

## HYDRAULIC FRACTURING FOR WELL STIMULATION

### General:

Discipline: Completion, Production

Level: Basic/Intermediate

Duration: 5 days

Instructor: Jairo Balcacer

### Purpose:

This course will introduce fundamental concepts of the hydraulic fracturing techniques, and the tools and procedures and required materials leading to an optimum design and operational performance. It will also present the theory and practical aspects of job design, execution, and post-job evaluation, including case studies and examples of successful treatments.

### Designed for:

This course is addressed to well completion, reservoir, intervention and production engineers as well as production supervisors who deal with well stimulation and production optimization.

### You will be able to:

- Know the history and purpose of hydraulic fracturing and learn some modern operations
- Summarize the fundamental principles, applications, and considerations involved in designing a hydraulic fracturing job.
- Learn how the rock matrix and mechanical fractures would affect the fracture treatment design
- Establish comparisons between the qualitative and quantitative models to describe fracture growth
- Describe direct and indirect techniques for fracture treatment diagnosis

### Course Content:

#### Hydraulic Fracturing Fundamentals

- Fundamental concepts
- Fracture initiation and growth
- Mechanic properties during fracturing
- Fracture initiation, propagation and closure pressures
- Qualitative and quantitative description of fracture growth

#### Hydraulic Fracturing Fluids

- Fluids function and properties
- Fracturing fluid rheology
- Fluid loss control
- Fracturing fluid additives

- Environmental aspects of fracturing fluids

### Proppants

- Proppant functions
- Properties affecting proppant performance
- Types of proppants

### Fracturing Equipment and Operations

- Surface equipment and layout
- Downhole equipment
- Specialized applications
- Fracturing stages

### Fracturing Treatment Evaluation

- Micro seismic fracture mapping
- Well performance evaluation

### Software applications:

- Hydraulic Fracture Design
- MS Excel spreadsheets



### Text and Consulting books:

- “Petroleum Production Systems”, M. J. Economides; A. D. Hill, C. Ehlig-Economides; Prentice Hall Petroleum Engineering Series

