aeonX

Specialist Knowledge | Extraordinary Results

Training Programmes

(Reservoir Engineering and Production Technology)

2026

AeonX E&P Learning

AeonX technical staff and global partners are seasoned E&P professionals with extensive international experience. We enjoy sharing our technical expertise and practical knowledge of the E&P industry with colleagues while ensuring high standards and quality of technical work. This makes us excellent teaching experts with a goal to always provide value.

We provide technical training and competency development in various disciplines within the oil and gas industry, with a focus on practice alongside the theory. Our training course courses include a wide range of subsurface and surface engineering courses which cover drilling and completions, reservoir engineering, production technology, reservoir and production management, PVT analyses, Petrophysics, Geology and geophysics, Production operations, Planning and scheduling, Petroleum economics, Green and Brown field development, Management, Operation and leadership courses etc.

Our courses range from standard five-day courses for fundamentals up to advanced and mastery level courses such as 6-week “Field development planning” course aimed at EP staff with several years of experience.

In house competencies can also be enhanced through structured internal training courses and cross functional workshops suited to your company using experienced facilitators. We review each organisation’s competency development goals and focus areas and develop bespoke courses to improve capabilities.

Our training courses and workshops are provided over **5 days** unless indicated and can be delivered locally or internationally – UK, USA, UAE, Spain, Netherlands, Italy, France, Singapore, Thailand etc.

Training Course Overview

Our Reservoir Engineering and Production Technology courses were designed to cover all levels of knowledge and understanding of the field of study, This includes PVT analysis, Sand Control design and optimisation, Production Optimisation and Integrated asset Modeling. It provides advanced courses in areas like Completion Design, Transient Modelling and Flow Assurance, Well Integrity Management, Artificial Lift Technology, Mangement (Well, Reservoir,Facilities).

FUNDAMENTALS

1 Fundamentals of PVT Analysis

The Fundamentals of PVT Analysis course provides a comprehensive foundation in understanding the behavior of reservoir fluids under varying pressure and temperature conditions. Understanding the thermodynamic behavior of reservoir fluids is not merely a laboratory exercise; it is the foundation for accurate reserves estimation, wellbore hydraulics, and surface facility sizing. This course introduces participants to the physical principles governing hydrocarbon phase behavior and systematically explores how laboratory-derived PVT data is generated, interpreted, and applied in real-world field development scenarios. Through a mix of theoretical physics and practical case studies, attendees will learn to navigate Pressure-Volume-Temperature (PVT) reports, identifying critical data points such as bubble point pressure, gas-oil ratios, and fluid compositions.

Some of the topics to be covered in this include;

- Introduction to Reservoir Fluids (Oil, Gas, Condensate Systems)
- Phase Behavior of Hydrocarbon Systems

- PVT Laboratory Experiments (CCE, CVD, Differential Liberation)
- Introduction to Equations of State (EOS) Modeling.
- Fluid Property Correlations and Estimation Techniques.
- Gas-Oil Ratio (GOR) and Solution Gas Behavior
- Black Oil vs Compositional Models
- Sampling Techniques: Bottomhole vs. Surface Recombination.
- PVT Data Quality Control and Interpretation
- Application of PVT Data in Reservoir Simulation.
- Impact of PVT Uncertainty on Asset Value.

2 Fundamentals of Reservoir Engineering

Reservoir Engineering is the central "brain" of any oil and gas asset, responsible for determining how much hydrocarbon is present and how much can be economically recovered. It focuses on understanding how reservoir rock and fluid properties interact to control fluid flow, storage capacity, and ultimate recovery. This course introduces key fluid flow concepts, including Darcy's law and multiphase flow behavior, providing the basis for understanding reservoir performance under different production mechanisms. Also, a strong emphasis is placed on analytical methods used in reservoir evaluation, including material balance techniques, volumetric reserve estimation, and decline curve analysis.

