

Training - Petroleum Geophysics



GEOPHY-EN-P



Face-to-face only



10 days

This course provides a comprehensive, practical understanding of most techniques used in petroleum geophysics. It aims to focus on seismic techniques applied to investigate both reservoir structure and petrophysical characteristics

Level

Awareness

Public

E&P professionals with no or limited experience in petroleum geophysics

Objectives

Attendees will be able to implement the following skills:

- Select the appropriate geophysical method to be used during various phases of petroleum Exploration & Production
- Gain an insight into seismic reflection and methodology: acquisition, processing and interpretation
- Acquire the fundamental principles of borehole seismic and reservoir geophysics

Pedagogical & technical resources

- Interactive presentations, exercises, document analysis and videos
- 2 workshops on PC, using seismic processing and interpretation software tools
- Software used during workshops: with courtesy of Schlumberger

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsible

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

INTRODUCTION TO PETROLEUM GEOPHYSICS

0.25 day

SEISMIC WAVE PROPAGATION & SIGNAL PROCESSING

0.75 day

Seismic waves, rock velocities and densities, Snell-Descartes law.
Reflection coefficients, acoustic impedance.

Seismic reflection principle. Seismic shot gathers.
Seismic signal vs. Seismic noises. Time domain vs. Frequency domain.
Time and space sampling.

SEISMIC ACQUISITION

2.5 days

Geodesy. Projections. Topographic surveying.
2D and 3D seismic, land, marine, sea bottom seismic.
Seismic sources (explosive, vibroseis, airguns...)
Seismic receivers (geophones, MEMS, hydrophones...)
Streamers, OBC, nodes, shallow water, transition zone...

SEISMIC PROCESSING & IMAGING

2.5 days

Seismic processing workflows, post-stack versus pre-stack.
Enhance signal versus noise.
CMP/Bin, static corrections, dynamic corrections, velocity analysis.
Stack, post-stack migrations, pre-stack migrations (PSTM - PSDM).
Workshop: 2D Seismic Processing.

BOREHOLE SEISMIC

0.75 day

Theory and principles, synthetic seismogram and well-to-seismic tying.
Vertical Seismic Profile (VSP), Offset Seismic Profile (OSP), walkaway.
Seismic While Drilling (SWD).
Examples and applications.

SEISMIC INTERPRETATION: THEORY & PRACTICE

2 days

Principles and methodology, seismic interpretation pitfalls.
2D seismic interpretation practice (on paper).
Workshop: 3D Seismic Interpretation.

SEISMIC FOR RESERVOIR ANALYSIS

1 day

Seismic amplitude analysis, Direct Hydrocarbon Indicators (DHI), seismic attribute analysis.
HR - HQ - HD - Broadband seismic, 4D Seismic.
Multi-component seismic, P waves versus S waves.
AVO-AVA processing and analysis, seismic inversion.

GRAVIMETRY, MAGNETOMETRY & ELECTRO-MAGNETOMETRY

0.25 day

Gravimetry: theory and principles.
Magnetometry: theory and principles.
Electro-magnetometry: theory and principles.

SUMMARY, SYNTHESIS & WRAP-UP

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com