TECHNICAL
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ACADEMY

School of Engineering

COURSE PROGRAMME

000704

Subsurface Petroleum Uncertainty and Risking

Subsurface Petroleum Uncertainty and Risking workshop explores the key sources of geological, geophysical, and reservoir uncertainties and their impact on decision-making and risk assessment.



Learn from the Best in the Business!

Course overview

Duration: 5 days / 40 hours · Intermediate level

Why take this course

Subsurface Petroleum Uncertainty and Risking workshop explores the key sources of geological, geophysical, and reservoir uncertainties and their impact on decision-making and risk assessment. Participants will learn deterministic and probabilistic techniques, including Bayesian methods, Monte Carlo simulations, and geostatistical modeling, to quantify and mitigate uncertainties and risks. Case studies will illustrate how uncertainty affects reserve estimation, well placement, and production forecasting. By the end of the course, attendees will be equipped with practical tools to improve decision-making in complex subsurface environments, especially with artificial intelligence algorithms and technologies.

The workshop is full of practical sessions using many industrial software platforms with live seismic and geological datasets. Petrel, OpendTect, Crystal Ball platforms will be used to apply the explained concepts and approaches.

Who it is for and how it helps

This course is ideally suited for professionals seeking to deepen their understanding of prospect generation, risk assessment, and resource evaluation, including:

Exploration Geologists, Geophysicists, and Development Geoscientists who want to enhance their technical and interpretive skills.

Reservoir Engineers looking to broaden their knowledge in prospect evaluation and resource quantification.

Financial analysts, accountants, and other industry professionals who support exploration teams and wish to understand the technical and economic underpinnings of exploration decisions.

What you will learn

- Identify and characterize petroleum system elements: Understand the fundamental controls on hydrocarbon occurrence, including various trap types, reservoir quality, seal effectiveness, source rock properties, and migration pathways.
- Evaluate uncertainties and risks: Apply both deterministic and probabilistic methods to assess geological uncertainties, quantify associated risks, and determine the probability of success (POS).
- Estimate volumes accurately: Conduct volumetric calculations and integrate multiple data sources to estimate recoverable hydrocarbon volumes with greater precision and confidence.
- Employ play-based exploration frameworks: Implement systematic workflows for play-based evaluation, enabling more effective prospect screening, ranking, and selection within a basin or region.

Course overview — continued

- Incorporate economic considerations: Understand exploration economics, including drilling costs, operational expenses, and market factors, to inform better exploration investment decisions and portfolio optimization.

Pre-course requirements

- A foundational understanding of petroleum geology and geophysics (e.g., sedimentary basin formation, basic stratigraphy, and structural geology).
- Basic familiarity with well logs, seismic data interpretation, and simple volumetric calculations.
- Competency in Microsoft Excel for conducting basic probability and volumetric analyses.

Programme instructor



Dr. Ahmed Hafez

Resourceful goal-oriented senior staff geoscientist with 18 years working experience in the oil and gas industry, mainly with international corporates, contributing to full cycle of exploration and production, with extensive academic experience. Highly competent of geoscience data interpretation, integration, reservoir characterization and modeling to create field development plan, brownfields revitalizing, waterflooding projects to boost oil production and generate new exploration prospects. Proven track-record of finding and developing oil and gas fields in many basins around the world includes Mediterranean, North Africa, South Mexico, Europe and Middle East regions. Implementing leading-edge multi-disciplinary techniques and workflows including artificial intelligence technologies for effective exploration and development. Indeed, complying with the HSE policies to ensure safe and efficient operations is a key characteristic.

Participant ratings

Programme evaluation based on participant feedback

Overall programme rating — 4.7 / 5

Clarity of learning objectives	**4.4 / 5**
Confidence in applying knowledge and skills	**4.4 / 5**
Achievement of learning objectives	**4.4 / 5**
Relevance of content to job tasks	**4.2 / 5**
Suitability of difficulty for the level of preparation	**4.2 / 5**
Increase in knowledge	**4.4 / 5**
Skills development	**4.3 / 5**
Willingness to recommend the programme to colleagues	**4.4 / 5**

19 responses

Joining the programme

Contact the Academy and quote course code 000704 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

Read the pre-course requirements in this programme before enrolling.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

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