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COURSE BROCHURE

Enhanced Oil Recovery Techniques Advanced Training Course

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Registered in the United Kingdom and Saudi Arabia

Enhanced Oil Recovery Techniques Advanced Training Course

Enhanced Oil Recovery Techniques is a 2-week advanced training course for reservoir engineers, production engineers and field development planners, and each participant prepares an EOR screening and pilot proposal for a mature field. As fields age and new discoveries shrink, adding recovery from existing reservoirs is often cheaper and lower in emissions than exploring for new barrels. Jupiter Prime Training runs Enhanced Oil Recovery Techniques for subsurface and development teams.

Why Enhanced Oil Recovery Techniques Matter Now

Three forces push enhanced recovery up the agenda: maturing giant fields where waterflood recovery is plateauing, investors who favour brownfield barrels with known infrastructure over frontier exploration, and the chance to use captured carbon dioxide for both storage and incremental oil. Operators that move too late see water cuts climb and facilities run down before tertiary methods can pay back; those that screen and pilot early extend field life and defer abandonment. The course classifies incremental recovery under the Petroleum Resources Management System PRMS and refers to equipment and injection practices set out in American Petroleum Institute API standards.

Who Gains Most from Enhanced Oil Recovery Techniques

- Reservoir engineers who model displacement, sweep and incremental recovery for mature fields
- Production engineers who run injection and producer wells and manage water and gas handling
- Field development planners who compare secondary and tertiary development options
- Laboratory and core analysis specialists who test fluid and rock behaviour for injection agents
- Surveillance engineers who design monitoring programmes for injection projects

A mature asset team that sends its reservoir, production and surveillance engineers together gains most, because a pilot succeeds only when modelling, operations and monitoring are designed as one.

Enhanced Oil Recovery Techniques Capabilities

Participants learn to judge which injection agent fits a reservoir, how much extra oil it may yield and how a pilot will prove it before full-field investment.

- Apply screening criteria to match reservoirs with recovery methods — development planning choices
- Assess waterflood performance with pattern and surveillance diagnostics — injection rebalancing decisions
- Compare miscible and immiscible gas injection, including carbon dioxide — gas sourcing and storage options
- Design polymer and surfactant flooding concepts from laboratory data — chemical supply and facilities
- Weigh thermal methods for heavy oil against energy and emissions — heavy oil asset strategy
- Specify a pilot with objectives, monitoring and success criteria — management sanction of full-field projects

Key Enhanced Oil Recovery Techniques Terms

- Enhanced oil recovery — methods that inject gases, chemicals or heat to recover oil beyond primary depletion and waterflooding.
- Sweep efficiency — the fraction of reservoir volume contacted by an injected fluid, combining areal and vertical coverage.
- Mobility ratio — the ratio of displacing fluid mobility to oil mobility, which controls fingering and sweep stability.
- Minimum miscibility pressure — the lowest pressure at which injected gas and reservoir oil become miscible and displace efficiently.
- Residual oil saturation — the oil fraction remaining in swept pore space after a displacement process.
- Incremental recovery factor — the additional share of original oil in place recovered by a project above the existing forecast.

Enhanced Oil Recovery Techniques Day by Day

Day 1: Recovery Stages and Mature Field Context

- Primary, Secondary and Tertiary Recovery Stages — Where Remaining Oil Sits
- Mature Field Performance Diagnostics — Water Cut, Gas Oil Ratio and Decline
- Incremental Volumes Under PRMS — Classifying Project Reserves Correctly
- Economic and Emissions Drivers for Enhanced Recovery — Brownfield Versus New Exploration
- Lessons From Global EOR Projects — Patterns of Success and Failure

Day 2: Displacement Physics and Rock-Fluid Behaviour

- Relative Permeability and Capillary Pressure — Controls on Residual Oil
- Wettability and Its Measurement — Choosing Agents for Carbonates and Sandstones
- Mobility Ratio and Viscous Fingering — Stability of the Flood Front
- Areal and Vertical Sweep Efficiency — Heterogeneity and Layering Effects
- Fractional Flow Theory — Predicting Breakthrough and Recovery

Day 3: EOR Screening Methods

- Screening Criteria Tables — Depth, Viscosity, Permeability and Temperature Limits
- Analogue Field Databases — Learning From Comparable Reservoirs
- Quick-Look Recovery Estimates — Ranking Candidate Methods Early
- Agent Availability and Logistics — Gas, Water and Chemical Sourcing
- Screening Matrix and Scorecard — Shortlisting Methods for Study

