TECHNICAL
EDUCATION
ACADEMY

School of Engineering

COURSE PROGRAMME

000504

# PROD004 – Production Operations and Well Management

In the ever-evolving landscape of the petroleum industry, staying abreast of the latest technological advancements and operational techniques is paramount.



Learn from the Best in the Business!

# Course overview

**Intermediate level**

## Why take this course

In the ever-evolving landscape of the petroleum industry, staying abreast of the latest technological advancements and operational techniques is paramount. OpenAI's training program, "Advanced Techniques in Oil Production," has been meticulously designed to equip petroleum engineers, production operations staff, reservoir engineers, facilities staff, drilling and completion engineers, geologists, field supervisors, and managers, field technicians, service company engineers and managers, and early-career engineers with the necessary skills to navigate the complex world of oil production.

This comprehensive course covers a broad spectrum of topics related to oil extraction, from understanding geological models to identifying conventional and unconventional hydrocarbon accumulations, to advanced techniques for carbonate and sandstone reservoir acidizing. Participants will gain a strong grasp of well inflow and outflow parameters, which forms the basis of efficient well operations. They will also learn to construct and use accurate nodal analysis models to aid in tubing size selection and problem well review.

Furthermore, the program delves into well completion design, allowing participants to understand the nuances of tubing, packer, and other downhole equipment selection. Special attention is given to the planning and execution of advanced well completion types, such as multilateral, extended length, and intelligent wells. This enhances the participants' capabilities to manage and optimize well operations in diverse scenarios.

Recognizing the unique challenges that may arise during operations, the course is structured to provide participants with insights into effective management strategies. Techniques for handling corrosion, erosion, and scale deposition, along with strategies for managing soluble and insoluble scales and produced water, are presented. Similarly, aspects of formation damage identification and the implementation of appropriate remedial procedures form an integral part of the program.

Another significant focus of this course is the understanding and application of modern fracture stimulation practices, essential for maximizing reservoir productivity. Participants will also delve into the design and operations of multistage, horizontal wells for shale gas and shale oil extraction, which represent some of the most cutting-edge methods in the industry.

Overall, the program equips participants with a well-rounded foundation in production engineering and operations. Upon completion, participants will have gained essential knowledge and practical skills, allowing them to excel in their respective roles and contribute meaningfully to their organizations' productivity and success in the petroleum industry.

## Who it is for and how it helps

The following professionals could greatly benefit from this course:

# Course overview — continued

• Petroleum Engineers: They could gain insight into advanced extraction techniques and well operations, enhancing their problem-solving and operational efficiency skills.

• Production Operations Staff: The course could provide them with a broader understanding of well operations, helping them optimize their day-to-day tasks and handle any challenges that may arise.

• Reservoir Engineers: The course would offer them a deep understanding of well inflow and outflow, improving their ability to manage and optimize reservoir performance.

• Facilities Staff: Knowledge of well operations and related technologies could help them better manage and maintain facilities associated with oil extraction.

• Drilling and Completion Engineers: They would gain insights into well design and completion, improving their expertise in executing drilling operations and setting up wells for production.

• Geologists: By understanding well operations, they could improve their ability to interpret geological data in the context of oil production.

• Field Supervisors and Managers: The course would help them manage well operations more effectively, improve overall productivity, and mitigate challenges that could hinder operations.

• Field Technicians: Enhanced understanding of well operations could improve their skills in handling and maintaining well-related equipment.

• Service Company Engineers and Managers: The course would equip them with industry knowledge, making them more effective in providing services and solutions to clients in the oil industry.

• Early Career Engineers or those transitioning into production engineering and operations: This course would serve as a foundation, offering a well-rounded education in production engineering.

## What you will learn

- Identify conventional and unconventional hydrocarbon accumulations using geological models
- Understand and apply key principles of well inflow and outflow to optimize production operations
- Select and design well completion equipment including tubing, packers, and other downhole tools
- Plan and implement advanced well completion types, including multilateral, extended length, and intelligent wells
- Successfully employ artificial lift systems, such as screw pumps, sucker rod pumps, gas lifts, and electric submersible pumps
- Plan well intervention jobs using wireline, snubbing, and coiled tubing methods and manage associated challenges effectively
- Identify and manage common oil production challenges such as corrosion, erosion, scale deposition, and formation damage
- Understand and apply modern techniques for carbonate and sandstone reservoir acidizing, sand control, and fracture stimulation
- Interpret cased hole production logging results and manage organic paraffin and asphaltene deposits
- Gain a comprehensive understanding of the design and operations of multistage, horizontal wells for shale gas and shale oil extraction, and heavy oil development processes

# Curriculum

Modules 01–05

## 01 Introduction and Fundamentals

- Geological Models for Hydrocarbon Accumulations
- Reservoir Engineering Fundamentals in Production Operations
- Understanding Inflow and Outflow and Applied System Analysis
- Well Testing Methods Applicable to Production Operations

## 02 Well Design and Construction

- Well Completion Design and Related Equipment
- Nodal Analysis Models for Tubing Size Selection
- Primary and Remedial Cementing Operations
- Perforating Design and Applications

## 03 Advanced Well Completion Techniques

- Design of Multilateral, Extended Length, and Intelligent Wells
- Design of Conventional and Unconventional Multi Stage Fractured Horizontal Wells
- Completion and Workover Well Fluids
- Well Intervention Techniques: Wireline, Hydraulic Workover Units, and Coiled Tubing

## 04 Production Challenges and Management

- Production Logging
- Corrosion Control
- Scale Deposition, Removal, and Prevention
- Surfactants, Paraffin, and Asphaltenes Management

## 05 Artificial Lift Systems and Problem Analysis

- Artificial Lift Completions: Rod Pump, Gas Lift, ESP, PCP, Plunger Lift, and Others
- Problem Well Analysis
- Formation Damage and Remediation

# Curriculum

Modules 06–07

## 06 Reservoir Stimulation and Control Methods

- Acidizing and Fracturing Techniques
- Sand Control Techniques
- Unconventional Resources: Shale Gas and Oil, Heavy Oil, and Bitumen

## 07 Modern Practices in Oil Production

- Understanding Modern Conventional Fracture Stimulation Practices
- Multi-Stage, Horizontal Well Shale Gas and Shale Oil Massive Frac Job Design and Operations
- Heavy Oil Development and Extraction: Mining Operations and Modern Thermal Processes

## Joining the programme

Contact the Academy and quote course code 000504 to confirm dates, delivery format, prices and enrolment terms.

## Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

## Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

## Discuss your training needs

mail@tecedu.org
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