Master Class Series

New Trends in Data Analysis

Analytics and Learning from Data

TRACS Training Master classes

Master classes are designed for people who want to update or refresh on specific topics without having to spend a week out of the office. The classes are led by experts in their respective fields and provide an opportunity for learning, inspiration, conversation and networking.

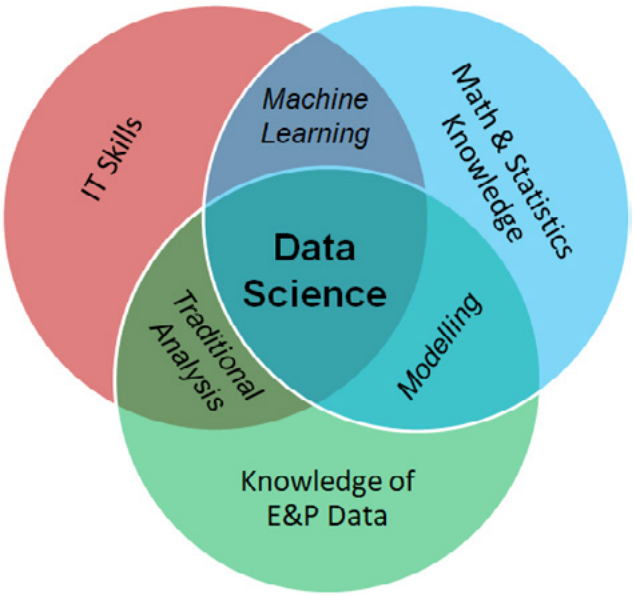
Designed for:
Geophysicists, geologists, petrophysicists, reservoir engineers and production engineers.

Duration:
1 Day

This short course in data science techniques is aimed at all disciplines describing and managing hydrocarbon reservoirs. Gradual changes have been taking place in data for upstream exploration and production over the past decade:

- The volume of data in geophysics, geology, petrophysics, reservoir engineering and production engineering has been growing exponentially
- Information Technology has improved its networking and processing capabilities by many orders of magnitude and has been using artificial intelligence so much that nowadays the leading IT companies can be described as AI companies
- A new discipline, Data Science, has emerged whose practitioners can work in multi-disciplinary teams, applying their skills in mathematics, statistics and computing to add business value in upstream E & P

The course is not designed to convert geoscientists and petroleum engineers into data scientists. It is designed to give them a better appreciation and understanding of how data science can help them in their jobs and to reduce whatever confusion there may be about the capabilities of artificial intelligence to transform the way we work. There are many buzz-words and lots of hype flying around about digitalization, big data, machine learning, data mining and so on. The course is intended to provide a clear introduction and sound perspective to this promising area of getting value from data.



Early Development
E&P Overview
Reservoir
Wells
Business & Risk
Open Air
Coaching
Master Class

New Trends in Data Analysis continued

Course Content:

The course is divided into six stages:

1. Introduction: Course rationale and objectives.
2. Overview of data, statistics and probability as used in E & P. The course starts by reviewing the tools used in basic statistics with some examples and exercises to firm up the concepts.
3. **Exploratory data analysis**. Because of the nature of our brains and our inability to manage complexity quickly we need to summarize and visualize the data, get a feeling for its basic properties and linkages before we are ready for in-depth analysis
4. **Regression.** We will start with simple linear regression using an example and later an exercise. Then we will discuss multiple regression models and describe *Multivariate Data Analysis*, covering P*rinciple Component Analysis, Cluster Analysis* and *Discriminant Analysis*.
5. The basics of advanced **Machine Learning** techniques will be described in a simple and clear fashion: *Tree-Based* methods, S*upport Vector Machines, Gradient Boosting Machines* and *Artificial Neural Networks.*
6. Demonstration of **R-language**. R is a programming language and free software environment for statistical computing and graphics. A lengthier version of this course will use *R* instead of *MS-Excel* as the working language for examples and exercises.

Course Duration:

1 day

Courses available from this series:

E&P Business in a Day
Uncertainty and Risk in Development
How to Make a Good Reservoir Model
Common Fallacies in Casing and Tubing Design
Reservoir Engineering Fundamentals
Field Development Planning
Geomechanics Integration
New Trends in Data Analysis
The Energy Transition in a Day
Carbon Capture and Storage (CCS)

Course Tutor

John Gallivan PhD

Main Series tutoring: Reservoir, Business & Risk, Master Class: Horizontal Wells
Industry experience: over 35 years, reservoir and petroleum engineering, economics
Career background: BNOC, Britoil, BP, Heriot-Watt, TRACS and AGR
Personal: AGR Director, Moscow

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