Day 4: Waterflood Optimisation

- Pattern Analysis and Injection Allocation — Balancing Voidage Replacement
- Hall Plots and Injectivity Diagnostics — Detecting Plugging and Fracturing
- Water Quality and Treatment — Protecting Injectivity Over Time
- Conformance Control With Gels and Profile Modification — Reducing Thief Zones
- Low-Salinity and Engineered Water Injection — Wettability Change Opportunities

Day 5: Gas Injection Methods

- Miscible and Immiscible Displacement — Minimum Miscibility Pressure Testing
- Hydrocarbon Gas Injection — Gas Cycling and Pressure Maintenance
- Carbon Dioxide Flooding and Storage — Dual Value of Recovery and Sequestration
- Water-Alternating-Gas Schemes — Controlling Gas Mobility and Override
- Gas Handling and Recycling Facilities — Compression and Separation Needs

Day 6: Chemical Flooding

- Polymer Flooding Design — Viscosity, Adsorption and Shear Degradation
- Surfactant and Alkaline-Surfactant-Polymer Floods — Interfacial Tension Reduction
- Laboratory Core Floods and Phase Behaviour Tests — Proving Formulations
- Chemical Supply, Mixing and Injection Facilities — Logistics and Cost
- Produced Fluid Treatment — Emulsions and Polymer Breakthrough Handling

Day 7: Thermal Methods for Heavy Oil

- Cyclic Steam Stimulation — Near-Well Heating and Soak Cycles
- Steamflooding and Steam-Assisted Gravity Drainage — Continuous Heat Delivery
- In-Situ Combustion Concepts — Air Injection and Front Control
- Steam Generation Energy and Emissions — Lower-Carbon Heat Options
- Wellbore and Casing Integrity Under Heat — Thermal Completion Design

Day 8: Simulation and Forecasting

- Sector Models for EOR Evaluation — Grid Choices and Upscaling
- Compositional and Chemical Simulation Options — Matching Method to Physics
- History Matching Mature Waterfloods — Building a Credible Base Case
- Uncertainty and Sensitivity Runs — Ranges of Incremental Recovery
- Forecast Profiles for Economics — Oil, Water, Gas and Agent Volumes

Day 9: Pilot Design and Surveillance

- Pilot Objectives and Success Criteria — What a Pilot Must Prove
- Pilot Location and Pattern Selection — Representativeness and Isolation
- Surveillance Plans — Tracers, Logging, Sampling and Pressure Monitoring
- Pilot Economics and Scale-Up Decisions — From Pilot Results to Full Field
- Health, Safety and Environmental Controls — Injection Agents and Containment

Day 10: Practising the Mature Field EOR Screening and Pilot Proposal

- Field Diagnostics and Remaining Oil Map — Applying Days 1 and 2 to a Case
- Method Screening Outcome — Applying Days 3 to 7 to the Reservoir
- Forecast and Uncertainty Range — Applying Day 8 to Selected Methods
- Pilot Concept and Monitoring Plan — Applying Day 9 to the Field
- Mature Field EOR Screening and Pilot Proposal — Presentation to a Mock Sanction Panel

Applying Enhanced Oil Recovery Techniques After the Course

- Run a screening matrix for one mature reservoir in your portfolio and present the two leading methods to the subsurface manager.
- Review injection pattern balance and Hall plots for a current waterflood and propose rebalancing or conformance actions.

Enhanced Oil Recovery Techniques Questions FAQ

What are enhanced oil recovery techniques and why do they matter now?

They are gas, chemical and thermal injection methods that recover oil beyond waterflooding. Maturing fields, investor preference for brownfield barrels and carbon dioxide storage opportunities make them a leading route to extend field life.

Which roles gain most from enhanced oil recovery techniques training?

Reservoir engineers, production engineers, field development planners, core analysis specialists and surveillance engineers gain most. Together they screen methods, model recovery, run injectors and prove results through pilots.

How do enhanced oil recovery techniques differ from a reservoir engineering fundamentals course?

They build on fundamentals to design tertiary projects. A fundamentals course covers rock and fluid properties and primary recovery, while this course works through screening, waterflood optimisation, gas, chemical and thermal methods, simulation and pilot design for mature fields.

What do you bring back from enhanced oil recovery techniques training?

You bring back a screening and pilot proposal for one mature field. It contains field diagnostics, a ranked method shortlist, a forecast range and a pilot concept with monitoring plan, ready for your subsurface or development committee.

Enhanced Oil Recovery Techniques: The Way Forward

The mature field EOR screening and pilot proposal gives each participant a structured case for testing enhanced recovery in one reservoir. Its first use is the next subsurface or development review, where managers decide whether to fund laboratory work and a pilot. Once pilot data arrive, revisit the forecast range and scale-up economics, because early surveillance usually reshapes expected recovery.