Thickening and Filtration 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 Thickening and Filtration Training Course is designed to build advanced competence in solid-liquid separation, slurry processing, dewatering technologies, and industrial filtration systems. This course provides a deep understanding of modern process optimization techniques, equipment selection, and operational troubleshooting used in mining, mineral processing, wastewater treatment, chemical processing, and metallurgical industries. Learners will explore key principles of sedimentation, clarification, flocculation, thickener performance, and filter media behavior, ensuring strong technical capability aligned with global best practices.

With increasing demand for sustainable water recovery, efficient tailings management, and cost-effective process engineering, this training emphasizes real-world applications of high-rate thickeners, pressure filtration, vacuum filtration, and membrane-based separation systems. Participants will gain practical insights into improving plant throughput, reducing moisture content, enhancing solid recovery, and optimizing chemical dosing strategies. The course bridges theory and industrial application through case-driven learning, enabling professionals to make data-driven decisions in high-performance processing environments.

Programme Curriculum

Thickening and Filtration Training Course

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Course Duration

5 days

Course Objectives

1. Master solid–liquid separation principles in industrial processes
2. Understand thickener design, sizing, and performance optimization
3. Apply flocculation and coagulation chemistry for improved settling
4. Optimize slurry rheology and sedimentation behavior
5. Improve filtration efficiency and cycle time reduction
6. Evaluate vacuum, pressure, and membrane filtration systems
7. Enhance tailings dewatering and water recovery systems
8. Reduce operational costs through process optimization strategies
9. Diagnose and troubleshoot thickener underflow and overflow issues
10. Improve cake moisture control and filtration performance metrics
11. Implement automation and process control in separation systems
12. Apply sustainable wastewater treatment and reuse technologies
13. Develop competency in industrial case-based process engineering decisions

Target Audience

1. Process engineers in mining and mineral processing
2. Metallurgical and chemical engineers
3. Plant operators and shift supervisors
4. Water and wastewater treatment engineers
5. Technical maintenance and reliability engineers
6. Environmental compliance and sustainability officers
7. Engineering students and graduate trainees
8. Project managers in process industries

Course Modules

Module 1: Fundamentals of Solid–Liquid Separation

- Particle size distribution and slurry characterization
- Principles of sedimentation and gravity settling
- Forces influencing separation efficiency
- Overview of thickening and filtration systems
- Case Study: Copper ore slurry settling optimization in concentrator plants

Module 2: Thickener Design and Operation

- Thickener types-conventional, high-rate, high-density
- Hydraulic loading and solids flux theory
- Rake mechanism and torque management
- Underflow density optimization techniques
- Case Study: Gold plant thickener throughput bottleneck resolution

Module 3: Flocculation and Chemical Conditioning

- Role of polymer flocculants in separation efficiency
- Coagulation mechanisms and dosing control
- Mixing energy and chemical dispersion strategies
- Impact of pH and ionic strength on performance
- Case Study: Iron ore beneficiation plant flocculation improvement

Module 4: Filtration Technologies and Equipment

- Vacuum vs pressure filtration systems
- Filter media selection and permeability
- Cake formation and resistance theory
- Filtration cycle optimization
- Case Study: Coal slurry vacuum filtration performance upgrade

Module 5: Advanced Membrane Filtration Systems

- Microfiltration, ultrafiltration, nanofiltration principles
- Membrane fouling and cleaning strategies
- Flux rate optimization and energy efficiency
- Industrial applications in wastewater recovery
- Case Study: Industrial effluent treatment using membrane systems

Module 6: Process Control and Automation

- SCADA systems in thickening and filtration
- Real-time monitoring of slurry density and flow
- Sensor technologies and instrumentation
- Feedback control loops for optimization
- Case Study: Automated thickener control in mineral processing plant

Module 7: Tailings Management and Water Recovery

- Sustainable tailings disposal methods
- Water balance optimization in processing plants
- Paste thickening and high-density tailings
- Environmental compliance and risk mitigation
- Case Study: Dry stacking tailings implementation in mining operation

Module 8: Troubleshooting and Performance Optimization

- Common operational failures and root cause analysis
- Scaling, blinding, and equipment wear issues
- KPI tracking for separation efficiency
- Continuous improvement methodologies

- Case Study: Filtration bottleneck resolution in phosphate plant

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

Start Date	End Date	Location	Price
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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