Topics covered in this course include;

- Introduction to Reservoir Types and Drive Mechanisms
- Rock Properties (Porosity, Permeability, Saturation)
- Fluid Flow in Porous Media
- Darcy's Law and Its Applications
- The Material Balance Equation (MBE) and its Applications.
- Volumetric Estimation of Hydrocarbons in Place

- Introduction to Well Testing and Pressure Transient Analysis (PTA).
- Relative Permeability and Capillary Pressure Concepts.
- Decline Curve Analysis (DCA) for Production Forecasting.
- Water Influx Theory and Aquifer Characterization.
- Basics of Reservoir Simulation and History Matching

3 Fundamentals of Sand Control Design and Optimisation

Our Fundamentals of Sand Control Design and Optimisation course is designed as a foundational or refresher course on the basics of sand control management. It provides a detailed understanding of sand production challenges in oil and gas wells and the engineering solutions used to manage them. Participants will learn how to assess sand risk using predictive models and geomechanical data, and how to interpret well and reservoir conditions that influence sand production. In addition, participants will explore sand monitoring techniques, failure diagnostics, and optimization strategies to improve system efficiency and reduce intervention costs. Real-world case studies are incorporated to demonstrate best practices and lessons learned from field applications.

Some of the topics to be covered in this course include;

- Mechanisms and Causes of Sand Production
- Assessing the Economic Impact of Sand Production.
- Sand Prediction Techniques and Models.
- Formation Sampling and Sieve Analysis Techniques.
- Sand Monitoring and Detection Methods.
- Standalone Screens (SAS) and Expandable Screens.
- Gravel Pack Design: Fluids, Proppants, and Placement.
- High-Rate Water Packs (HRWP) vs. Frac-Packing.
- Chemical Sand Consolidation (SCON) Techniques.
- Sand Control Optimization Strategies.

- Completion Design for Sand Control.
- Sand Control Optimization Strategies.
- Case Studies and Field Applications
- Troubleshooting and Remediation of Failed Sand Control

4 Production Optimisation and Integrated Asset Modeling

Designed to provide a comprehensive introduction to production optimization techniques and the application of Integrated Asset Modeling (IAM) in maximizing hydrocarbon recovery, this course adopts a systems approach in recognizing that production performance is influenced by the interaction between the reservoir, wellbore, and surface facilities. Using the power of Nodal Analysis, participants will learn how to identify exactly where energy losses (pressure drops) are occurring whether at the reservoir face, the safety valve, or the surface choke. A key component of the course is the introduction to integrated asset modeling (IAM), where reservoir, well, and surface models are combined into a unified framework for scenario analysis and decision-making.

Some topics to be covered include the following;

- Introduction to Production Systems (Reservoir to Surface)
- Principles of Nodal Analysis (Inflow vs. Outflow Performance).
- Inflow Performance Relationship (IPR)
- Outflow Performance (VLP) and Tubing Performance
- Artificial Lift Selection: Gas Lift, ESP, and Rod Pumps.
- Introduction to Integrated Asset Modeling (IAM) Workflows.
- Optimization of Surface Gathering Systems and Pipelines.
- Production Constraints and Bottleneck Identification

- Digital Oilfield Concepts and Real-Time Data Monitoring
- Wellbore Hydraulics and Flow Assurance Fundamentals.

5 Fundamentals of Enhanced Oil Recovery

The Fundamentals of Enhanced Oil Recovery (EOR) course serves an entry point into advanced recovery techniques used to maximize hydrocarbon extraction. This course begins with a review of primary and secondary recovery mechanisms to establish a foundation for understanding the need for tertiary recovery methods. This curriculum focuses on the fundamental physics of EOR, explaining how different methods alter the interfacial tension, mobility ratios, and viscosity of reservoir fluids to improve sweep efficiency. The course provides detailed insights into how reservoir properties, fluid characteristics, and operational constraints influence the selection and performance of EOR methods. Participants will learn screening criteria used to determine EOR feasibility and how to evaluate candidate reservoirs.

Some topics to be covered include the following;

- Introduction to EOR: Distinguishing Primary, Secondary, and Tertiary Recovery.
- Fundamentals of Enhanced Oil Recovery Mechanisms.
- Microscopic vs. Macroscopic Displacement Efficiency.
- Thermal Recovery Methods: Steam Injection, Steam-Assisted Gravity Drainage, Cyclic Steam Stimulation
- Miscible and Immiscible Gas Injection (CO2, N2, and Hydrocarbon Gas).
- Chemical EOR: Polymer, Surfactant, and Alkaline Flooding.
- Miscibility and Phase Behavior in EOR Processes
- Reservoir Screening Criteria for EOR
- Design and Implementation of EOR Projects
- Economic Challenges and Environmental Impact of EOR Projects.

