

## 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.