

Geomechanics for Drilling Operations

3.00 days

FOR/GEOME

Overview

AUDIENCE

Engineers and supervisors involved in drilling and completion operations.

PURPOSE

This course provides an understanding of geomechanics solutions for mitigating and solving drilling problems.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:
acquire the basic knowledge on geomechanics applied to drilling and completion operations,
grasp through case studies some important drilling and wellbore issues with regard to geomechanics.

PREREQUISITE

No prerequisites for this course.

WAYS AND MEANS

Training includes application exercises designed for drilling.

Agenda

SCOPE OF ROCK MECHANICS

0.25 d

What is geomechanics? Why geomechanics?
Geomechanics applications. Geomechanics limitation.

INTRODUCTION TO ROCK MECHANICS

0.75 d

Stress. Strains.
Rock failure criteria. Mohr circle application.
Effect of pore pressure and temperature on rock failure application.

STRESS DISTRIBUTION AROUND THE WELLBORE: CASE OF COMPACT ROCKS

1.00 d

Stress expression: case on an isotropic and anisotropic stress fields.
Effect of pressure in the well and the temperature on the stresses.
Different modes of failure.
Stability diagram.

PORE & FRACTURATION DETERMINATION

0.50 d

Underground stresses. Geostatic pressure.
Pore pressure estimation: ratio, equivalent depth, Eaton method.
Fracturation pressure estimation: calculation, LOT.

APPLICATION

0.50 d

Anisotropy effect on wellbore.
Effect of mud weight, bore hole temperature, wellbore trajectory.