

BASIC SIMULATION AND KNOWLEDGE-BASED DECISION MAKING

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Duration: 6 hours

Scope

Today, practically all aspects of engineering problems are solved with simulators. For the petroleum industry, it ranges from well testing to prediction of enhanced oil recovery. For every application, however, there is a custom-designed simulator. Even though, quite often, 'comprehensive', 'All-purpose', and other denominations are used to describe a company simulator, every simulation study is a unique process, starting from the process description to the final analysis of results.

Simulation is the art of combining physics, mathematics, reservoir engineering, and computer programming to develop a tool for predicting performance under various operating strategies. This course familiarizes participants with steps involved in the development of a simulator, ranging from formulation to history matching, with petroleum reservoir as an example. The engineering approach is introduced. This approach is simple and yet general and rigorous. Various solution techniques are discussed and the merit of creating cloud points (as opposed to linear solutions) presented. Tactics of conducting scientific risk analysis are also discussed.

OUTLINE

1. General principles of simulation
2. Data acquisition and sources of errors
3. Practical tips for data filtering
4. Difference between major commercial simulators
6. Do's and Don'ts of history matching
7. Custom designing simulators, with examples of reservoir simulation
8. Complex scenarios and measures to model them with conventional simulators
9. A generalized approach to simulation

WHO SHOULD ATTEND

Engineers, geologists, planners, and policy makers involved in technology development and turn key projects