Training - Dynamic Reservoir Simulation

DSIMRES-EN-P | Face-to-face only | 10 days

This course provides a comprehensive and practical understanding of dynamic reservoir simulation, covering principles and concepts as well as data reviewing and formatting

Level

Skilled

Public

Newly-hired and 2- to 3-year experienced reservoir engineers willing to deepen their knowledge in reservoir fluid properties and PVT modeling. It is also intended for geoscientists, petroleum engineers and production engineers moving towards reservoir engineering

Objectives

Attendees will be able to implement the following skills:

- Discuss the fundamental concepts of dynamic reservoir simulation
- Build a simple reservoir simulation model (including data gathering and data QC)
- Carry out a simple reservoir simulation study (including taking into account technical and economical constraints, basic history matching and production forecast) using a black-oil model

Pedagogical & technical resources

- Interactive lectures and exercises
- Hands-on practice using state-of-the-art industrial software packages: ECLIPSE™, PETREL-RE™ or PumaFlow™ reservoir simulator
- Black oil reservoir simulation including the manipulation of all kind of reservoir data (geological, petrophysical, PVT, well data, production history)
- Software used during workshops: with courtesy of Schlumberger

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsable

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

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INTRODUCTION TO DYNAMIC RESERVOIR SIMULATION — 0.5 day

Physical aspects and fundamental laws.
Mathematical and numerical aspects (diffusivity equation, transport equation, equations od state...).
Types of reservoir simulation models: black oil, compositional, thermal, chemical and double porosity model.

INTRODUCTION TO THE SIMULATOR — 0.5 day

Simulation software presentation.
Practical exercise (building a model from A to Z).

SPACE & TIME DISCRETIZATION — 0.5 day

Various types of grids (Cartesian grid, radial grid, corner point grid, etc.), related properties and key elements to take into account.
Time step management and main events to take into account.
Practical exercise using the simulator.

PETROPHYSICS — 1 day

Data review and petrophysical upscaling.
Practical exercise using the simulator.

FLUIDS — 1 day

Data review and formalisms used by the simulator.
Use of black oil data set and integration of lab experiments results (constant composition expansion, constant volume depletion).
Practical exercise using the simulator.

INITIAL STATE — 1 day

Data review and formalisms used by the simulator (equilibration regions).
Identification of fluids in place per region.
Practical exercise using the simulator.

AQUIFERS REPRESENTATION — 0.5 day

Formalisms used by the simulator (gridded or analytical aquifers).
Review of different possibilities (bottom, edge, transient, steady state, semi steady state) and Hurst & Van Everdingen tables.
Practical exercise using the simulator.

FLOW REPRESENTATION — 1 day

Formalisms used by the simulator (transmissivity multipliers, end point scaling of capillary pressures and relative permeability).
Identification of production mechanisms and material balance analysis.
Practical exercise using the simulator.

WELLS REPRESENTATION — 1 day

Formalisms used by the simulator (wells trajectory, perforations...).
Introduction to well performance:
Inflow performance and numerical PI, outflow performance and VFP tables.
Practical exercise using the simulation software.

PRODUCTION FORECAST — 2 days

Objectives and methodology.
Integration of well representation and production constraints.
Estimation of future productions linked to different scenarios and identification of remaining uncertainties.

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Practical exercise using the simulator.

Sessions

Rueil-Malmaison - From 12/07/2026 to 12/18/2026 **8500 €/HT**

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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