

## Exciting Training Opportunity for Geoscientists

# Principles of 3-D Seismic Interpretation

Uzma Group in conjunction with its Technology Partner, SCA, (a world leader in Upstream Exploration and Production courses) are proud to bring this training opportunity to oil and gas companies in the S.E Asia region. Since its founding in 1988, SCA has provided leading edge technical training services around the world to over 19,000 petroleum industry professionals.

### Course Description:

**3-D seismic data not only reduces the risk of drilling exploration and development wells, but it can also dramatically increase production from existing fields.** The success of any exploration or development program utilizing 3-D seismic data is dependent upon accurate, three-dimensionally viable interpretations of the seismic data.

The successful application of a 3-D seismic survey depends on the following principles of proper design, acquisition, processing, guarding against pitfalls, and utilization of available 3-D technologies for accurate and three dimensionally valid structural and stratigraphic interpretations.

This course covers the following fundamental seismic principles:

- A detailed step by step discussion of how to design a 3-D survey along with crucial processing steps and related pitfalls
- A discussion of the application of VSP, methodology for mapping channels, Geostatistical Kriging for thickness interpolation, time lapse 3-D (4-D), principles of P & S wave (multi-component) anisotropy analysis and interpretation, component rotation, and S-wave splitting into slow and fast due to fractures and saturation
- In-depth explanation of thin bed thickness estimation using properly processed and modeled amplitudes and frequencies, and related pitfalls
- How to utilize of seismic attributes including coherency and variance
- How to apply seismic modeling in 3-D analysis and to convert stacking into interval velocities for dipping layers
- A detailed step by step procedure for structural interpretation is presented. In this section of the course, we use a live demonstration of principles of 3-D design (using OMNI), analysis and interpretation (using Geographix - Discovery)
- Procedures for stratigraphic interpretation are presented with examples and exercises
- How to conduct the risk analysis of 4-D seismic, reviewing more than 20 case histories from many parts of the world

### Exercises:

**Exercises are conducted** throughout the course to enhance the understanding of principles presented. Some of these exercises include:

- Designing a 3-D survey over a prospect
- Mapping reservoir thickness from seismic amplitudes, recognize and overcome a very important pitfall
- Several exercises for mapping faults and reservoirs to estimate oil and gas resources or reserves
- The mapping of channels in the presence of structure using in-lines, cross-lines and horizontal slices

### Learning Outcomes:

1. Utilize essential procedures in structural and stratigraphic interpretation
2. Apply fundamental principles of structural and stratigraphic interpretation
3. Use Geostatistical Kriging
4. Use S-waves in fractured reservoir interpretation
5. Estimate thin bed thickness with 3-D data
6. Make use of reservoir characterization and compartmentalization tools
7. Conduct risk analysis of 4-D data

## Who Should Attend:

Interpreters who need an understanding of 3-D seismic interpretation fundamentals, geophysicists, geologists, technical support personnel, seismic processors, data processing and acquisition supervisors and managers. This course will benefit any geoscience professional who utilizes 3-D seismic data.

## Prerequisites:

It is recommended that participants take Seismic Survey Design, Acquisition and Processing; and AVO and Seismic Attributes or equivalent courses.

## Course Content:

- Overview of 3-D data acquisition and processing
- Principles of 3-D migration
- Horizontal and horizon slices
- 3-D modeling
- 3-D seismic technologies
- Reduced risk using 4-D
- Successful applications of 3-D in E&P
- Geostatistical Kriging and variogram
- Anisotropy, 3-D, 3-C, S-waves
- Principles of structural & stratigraphic Interpretation
- Application of seismic attributes
- Thickness estimation using amplitude modeling, and frequency
- Reservoir management using 3-D
- Summary of 3-D seismic case histories from around the world

For further details contact [training@uzmagroup.com](mailto:training@uzmagroup.com) or register on line at:  
[http://scacompanies.com/training\\_services/CourseDetail.aspx?courseid=29](http://scacompanies.com/training_services/CourseDetail.aspx?courseid=29)