6 Fundamentals of Drilling and Completions Design in Oil & Gas Wells

This serves as a comprehensive roadmap for the construction of a safe and efficient wellbore. It covers the entire process from the initial spud to the final installation of the production string. Participants will gain a deep understanding of the "Drilling Mechanics" involved, including bit selection, drill string design, and the critical role of drilling fluids in maintaining wellbore stability and pressure control.

The course then transitions into "Completions Design," where the focus shifts from making a hole to creating a conduit for production. The participants will learn about casing design, cementing operations, and the selection of downhole hardware such as packers and safety valves. The curriculum bridges the gap between drilling and reservoir engineering, ensuring that the well is not just drilled safely, but is completed in a way that minimizes skin damage and optimizes long-term productivity.

Some topics to be covered include the following;

- Introduction to Drilling Operations and Rig Components.
- Well Planning and Design Fundamentals.
- Drill Bit Technology and Selection Criteria.
- Drilling Fluids: Functions, Types, and Rheology.
- Fundamentals of Well Control and Blowout Prevention.
- Drilling Techniques (Vertical, Directional, Horizontal)
- Casing Design and Cementing Operations.
- Completion Types: Open Hole, Cased Hole, and Multilaterals.
- Perforation and Well Stimulation Basics
- Downhole Completion Equipment: Packers, Mandrels, and Tubing
- Wellbore Stability and Identifying Formation Damage.

ADVANCED COURSES

1 Advanced Reservoir Engineering

This course provides an in-depth understanding of advanced well completion design, focusing on optimizing well performance, enhancing recovery, and ensuring long-term operational integrity. Participants will explore advanced completion technologies, including intelligent completions, multilateral wells, and zonal isolation techniques. This course emphasizes the integration of reservoir characteristics, production objectives, and operational constraints in designing effective completion systems, incorporates design workflows, best practices, and real-world case studies to ensure participants can apply advanced concepts to field operations.

Some topics to be covered include the following;

- Advanced Reservoir Characterization Techniques
- Static and Dynamic Model Integration
- Numerical Reservoir Simulation (Black Oil & Compositional)
- Uncertainty Quantification and Experimental Design (DoE).
- Reservoir Management for Improved Oil Recovery (IOR).
- Unconventional Gas Reservoir.
- Field Development Planning and Optimization
- Reservoir Performance Forecasting
- Capillary Pressure and Relative Permeability in Heterogeneous Media.
- Data-Driven Reservoir Modeling and Machine Learning Applications.
- Mature Field Management Strategies

2 Advanced Completion Design

Advanced Completions Design course is focused on providing practical knowledge to professionals seeking to deepen their expertise in reservoir evaluation, modeling, and management. Building on fundamental concepts. This course focuses on advanced analytical and numerical techniques used to optimize hydrocarbon recovery in complex reservoir systems. Participants will explore sophisticated reservoir characterization methods, integrating geological, petrophysical, and dynamic data to develop accurate reservoir models. It incorporates real-field case studies and practical exercises to bridge theory and application, enabling participants to make informed decisions in reservoir development and asset management.

Some topics to be covered include the following;

- Advanced Completion Design Principles
- Intelligent and Smart Well Completion
- Metallurgy and Material Selection for Corrosive Environments.
- Intelligent Completions: Monitoring and Remote Flow Control.
- Multilateral and Horizontal Well Completions.
- Zonal Isolation and Packers Design
- Well Stimulation (Acidizing and Hydraulic Fracturing)
- Design Philosophy for HPHT and Deepwater Wells.
- Interventionless Completion Technologies.
- Completion Monitoring and Diagnostics
- Case Studies and Optimization Strategies

3 Advanced Transient Modelling and Flow Assurance

As production moves into deeper waters and harsher environments, maintaining a continuous flow from the reservoir to the processing facility becomes a major technical hurdle. This course focuses on the physics of multiphase flow and the management of flow blockers such as hydrates, waxes, asphaltenes, and scale. Unlike steady-state modeling, this advanced module emphasizes Transient Modeling understanding what happens during start-up, shut-down, and slugging events. Participants will learn to use industry-standard software to simulate these dynamic conditions, allowing them to design effective thermal insulation, chemical injection systems, and pigging programs that prevent costly production outages.

