Datastat Research
Building Capacity in Training and Research

DATASTAT TRAINING IN

OFFICIAL COURSE PROSPECTUS

Center for Advanced Research & Professional Development

Nairobi Training Center • Global Virtual Academy • Corporate On-Site

OIL AND GAS

AI-Based Reservoir Performance Forecasting Training Course

Comprehensive Course Syllabus, Practical Modules & Upcoming Schedules

PROGRAM SPECIFICATIONS & HIGHLIGHTS

DURATION
5 Days Practical Hands-on

DELIVERY MODES
In-Person Class & Live Virtual

CERTIFICATION
Accredited Certificate of Completion

INTAKES / DATES
Multiple Cohort Schedules Included

PREPARED FOR:

Valued Participant

Email: training@datastatresearch.org | Issued: November 22, 2026

Academic & Professional Training Year: 2026

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AI-Based Reservoir Performance Forecasting Training Course

Oil and Gas • 5 Days Intensive • Accredited Certification

Course Overview

AI-Based Reservoir Performance Forecasting Training Course is designed to equip oil and gas professionals with advanced knowledge and practical skills in artificial intelligence (AI), machine learning (ML), predictive analytics, reservoir simulation, and data-driven reservoir engineering.

Key Skills & Software Tools Covered

AI Forecasting • Reservoir Simulation • Predictive Analytics • Machine Learning

Upcoming Training Schedules

Confirmed cohort intakes and venues. Both physical in-person classroom and live virtual online seats are available.

TRAINING DATES	LOCATION / VENUE	FORMAT / DURATION	INVESTMENT (FEE)
12 Oct 2026 – 16 Oct 2026	Nairobi	Classroom / 5d	**$1,500 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Kigali	Classroom / 5d	**$3,000 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Dubai	Classroom / 5d	**$5,000 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Cape Town	Classroom / 5d	**$4,500 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Addis Ababa	Classroom / 5d	**$3,000 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Singapore	Classroom / 5d	**$5,000 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Istanbul	Classroom / 5d	**$5,000 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Bangkok	Classroom / 5d	**$5,000 USD / KES 110,000**
12 Oct 2026 – 16 Oct 2026	Accra	Classroom / 5d	**$4,000 USD / KES 110,000**
19 Oct 2026 – 23 Oct 2026	Nairobi	Classroom / 5d	**$1,500 USD / KES 110,000**
19 Oct 2026 – 23 Oct 2026	Kigali	Classroom / 5d	**$3,000 USD / KES 110,000**
19 Oct 2026 – 23 Oct 2026	Dubai	Classroom / 5d	**$5,000 USD / KES 110,000**

* Corporate discounts and customized cohort scheduling are available for teams of 3 or more participants.

Course Curriculum & Modules

AI-Based Reservoir Performance Forecasting Training Course

Introduction

AI-Based Reservoir Performance Forecasting Training Course is designed to equip oil and gas professionals with advanced knowledge and practical skills in artificial intelligence (AI), machine learning (ML), predictive analytics, reservoir simulation, and data-driven reservoir engineering. As the petroleum industry accelerates its digital transformation, AI-powered forecasting is becoming increasingly important for improving reservoir performance, optimizing hydrocarbon recovery, reducing operating costs, and supporting faster, more accurate field development decisions. The course also examines the role of digital oilfields, automated workflows, cloud-based analytics, and intelligent reservoir management in strengthening forecasting accuracy and operational efficiency.

Through practical exercises, industry-focused case studies, and real-world reservoir management scenarios, participants will develop the capability to transform complex subsurface datasets into actionable insights. The programme emphasizes predictive reservoir analytics, production optimization, uncertainty quantification, reservoir surveillance, intelligent history matching, and AI-driven decision support for both conventional and unconventional hydrocarbon assets. Participants will explore techniques for identifying production trends, detecting anomalies, forecasting well and field performance, evaluating recovery strategies, and managing uncertainty in reservoir predictions. The course also addresses data quality, model validation, explainable AI, and the integration of engineering expertise with machine learning outputs to ensure reliable and interpretable results. By the end of the training, participants will be better positioned to implement AI-based reservoir forecasting workflows, improve reservoir management strategies, maximize recovery factors, and support sustainable, economically efficient petroleum production.

Course Duration

5 days

Course Objectives

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

- Understand the fundamentals of AI-driven reservoir performance forecasting and its applications in modern petroleum engineering.
- Apply machine learning algorithms to predict reservoir production trends and hydrocarbon recovery performance.
- Integrate historical production data, pressure data, well logs, and reservoir simulation outputs into predictive analytics workflows.
- Develop AI-based models for oil, gas, and water production forecasting.
- Apply time-series forecasting techniques to analyze reservoir behavior and future production trends.
- Use deep learning and neural networks to identify complex relationships within reservoir datasets.
- Improve reservoir performance predictions through automated history matching and model calibration.
- Apply predictive analytics to identify production anomalies, reservoir pressure changes, and unexpected water breakthrough.
- Evaluate decline curve analysis alongside AI-powered production forecasting methods.
- Conduct uncertainty quantification and scenario-based forecasting for improved reservoir decision-making.
- Apply explainable AI techniques to improve the transparency and interpretability of reservoir predictions.
- Optimize well performance, production strategies, and reservoir management plans using AI-generated insights.
- Design practical AI implementation strategies that support digital oilfield transformation and data-driven reservoir optimization.

