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COURSE BROCHURE

Geocellular Reservoir Model Building and Upscaling Training Course

13 – 17 June 2027
Muscat

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Ref: 2480_93929 **Date:** 13 – 17 June 2027 **Location:** Muscat **Fees:** 6500 GBP

Geocellular Reservoir Model Building and Upscaling is a 1-week training course for reservoir engineers and geoscientists who turn seismic horizons, well logs and core into a 3D grid ready for flow simulation, ending with a reservoir modelling workflow plan. Field development choices now lean on static models that are auditable and honest about uncertainty. Jupiter Prime Training delivers Geocellular Reservoir Model Building and Upscaling.

Why Geocellular Reservoir Model Building and Upscaling Matters Now

Three forces shape this work today. Infill drilling in mature fields depends on knowing where unswept oil sits between wells, which only a well-built geocellular grid can show. Carbon storage and gas projects ask the same grids to predict plume extent and seal capacity. A disciplined build supports reserves booking and well targeting with confidence; a careless one misplaces wells and overstates volumes. The course rests on established geostatistical methods such as variogram analysis, kriging and sequential simulation.

Who Gains Most from Geocellular Reservoir Model Building and Upscaling

- Geoscientists who interpret horizons, faults and depositional facies for model input
- Petrophysicists who supply porosity, permeability and water saturation logs to the grid
- Reservoir engineers who receive upscaled grids for dynamic simulation
- Subsurface coordinators who check volumetrics before reserves submissions
- Geomodelling specialists who maintain and update field models between drilling campaigns

An asset subsurface group sending its geologist, petrophysicist and reservoir engineer together gains most, as the build depends on every hand-off between them.

Geocellular Reservoir Model Building and Upscaling Capabilities

Participants leave able to move from interpreted surfaces and logs to a fit-for-purpose grid and a defensible simulation input.

- Design a structural model of horizons, faults and zones that honours well tops — well placement teams
- Build facies models with object-based and pixel-based geostatistics — depositional interpretation choices
- Calculate porosity, net-to-gross and permeability distributions conditioned to facies — volumetric estimates
- Specify grid resolution and layering suited to flow behaviour — simulation engineers
- Test upscaling methods for permeability and transmissibility — dynamic model fidelity
- Communicate low, mid and high case volumes from multiple realisations — reserves and investment committees

Key Geocellular Reservoir Model Building and Upscaling Terms

- Geocellular model — A 3D grid of cells, each holding facies and rock property values, representing a reservoir between and beyond wells.
- Variogram — A function describing how similarity between property values falls with distance and direction, used to guide geostatistical population.
- Sequential Gaussian simulation — A stochastic method that fills grid cells one by one, honouring well data and the variogram to create equally likely realisations.
- Net-to-gross — The fraction of a reservoir interval made of rock able to store and flow hydrocarbons.
- Upscaling — Converting a fine geological grid into a coarser simulation grid while preserving flow behaviour as closely as possible.
- Realisation — One of many equally probable versions of a stochastic model, used together to express uncertainty.

Geocellular Reservoir Model Building and Upscaling Day by Day

Day 1: Data Conditioning and Structural Model

- Well Top and Seismic Horizon Reconciliation — Choosing the Depth Reference
- Fault Modelling and Pillar Gridding — Honouring Compartment Boundaries
- Zonation and Stratigraphic Layering Schemes — Matching Depositional Geometry
- Time-to-Depth Conversion Velocity Models — Controlling Structural Uncertainty
- Data Quality Audit of Logs and Core — What Enters the Grid

Day 2: Facies Modelling

- Log Facies Classification From Core Calibration — Defining Modelled Rock Types
- Variogram Analysis and Anisotropy — Setting Correlation Lengths per Facies
- Sequential Indicator Simulation — Pixel-Based Facies Distribution Choices
- Object-Based Channel and Lobe Modelling — Capturing Sand Body Shapes
- Seismic Attribute Trends as Soft Data — Steering Facies Away From Wells

Day 3: Petrophysical Property Population

- Porosity Modelling With Sequential Gaussian Simulation — Facies-Conditioned Distributions
- Permeability Transforms and Co-Kriging — Linking Flow Capacity to Porosity
- Saturation Height Functions — Placing Fluid Contacts in the Grid
- Volumetric Calculation of Hydrocarbons in Place — Low, Mid and High Cases
- Multiple Realisation Ranking — Selecting Cases for Simulation

Day 4: Upscaling and Simulation Hand-Off

- Simulation Grid Design and Coarsening Ratios — Balancing Run Time and Accuracy
- Permeability and Transmissibility Upscaling Methods — Preserving Flow Paths
- Upscaling Quality Checks With Flow Diagnostics — Spotting Lost Heterogeneity
- Fault Transmissibility Multipliers — Representing Seal Behaviour in Simulation
- Static to Dynamic Model Hand-Off Package — Inputs for History Matching

Day 5: Practising the Reservoir Modelling Workflow Plan

- Building a Structural Model for a Carbonate Field Case — Applying Day One
- Running Facies Realisations for a Clastic Gas Storage Case — Applying Day Two
- Comparing Volumetric Ranges Across Realisations — Applying Day Three
- Peer Challenge of Upscaled Grid Quality — Applying Day Four
- Assembling the Reservoir Modelling Workflow Plan — Final Work Product

Applying Geocellular Reservoir Model Building and Upscaling After the Course

- Audit the variogram parameters and facies proportions of one existing field model and document which assumptions lack well or seismic support.
- Run an upscaling quality check on one simulation grid and compare flow diagnostics against the fine geological grid.

Geocellular Reservoir Model Building and Upscaling Questions FAQ

What is Geocellular Reservoir Model Building and Upscaling and why does it matter now?

It is the process of turning interpreted surfaces, logs and core into a 3D property grid and coarsening it for flow simulation. It matters now because infill drilling, gas storage and carbon storage projects all depend on grids that show heterogeneity honestly.

Which roles gain most from Geocellular Reservoir Model Building and Upscaling?

Geoscientists, petrophysicists, reservoir engineers, subsurface coordinators and geomodelling specialists gain most.

How does Geocellular Reservoir Model Building and Upscaling differ from a course on dynamic reservoir simulation?

It concentrates on building and upscaling the static grid. A simulation course starts from a finished grid and focuses on fluid flow, history matching and forecasting.

What do you bring back from Geocellular Reservoir Model Building and Upscaling?

You bring back a reservoir modelling workflow plan for a realistic field case, covering structure, facies, properties, volumetrics and the upscaled hand-off to simulation.

Geocellular Reservoir Model Building and Upscaling: The Way Forward

The reservoir modelling workflow plan first informs which data gaps to close before the next model update and which realisations to pass to simulation. Geologists, petrophysicists and reservoir engineers share it as their common build sequence. After its first use, revisit grid resolution and upscaling choices against actual well results.