

## DATA ANALYSIS AND DATA VISUALIZATION IN OIL AND GAS (UPSTREAM)

*“Transforming Upstream Data into Operational Insights and Strategic Value”*

### Schedule

| Date             | Venue      | Fees (Face-to-Face)   |
|------------------|------------|-----------------------|
| 12 - 16 Oct 2026 | London, UK | USD 3495 per delegate |

► **Available delivery methods:** Face-to-Face & Online Training

### Introduction

In today’s upstream oil and gas industry, data is a strategic asset. From exploration to production, massive volumes of geological, geophysical, and operational data are generated daily. However, transforming this raw data into actionable insights requires strong analytical and visualization capabilities.

This intensive course equips technical professionals with hands-on skills in data analysis, interpretation, and visualization tailored for upstream operations. Using industry-relevant datasets and case studies, participants will apply tools like Excel, Power BI, and Python to explore, analyze, and present upstream data for decision-making and performance optimization.

### Objectives

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

- Organize and clean upstream data for analysis and modeling
- Use descriptive and inferential statistics to interpret field data
- Visualize production, reservoir, and drilling data effectively
- Apply dashboards and KPIs to monitor upstream performance
- Translate technical data into business insights for engineering and management

## Why Attend

- Bridge the gap between raw upstream data and actionable information
- Learn hands-on with datasets from real exploration and production scenarios
- Strengthen technical reporting with interactive visual tools
- Build competence in data storytelling for well performance, downtime, and reservoir behavior
- Support digital transformation in oilfield operations

## Target Audience

This program is designed for:

- Reservoir, drilling, and production engineers
- Data analysts and petroleum engineers
- Geoscientists and field operations supervisors
- Technical reporting, asset management, and planning staff
- Anyone working with upstream data seeking improved analysis and visualization skills

## Individual Benefits

Key competencies that will be developed include:

- Data wrangling and statistical interpretation
- Use of visualization tools like Power BI, Excel, and Python charts
- Well and reservoir performance monitoring through KPIs
- Drilling and production efficiency analysis
- Effective communication of technical insights to stakeholders

## Organizational Benefits

Upon completing the training course, participants will demonstrate:

- More data-informed decisions across upstream operations
- Improved reporting accuracy and communication to management
- Reduced operational risk through early insight and trend detection
- Faster performance diagnostics and optimization
- Support for digital initiatives and smarter oilfield management

## Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - Data analytics frameworks applied to E&P
- Case Studies - Real upstream challenges in drilling, completions, and production
- Workshops - Hands-on use of Excel, Power BI, and Python
- Peer Exchange - Group discussion of data use in upstream decisions
- Tools - Dashboards, well log visuals, data quality checklists

## Course Outline

Detailed 5-Day Course Outline

**Training Hours: 7:30 AM - 3:30 PM** Daily Format: 3-4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 - 02:00

### Day 1: Fundamentals of Data Analysis in Upstream

- Module 1: Types and Sources of Upstream Data (07:30 - 09:30) • Production, drilling, logging, and reservoir datasets • Data quality, frequency, and formats
- Module 2: Data Cleaning and Structuring (09:45 - 11:15) • Missing values, anomalies, and formatting issues • Preparing datasets for analysis
- Module 3: Exploratory Data Analysis (11:30 - 01:00) • Descriptive statistics, correlation, distribution • Tools: Excel Pivot Tables and summary stats
- Module 4: Workshop - Data Cleaning & EDA in Excel (02:00 - 03:30) • Clean and analyze a sample well performance dataset

### Day 2: Visualization Principles and KPI Development

- Module 1: Data Visualization Best Practices (07:30 - 09:30) • Graph types, chart selection, visual storytelling basics • Clarity, interactivity, and error avoidance
- Module 2: Visualizing Time Series and Operational Data (09:45 - 11:15) • Trends in production, pressure, and downtime • Dual-axis charts and conditional formatting
- Module 3: KPI Dashboards for Field Performance (11:30 - 01:00) • Daily production, uptime %, WHP, GOR • Designing real-time dashboard elements
- Module 4: Workshop - Build a Field Dashboard in Power BI (02:00 - 03:30) • Participants design a live operations dashboard

### Day 3: Statistical Analysis and Forecasting Techniques

- Module 1: Statistical Tools for Upstream Decisions (07:30 - 09:30) • Correlation, regression, standard deviation • Analyzing downtime drivers and failure rates
- Module 2: Trend Analysis and Forecasting (09:45 - 11:15) • Moving averages, linear forecasting, decline curves • Field-level predictive analysis
- Module 3: Introduction to Python for Upstream Analytics (11:30 - 01:00) • Pandas, matplotlib, and seaborn basics • Structured workflows for engineers
- Module 4: Workshop - Forecasting Production Trends (02:00 - 03:30) • Apply regression and decline curve methods in Excel/Python

### Day 4: Use Cases in Upstream Data Analytics

- Module 1: Drilling Data Analysis (07:30 - 09:30) • ROP, WOB, bit wear, vibration • Drilling efficiency dashboards
- Module 2: Completion and Well Test Analysis (09:45 - 11:15) • Stimulation effectiveness, flow rates, skin factor trends • Visualizing drawdown and pressure build-up
- Module 3: Production Optimization with Data (11:30 - 01:00) • Gas lift, ESP, and well intervention metrics • Automating alerts and exception reporting
- Module 4: Workshop - Integrated Field Analysis Case (02:00 - 03:30) • Analyze multi-well data to spot underperformance

### Day 5: Reporting, Automation & Certification

- Module 1: Automating Reports and Alerts (07:30 - 09:30) • Using Power BI service and Excel macros • Email alerts and mobile dashboards
- Module 2: Communicating Insights to Stakeholders (09:45 - 11:15) • Slide decks, visual reports, technical summaries • Linking visuals to operational decisions
- Module 3: Final Case Review & Participant Presentations (11:30 - 01:00) • Present analysis and dashboards to group
- Module 4: Wrap-Up and Certification (02:00 - 03:30) • Course recap, action planning, certificate distribution

## Certification

Participants will receive a Certificate of Completion in Data Analysis & Visualization in Oil & Gas (Upstream), confirming their expertise in transforming field data into operational insights using practical analytical and visualization techniques.

## Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

|  |   |   |
|--|---|---|
| <p><b>In-House / Customized Training</b></p> <p>Interested in running this course for your team?</p> <p>Please contact us:</p> | <p>TEL:</p> <p><b>+601116373203</b></p> | <p>EMAIL:</p> <p><b>info@mawaevents.net</b></p> |
|--|---|---|

© Material published by MAWA Events shown here is copyrighted. All rights reserved. Any unauthorized copying, distribution, use, dissemination, downloading, storing (in any medium), transmission, reproduction or reliance in whole or any part of this course outline is prohibited and will constitute an infringement of copyright.