

# PE6 HYDRAULIC FRACTURE TREATMENT DESIGN, OPTIMIZATION, AND EVALUATION

Dr. Zillur Rahim Fees: 2400 €

**DUBAI:2 – 5 Dec. 2018 & 22 – 25 April 2019**

## COURSE OVERVIEW

To use hydraulic fracturing and production forecasting tools to design and evaluate propped fracture treatments. The course will focus on fundamentals of hydraulic fracturing, formation damage, candidate selection, reservoir and fracturing parameters, fracturing models, identifying main data items, building dataset for hydraulic fracture simulation, planning for efficient perforation placement using sensitivity study, designing an optimal fracture treatment, and new technologies including multi-stage fracturing stimulation in horizontal wells. The course is a fine blend between stimulation technology and reservoir engineering which is essential for reservoir engineers who would like to understand and be involved in hydraulic fracturing. The course will contain several field examples for the participants to have hands-on experience with real data.

## WHO SHOULD ATTEND

The course is intended for Petroleum Engineers, Production Engineers, Drilling Engineers, and Technical staff involved in workover and stimulation operations.

## COURSE CONTENT

1. **Introduction to Stimulation**
  - Purpose
  - Candidate selection
  - o 2 Dimensional Perkins, Kern, Nordgren Model
  - o 2 Dimensional Geertsma deKlerk Model
2. **Hydraulic Fracturing Fundamentals**
  - General Discussion
  - Rock Properties
  - Fracture Models
  - Candidate Selection
  - o 3 Dimensional Model
3. **Fracture Mechanics**
  - Fluid Flow And Rock Mechanics Equations
4. **Developing Reservoir Datasets**
  - Reservoir Properties
  - Mechanical Properties
  - Identifying Main Properties And Their Impact on Fracture Geometry (sensitivity study)
    - o Young's Modulus

- o In-Situ Stress
- o Poisson's Ratio
- o Fracture Toughness
- o Fracture Interval

## 5. Fracture Modeling

- Fracture Geometry Optimization
  - o Generating Production Profiles
  - o Sensitivity Analysis
    - Fluid (viscosity, injection rate)
    - Proppant (quality)

## 6. New Technology

- Multi Stage Fracturing
  - o Completions
  - o Stimulation treatments

**Dr. Zillur Rahim**



**THE LECTURER**

Dr. Zillur Rahim, Ph.D. P.E., is a senior Petroleum Engineer consultant specialized in hydraulic fracturing design and optimization techniques. After graduating from Algerian Petroleum Institute with BS degree, he completed his MS and Ph.D. from Texas A&M University, both in Petroleum Engineering. He joined S. A. Holditch and Associates, Inc., in 1987 where he developed three-dimensional hydraulic fracturing and proppant transport and acid fracturing model that were marketed to the industry. During his career with Holditch and associates (1987-97), and Schlumberger-Reservoir Technologies, Dr. Rahim worked in design, optimization, and evaluation of fracture treatments, reservoir simulation, production optimization, pressure transient analyses, and tight gas characterization. He conducted several stimulation studies in the US, Algeria, Oman, and Morocco. He taught industry courses for PEMEX (Mexico) and PDVSA (Venezuela). Currently, Dr. Rahim is responsible for stimulation activities for all non-associated gas wells in Saudi Arabia. He is also an instructor for the Advanced Stimulation Course in the Upstream Professional Development Center in Saudi Aramco. Dr. Rahim authored over 90 technical papers and have participated in numerous SPE conferences as committee member, session chair, keynote speaker, and discussion leader. He is a registered professional engineer in Texas.