Target Audience

- Reservoir engineers and senior reservoir engineering specialists.
- Petroleum engineers and production optimization engineers.
- Geoscientists and subsurface interpretation specialists.
- Reservoir simulation engineers and modelling specialists.
- Production data analysts and petroleum data scientists.
- Digital oilfield, AI, and machine learning professionals in the energy sector.
- Petroleum asset managers, field development planners, and technical managers.
- Oil and gas consultants, researchers, and professionals involved in reservoir management and hydrocarbon recovery.

4. Course Modules

Module 1: Fundamentals of AI-Based Reservoir Performance Forecasting

- Introduction to AI, machine learning, and predictive analytics in reservoir engineering.
- Principles of reservoir performance evaluation and production forecasting.
- Overview of conventional forecasting methods and AI-driven alternatives.
- Reservoir data sources, including production histories, pressure records, well logs, and simulation results.
- Case study: Comparing conventional decline curve analysis with a machine learning model for forecasting an oil-producing field.

Module 2: Reservoir Data Management and Feature Engineering

- Collection, integration, and preprocessing of reservoir and production datasets.
- Data cleaning, missing-value treatment, and outlier detection techniques.
- Feature engineering using pressure, temperature, water cut, gas-oil ratio, and production history.
- Time-series preparation, data normalization, and training-validation-test dataset design.
- Case study: Improving forecasting reliability by correcting inconsistent production records from a mature reservoir.

Module 3: Machine Learning Algorithms for Reservoir Forecasting

- Application of linear regression, random forests, and gradient boosting to production prediction.
- Supervised learning techniques for forecasting oil, gas, and water production rates.
- Model selection, hyperparameter tuning, and performance optimization.
- Evaluation metrics, including MAE, RMSE, and coefficient of determination (R^2).
- Case study: Comparing random forest and gradient boosting models for forecasting production from a multiwell reservoir.

Module 4: Time-Series Forecasting and Deep Learning

- Fundamentals of time-series analysis for reservoir production data.
- Application of autoregressive models and other statistical forecasting methods.

- Introduction to recurrent neural networks (RNNs), LSTM networks, and deep learning architectures.
- Forecasting production decline, pressure trends, and changing reservoir behavior.
- Case study: Using LSTM-based forecasting to predict monthly oil production from a mature offshore field.

Module 5: AI-Driven Reservoir Simulation and History Matching

- Integration of AI models with numerical reservoir simulation workflows.
- Fundamentals of automated history matching and model calibration.
- Surrogate modelling to accelerate computationally intensive reservoir simulations.
- Sensitivity analysis for permeability, porosity, aquifer strength, and fluid properties.
- Case study: Applying surrogate models to evaluate multiple reservoir development scenarios more efficiently.

Module 6: Reservoir Surveillance, Anomaly Detection, and Production Diagnostics

- AI-based identification of abnormal production and pressure trends.
- Early detection of water breakthrough, gas coning, and unexpected production decline.
- Application of clustering and anomaly detection algorithms to well surveillance.
- Integration of real-time production monitoring with predictive reservoir analytics.
- Case study: Detecting early water breakthrough in a producing field using water-cut trends and machine learning.

Module 7: Uncertainty Quantification and Reservoir Performance Optimization

- Understanding geological, operational, and data-related uncertainty in forecasts.
- Probabilistic forecasting and scenario-based reservoir performance evaluation.
- Monte Carlo simulation and sensitivity analysis for recovery estimation.
- AI-supported evaluation of infill drilling, well intervention, and production strategies.
- Case study: Comparing alternative infill drilling and water-injection scenarios to assess production potential and uncertainty.

Module 8: AI Implementation, Explainable Models, and Digital Reservoir Management

- Application of explainable AI techniques, including feature importance and SHAP-based interpretation.
- Integration of predictive models into digital oilfield and reservoir management workflows.
- Model deployment, performance monitoring, and periodic retraining.
- Governance, data security, model limitations, and responsible AI implementation.
- Case study: Designing an AI-enabled reservoir performance dashboard for a field development team to monitor forecasts and support production decisions.

Training Methodology

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@datastatresearch.org or call +254724527104

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to DATASTAT CONSULTANCY LTD account, as indicated in the invoice so as to enable us prepare better for you.

Certification & Learning Methodology

- Hands-on practical delivery with real-world datasets, case studies, and lab exercises.
- Post-training mentorship, access to class resources, and customized follow-up support.
- Participants who successfully complete the course receive an accredited Datastat Certificate of Completion.

How to Enroll & Reserve Your Seat

1. Online Registration: Visit https://datastatresearch.org/courses/ai-based-reservoir-performance-forecasting-training-course to register online.
2. Email Booking: Send participant details to training@datastatresearch.org for official invoice & reservation.
3. Support & Assistance: Inquire via phone +254 724 527 104 | +254 734 969 612.