Training Course on Production Optimization and Artificial Lift Systems

Professional Development Training Course Outline

Category	Oil and Gas	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In the dynamic world of oil and gas production, maximizing output and efficiency is paramount. Training Course on Production Optimization & Artificial Lift Systems is designed to equip energy professionals with the latest technologies, data-driven strategies, and best practices to enhance production rates while minimizing operational costs. With global energy demand surging, mastering artificial lift techniques and optimizing reservoir performance are critical skills for engineers and field operators. This course merges theory with practice through real-world case studies, hands-on sessions, and simulation tools.

This advanced training focuses on modern production challenges such as flow assurance, declining well performance, and automation of lift systems. Learners will gain a competitive edge through deep dives into ESP, gas lift, plunger lift, rod pumping systems, and smart optimization techniques using AI and predictive analytics. By the end of this course, participants will be proficient in diagnosing production inefficiencies, selecting the right artificial lift method, and implementing optimization frameworks aligned with energy transition and digital oilfield initiatives.

Programme Curriculum

Training Course on Production Optimization & Artificial Lift Systems

Introduction

In the dynamic world of oil and gas production, maximizing output and efficiency is paramount. Training Course on Production Optimization & Artificial Lift Systems is designed to equip energy professionals with the latest technologies, data-driven strategies, and best practices to enhance production rates while minimizing operational costs. With global energy demand surging, mastering artificial lift techniques and optimizing reservoir performance are critical skills for engineers and field operators. This course merges theory with practice through real-world case studies, hands-on sessions, and simulation tools.

This advanced training focuses on modern production challenges such as flow assurance, declining well performance, and automation of lift systems. Learners will gain a competitive edge through deep dives into ESP, gas lift, plunger lift, rod pumping systems, and smart optimization techniques using AI and predictive analytics. By the end of this course, participants will be proficient in diagnosing production inefficiencies, selecting the right artificial lift method, and implementing optimization frameworks aligned with energy transition and digital oilfield initiatives.

Course Objectives

1. Understand the principles of production optimization in oil and gas wells.
2. Identify and analyze artificial lift methods for various reservoir conditions.
3. Gain hands-on experience with Electric Submersible Pumps (ESP) and their control systems.
4. Apply predictive analytics and machine learning for performance forecasting.
5. Evaluate the economics of artificial lift vs natural flow production.
6. Master gas lift design and troubleshooting strategies.
7. Implement digital twin modeling for artificial lift optimization.
8. Optimize rod pumping systems using real-time data and failure analysis.
9. Understand smart well technology and automation in production systems.
10. Diagnose well production issues using nodal analysis.
11. Execute energy-efficient lifting strategies in mature fields.
12. Learn safety standards, regulatory compliance, and ESG-aligned practices.
13. Develop data-driven optimization workflows using modern software.

Target Audiences

1. Production Engineers
2. Petroleum Engineers
3. Field Supervisors
4. Artificial Lift Technicians
5. Asset Managers
6. Oil & Gas Consultants
7. Reservoir Engineers
8. Operations Managers

Course Duration: 10 days

Course Modules

Module 1: Fundamentals of Production Optimization

- Introduction to production systems
- Reservoir inflow and outflow performance
- Optimization goals and constraints
- Overview of lift mechanisms
- Introduction to nodal analysis
- **Case Study:** Optimization in a mature field in the Permian Basin

Module 2: Artificial Lift System Overview

- Types of artificial lift methods
- Lift selection criteria
- Lifespan and reliability comparison
- Introduction to hybrid lift systems
- Lift performance KPIs
- **Case Study:** Lift strategy design in offshore wells

Module 3: Electric Submersible Pumps (ESP)

- Components and configurations
- ESP performance curves
- Monitoring and control systems
- Troubleshooting ESP failures
- ESP automation and AI integration
- **Case Study:** ESP application in high water cut wells

Module 4: Gas Lift Systems

- Principles of continuous and intermittent gas lift
- Gas lift valve performance
- Gas lift design and simulation
- Troubleshooting unstable flow
- Gas source and compression planning
- **Case Study:** Optimizing gas lift in deep wells (Middle East)

Module 5: Rod Pump Systems

- Design and installation of rod pumps
- Surface vs subsurface components
- Pump efficiency diagnostics
- Rod string failure analysis
- Rod lift automation and VSD
- **Case Study:** Reducing rod failures in shale oil operations

Module 6: Plunger Lift Systems

- Operating principles and cycle types
- Well conditions for plunger lift
- Cycle optimization methods
- Control systems and sensors
- Integration with SCADA systems
- **Case Study:** Plunger lift deployment in low-pressure wells

Module 7: Advanced Lift Design

- Custom lift selection tools
- Multi-zone lift integration
- Economic modeling for lift systems
- Software platforms for lift modeling
- Parameter sensitivity analysis
- **Case Study:** Hybrid lift design for enhanced oil recovery (EOR)

Module 8: Nodal Analysis & Simulation

- Inflow Performance Relationship (IPR)
- Vertical Lift Performance (VLP)
- System analysis and bottlenecks
- Use of software (e.g., Prosper, Pipesim)
- Optimization workflow using nodal analysis
- **Case Study:** Reducing drawdown in marginal wells using IPR/VLP

Module 9: AI and Machine Learning in Production Optimization

- Data collection strategies

- AI models for failure prediction
- Use of ML for flow assurance
- Pattern recognition in lift performance
- Decision support systems
- **Case Study:** ML-driven ESP optimization in offshore fields

Module 10: Digital Oilfield Technologies

- IoT in production monitoring
- Smart sensors and real-time data
- Cloud platforms for production data
- Remote diagnostics and control
- Digital twin applications
- **Case Study:** Real-time optimization via digital twin in Asia-Pacific fields

Module 11: Performance Monitoring and KPIs

- Defining key production KPIs
- Real-time monitoring dashboards
- Downtime analysis and reporting
- Benchmarking tools
- Performance-based lift adjustments
- **Case Study:** Improving uptime in a gas-lifted field in Nigeria

Module 12: Production Troubleshooting Techniques

- Diagnosing pump failures
- Sand production and erosion
- Paraffin, scale, and hydrate issues
- Well surveillance tools
- Chemical treatment strategies
- **Case Study:** Root cause analysis in pump failures (Canada)

Module 13: Energy Efficiency and Sustainability

- Reducing energy use in lift operations
- Green technologies in artificial lift
- Environmental and regulatory drivers
- ESG alignment for operators
- Carbon footprint calculation tools
- **Case Study:** Energy-efficient ESP retrofit in aging fields

Module 14: Production Optimization Economics

- CAPEX and OPEX considerations
- Lifecycle cost analysis
- Break-even analysis
- Return on lift system investment
- Optimizing lift for market conditions
- **Case Study:** Gas lift vs rod pump economic comparison in Texas

Module 15: Integrated Optimization Strategy

- Multi-disciplinary integration
- Workflow design for optimization
- Collaboration between subsurface and operations teams

- Continuous improvement loop
- Performance reviews and audits
- **Case Study:** Field-wide lift optimization in Latin America

Training Methodology

- Instructor-led interactive presentations
- Real-world case study discussions
- Simulation-based software sessions
- Group exercises and role-playing
- Assessment through quizzes and project evaluation
- Access to industry tools and templates

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com