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COURSE BROCHURE

# Digital Oil Field Engineering: Integrated Asset Models Training Course

22 – 26 November 2026
Muscat

# Digital Oil Field Engineering: Integrated Asset Models Training Course

**Ref:** 2059_75854 **Date:** 22 – 26 November 2026 **Location:** Muscat **Fees:** 6500 GBP

Digital Oil Field Engineering: Integrated Asset Models is a 1-week training course for production, reservoir and surveillance engineers who connect wells, networks and facilities into one calibrated model and produce a Field Optimisation Loop Charter. As operators push ageing fields harder with fewer people on site, the speed at which live measurements become choke, lift and allocation decisions now shapes recovery and uptime. Jupiter Prime Training delivers this course on Digital Oil Field Engineering.

## Why Digital Oil Field Engineering Matters Now

Three forces shape the digital oil field today: dense sensor networks that stream pressure, temperature and rate data every second; integrated asset teams expected to act on that stream across reservoir, wells and surface facilities; and remote operating centres that concentrate scarce expertise. Linking them well exposes deferred production early; linking them poorly leaves teams trusting stale models, chasing alarms and arguing over allocation. The course rests on integrated field management IFM, integrated value modelling IVM and model calibration MC as connected disciplines.

## Who Gains Most from Digital Oil Field Engineering

- Engineers responsible for daily well surveillance, exception handling and deferment tracking
- Engineers who build and maintain well, network and facility simulation models
- Reservoir specialists who reconcile dynamic models with production history
- Engineers who run artificial lift and choke optimisation across a cluster of wells
- Specialists who manage historians, tag structures and data quality for field instrumentation

Asset teams gain most when a reservoir, a production and a surveillance engineer from the same field attend together.

## Digital Oil Field Engineering Capabilities

Participants practise turning sensor streams and coupled simulators into repeatable field decisions.

- Assess sensor coverage and historian quality for each well and flowline — instrumentation investment decisions
- Build an integrated asset model coupling reservoir, wellbore, network and process units — asset forecasting
- Calibrate well and network models against well tests and live rates — production allocation
- Design closed optimisation loops for gas lift, pumps and chokes — daily operating targets

- Weigh field development options with integrated value modelling — capital allocation committees
- Specify roles and escalation routes for a collaboration centre — operations and asset leadership

## Key Digital Oil Field Engineering Terms

- Integrated asset model — a coupled simulation linking reservoir, wells, gathering network and processing facilities.
- Integrated field management IFM — the work process that uses live data and coupled models to run a field as one system.
- Integrated value modelling IVM — evaluation that combines production profiles, operating constraints and economics to rank field decisions on value.
- Model calibration MC — adjusting model parameters until simulated pressures and rates match measured data within an agreed tolerance.
- Virtual flow metering — estimating each well's oil, gas and water rates from pressure and temperature readings and a calibrated model.
- Production deferment — volume not produced because of downtime, constraints or suboptimal settings.

## Digital Oil Field Engineering Day by Day

## Day 1: Field Instrumentation and the Data Backbone

- Downhole Gauges and Wellhead Sensors — Coverage Gaps Across the Well Stock
- Historians and Tag Naming — Data Retrieval Speed for Engineers
- Data Validation and Outlier Filtering — Trust in Live Measurements
- Well Test Records and Allocation Factors — Reconciling Field and Well Volumes
- Exception-Based Surveillance Dashboards — Prioritising Engineer Attention Each Shift

## Day 2: Building the Integrated Asset Model

- Inflow Performance and Vertical Lift Curves — Well Deliverability Limits
- Gathering Network Hydraulics — Backpressure and Bottleneck Identification
- Coupling Reservoir and Surface Simulators — Choosing Explicit or Implicit Links
- Process Facility Constraints in the Model — Separator and Compressor Capacity
- Model Scope and Granularity Choices — Run Time Versus Decision Accuracy

## Day 3: Model Calibration and Virtual Metering

- History Matching of Well Models — Parameter Uncertainty Ranges
- Automated Calibration Routines — Frequency of Model Refresh
- Virtual Flow Meter Design — Replacing or Supplementing Test Separators
- Calibration Tolerance and Drift Alarms — When to Retest a Well
- Uncertainty Propagation Through the Model Chain — Forecast Confidence Bands

## Day 4: Optimisation Loops and Integrated Value Modelling

- Gas Lift Allocation Optimisation — Limited Lift Gas Across Competing Wells
- Choke and Pump Setpoint Loops — Rate Targets Within Sand and Water Limits
- Integrated Value Modelling Workflows — Ranking Infill and Workover Candidates
- Deferment Accounting Against Technical Potential — Loss Category Ownership
- Collaboration Centre Operating Rhythm — Handover Between Field and Office

## Day 5: Practising the Field Optimisation Loop Charter

- Surveillance Gap Review on a Case Field — Applying Day 1 Methods
- Coupled Model Run on Constrained Network — Testing Day 2 Choices
- Calibration Health Check of Case Wells — Applying Day 3 Tolerances
- Optimisation Scenario Comparison — Selecting Settings With Value Evidence
- Field Optimisation Loop Charter — Owners, Triggers and Review Cadence

## Applying Digital Oil Field Engineering After the Course

- Run a calibration health check on the ten highest-rate wells and log drift against agreed tolerances.
- Lead a gas lift or choke optimisation trial on one network branch and record deferment recovered.

## Digital Oil Field Engineering Questions FAQ

### What is Digital Oil Field Engineering and why does it matter now?

Digital Oil Field Engineering links live field data with calibrated, coupled models so that engineers can adjust wells and facilities quickly. It matters now because fields are older, sensors are denser and expert staff are fewer, so faster decisions protect recovery and uptime.

### Which roles gain most from Digital Oil Field Engineering?

Production, reservoir and surveillance engineers gain most. Instrumentation specialists also benefit, especially when one asset team attends together.

### How does Digital Oil Field Engineering differ from a reservoir simulation course?

It is broader in scope and closer to daily operations. A reservoir simulation course focuses on subsurface flow, while this one couples reservoir, wells, networks and facilities and calibrates them with live data.

### What do you bring back from Digital Oil Field Engineering?

You bring back a Field Optimisation Loop Charter for a case field, plus methods for sensor gap reviews, model calibration checks and gas lift and choke optimisation.

## Digital Oil Field Engineering: The Way Forward

The Field Optimisation Loop Charter sets which wells and network branches run in closed optimisation loops, who owns each trigger and how often models are recalibrated. Its first use informs the next gas lift or choke adjustment cycle, guided by surveillance and production engineers. After that cycle, revisit calibration tolerances and the loss categories that still lack a clear owner.