TRAINING & EDUCATION

Course Code
PE03
Course Title
Reservoir Characterization Using Geostatistics
Instructor
Dr. Ömer İnanç Türeyen

Professional Career
Dr. Türeyen is an assistant professor of petroleum and natural gas engineering at the Istanbul Technical University. He holds an MSc degree from the Istanbul Technical University, and a PhD degree from Stanford University, all in petroleum engineering. He joined Istanbul Technical University in Aug 2005 as an assistant professor. Dr. Türeyen is involved in research in areas of reservoir characterization, reservoir simulation and geothermal engineering. Dr. Türeyen has also experience in giving short courses to the industry and given two short courses on geothermal engineering. Dr. Türeyen is a member of the Society of Petroleum Engineers, and the Chamber of the Turkish Petroleum Engineers.

Course Objective and Description
The objective of this course is to provide the students with methods for characterizing spatial properties of reservoirs and to provide the capabilities for solving related problems. The course is based heavily on statistics and is geared mostly towards assessing and quantifying uncertainty related to physical properties of the reservoir (such as porosity, permeability and etc.) and to the future performance predictions of a reservoir. The course starts out with the fundamental statistical concepts followed by the application of these concepts to spatial phenomena. Then Kriging is introduced as a tool for interpolating and quantifying the uncertainty of physical reservoir parameters. Finally the course ends with the sequential simulation paradigm and a brief introduction to history matching. Examples will be carried out with the GSLIB geostatistical software through out the class.

Who Should Attend
Reservoir engineers, petrophysicist, geologists and personnel involved in reservoir simulation.
Prerequisite
None
Learning Level
Intermediate
Duration
4 days
Course Material
A file of Power Point Presentation and handouts

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Course Outline

Day One

- Fundamental statistical concepts
    - o Descriptive statistics
    - o Visual statistical measures for summarizing a population
    - o Quantitative measures for summarizing a population
    - o Bivariate descriptive statistics
    - o Spatial statistics
    - o The covariance function
    - o The semi-variogram
    - o Indicator covariance function

Day Two

- GSLIB crash course

Day Three

- Deterministic and probabilistic models
- The random function model
    - o The random variable
    - o The discrete random variable
    - o The decision of stationarity
- Types of variogram models
- Introduction to kriging

Day Four

- Kriging (cont'd)
    - o Simple kriging
    - o Ordinary kriging
    - o Block kriging
- The sequential simulation paradigm
- Sequential Gaussian simulation

Antalya, Turkey
3-6 May
US$ 2,450

İstanbul, Turkey
25-28 Oct
US$ 2,450

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