Ore Deposit Models & Classification 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

Ore Deposit Models & Classification Training Course is designed to equip geologists, mining engineers, exploration professionals, resource analysts, and technical decision-makers with advanced knowledge of modern ore deposit systems, mineral exploration strategies, and classification frameworks. The course integrates economic geology, mineral systems analysis, geometallurgy, structural geology, geochemistry, GIS-based targeting, machine learning in exploration, and sustainable mining practices to provide participants with practical and industry-relevant expertise. Through real-world case studies and applied technical exercises, participants gain the ability to identify, evaluate, classify, and interpret ore-forming environments across diverse geological settings.

As the global mining industry accelerates toward critical minerals, ESG compliance, digital transformation, AI-assisted exploration, decarbonization, and resource optimization, there is increasing demand for professionals capable of understanding advanced ore deposit models and mineral classification systems. This training emphasizes trending industry concepts such as critical raw materials (CRM), battery minerals, data-driven exploration, predictive targeting, mineral resource governance, 3D geological modeling, remote sensing integration, and sustainable resource development. Participants will develop practical competencies to support exploration success, improve investment decisions, reduce geological uncertainty, and enhance operational efficiency in modern mining environments.

Programme Curriculum

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Course Objectives

By the end of this course, participants will be able to:

1. Understand modern ore deposit models and mineral systems frameworks.
2. Apply advanced mineral exploration targeting techniques for resource discovery.
3. Interpret geological, geochemical, and geophysical datasets for ore evaluation.
4. Classify ore deposits using globally accepted economic geology standards.
5. Analyze critical minerals and battery metals deposit environments.
6. Utilize GIS, remote sensing, and 3D geological modeling tools in exploration.
7. Integrate AI and machine learning applications in mineral prospectivity analysis.
8. Evaluate structural controls influencing mineralization systems.
9. Assess hydrothermal, magmatic, sedimentary, and metamorphic ore-forming processes.
10. Conduct mineral resource estimation and reporting aligned with international codes.
11. Apply ESG and sustainable mining principles in exploration and resource development.
12. Examine global case studies on gold, copper, lithium, REE, iron ore, and polymetallic deposits.
13. Develop strategic exploration programs using data-driven decision-making methodologies.

Target Audience

1. Exploration Geologists
2. Mining Engineers
3. Resource Geologists
4. Geochemists and Geophysicists
5. GIS & Remote Sensing Specialists
6. Mineral Resource Analysts
7. Government Geological Survey Professionals
8. Mining Investors and Technical Consultants

Course Modules

Module 1: Fundamentals of Ore Deposit Geology

- Introduction to ore-forming processes
- Tectonic settings and mineralization
- Magmatic, hydrothermal, and sedimentary systems
- Ore textures, alteration, and paragenesis
- Global mineral systems overview
- **Case Studies:** Witwatersrand Basin Gold Deposits

Module 2: Ore Deposit Classification Systems

- Genetic classification of ore deposits
- Metallic vs non-metallic deposits
- Porphyry, epithermal, skarn, and VMS systems
- IOCG and SEDEX deposit models
- Critical minerals classification frameworks
- **Case Studies:** Olympic Dam Mine IOCG Deposit

Module 3: Structural Geology & Mineralization Controls

- Faults, folds, and fracture systems
- Structural controls on ore emplacement
- Shear-hosted mineralization
- Fluid pathways and deformation
- Structural mapping techniques
- **Case Studies:** Carlin Trend Gold Mineralization

Module 4: Geochemistry & Geophysical Applications

- Exploration geochemistry principles
- Pathfinder elements and anomalies
- Geophysical survey interpretation
- Geochemical modeling techniques
- Integration of exploration datasets
- **Case Studies:** Kupferschiefer Deposits Copper-Silver Systems

Module 5: Critical Minerals & Battery Metals

- Lithium, cobalt, graphite, and REE deposits
- Energy transition mineral demand
- Pegmatite and brine-hosted lithium systems
- Strategic minerals exploration
- Sustainable supply chain considerations
- **Case Studies:** Greenbushes Mine Lithium Deposit

Module 6: Digital Exploration Technologies

- GIS-based mineral targeting
- Remote sensing applications
- AI and machine learning in exploration
- 3D geological modeling
- Big data analytics for mining

- **Case Studies:** Pilbara Region AI-driven Iron Ore Exploration

Module 7: Resource Estimation & Reporting

- Mineral resource estimation fundamentals
- Ore reserve classification systems
- Sampling and QA/QC procedures
- International reporting codes
- Risk and uncertainty management
- **Case Studies:** Escondida Mine Copper Resource Modeling

Module 8: Sustainable Mining & ESG Integration

- ESG frameworks in mining
- Environmental risk assessment
- Responsible resource development
- Social license to operate
- Mine closure and rehabilitation strategies
- **Case Studies:** Voisey's Bay Mine Sustainable Nickel Mining

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