# Well Stimulation Techniques and Operations

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# Introduction:

**Reservoir stimulation** deals with well productivity. As a result, a successful stimulation first requires accurate identification of parameters controlling well productivity and the determination of whether or not stimulation can improve production. This is therefore the very first step of the stimulation job design.

Well stimulation treatments, which are designed to restore or enhance well productivity, are of two basic types. Matrix treatments are performed at pressures that are below the formation fracture pressure; they are primarily designed to remove near-wellbore damage. Fracture treatments, on the other hand, are performed at pressures above the formation fracture pressure; they are designed to open up highly conductive flow paths between the reservoir and the wellbore, thereby bypassing near-wellbore damage and changing the flow patterns around the well.

**This course** provides a basic understanding of the types of formations and basic reservoir properties with which we deal as well as developing the basic formation damage, acidifying, and hydraulic fracturing concepts. The course includes acidifying and fracturing quality control, conducting the treatment, monitoring pressures, and other critical parameters, during and after the treatment. This course is designed to cover all aspects of well stimulation. The course includes the basic concepts of well stimulation and its importance in increasing productivity of wells beside it discusses acidizing and fracturing quality control, conducting the treatment, monitoring pressures, and other critical parameters, during and after the treatment

# Objectives:

**By the end of this course delegates will be able to:**

- How to select stimulation techniques best suited for various formation types and situations
- Apply basic non-acid and acidifying concepts
- Apply basic hydraulic fracturing concepts

# Who should attend?

Petroleum Engineers, Reservoir Engineers, Production Engineers, Well Service Engineers, Operators, Senior Operators, Junior Engineers, Drilling Engineers, Drilling Supervisors, Geologists, Technologists, foremen, technicians, field supervisors and operations personnel, anyone involved in the planning, execution and evaluation of well stimulation treatments in conventional as well as unconventional plays, including completion, production, workover, reservoir and drilling personnel

# Course Outline:

- Well Stimulation Foundations
- Well Stimulation Techniques
- The factors that affect well production

- What well stimulation is, and why well stimulation methods are used
- Types of well stimulation methods commonly used
- Coiled Tubing Applications in Stimulation Operations
- Geological basic reservoir properties
- Formation damage: how and why it happens

- Non-acid damage removal techniques
- Acidifying Objectives, types, additives
- Acidifying placement techniques and the pressure chart
- Quality control and safety
- Hydraulic fracturing materials and their importance to success, including gel and slick water treatments
- How different well stimulation methods work
- Safety concerns related to well stimulation methods
- Hydraulic fracturing equipment
- The frac chart
- Hydraulic fracturing quality control and safety
- Energized fluids – application and safety