Integrated Reservoir Modeling

Course Price

£3250

Course Description

Integrated Reservoir Modeling is carried out to better understand and characterize uncertainties in reservoir and well behaviour. It is used to make predictions for use in hydrocarbon development planning (field development planning) and well & reservoir surveillance and optimisation. This process should be seen in the context of a business plan for a new or producing asset in which a business focus will be maintained by addressing specifically those aspects having the biggest impact or influence on the business decisions being addressed. This course therefore, explicitly cover those aspects of a study in which the business context has a strong or dominating influence e.g. framing of the project, model design, economic screening and the selection of preferred development scenarios.

Course Objectives

This course deals with main elements of the IRM process which are:
• Taking an integrated approach to model building to ensure the appropriate technical & business integrity and fastest cycle-time of modelling effort
• Framing and structuring the project to align with and optimise business opportunities
• Understanding data, validity of data, and data limitations
• Identifying key risks and uncertainties
• Constructing first pass reservoir models to validate the dataset, to provide an early evaluation of the business opportunities and their associated risks and to provide a focus for detailed modelling
• Constructing detailed reservoir models to be used for making business opportunity decisions

Who Should Attend

Geologists, geophysicists, engineers, petrophysicists or others involved in reservoir modeling.

Course Content

Day 1
Detailed Data Interpretation

– Compile Analogue data
– Seismic Interpretation
– Rock and Fluid Properties from well data
– Reservoir Architecture definition

Day 2
Static Modeling
– Import finalized interpreted data
– Build structural model
– Generate geocellular framework
– Generate facies model
– Populate framework with rock properties
– Calculate static volumes and estimate volumetric uncertainty
– Reconcile static and dynamic data (logs/volumes)
– Flow unit identification

Day 3
Upscale Static Models
– Upscaling Basics
– QC of static and dynamic models via synthetic seismic generation

Build Dynamic Models
– Generate PVT models
– Generate Relative Permeability model data
– Generate Capillary Pressure data
– Rock compaction data
– Generate aquifer model
– Prepare well data and constraints
– Prepare History match simulation models
– Prepare forecasts

Day 4
Build Well Models
– Build detailed well models/lift tables
– Select sand control options
– Select artificial lift option
– Select wells and completion concepts
– Select detailed short term gains and shut off opportunities
– Conduct well safety assessment
– Establish operating philosophy

Day 5
Build Surface Models

Generate Scenario Forecasts
– Detailed NFA forecasting
– Generate activity forecasts and ranges
– Determine reserves and scopes

Build/Run Economic Models

– Build Economic models
– Run Economics
– Run Economic Sensitivities

Select Development concepts

Document Forward Plan

CPD Unit

Continuing Professional Development

35 HOURS CPD