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COURSE BROCHURE

Machine Learning for Oilfield Production Data Management Course

19 – 23 April 2027

Dar es Salaam

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Registered in the United Kingdom and Saudi Arabia

Machine Learning for Oilfield Production Data Management Course

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Machine Learning for Oilfield Production Data Management is a 1-week training course for production engineers, reservoir analysts and data stewards who prepare well and facility data for predictive models, and it produces a Well Data Readiness and Model Roadmap. As operators instrument more wells, the quality of historian, well test and allocation data decides whether models help or mislead. Jupiter Prime Training delivers this course on Machine Learning for Oilfield Production Data Management.

Why Machine Learning for Oilfield Production Data Management Matters Now

Mature fields run more wells on artificial lift with leaner crews, so engineers lean on algorithms to flag pump trouble and forecast decline. Yet many historians hold frozen tags, gaps and unreconciled well tests. Asset teams that clean, label and catalogue this information can trust failure alerts and rate forecasts; those that feed raw tags to models chase false alarms and lose credibility with operations. The course draws on ISO/IEC 42001, the AI management system standard, and the NIST AI Risk Management Framework NIST AI RMF.

Who Gains Most from Machine Learning for Oilfield Production Data Management

- Engineers who run daily well surveillance and exception reporting
- Analysts who build decline curves and rate forecasts for field plans
- Specialists who maintain pump, compressor and separator sensor historians
- Data stewards who own well master data, naming and allocation records
- Reliability engineers who plan interventions on rod pumps and electric submersible pumps

Asset teams that mix production, reliability and data roles gain most when several members attend together.

Machine Learning for Oilfield Production Data Management Capabilities

Participants practise turning noisy wellsite signals into labelled, traceable inputs that a model and a field engineer both trust.

- Assess historian tags for flatlines, spikes and gaps before modelling — surveillance leads
- Design a failure label set from workover and pull records — reliability engineers
- Build a rate forecast that blends decline curves with machine learning — field planners
- Test a pump failure classifier against missed and false alerts — operations supervisors
- Specify well master data and lineage rules for model inputs — data stewards
- Communicate forecast uncertainty to asset managers — investment decisions

Key Machine Learning for Oilfield Production Data Management Terms

- Process historian — a time-series store that records sensor readings from wells and facilities at fixed intervals.
- Well test reconciliation — comparing measured test rates with allocated production to find errors.
- Decline curve analysis — fitting a rate trend to past production to project future output of a well.
- Failure labelling — tagging historical periods before a pump or equipment failure so a model can learn warning patterns.
- Data lineage — a record of where each model input came from and how it was transformed.
- Virtual flow metering — estimating well rates from pressures and temperatures instead of a physical meter.

Machine Learning for Oilfield Production Data Management Day by Day

Day 1: Upstream Data Landscape and Model Use Cases

- Production Data Flow Mapping — From Wellhead Sensor to Allocation Report
- Use Case Screening Matrix — Ranking Surveillance, Forecasting and Lift Problems
- Well Master Data Model — Naming, Hierarchy and Completion Records
- ISO/IEC 42001 Context Clause — Scoping Model Use Within Asset Operations
- NIST AI RMF Govern Function — Assigning Owners for Production Models

Day 2: Sensor Data Quality and Preparation

- Historian Tag Profiling — Detecting Flatlines, Spikes and Communication Gaps
- Resampling and Gap Filling Rules — Choosing Interpolation Versus Exclusion
- Well Test Reconciliation — Exposing Meter Drift and Allocation Errors
- Feature Engineering From Pressure and Amperage — Capturing Lift Behaviour
- Data Lineage Register — Tracing Every Input Back to Source

Day 3: Predictive Maintenance for Artificial Lift and Rotating Equipment

- Failure Labelling From Workover Records — Building Trustworthy Training Sets
- Electric Submersible Pump Classifier — Predicting Trips Before Shutdown
- Rod Pump Dynamometer Card Patterns — Recognising Fluid Pound and Gas Interference
- Compressor Anomaly Detection — Setting Alert Bands for Gas Facilities
- Alert Precision Review — Balancing Missed Failures Against Nuisance Callouts

Day 4: Production Forecasting and Reservoir Signals

- Hybrid Decline Curve Modelling — Combining Physics Trends With Learned Corrections
- Virtual Flow Metering — Estimating Rates Where Test Separators Are Scarce
- Water Cut Trend Prediction — Timing Water Handling and Intervention
- Forecast Backtesting — Measuring Error Against Held-Out Production Months
- Model Drift Monitoring — Retraining After Workovers and Choke Changes

Day 5: Practising the Well Data Readiness and Model Roadmap

- Onshore Oil Field Case — Applying Tag Profiling to Lift Surveillance
- Offshore Gas Platform Case — Applying Anomaly Bands to Compression
- Forecast Review Panel — Defending Hybrid Rate Forecasts to Planners
- Stewardship Roles Agreement — Fixing Owners for Master Data and Labels
- Well Data Readiness and Model Roadmap — Completing the Asset Sequence

Applying Machine Learning for Oilfield Production Data Management After the Course

- Profile historian tags for ten priority wells and publish a gap and flatline report with agreed fixes.
- Build a failure label set from the last workover records and test one pump classifier against it.

Machine Learning for Oilfield Production Data Management Questions FAQ

What is machine learning for oilfield production data management and why does it matter now?

It is the practice of preparing well, sensor and production records so predictive models can be trusted. It matters now because fields rely on remote surveillance and lean crews, and poor data breaks every model built on it.

Which roles gain most from machine learning for oilfield production data management?

Production engineers, reservoir analysts, reliability engineers and data stewards gain most. Working knowledge of well operations matters more than coding skill.

How does machine learning for oilfield production data management differ from a general data science course?

It works only with upstream signals such as historian tags, well tests and lift data. A general data science course teaches algorithms on generic datasets instead.

What do you bring back from machine learning for oilfield production data management training?

You bring back a readiness assessment for your wells and a sequenced list of model use cases, with data owners and quality fixes.

Machine Learning for Oilfield Production Data Management: The Way Forward

The Well Data Readiness and Model Roadmap first informs which wells and lift systems receive a predictive model and which need data repair. Asset managers, surveillance engineers and data stewards use it to schedule work. After its first use, revisit the failure labels and backtest errors to see whether historian fixes improved model trust.