Special Courses · SC388

Petrel Uncertainty Analysis and Optimisation Fundamentals

Istanbul · 27 - 31 Dec 2026

Date	Venue	Duration
27 - 31 Dec 2026	**Istanbul**	**1 Week**
Fee	Ref	Language
£5,400 GBP	**SC388**	**English**

Introduction

Reservoir management in the oil and gas industry is a complex and dynamic process that requires the integration of geological, geophysical, and engineering data. Petrel, a leading software platform, offers powerful tools for reservoir modelling, but harnessing its full potential requires a deep understanding of uncertainty analysis and optimisation fundamentals.

Our 5-day training programme is designed to equip professionals with the knowledge and skills necessary to effectively use Petrel for uncertainty analysis and optimisation in reservoir management. Whether you are a reservoir engineer, geologist, or geophysicist, this programme will provide you with the expertise needed to make informed decisions in reservoir development and production.

Course Objectives

By the end of this training programme, participants will be able to:

- Master Petrel Essentials: Gain proficiency in Petrel software, from basic navigation to advanced modelling techniques, enabling efficient project setup and data manipulation.
- Understand Uncertainty Analysis: Comprehend the concept of uncertainty in reservoir modelling, identify sources of uncertainty, and implement various uncertainty quantification methods.
- Stochastic Modelling: Learn how to create stochastic realisations of geological models, define property distribution functions, and understand geostatistical techniques.
- Sensitivity Analysis: Perform sensitivity studies in Petrel, identify critical parameters, and interpret sensitivity results to make informed decisions.
- Optimisation Fundamentals: Understand the fundamentals of optimisation, define objectives and constraints, and set up optimisation problems within Petrel.
- Integrated Workflow: Develop integrated workflows that combine uncertainty analysis with optimisation to optimise reservoir development strategies.
- Advanced Techniques: Explore advanced uncertainty analysis and optimisation techniques for complex geological scenarios and real-time reservoir management.

- Case Studies: Analyse real-world case studies to apply the knowledge gained during the training programme to practical reservoir management scenarios.

Target Audience

This training programme is designed for professionals working in the oil and gas industry who are involved in reservoir management and modelling. The target audience includes:

- Reservoir Engineers
- Geologists
- Geophysicists
- Petrophysicists
- Reservoir Simulation Specialists
- Asset Managers
- Data Analysts
- Any professional involved in the exploration, development, or production of hydrocarbon reservoirs

Course Outlines

Day 1

Introduction to Petrel and Uncertainty Analysis

- Introduction to Petrel
  - Overview of Petrel software
  - Interface and navigation
  - Basic data import and project setup
- Geological Modelling Basics
  - Creating geological models
  - Fault modelling and gridding
  - Property modelling techniques
- Introduction to Uncertainty Analysis
  - Understanding uncertainty in reservoir modelling
  - Types of uncertainty: geological, geophysical, and engineering
  - Uncertainty quantification methods

Day 2

Uncertainty Analysis in Petrel

- Stochastic Modelling in Petrel
  - Overview of stochastic modelling
  - Building stochastic realisations
  - Property distribution functions
- Geostatistics in Petrel
  - Introduction to geostatistics

    - Variogram modelling
    - Kriging and simulation
- Sensitivity Analysis
    - Identifying critical parameters
    - Running sensitivity studies
    - Analysing results

Day 3

Optimisation Fundamentals

- Introduction to Optimisation
    - Optimisation in reservoir management
    - Types of optimisation problems
    - Optimisation objectives and constraints
- Setting Up Optimisation Problems in Petrel
    - Defining objectives and constraints
    - Choosing optimisation variables

Day 4

Performing Uncertainty Analysis with Optimisation

- Integrated Uncertainty and Optimisation Workflows
    - Combining uncertainty analysis with optimisation
    - Workflow design and considerations
- Case Studies
    - Practical examples of uncertainty analysis and optimisation in Petrel
    - Analysing real-world reservoir data

Day 5

Advanced Topics and Application

- Advanced Uncertainty Analysis Techniques
    - Advanced stochastic modelling methods
    - Handling complex geological scenarios
    - Advanced sensitivity analysis techniques
- Real-Time Reservoir Management and Optimisation
    - Introduction to real-time optimisation
    - Using Petrel for ongoing reservoir management
    - Case studies and best practices
- Course Conclusion and Q&A
    - Review of key concepts
    - Open floor for participant questions and discussion

- Course evaluation and feedback

Register or ask about this course online
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