Resource Modelling & Estimation Analytics 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

Resource Modelling & Estimation Analytics Training Course integrates block modelling, spatial analytics, machine learning, grade estimation, uncertainty quantification, and digital mining transformation to deliver accurate, defensible, and globally compliant resource estimates. Participants will gain hands-on exposure to advanced kriging techniques, variography, simulation modelling, and resource classification frameworks aligned with international reporting standards such as JORC, NI 43-101, and SAMREC.

With increasing demand for sustainable mining, ESG compliance, real-time analytics, and predictive resource intelligence, this training equips professionals with cutting-edge tools, automation strategies, and data integration workflows. The course emphasizes practical applications, case-based learning, and industry software tools, enabling participants to enhance resource confidence, reduce geological risk, and optimize mine planning decisions in a rapidly evolving digital mining ecosystem

Programme Curriculum

Resource Modelling & Estimation Analytics Training Course

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5 days

Course Objectives

1. Apply advanced geostatistical modelling techniques for resource estimation
2. Develop 3D block models using industry-standard software
3. Integrate machine learning algorithms in resource estimation workflows
4. Perform variography and spatial continuity analysis
5. Conduct kriging and simulation-based estimation
6. Implement uncertainty quantification and risk analysis frameworks
7. Optimize grade control and short-term resource reconciliation
8. Apply big data analytics and data integration techniques
9. Interpret and validate resource classification
10. Enhance resource modelling automation using scripting tools (Python/R)
11. Evaluate economic impacts of resource estimation decisions
12. Align modelling practices with JORC, SAMREC, NI 43-101 compliance standards
13. Leverage AI-driven predictive modelling for resource optimization

Target Audience

1. Mining Engineers
2. Exploration Geologists
3. Resource Geologists
4. Geostatisticians
5. Mine Planning Engineers
6. Data Scientists in Mining
7. Mineral Economists
8. GIS & Spatial Data Analysts

Course Modules

Module 1: Fundamentals of Resource Modelling

- Geological data types and structures
- Sampling methods and QA/QC protocols
- Data validation and preprocessing
- Introduction to block modelling
- Spatial data visualization
- **Case Study:** Gold deposit data validation in West Africa

Module 2: Geostatistics & Variography

- Spatial continuity concepts
- Variogram modelling
- Anisotropy analysis
- Model fitting techniques

- Variogram validation
- **Case Study:** Iron ore variography in Australia

Module 3: Estimation Techniques

- Inverse Distance Weighting (IDW)
- Ordinary Kriging (OK)
- Universal Kriging (UK)
- Indicator Kriging
- Nearest Neighbor methods
- **Case Study:** Copper grade estimation in Chile

Module 4: Advanced Simulation Methods

- Sequential Gaussian Simulation (SGS)
- Conditional simulation techniques
- Multiple realizations analysis
- Risk modelling and uncertainty
- Comparison of deterministic vs stochastic models
- **Case Study:** Diamond deposit uncertainty modelling in Botswana

Module 5: Block Modelling & Software Applications

- Block model creation and optimization
- Sub-blocking techniques
- Model validation and reconciliation
- Software tools
- Visualization techniques
- **Case Study:** Platinum reef modelling in South Africa

Module 6: Resource Classification & Reporting

- Classification criteria
- Confidence levels and uncertainty
- Reporting standards
- Documentation and audit trails
- Competent Person requirements
- **Case Study:** JORC-compliant reporting in Australia

Module 7: AI & Data Analytics in Resource Estimation

- Machine learning for grade prediction
- Data integration
- Predictive analytics models
- Automation using Python/R
- Real-time data analytics
- **Case Study:** AI-based lithium resource modelling in Canada

Module 8: Economic Evaluation & Decision-Making

- Cut-off grade optimization
- Sensitivity analysis

- Resource-to-reserve conversion
- Financial modelling inputs
- Decision-making under uncertainty
- **Case Study:** Coal reserve optimization in Indonesia

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:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com