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 Production Forecasting and Optimization 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 Production Forecasting and Optimization Training Course

Oil and Gas • 5 Days Intensive • Accredited Certification

Course Overview

AI-Based Production Forecasting and Optimization 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, production forecasting, and intelligent production optimization.

Key Skills & Software Tools Covered

AI Forecasting • Production Optimization • 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 Production Forecasting and Optimization Training Course

Introduction

AI-Based Production Forecasting and Optimization 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, production forecasting, and intelligent production optimization. As the energy industry accelerates its digital transformation, organizations are increasingly adopting AI-driven technologies to improve production efficiency, maximize hydrocarbon recovery, reduce operational costs, and enhance reservoir performance. This comprehensive training course explores how AI algorithms, data analytics, deep learning, and predictive modeling can transform conventional production forecasting into a dynamic, data-driven decision-making process. Participants will learn how to integrate historical production data, real-time sensor information, reservoir simulation outputs, well performance indicators, and operational parameters to generate accurate production forecasts and identify optimization opportunities across upstream oil and gas operations.

The course also focuses on AI-powered production optimization, intelligent well surveillance, predictive maintenance, reservoir performance analytics, and automated decision support systems. Participants will explore techniques for forecasting oil, gas, and water production; identifying production decline patterns; optimizing artificial lift systems; detecting production anomalies; and evaluating multiple operating scenarios using machine learning models. The program also addresses data quality, model validation, uncertainty quantification, explainable AI, and the integration of digital oilfield technologies into production workflows. By the end of the course, participants will be better positioned to leverage AI-driven production intelligence, smart field technologies, and data-driven optimization strategies to improve asset productivity, support investment decisions, and achieve sustainable operational excellence in the evolving energy sector.

Course Duration

5 days

Course Objectives

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

- Understand the fundamentals of AI-driven production forecasting and digital transformation in the oil and gas industry.
- Apply machine learning algorithms to historical production data for accurate forecasting and trend analysis.
- Develop predictive models for oil, gas, and water production using advanced analytics techniques.
- Implement time-series forecasting methods to predict short-term and long-term production performance.
- Use AI-powered decline curve analysis to evaluate well productivity and production decline patterns.
- Apply predictive analytics to identify production bottlenecks and improve operational efficiency.
- Optimize artificial lift systems using machine learning and intelligent performance monitoring.
- Integrate real-time production data and digital oilfield technologies into forecasting workflows.
- Detect production anomalies using AI-based pattern recognition and anomaly detection models.
- Evaluate reservoir and well performance using data-driven production optimization techniques.
- Apply scenario modeling and sensitivity analysis to improve production planning and asset management.
- Validate forecasting models using performance metrics, uncertainty analysis, and explainable AI techniques.
- Develop practical AI implementation strategies to maximize production recovery, reduce costs, and improve field performance.

Target Audience

- Petroleum and production engineers responsible for well performance and production optimization.
- Reservoir engineers involved in production forecasting, reservoir surveillance, and recovery planning.
- Data scientists and AI/ML engineers working on energy-sector analytics solutions.
- Oil and gas production managers overseeing field performance and operational efficiency.
- Well intervention, artificial lift, and well surveillance specialists.
- Asset managers and field development planners responsible for production targets and investment decisions.
- Digital oilfield specialists, automation engineers, and industrial data analysts.
- Technical consultants, energy researchers, and senior professionals supporting AI adoption in upstream operations.

Course Modules

Module 1: Fundamentals of AI-Based Production Forecasting

- Introduction to AI, machine learning, and predictive analytics in upstream oil and gas.
- Overview of production forecasting principles and conventional forecasting limitations.
- Types of production data: historical rates, pressure, temperature, water cut, and operating conditions.
- Introduction to supervised learning, unsupervised learning, and deep learning applications.
- Case study: Comparing conventional production forecasting with AI-driven forecasting for a mature oilfield.

Module 2: Production Data Management and Feature Engineering

- Collection and integration of well, reservoir, facility, and sensor data.
- Data cleaning, missing-value treatment, outlier detection, and data quality assurance.
- Feature engineering using pressure, choke settings, water cut, gas-oil ratio, and production history.
- Time-series preparation, data normalization, and training-validation-test dataset design.
- Case study: Improving forecast accuracy by resolving inconsistent production records from a multiwell asset.

Module 3: Machine Learning Models for Production Forecasting

- Linear regression, random forest, gradient boosting, and other predictive modeling techniques.
- Introduction to advanced ensemble methods and neural networks for production prediction.
- Model selection based on data availability, forecast horizon, and operational objectives.
- Model training, hyperparameter tuning, and cross-validation for reliable predictions.
- Case study: Predicting daily oil production using historical well data and gradient boosting models.

Module 4: Time-Series Forecasting and Production Decline Analysis

- Time-series fundamentals, trend analysis, seasonality, and production behavior.
- Application of ARIMA, exponential smoothing, and other time-series forecasting approaches.

- Integration of deep learning models such as LSTM networks for sequential production data.
- AI-enhanced decline curve analysis and identification of changing production patterns.
- Case study: Forecasting production decline and estimating future output from a mature offshore field.

Module 5: AI-Driven Production Optimization

- Identification of production bottlenecks using predictive analytics and operational data.
- Optimization of well operating conditions, choke settings, and production allocation.
- Artificial lift optimization using AI-driven performance predictions.
- Application of optimization algorithms to balance production, equipment limits, and operating costs.
- Case study: Using predictive models to identify optimal operating conditions for a group of producing wells.

Module 6: Real-Time Monitoring and Intelligent Production Surveillance

- Integration of SCADA, IoT sensors, historians, and digital oilfield platforms.
- Real-time production monitoring and AI-enabled performance dashboards.
- Anomaly detection for identifying unexpected production losses and abnormal operating conditions.
- Predictive maintenance applications for pumps, compressors, and artificial lift equipment.
- Case study: Detecting abnormal well performance using real-time pressure, flow-rate, and equipment data.

Module 7: Forecast Validation, Uncertainty, and Decision Support

- Forecast evaluation using MAE, RMSE, MAPE, and other relevant performance metrics.
- Model validation, backtesting, overfitting prevention, and data leakage control.
- Uncertainty quantification, probabilistic forecasting, and production scenario analysis.
- Explainable AI techniques for interpreting predictions and supporting engineering decisions.
- Case study: Evaluating alternative production forecasts under uncertain reservoir and operating conditions.

Module 8: AI Implementation, Digital Oilfields, and Business Value

- Integrating AI forecasting models into production engineering workflows.
- Developing digital oilfield strategies and intelligent decision-support systems.
- Assessing the economic value of production optimization and forecast improvements.
- Managing AI deployment, model monitoring, retraining, cybersecurity, and data governance.
- Case study: Designing an AI implementation roadmap for a mature field targeting improved recovery and lower operating costs.

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-production-forecasting-and-optimization-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.