DATASTAT TRAINING IN

OFFICIAL COURSE PROSPECTUS

Center for Advanced Research & Professional Development

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

OIL AND GAS

Deep Learning for Petroleum Engineering Applications 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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Deep Learning for Petroleum Engineering Applications Training Course

Oil and Gas • 5 Days Intensive • Accredited Certification

Course Overview

Deep Learning for Petroleum Engineering Applications Training Course is designed to equip oil and gas professionals with advanced knowledge and practical skills in artificial intelligence (AI), deep learning, machine learning, predictive analytics, and data-driven petroleum engineering.

Key Skills & Software Tools Covered

Deep Learning • Predictive Analytics • Reservoir Modeling • Production Optimization

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

Deep Learning for Petroleum Engineering Applications Training Course

Introduction

Deep Learning for Petroleum Engineering Applications Training Course is designed to equip oil and gas professionals with advanced knowledge and practical skills in artificial intelligence (AI), deep learning, machine learning, predictive analytics, and data-driven petroleum engineering. As the petroleum industry accelerates its digital transformation, deep learning is becoming increasingly valuable for improving reservoir characterization, optimizing drilling operations, forecasting production, detecting equipment failures, and enhancing operational safety. This comprehensive training course explores the application of artificial neural networks, convolutional neural networks (CNNs), recurrent neural networks (RNNs), long short-term memory (LSTM) networks, transformers, and advanced predictive modeling to complex petroleum engineering challenges. Participants will learn how to process large volumes of geological, geophysical, drilling, reservoir, and production data to uncover hidden patterns, improve engineering decisions, and support more efficient hydrocarbon exploration and recovery.

The course emphasizes practical implementation through real-world petroleum datasets, deep learning model development, intelligent reservoir simulation, automated well-log interpretation, production optimization, and predictive maintenance. Participants will explore how deep learning integrates with digital oilfield platforms, cloud computing, high-performance computing, and industrial data analytics to improve operational performance and reduce uncertainty. The program also covers data preprocessing, feature engineering, model training, hyperparameter optimization, model validation, explainable AI, and responsible AI deployment in petroleum operations. Through hands-on exercises and industry-focused case studies, learners will develop the ability to select appropriate deep learning architectures, evaluate predictive accuracy, interpret model outputs, and translate AI-generated insights into actionable engineering recommendations. By the end of the training, participants will be better prepared to support smart oilfields, intelligent drilling systems, digital reservoir management, sustainable production strategies, and next-generation petroleum engineering innovation.

Course Duration

5 days

Course Objectives

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

- Explain the fundamentals of deep learning, artificial intelligence, neural networks, and machine learning in petroleum engineering.
- Identify and prepare geological, geophysical, drilling, and production datasets for deep learning applications.
- Apply data preprocessing, feature engineering, and exploratory data analytics to petroleum datasets.
- Develop deep learning models for reservoir characterization and rock property prediction.
- Implement CNN-based approaches for seismic interpretation and geological image analysis.
- Apply LSTM and other time-series models to oil and gas production forecasting.
- Use deep learning techniques to improve drilling performance, rate of penetration prediction, and well planning.
- Develop predictive models for reservoir pressure, porosity, permeability, and fluid properties.
- Apply anomaly detection and predictive maintenance models to petroleum equipment and production facilities.
- Evaluate deep learning models using appropriate performance metrics and validation techniques.
- Optimize neural network architectures through hyperparameter tuning and model optimization.
- Integrate explainable AI, uncertainty assessment, and model monitoring into petroleum engineering workflows.
- Design practical AI-driven solutions that support digital oilfield transformation, operational efficiency, and data-driven decision-making.

Target Audience

- Petroleum engineers and production engineers.
- Reservoir engineers and reservoir simulation specialists.
- Drilling engineers and well-planning professionals.
- Geologists, geophysicists, and seismic interpretation specialists.
- Data scientists, machine learning engineers, and AI developers in oil and gas.
- Oilfield digital transformation and automation professionals.
- Research scientists, university lecturers, and postgraduate engineering students.
- Technical managers, petroleum consultants, and energy technology specialists.

