Geological Modelling Basics 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

Geological Modelling Basics Training Course is designed to build strong foundations in 3D geological modelling, subsurface interpretation, and spatial data integration for modern geoscience applications. With increasing demand in mining geology, petroleum exploration, geotechnical engineering, and GIS-based earth modelling, this course equips learners with practical skills to convert raw geological data into accurate, decision-ready 3D models. Participants will gain exposure to industry-relevant workflows including stratigraphic correlation, structural modelling, and reservoir characterization using standardized modelling principles.

In today’s data-driven geoscience environment, professionals are expected to integrate geophysical data, borehole logging, remote sensing, and spatial analytics into coherent geological frameworks. This training emphasizes hands-on understanding of digital geological modelling workflows, uncertainty analysis, and interpretation of subsurface structures, enabling learners to support exploration decisions, resource estimation, and engineering design with confidence and technical accuracy.

Programme Curriculum

Geological Modelling Basics Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Understand fundamentals of 3D geological modelling and earth system representation
2. Develop skills in subsurface data integration and interpretation
3. Apply structural geology principles in digital modelling
4. Interpret and correlate stratigraphic sequences and lithology
5. Build competency in borehole log analysis and validation
6. Use GIS tools for spatial geological analysis
7. Learn workflows for mineral exploration targeting
8. Understand reservoir modelling concepts in petroleum geology
9. Apply fault and fold modelling techniques
10. Manage and reduce geological uncertainty in models
11. Develop data cleaning and preprocessing techniques for geoscience datasets
12. Create basic 3D geological frameworks for decision support
13. Integrate multi-source geoscience datasets for modeling accuracy

Target Audience

1. Geology graduates and early-career geologists
2. Mining engineers and exploration geoscientists
3. Petroleum and reservoir engineers
4. GIS and remote sensing professionals
5. Environmental and geotechnical engineers
6. Mining industry technicians and analysts
7. Earth science researchers and academics
8. Data analysts entering geoscience and spatial modelling

Course Modules

Module 1: Fundamentals of Geological Modelling

- Principles of geological modelling systems
- Earth structure representation concepts
- Introduction to 2D vs 3D interpretation
- Data types in geosciences
- Modelling workflow overview
- **Case Study:** Basic 3D subsurface model of a layered sedimentary basin

Module 2: Geological Data Collection & Management

- Borehole and drilling data acquisition
- Field mapping and sampling techniques

- Data validation and error checking
- Database structuring for geoscience
- Metadata standards in geology
- **Case Study:** Cleaning and structuring mining exploration borehole dataset

Module 3: Structural Geology for Modelling

- Fault and fold interpretation techniques
- Stress and deformation analysis
- Structural domain classification
- Geometry construction in models
- Kinematic interpretation basics
- **Case Study:** Faulted terrain structural reconstruction model

Module 4: Stratigraphy and Lithological Correlation

- Sequence stratigraphy fundamentals
- Lithological classification systems
- Correlation between boreholes
- Facies analysis and interpretation
- Depositional environment modelling
- **Case Study:** Stratigraphic correlation of coal-bearing formation

Module 5: GIS and Spatial Data Integration

- GIS fundamentals in geology
- Spatial interpolation methods
- Raster and vector data usage
- Map creation and interpretation
- Coordinate systems in geoscience
- **Case Study:** GIS-based mineral prospectivity mapping

Module 6: 3D Modelling Techniques

- Surface and solid modelling concepts
- Grid construction techniques
- Interpolation algorithms
- Geological surface generation
- Model visualization methods
- **Case Study:** 3D ore body modelling for gold deposit

Module 7: Resource Estimation and Interpretation

- Volume and grade estimation methods
- Block modelling fundamentals
- Uncertainty quantification
- Cut-off grade analysis
- Economic interpretation of models
- **Case Study:** Resource estimation model for copper deposit

Module 8: Model Validation and Reporting

- Model verification techniques
- Error detection and correction
- Uncertainty reporting
- Technical reporting standards
- Decision-making outputs
- **Case Study:** Validation of petroleum reservoir model

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

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