E-course: Geophysical Data Acquisition & Processing

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On-line course

This on-line course makes it possible to study the basics of acquiring and processing geophysical data at times convenient to you and at a relatively low cost: no need to travel, no need to interrupt your project for a week. The course start 4 times in a year and takes three months to complete (January, April, July, October). During the course, you need to study certain chapters of an “Applied Geophysics” book as an introduction to practical assignments. Use will be made of “Skype”, “WhatsApp”, email and “Moodle”. At the start a Skype session will be organised to introduce ourselves and to introduce the way the course is organised. From there onwards, use will be made of “WhatsApp” for informal group interactions, email for specific items to be discussed between a participant and the instructor and Moodle for downloading the assignment instructions, uploading solutions and keeping track of informal course news and formal discussions. The course should be finished 3 months after the start. A final multiple choice quiz will be available to test progress made in understanding acquisition and processing of geophysical data.

Business context

Geophysics provides technology with which we can "look" into the subsurface. It is a key enabler of many activities in the search for hydrocarbons, minerals and fresh water. It is also extensively used in the domain of monitoring pollution and rejuvenation of polluted sites. The course provides the fundamentals of seismic refraction & reflection methods, the use of gravity, magnetic, electrical and electromagnetic methods. Modern geophysical acquisition and processing techniques will be taught not only based on a text book but above all by applying the theory in mainly Excel based assignments

Who should follow it

Geologists, Geophysicists and Petroleum engineers, involved in exploration and development of oil and gas fields and for those involved in projects related to the shallow subsurface. In addition, it would be useful for those dealing with the (geo)physical effects of production of a field.

Requirements

A reasonable level of understanding of mathematics and physics is assumed.

Course content
Various geophysical methods from gravity, magnetics, electrical, electro-magnetic, refraction and reflection seismic.

Topics are:
- Gravity surveying
- Magnetics surveying
- Electrical surveying
- Electro-Magnetic surveying, including Ground Penetrating Radar
- Acquisition of shallow refraction seismic data
- Acquisition of reflection seismic data
- When to use 2D, 3D and 4D seismic
- Principles of wave propagation
- Basic designs of 2D and 3D seismic acquisition
- Processing of seismic and GPR data: Objectives
- How to improve signal-to-noise ratio, vertical and lateral resolution
- From simple migration to Imaging
- Result in depth (Time-to-Depth conversion)
- What to spend on a new survey (Value of Information)

Learning methods and tools
At the end of the course participants will have a good understanding of what information geophysical data can give and for what purposes it can be used. This will enable them to specify the requirements for a survey, either done by themselves of by a special service provider.

Other benefits include:
- To place and value geophysical activities in a multi-disciplinary context
- Judge the merits of various geophysical techniques
- Better liaise and collaborate with staff in related disciplines
- Recognise artefacts and direct hydrocarbon indications on seismic
- Value novel developments such as time lapse methods for hydrocarbon reservoir monitoring

For more information on courses go to www.epts.org

For information on the fee and registration please contact info@epts.org .