Course Modules

Module 1: Foundations of Deep Learning in Petroleum Engineering

- Introduction to AI, machine learning, and deep learning in the petroleum industry.
- Artificial neural networks, activation functions, and network architectures.
- Supervised, unsupervised, and self-supervised learning approaches.
- Petroleum data sources, data quality, and engineering data integration.
- Deep learning frameworks, including TensorFlow, Keras, and PyTorch.
- Case Study: Evaluate how a petroleum operator could use deep learning to integrate well logs, drilling parameters, and production history to improve field-development decisions.

Module 2: Petroleum Data Analytics and Deep Learning Model Preparation

- Collection and integration of geological, seismic, drilling, and production data.
- Data cleaning, missing-value treatment, normalization, and standardization.
- Feature engineering for reservoir, drilling, and production variables.
- Training, validation, and test dataset design to prevent data leakage.
- Exploratory data analysis and visualization for petroleum engineering.
- Case Study: Prepare a historical well-production dataset for machine learning by resolving missing values, identifying anomalies, and selecting relevant predictive features.

Module 3: Deep Learning for Reservoir Characterization

- Application of neural networks to porosity and permeability prediction.
- Reservoir rock classification using well logs and core analysis data.
- Prediction of lithology, fluid saturation, and reservoir quality.
- Integration of geological features with petrophysical measurements.

• Model validation, uncertainty evaluation, and reservoir property mapping.

• Case Study: Develop a neural network to predict reservoir porosity from gamma-ray, resistivity, density, and neutron-log measurements, then compare its predictions with available core data.

Module 4: Deep Learning for Seismic Interpretation and Geophysical Analysis

• Fundamentals of seismic data preparation for deep learning.

• CNN architectures for seismic facies classification.

• Automated fault detection and geological structure identification.

• Deep learning for seismic attribute analysis and horizon interpretation.

• Evaluation of image-based models and geological prediction uncertainty.

• Case Study: Train a CNN-based model to classify seismic image patches into geological categories and assess its usefulness for accelerating interpretation in a complex reservoir.

Module 5: Deep Learning for Drilling and Well Engineering

• Prediction of rate of penetration using drilling and formation data.

• Deep learning for drilling dysfunction and abnormal-operation detection.

• Optimization of drilling parameters using predictive models.

• Wellbore condition monitoring and drilling performance analytics.

• Data-driven approaches to well planning and operational risk assessment.

• Case Study: Build a predictive model using historical weight-on-bit, rotary speed, torque, and drilling data to estimate rate of penetration and identify opportunities for improving drilling efficiency.

Module 6: Production Forecasting and Artificial Lift Optimization

• Time-series forecasting using recurrent neural networks and LSTM models.

• Transformer-based approaches for multivariate production forecasting.

• Prediction of oil, gas, and water production trends.

• Deep learning applications in artificial lift and pump-performance monitoring.

• Production anomaly detection, decline analysis, and model performance evaluation.

• Case Study: Develop an LSTM model to forecast daily oil production using historical production rates, water cut, well operating conditions, and artificial lift parameters.

Module 7: Deep Learning for Reservoir Simulation and Production Optimization

• Data-driven reservoir performance prediction and surrogate modeling.

• Integration of deep learning with reservoir simulation workflows.

• Prediction of pressure distribution and reservoir response.

• Production optimization using model-based decision support.

• Model-assisted evaluation of recovery strategies and operating scenarios.

• Case Study: Train a surrogate model using simulated reservoir scenarios to estimate production response under different injection rates, well configurations, and operating conditions.

Module 8: Predictive Maintenance, Explainable AI, and Deployment

• Deep learning for equipment health monitoring and failure prediction.

• Anomaly detection in pumps, compressors, pipelines, and processing facilities.

• Explainable AI techniques for interpreting engineering predictions.

• Model deployment, monitoring, drift detection, and performance maintenance.

• Responsible AI, cybersecurity considerations, and integration with digital oilfield systems.

• Case Study: Design a predictive maintenance workflow for an oilfield pump using vibration, temperature, pressure, and operating-history data, with model outputs supporting maintenance planning.

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/deep-learning-for-petroleum-engineering-applications-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.