INTEGRATED RESERVOIR MODELING
INTERPRETATION, EVALUATION, AND OPTIMIZATION   RSE022

COURSE DESCRIPTION

This course covers important topics necessary to help participants to use geological modeling to produce realistic volumetric estimations for hydrocarbon reservoirs. It will show how new operational data and revised interpretations can be identified and incorporated into models at any point in the workflow.

The course introduces the procedures and workflow for building a 3D model, regardless of the software available to the modeling team. It will emphasize on integrating static and dynamic reservoir properties with the geological facies model. It should be emphasized that the purpose of the course is methodology and not software operation.

COURSE GOAL

To enhance the participants' knowledge, skills and abilities necessary to use geological modeling to produce realistic volumetric estimations for hydrocarbon reservoirs.

COURSE OBJECTIVES

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

- Learn about the retention of relevant fine-scale detail through upscaling.
- Decide what structural elements to include, which can be a source of much debate.
- Be familiar with different clastic and carbonate depositional environments and how to best characterize them for subsequent modelling.
- Understand simple rock typing methods that are readily applicable to 3D models.
- Determine what makes a good static model.

WHO SHOULD ATTEND

- Geologists
- Geophysicists
- Petrophysicists
- Reservoir Engineers
- Drilling Engineers
- Seismic Interpreters.

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. **Design and Workflow: A Conceptual Framework**

   - Reservoir Envelope -Top and Base Structure
   - Internal Framework - Correlation Scheme
   - Reservoir Compartments - Fault Geometry
   - Reservoir Architecture - Facies Model
   - Petrophysical Property Distribution
   - Volumetric Assessment

2. **Reservoir Framework**

   - Depth Conversion Uncertainty
   - Model Surface Selection and Quality Control
   - Fault Modelling and Compartments
   - Stratigraphy and Correlation
   - Grid Construction

3. **Reservoir Architecture**

   - Depositional Models and Facies Analysis
   - Core-log Integration
   - Basic Statistics
   - Objects and Indicators
   - Seismic Conditioning
   - Facies Modelling

4. **Property Modeling in 3D**

   - Basic Petrophysics
   - Rock Typing
   - More Basic Statistics
   - Porosity Models
   - Saturation Models
   - Permeability Models

5. **Upscaling and Uncertainty**

   - Geological Model Analysis
   - Hydrocarbon Volumes Initially in Place
   - Drainable Volumes
   - Simulation grid construction
   - Property Upscaling
   - Multiple Scenarios, Realizations, and Ranking