

Petroleum Production Forecasting & Optimization with AI Analytics

21 – 25 December 2026
Barcelona (Spain)

UK Traininig

PARTNER



Petroleum Production Forecasting & Optimization with AI Analytics

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Introduction

Accurate petroleum production forecasting is a critical factor in sustaining output levels, optimizing operations, and maximizing resource utilization. In today's rapidly evolving energy sector, the integration of Artificial Intelligence AI and advanced analytics has become a strategic necessity to improve forecasting accuracy, streamline operations, and enhance profitability.

This course equips participants with the skills and knowledge to implement AI-driven forecasting models and optimization strategies, enabling data-backed decision-making for higher productivity and efficiency in petroleum production operations.

Course Objectives

- Understand the fundamentals of petroleum production forecasting.
- Apply AI analytics to enhance prediction accuracy.
- Build predictive models using historical and operational data.
- Implement optimization algorithms to maximize well and field output.
- Integrate real-time sensor data into forecasting and optimization processes.
- Analyze key performance indicators to assess operational efficiency.
- Identify and resolve production challenges using advanced analytics.
- Develop sustainable production strategies supported by AI.

Course Outlines

Day 1: Fundamentals of Production Forecasting and AI Applications

- Overview of traditional forecasting methods in petroleum production.
- Importance and role of forecasting in operations.
- AI's impact on predictive model development.
- Data sources are essential for production forecasting.
- Limitations of conventional forecasting techniques.
- Comparative analysis: traditional vs AI-driven models.

A graphic of a chessboard with several pawns. In the foreground, a large gold king piece stands prominently. Behind it, several smaller pawns, some gold and some silver, are positioned on the board. The background features concentric circles emanating from behind the king piece.

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Day 2: Data Acquisition and Preparation for Predictive Models

- Types of data used geological, operational, production.
- Data cleaning and handling missing values.
- Feature engineering to extract influential variables.
- Merging data from multiple sources.
- Leveraging IoT technologies for real-time data collection.
- Practical exercise: preparing a forecasting dataset.

Day 3: Building AI-Driven Predictive Models

- Selecting suitable algorithms for production forecasting.
- Building regression and time series forecasting models.
- Model accuracy evaluation and improvement techniques.
- Scenario-based production forecasting.
- Detecting deviations in production performance.
- Practical exercise: training an AI-based forecasting model.

Day 4: Production Optimization Strategies with AI Analytics

- Identifying optimization opportunities in production processes.
- Applying optimization algorithms to adjust production plans.
- Adaptive control of operational rates.
- Using predictive analytics for operational decision-making.
- Minimizing operational risks with predictive maintenance.
- Practical exercise: creating a production optimization plan.

Day 5: Performance Evaluation and Continuous Improvement

- Key performance indicators KPIs for production optimization.
- Economic impact assessment of optimization strategies.
- Updating models with new operational data.
- Embedding continuous improvement into production strategies.
- Case studies of successful AI Analytics applications.
- Practical exercise: presenting a complete production improvement plan.

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A graphic illustration of a chessboard with several chess pieces. A large gold king piece is prominent in the foreground, with a silver pawn and a gold pawn nearby. The board is checkered, and there are concentric circles in the background.

Why Attend this Course: Wins & Losses!

- Gain advanced skills in AI-based forecasting and optimization.
- Improve production efficiency and reduce operational costs.
- Enhance accuracy in operational decision-making.
- Prevent unexpected failures with predictive maintenance.
- Maximize resource utilization and increase profitability.
- Learn from real-world examples and practical exercises.
- Develop expertise in integrating AI into production strategies.
- Stay up-to-date with the latest technologies in petroleum operations.

Conclusion

AI-powered petroleum production forecasting and optimization represent a transformative shift in operational management. By leveraging data-driven insights, this approach allows for precise, real-time decision-making and long-term productivity gains.

This course equips participants with the tools to design robust predictive models, implement effective optimization strategies, and achieve measurable operational and financial outcomes.

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