

Production Optimisation Using NODAL Analysis

Course Duration : 5 days

Date : November 16 - 20, 2025

Location : Abu Dhabi

Type of Participant : This training course is designed for and will greatly benefit Production, operations, and reservoir engineers, production technologists, senior technicians and field supervisors with an engineering background.

Summary:

This course looks at both oil and gas production and presents a **systems analysis approach (called nodal analysis)** to analyze performance. The **nodal analysis** procedure consists of selecting a division point or node in the well and dividing the system at this point to optimize performance in the most economical manner.

Although the entire production system is analyzed as a total unit, interacting components, electrical circuits, complex pipeline networks, and centrifugal pumping are evaluated individually using this method. Locations of excessive flow resistance or pressure drop in any part of the network are identified. Many factors are used to maximize production from discovery wells to those ready to be abandoned, including: establishing a relationship between flow rate and pressure drop within each component in the system; using gradient correlations and selection procedures; and deciding when to use artificial lift to maintain a required production rate. Numerous example problems clarify content.

Objective:

By the end of this training course, participants will be able to:

- Introduce the concept of NODAL analysis as a tool in production



optimization and hence enhancement

- Exposed to the analysis of various components of the producing system and their effect on the performance of the total production system
- Learn practical instructions on design and analysis of naturally flowing oil and gas wells, as well as artificial lift methods based on Nodal analysis - concepts.

Contents:

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

- Welcome & Introduction
- Pre Test
- Introduction
- Reservoir Production Process
- Reservoir Drive Mechanisms
- Reservoir Fluid properties
- Reservoir rock properties
- Darcy's law
- Well production performance

Day 2

- Nodal analysis concept
- Inflow performance curve
- Outflow performance curve
- Inflow performance correlations
- Predicting IPR for Oil & Gas well



Day 3

- Vertical flow correlations
- Horizontal flow correlations
- Factors affecting outflow performance

Day 4

- Importance of surface chokes
- Multiphase flow choke correlations
- Artificial lift design with Nodal analysis

Day 5

- Importance of nodal analysis on production system optimization
- Stimulation impact
- Tubing size selection
- Effect of flow restriction
- Effect of flow line size
- Effect of well completion
- Depletion impact

Training Methodology:**Training Methodology**

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Workshops & Work Presentations
- 20% Case Studies & Practical Exercises
- 30% Videos, Software & Simulators
- Pre-Test and Post-Test
- Group Work



- Discussion
- Presentation

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Daily Program:

Program Schedule

09:00 - 09:10	Registration & Coffee
09:10 – 09:30	Welcome & Introduction
09:30 – 09:50	PRE-TEST
11:00 -11:20	Refreshments & Networking Break
11:20 – 14:00	Course Presentation (cont'd)
14:00	End of Course

(breaks are mutually agreed on timings, without compromising course duration)