Some topics to be covered include the following;

- Physics of Multiphase Flow: Flow Regimes and Pressure Drop.
- Fundamentals of Transient Flow Modeling
- Hydrate Management: Thermodynamics, Inhibition, and Dissociation.
- Wax Deposition: Prediction, Prevention, and Remediation.
- Asphaltene and Scale Characterization and Control.
- Severe Slugging Analysis and Mitigation Strategies.
- Heat Transfer and Thermal Effects in Pipelines
- Flow Assurance Simulation Tools and Applications
- Integrated Flow Assurance Management
- Subsea Flow Assurance Architecture and Pigging Operations.
- Erosion and Corrosion Modeling in Production Networks

4 Masterclass in Well Integrity Management

Well Integrity masterclass provides a rigorous framework for managing the technical, operational, and organizational aspects of wellbore safety. It moves beyond simple maintenance to a full life cycle approach from initial design and construction through to final Plug and Abandonment (P&A). This course explores the principles of well barrier design, monitoring, and failure prevention. Participants will gain insight into the identification and management of integrity risks, including sustained casing pressure, leaks, corrosion, and mechanical failures.

Some topics to be covered include the following;

- The Life-Cycle Approach to Well Integrity.
- Establishing a Well Integrity Management System
- Casing and Tubing Corrosion Monitoring and Modeling.
- Barrier Philosophy: Defining and Verifying Primary and Secondary Barriers.
- Managing Sustained Casing Pressure (SCP) and A-annulus Leaks.
- Advanced Logging: Cement Bond (CBL) and Ultrasonic Imaging.
- Wellhead and Tree Maintenance and Leak Detection.
- Risk Assessment and Qualitative/Quantitative Barrier Analysis.
- Remedial Operations for Integrity Failures (Squeeze Cementing, Patches).
- Regulatory Compliance and Well Abandonment (P&A) Standards.
- Case Studies and Industry Best Practices

5 Artificial Lift Technology

Designed to equip participants with the knowledge required to select, design, and optimize artificial lift solutions across different reservoir conditions, this course provides an in-depth exploration of artificial lift systems used to enhance and sustain hydrocarbon production when natural reservoir energy is insufficient. Participants will examine the operating principles, design considerations, and performance characteristics of major artificial lift methods, including gas lift, electric submersible pumps (ESP), rod pumps, and progressive cavity pumps (PCP).The course emphasizes system selection criteria, considering reservoir properties, fluid characteristics, well conditions, and economic factors. Participants will also learn about performance monitoring, troubleshooting, and optimization techniques to maximize efficiency and reduce downtime.

Some topics to be covered include the following;

- Selection Framework: Matching Lift Methods to Well Conditions.
- Gas Lift Design: Mandrel Spacing and Valve Mechanics.
- Electric Submersible Pumps (ESP): Design and Troubleshooting.
- Sucker Rod Pumping: Kinematics and Dynamometer Analysis.
- Progressing Cavity Pumping (PCP) for Heavy Oil and Sand.
- Advanced Logging: Cement Bond (CBL) and Ultrasonic Imaging.
- Hydraulic Pumping and Jet Pump Applications.
- Plunger Lift and Capillary Injection for Liquid Loading in Gas Wells
- Real-Time Monitoring and Automation of Lift Systems.
- Power Efficiency and Economic Optimization of Artificial Lift.

6 Advanced Well, Reservoir and Facilities Management

The masterclass represents the pinnacle of integrated asset management. It focuses on the synergy between the subsurface (Well/Reservoir) and the surface (Facilities). This course teaches a "Whole System" mindset, where the goal is to maximize the Net Present Value (NPV) of the asset through disciplined data acquisition and collaborative workflows. Participants will learn how to integrate data and models across subsurface and surface domains to support decision-making and maximize asset value. The course covers advanced production system analysis, reservoir management strategies, and facility optimization techniques. articipants will gain insight into digital oilfield technologies, real-time data integration, and advanced analytics used to enhance asset performance. Case studies from mature and greenfield assets provide practical context for applying integrated management strategies.

Some topics to be covered include the following;

- Integrated Asset Management Principles
- Reservoir-Well-Facility Interaction
- Advanced Production System Modeling
- Production Forecasting and Scenario Analysis
- Facility Constraints and Debottlenecking.
- Managing Water Cycles: Injection, Production, and Disposal.
- Asset Integrity vs. Production Optimization Trade-offs.
- Leading Multi-Disciplinary Asset Performance Reviews.
- Production Allocation and Reconciliation Processes.