Mineral Resource Classification (JORC / NI 43-101) Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The Mineral Resource Classification (JORC / NI 43-101) Training Course is designed to develop advanced competency in mineral resource estimation, reporting standards, geological modelling, and compliant resource classification frameworks used globally in the mining and exploration sector. This course integrates the principles of the JORC Code (Australasia) and NI 43-101 (Canada) to ensure participants understand internationally recognized reporting standards, QA/QC protocols, geological confidence classification, geostatistical analysis, and audit-ready reporting practices. With increasing global demand for transparent and regulatory-compliant mineral reporting, professionals must master the ability to convert geological data into defensible, auditable, and investment-grade mineral resource statements.

This training emphasizes real-world mining applications, digital resource modeling, geometallurgy integration, and ESG-aligned reporting governance. Participants will engage with modern tools and methodologies including 3D geological modelling, block modeling, variography, conditional simulation, and resource classification logic aligned with CRIRSCO standards. The program is designed for geologists, mining engineers, consultants, and regulators seeking to enhance their expertise in critical mineral reporting, lithium and battery metals classification, copper-gold systems, and ESG-compliant resource governance frameworks. By the end of the course, participants will be equipped to produce NI 43-101 technical reports, JORC Table 1 compliant documentation, and bankable feasibility-level resource statements.

Programme Curriculum

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Course Duration

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Course Objectives

1. Master JORC Code 2012 and NI 43-101 compliance frameworks
2. Apply CRIRSCO-aligned mineral resource classification principles
3. Develop competency in geological database validation and QA/QC protocols
4. Perform 3D geological modelling using industry-standard software workflows
5. Understand block modeling and grade estimation techniques
6. Apply variography and geostatistics for resource confidence analysis
7. Differentiate between Inferred, Indicated, and Measured resources
8. Produce audit-ready technical reports for regulatory submission
9. Integrate ESG reporting standards into mineral resource classification
10. Evaluate sampling methods and drilling data integrity
11. Conduct cut-off grade analysis and economic evaluation
12. Implement resource reconciliation and mine-to-model validation
13. Prepare bankable resource statements for investment and financing

Target Audience

1. Exploration Geologists
2. Mining Engineers
3. Resource Geologists
4. Geostatisticians and Data Scientists in Mining
5. Mining Consultants and Competent Persons (CPs)
6. Government Mineral Regulators and Auditors
7. Mining Company Technical Managers
8. Graduate Geoscience Students and Researchers

Course Modules

Module 1: Introduction to Mineral Reporting Standards

- Overview of JORC and NI 43-101 frameworks
- CRIRSCO global reporting standards
- Role of Competent Person (CP)
- Ethical reporting and governance
- Legal implications of non-compliance
- **Case Study:** Bre-X gold fraud and reporting failures

Module 2: Geological Data Management

- Drillhole database structuring
- Data validation workflows
- Assay data integrity checks
- Digital logging systems
- Database audit procedures
- **Case Study:** Lithium brine dataset validation errors

Module 3: QA/QC in Mineral Exploration

- Standards for blanks, duplicates, standards
- Sampling bias detection
- Laboratory accreditation systems
- Error propagation analysis
- QA/QC reporting dashboards
- **Case Study:** Copper deposit sampling bias correction

Module 4: 3D Geological Modelling

- Wireframing ore bodies
- Lithological modelling techniques
- Structural geology interpretation
- Software-based modelling workflows
- Model validation techniques
- **Case Study:** Gold vein system modelling in complex geology

Module 5: Drillhole Analysis & Interpretation

- Section and plan interpretation
- Litho-stratigraphic correlation
- Grade continuity analysis
- Cross-section balancing
- Geological uncertainty mapping
- **Case Study:** Iron ore deposit drillhole reconciliation

Module 6: Introduction to Geostatistics

- Statistical distributions in ore bodies
- Spatial variability concepts
- Variogram interpretation
- Nugget effect analysis
- Data declustering techniques

- **Case Study:** Nickel laterite variogram modelling

Module 7: Variography and Spatial Continuity

- Experimental variogram creation
- Range, sill, and nugget interpretation
- Anisotropy analysis
- Model fitting techniques
- Geological controls on continuity
- **Case Study:** Gold mineralization continuity mapping

Module 8: Block Modeling Fundamentals

- Block model construction principles
- Block size optimization
- Coding and domain separation
- Grade estimation workflows
- Model validation checks
- **Case Study:** Copper porphyry block model development

Module 9: Grade Estimation Techniques

- IDW and kriging methods
- Ordinary kriging fundamentals
- Estimation bias control
- Search ellipsoid configuration
- Model smoothing effects
- **Case Study:** Zinc-lead deposit estimation comparison

Module 10: Mineral Resource Classification

- Inferred vs Indicated vs Measured criteria
- Geological confidence mapping
- Data spacing requirements
- Modifying factors application
- Classification reporting standards
- **Case Study:** Gold deposit reclassification audit

Module 11: Cut-off Grade Analysis

- Economic threshold concepts
- Sensitivity analysis
- Metal price assumptions
- Mining cost modelling
- Optimization techniques
- **Case Study:** Lithium project cut-off grade optimization

Module 12: Resource Reporting (JORC/NI 43-101)

- Technical report structure
- Table 1 compliance checklist
- Risk disclosure requirements

- Data transparency standards
- Competent Person sign-off
- **Case Study:** NI 43-101 feasibility report review

Module 13: Mine-to-Model Reconciliation

- Production vs model comparison
- Dilution and loss analysis
- Reconciliation dashboards
- Operational adjustments
- Continuous improvement loops
- **Case Study:** Iron ore production reconciliation mismatch

Module 14: ESG in Resource Classification

- ESG reporting integration
- Environmental baseline data
- Social license considerations
- Governance frameworks
- Sustainable mining metrics
- **Case Study:** ESG-driven copper project approval

Module 15: Advanced Resource Governance & Auditing

- Independent technical audits
- Due diligence workflows
- Risk identification frameworks
- Investment readiness assessments
- Regulatory compliance audits
- **Case Study:** Mining IPO technical due diligence failure

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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