

STRUCTURAL INTERPRETATION OF SEISMIC DATA

Professors:



Christian CHOMAT and Jean-Marie FLAMENT

CVs available on www.totaisprof.com

Objectives :

The primary objective is to review the fundamentals of the structural interpretation of the seismic data with emphasis on industry applications and seismic interpretation.

The course consists of the integration within a week, of two complementary courses with ten professors.

Refer to individual course sheets:

- "Structural Interpretation in Petroleum Exploration" by Jean-Marie Flament
- "Seismics in Petroleum Exploration" by Christian Chomat

Who should attend :

Bachelor/Master Students in Geology, Geophysics or Petroleum Engineering

Prerequisites :

Basic knowledge of Geology
Good understanding of English

Duration:

5 full days (morning and afternoon sessions)
2 sessions/day (3 1/2 hours/session)
Total around 30 hours
The programme can be customized to meet different timing and/or students needs

Language:

Course in English, French (+ Spanish for Seismics)
Slides and handouts in English

Handouts:

Two course booklets (geology and seismics) of most representative slides (4 slides per page, about 100 pages each)
One seismic exercise booklet

Warning: no digital copy provided due to confidentiality data constraints.

Day 1

- A. Introduction: Energy the Global Picture**
Past, present and future of the fossil energy
- B. Seismic Principles:**
Seismic experiment, layer cake, velocities
- C. Seismic Acquisition:**
Land and marine acquisition, shotpoints, CDP, multiple fold, alternative designs
- D. Structural Geology and Tectonics: basics**
Data & scales, observation & interpretation, strain & stress, tectonic regimes
- E. Earth structure and plate tectonics**
- F. Extension:**
Geometry and mechanism, fault types, impact of detachment levels, inheritance from basement

Slides & Exercises

Day 2

- G. Seismic Processing:**
Offsetting, seismic trace, processing sequences, deconvolution, multiples, stack & velocities, migration, enhancing imaging
- H. Wells & Seismics**
Seismic to wells tie, Synthetic seismograms, VSP
- I. Seismic Interpretation:**
Structural, Lithology, Gas-Strat, fluids and Tract Hydrocarbon Indicators, Inversion and modelling, seismic attributes, 4D
- J. Depth Conversion and Mapping**
Velocities, Hand & computer mapping
- K. Interpretation exercise on paper**
Salt tectonics - pre-salt and diaps (half a day)

Slides & Exercises

Day 3

- L. Interpretation exercise on paper**
Salt tectonics - pre-salt and diaps (full day)

Day 4

- M. Riffs and passive margins:**
Faults, mechanism & geometry, passive margins types & geometry, impact for petroleum exploration
- N. Compression:**
Geometry & mechanism, Folded & thrustal structures, tectonics & sedimentation
- O. Strike-Slip:**
Classification, associated structures
- P. Gravity tectonics:**
Mechanism, structural expression and parameters
Impact for petroleum exploration
- Q. Inversion:**
Positive & negative, impact for the petroleum system
- R. Seismic & Geology Quiz**
Slides & Exercises

Day 5

- S. Structural Interpretation:**
Skills & methodology, additional exercises
- T. Quiz correction**
- U. Certificate Ceremony**
Slides & Exercises