Economic Geology of Ore Deposits 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

Economic Geology of Ore Deposits Training Course focuses on the critical scientific and applied principles behind the formation, distribution, and extraction of economically valuable mineral deposits. With the rising global demand for critical minerals, green energy transition metals, and battery raw materials, this training provides an essential foundation for careers in mining geology, mineral exploration, geometallurgy, and resource evaluation.

The program integrates modern tools such as GIS mapping, remote sensing, geochemical analysis, 3D geological modeling, and AI-driven mineral prediction systems. Participants will develop practical competencies in identifying ore deposit types, evaluating mineral potential, and applying sustainable and ESG-compliant mining frameworks. The course also emphasizes real-world case studies from major mining provinces including the Witwatersrand Basin, Bushveld Complex, Andean Copper Belt, and Canadian Shield, ensuring learners gain globally relevant insights into ore-forming processes and exploration strategies.

Programme Curriculum

Economic Geology of Ore Deposits Training Course

Introduction

Economic Geology of Ore Deposits Training Course focuses on the critical scientific and applied principles behind the formation, distribution, and extraction of economically valuable mineral deposits. With the rising global demand for critical minerals, green energy transition metals, and battery raw materials, this training provides an essential foundation for careers in mining geology, mineral exploration, geometallurgy, and resource evaluation.

The program integrates modern tools such as GIS mapping, remote sensing, geochemical analysis, 3D geological modeling, and AI-driven mineral prediction systems. Participants will develop practical competencies

in identifying ore deposit types, evaluating mineral potential, and applying sustainable and ESG-compliant mining frameworks. The course also emphasizes real-world case studies from major mining provinces including the Witwatersrand Basin, Bushveld Complex, Andean Copper Belt, and Canadian Shield, ensuring learners gain globally relevant insights into ore-forming processes and exploration strategies.

Course Duration

5 days

Course Objectives

1. Understand ore genesis processes and global metallogenic evolution
2. Analyze mineral systems and ore-forming environments
3. Apply exploration geology techniques for mineral discovery
4. Interpret geochemical anomaly datasets for target generation
5. Utilize GIS and remote sensing in mineral exploration
6. Develop skills in 3D geological modeling and resource estimation
7. Evaluate economic viability of ore deposits (NPV, ROI, feasibility)
8. Identify and classify metallic and non-metallic mineral deposits
9. Integrate AI and machine learning in mineral prediction models
10. Assess ore beneficiation and mineral processing pathways
11. Apply sustainable mining and ESG compliance frameworks
12. Conduct mineral resource reporting (JORC/NI 43-101 standards)
13. Enhance decision-making in critical minerals and energy transition mining

Target Audience

1. Mining and exploration geologists
2. Geoscience and geology students
3. Mineral resource engineers
4. Mining industry professionals
5. Government geological survey staff
6. Environmental and sustainability consultants
7. Investment analysts in mining and commodities
8. Research scientists in earth and planetary sciences

Course Modules

Module 1: Fundamentals of Economic Geology

- Ore formation processes and mineral systems theory
- Classification of ore deposits
- Geological time and metallogenic epochs
- Global distribution of mineral resources
- Case Study: Witwatersrand Gold Basin

Module 2: Ore Deposit Types & Genesis Models

- Porphyry copper systems
- Epithermal gold deposits
- Sedimentary exhalative (SEDEX) systems
- Magmatic Ni-Cu-PGE deposits

- Case Study: Bushveld Igneous Complex

Module 3: Mineral Exploration Techniques

- Geological mapping and structural analysis
- Geophysical methods
- Geochemical sampling strategies
- Drilling and core logging methods
- Case Study: Olympic Dam

Module 4: Geochemical Analysis & Interpretation

- Trace element geochemistry
- Isotope geochemistry applications
- Pathfinder elements in exploration
- Data interpretation techniques
- Case Study: Carlin Gold Trend

Module 5: GIS, Remote Sensing & Digital Exploration

- Satellite imagery interpretation
- GIS-based mineral targeting
- Spectral analysis for alteration mapping
- Digital elevation models (DEM)
- Case Study: Andes Copper Belt Exploration

Module 6: Resource Estimation & 3D Modeling

- Block modeling techniques
- Grade estimation methods
- Kriging and geostatistics
- Ore reserve classification systems
- Case Study: Vale Iron Ore Deposits (Brazil)

Module 7: Mining Economics & Feasibility Studies

- Net Present Value (NPV) and IRR analysis
- Cost-benefit evaluation
- Commodity price forecasting
- Risk analysis in mining projects
- Case Study: Oyu Tolgoi Copper Project (Mongolia)

Module 8: Sustainable Mining & Critical Minerals

- ESG frameworks in mining
- Mine rehabilitation and closure planning
- Critical minerals for energy transition (Li, Co, REEs)
- Environmental impact mitigation
- Case Study: Lithium Triangle (Chile–Argentina–Bolivia)

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:

Register Online Now

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