

ADVANCED HYDRAULIC FRACTURING



DRPT356

COURSE TITLE

Advanced Hydraulic Fracturing Training

COURSE DATE/ VENUE

01st - 5th December 2025

London, UK

COURSE REFERENCE

DRPT356

COURSE DURATION

05 Days

DISCIPLINE

Drilling, Reservoir & Petroleum Training

COURSE INTRODUCTION

This Advanced Hydraulic Fracturing Technical Training is designed for Petroleum engineers, stimulation specialists, and technical professionals seeking to deepen their knowledge and practical skills in designing, executing, and evaluating hydraulic fracturing treatments across a variety of reservoir conditions.

Throughout the course, participants will gain a thorough understanding of the concepts of hydraulic fracturing, including fracture geometries, propagation behaviors, and the rock mechanics that influence fracture growth. Special attention is given to identifying formation damage, understanding its types and causes. In addition to estimating formation fracture pressure gradients that is critical for treatment design.

The training covers the full workflow of hydraulic fracturing — from data gathering and candidate evaluation to treatment planning, real-time execution, and post-frac evaluation. Attendees will develop the ability to recognize the strengths and limitations of existing fracturing technologies and fracture models. In addition to evaluating post frac treatment and judge the success of the pumped treatment.

Participants will also learn the application of pre-frac diagnostic tests, how to interpret net pressure data and ACA, and understand how real-time treatment monitoring can enhance fracture design and performance.

Additionally, attendees will gain practical insights into field operations, surface and downhole equipment, API testing standards for fracturing fluids and proppants, and the critical role of field experience and data management in improving frac design and execution over time.

Further, the course explores various specialized fracturing techniques such as foam fracturing, acid fracturing, limited entry fracs, re-fracturing, methanol fracs, and multi-stage fracturing in horizontal wells.

By the end of the course, participants will have the technical proficiency and practical skills needed to design, execute, and evaluate advanced hydraulic fracturing treatments with confidence and precision.

COURSE OBJECTIVE

By the end of this course, participants will be able to:

- Understand concept of hydraulic fracturing as a reservoir stimulation method and main fracturing geometries.
- Explain fracture propagation directions and what are the main factors that control frac propagation.
- Discuss formation damage different types and understand the nature of damage formation.
- Calculate and estimate formation fracture pressure gradient and formation closure pressure gradient.
- Identify the data requirements and steps that must be implemented to properly design, implement, and evaluate hydraulic fracturing treatments
- Evaluate and select stimulation candidates and apply hydraulic fracturing concepts to various types of reservoir conditions to optimize productivity.
- Realize the strengths and limitations of existing hydraulic fracturing technology and fracture models
- Better understanding of rock properties and rock mechanics related to fracturing applications.
- Learn how to generate a practical hydraulic fracturing treatment pumping schedule and calculate the volumes of main treatment different stages.
- Discuss different hydraulic fracturing pumping techniques, advantages and disadvantages of each technique, and optimum candidates for each technique.
- Design hydraulic fracturing treatments that are optimum to different fracturing applications.
- Know the different types of pre-frac injection tests and the obtained information from each test, and when to select the optimum test to get needed information.
- Use pre-frac injection test data and real-time fracturing treatment data in fracturing applications to define fracture parameters and improve frac treatment design
- Interpret net pressure changes with time to understand formation behavior and frac propagation during the main treatment.
- Consider factors influencing post-frac fracture conductivity and well clean up
- Learn how to evaluate fracturing treatment after implementation to judge the success or failure of the pumped treatment.
- Know the types of different fracturing fluids systems in addition to knowing the different types of fluid additives and the function of each one.
- Understand different API lab tests that are applied on fracturing fluid to check QAQC.
- Discuss different types, sizes, and strength of proppant and when each type of proppant can be used.
- Understand the different API standard tests on proppant.

- Learn the main fracturing equipment and surface connections that are used during pumping the main frac treatment. In addition to the different down hole fracturing equipment.
- Understand the different techniques used to stimulate multi stages frac and how to isolate different stages while operating the treatment.
- Discuss different state of art techniques to complete an horizontal well with hydraulic fracturing.
- Learn different special application hydraulic fracturing pumping techniques (Foam frac, Acid frac, limited entry frac, Re-frac, Settle frac, multi-stage frac, Methanol Frac, ...) and when each technique can be effectively implemented.
- Understand importance of field experience in designing hydraulic fracturing treatment and how to build a frac database.

COURSE AUDIENCE

This presentation is designed for Production engineers, Reservoir engineers, and Drilling engineers, and others who have a basic understanding of hydraulic fracturing and need to enhance their knowledge about fracturing concepts and applications

COURSE CONTENT

DAY 1: Introduction – Basics of Hydraulic Fracturing

- Introduction to Audience. Understand course objectives and expectations.
- What is hydraulic fracturing (Identification).
- Formation damage main causes
- The fracture main geometries
- Understanding frac propagation and propagation directions
- Plan for a hydraulic fracturing treatment. Gathering the required information
- Fracturing treatment main pumping schedule stages. www.trainitacademy.com
- Hydraulic fracturing candidate selection criteria.

DAY 2: Hydraulic Fracturing Design

- Design goal(s) and preparing the required data.
- Hydraulic fracturing design steps.
- Hydraulic fracturing design models
- Post treatment evaluation (Different methods and techniques to evaluate the frac treatments and geometries).

DAY 3: Pre-frac Injection Tests (Data Frac).

- Pre-frac injection test concept
- Pre-frac injection test types and data obtained
- Step rate injection tests (Method and data obtained).
- Calibration test (Method and data obtained).
- Pressure decline and formation closure analysis.
- After closure analysis (ACA).
- Net pressure interpretation.

DAY 4: Fracturing Fluid and Propping Agents.

- Fracturing fluid main functions.

- Fracturing fluid different types.
- Fracturing fluid different additives and their function.
- Fracturing fluid rheology
- Proppant main function and properties.
- Proppant different types.
- API standard proppant tests.

DAY 5: Hydraulic Fracturing Operation Considerations and Different Hydraulic Fracturing Techniques and Technologies

- Surface fracturing equipment.
- Quality control for fracturing fluid and proppant.
- Multi-stages fracturing operation and different isolation methods.
- Fracturing techniques in horizontal wells.
- Foam Frac.
- Acid Frac.
- Horizontal wells fracturing technique.
- Limited entry frac pumping technique.
- Channel fracturing pumping technique.
- Re-fracking technique and candidate selection.
- Settle Frac. www.trainitacademy.com

COURSE CERTIFICATE

TRAINIT ACADEMY will award an internationally recognized certificate(s) for each delegate on completion of training.

COURSE METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions