Rock Mass Classification 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

Rock Mass Classification Systems are fundamental to modern geotechnical engineering, mining stability analysis, tunneling design, and underground excavation safety. Rock Mass Classification Systems Training Course provides a comprehensive understanding of globally recognized classification systems. Participants will gain advanced skills in evaluating rock mass behavior, interpreting geological discontinuities, and applying classification outcomes to real-world engineering design and risk mitigation in mining and civil infrastructure projects.

In today’s data-driven mining and infrastructure environment, accurate rock mass characterization, slope stability assessment, ground support design, and excavation risk prediction are critical for operational success. This course integrates field mapping, geotechnical logging, core analysis, numerical modeling inputs, and AI-assisted geotechnical interpretation. It equips professionals with decision-making capabilities to improve safety performance, cost efficiency, and structural reliability in underground and surface engineering environments.

Programme Curriculum

Rock Mass Classification Systems Training Course

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5 days

Course Objectives

1. Master Rock Mass Classification Systems (RMR, Q, GSI, RQD)
2. Apply geotechnical logging and core interpretation techniques
3. Evaluate rock discontinuities, joints, faults, and fractures
4. Perform rock mass quality assessment for engineering design
5. Integrate geological mapping into stability analysis workflows
6. Develop ground support design strategies using classification data
7. Conduct slope stability and underground excavation assessments
8. Improve risk-based geotechnical decision-making frameworks
9. Utilize numerical modeling inputs from rock mass data
10. Apply data-driven geotechnical risk prediction techniques
11. Enhance mine safety and hazard identification systems
12. Interpret laboratory and field geomechanical data sets
13. Implement best practices in rock engineering design standards

Target Audience

- Mining Engineers
- Geotechnical Engineers
- Geological Engineers
- Civil Engineers
- Rock Mechanics Specialists
- Mine Planning Engineers
- Engineering Geologists
- Technical Safety & Risk Engineers

Course Modules

Module 1: Fundamentals of Rock Mass Classification

- Introduction to rock mass behavior and engineering geology
- Overview of classification systems
- Rock material vs rock mass properties
- Field data collection techniques
- **Case Study:** Tunnel collapse due to poor classification in alpine region

Module 2: Discontinuity Analysis & Rock Structure

- Joint sets, faults, bedding planes analysis
- Orientation and spacing measurement techniques
- Roughness, infill, and persistence evaluation

- Stereonet interpretation basics
- **Case Study:** Slope failure in open-pit mine due to joint misinterpretation

Module 3: RMR (Rock Mass Rating) System Application

- RMR parameter evaluation system
- Strength, spacing, condition, groundwater effects
- Support recommendations using RMR
- Field logging standards
- **Case Study:** Underground mine support redesign using RMR system

Module 4: Q-System (NGI) for Tunneling

- Q-value calculation methodology
- Stress reduction factor and joint set number
- Support pressure estimation
- Excavation stability classification
- **Case Study:** Metro tunnel support optimization using Q-system

Module 5: Geological Strength Index (GSI)

- GSI chart interpretation
- Rock structure vs surface condition mapping
- Integration with Hoek-Brown criteria
- Numerical modeling applications
- **Case Study:** Dam foundation stability assessment using GSI

Module 6: Core Logging & Field Mapping Techniques

- Drill core logging standards
- Lithological and structural logging
- Core recovery and RQD calculation
- Geotechnical database management
- **Case Study:** Exploration drilling misclassification correction in copper mine

Module 7: Ground Support Design & Stability Analysis

- Rock reinforcement systems
- Support selection using classification outputs
- Slope stability and underground support design
- Risk-based design optimization
- **Case Study:** Highwall failure prevention through improved support system

Module 8: Advanced Rock Engineering & Digital Integration

- AI and machine learning in rock classification
- 3D geological modeling integration
- Numerical simulation inputs from classification systems
- Real-time geotechnical monitoring systems
- **Case Study:** Smart mine geotechnical monitoring system implementation

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

Start Date	End Date	Location	Price
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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