughs
- Operational parameters and adjustments
- Recovery optimization techniques
- **Case Study:** Heavy mineral sand recovery using spiral concentrators

Module 5: Shaking Table Separation Techniques

- Table motion and separation principles
- Deck inclination and wash water control
- Fine particle recovery methods
- Operational efficiency improvements
- **Case Study:** Tin and tungsten recovery using shaking table technology

Module 6: Dense Media Separation (DMS)

- Heavy medium principles and magnetite suspension
- Separation of high-density minerals
- Plant configuration and control systems
- Medium recovery and recycling
- **Case Study:** Diamond recovery in kimberlite ore processing plant

Module 7: Process Control and Optimization

- Plant performance monitoring
- Recovery rate improvement techniques
- Troubleshooting gravity circuits
- Automation and control strategies
- **Case Study:** Optimization of chromite recovery plant efficiency

Module 8: Advanced Gravity Separation Integration

- Multi-stage separation systems
- Hybrid processing circuits
- Sustainability in mineral recovery
- Energy efficiency and waste reduction
- **Case Study:** Integrated gold recovery plant using combined gravity 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

Start Date	End Date	Location	Price
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