Oil and Gas Production Chemistry Training Course

Professional Development Training Course Outline

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

Course Introduction

Oil and Gas Production Chemistry Training Course provides participants with advanced knowledge and practical skills required to manage chemical challenges throughout the oil and gas production lifecycle. As the industry focuses on flow assurance, asset integrity management, production optimization, corrosion control, scale prevention, water treatment, sustainability, digital oilfield technologies, and operational excellence, production chemistry has become a critical discipline for maintaining safe, reliable, and cost-effective operations. This course examines the chemical interactions occurring in reservoirs, wells, production facilities, pipelines, and export systems while providing practical solutions to mitigate production losses and integrity threats.

Participants will gain expertise in identifying, monitoring, and controlling production chemistry issues including **corrosion, scaling, emulsions, wax deposition,** asphaltenes, hydrate formation, microbial contamination, produced water management, chemical injection optimization, carbon management, and process troubleshooting. Through real-world case studies, laboratory demonstrations, simulation exercises, and best-practice methodologies, attendees will learn how to improve production efficiency, extend asset life, reduce operational risks, and enhance environmental compliance in modern oil and gas facilities.

Programme Curriculum

Oil and Gas Production Chemistry Training Course

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Course Objectives

Upon completion of this course, participants will be able to:

1. Understand fundamental principles of production chemistry in oil and gas operations.
2. Identify and mitigate corrosion mechanisms using advanced integrity management techniques.
3. Analyze scale formation risks and implement effective scale inhibition programs.
4. Optimize chemical injection systems through data-driven performance monitoring.
5. Evaluate wax deposition and paraffin control strategies for flow assurance.
6. Assess asphaltene precipitation risks and treatment methodologies.
7. Implement hydrate prevention technologies and operational controls.
8. Design effective produced water treatment and reuse programs.
9. Apply microbial control and biocide management best practices.
10. Conduct root-cause analysis of production chemistry-related failures.
11. Utilize digital monitoring, predictive analytics, and smart chemical management systems.
12. Improve production efficiency through integrated flow assurance solutions.
13. Develop sustainable production chemistry programs aligned with ESG and environmental compliance objectives.

Target Audience

1. Production Chemists
2. Process Engineers
3. Petroleum Engineers
4. Operations Engineers
5. Production Supervisors
6. Asset Integrity Engineers
7. Corrosion Specialists
8. HSE and Environmental Professionals

Course Modules

Module 1: Fundamentals of Production Chemistry

- Overview of production chemistry principles
- Reservoir fluid characteristics
- Oil, gas, and water interactions

- Production chemistry challenges
- Chemistry management lifecycle
- **Case Study:** Production loss analysis caused by untreated chemistry issues in a mature oil field.

Module 2: Reservoir Fluids and Produced Water Chemistry

- Crude oil composition analysis
- Formation water characteristics
- Water compatibility studies
- Reservoir fluid sampling
- Laboratory testing methods
- **Case Study:** Formation water incompatibility causing severe scaling.

Module 3: Corrosion Mechanisms in Oil and Gas Production

- CO? corrosion
- H?S corrosion
- Oxygen corrosion
- Galvanic corrosion
- Corrosion monitoring techniques
- **Case Study:** Pipeline failure investigation due to internal corrosion.

Module 4: Corrosion Inhibitor Selection and Optimization

- Corrosion inhibitor chemistry
- Chemical performance evaluation
- Dosage optimization
- Monitoring effectiveness
- Field implementation strategies
- **Case Study:** Cost reduction through optimized corrosion inhibitor programs.

Module 5: Scale Formation and Control

- Scale formation mechanisms
- Common scale types
- Risk prediction models
- Scale monitoring systems
- Scale management programs
- **Case Study:** Barium sulfate scale blockage in offshore production systems.

Module 6: Wax and Paraffin Management

- Wax deposition mechanisms
- Temperature effects
- Wax inhibitor technologies
- Mechanical removal methods
- Monitoring and prevention strategies
- **Case Study:** Pipeline shutdown caused by paraffin deposition.

Module 7: Asphaltene Management

- Asphaltene chemistry

- Precipitation mechanisms
- Diagnostic testing
- Chemical treatment options
- Prevention strategies
- **Case Study:** Production decline due to asphaltene plugging.

Module 8: Hydrate Prevention and Control

- Hydrate formation principles
- Risk assessment methods
- Thermodynamic inhibitors
- Low dosage hydrate inhibitors
- Operational controls
- **Case Study:** Offshore hydrate blockage incident investigation.

Module 9: Emulsion Management and Crude Oil Treatment

- Emulsion formation mechanisms
- Emulsion stability factors
- Demulsifier selection
- Separation optimization
- Crude oil quality improvement
- **Case Study:** Export oil specification failure due to stable emulsions.

Module 10: Produced Water Treatment Technologies

- Produced water characteristics
- Treatment process design
- Oil-in-water removal
- Water reinjection quality control
- Environmental discharge requirements
- **Case Study:** Produced water treatment plant optimization project.

Module 11: Microbiological Control in Production Systems

- Microbial contamination mechanisms
- Sulfate-reducing bacteria
- Biofilm formation
- Biocide treatment programs
- Monitoring techniques
- **Case Study:** MIC-related pipeline integrity failure.

Module 12: Chemical Injection Systems and Performance Monitoring

- Chemical injection equipment
- Injection point selection
- Chemical storage and handling
- Monitoring KPIs
- Digital optimization tools
- **Case Study:** Production gains through smart chemical injection optimization.

Module 13: Flow Assurance Management

- Integrated flow assurance principles
- Risk assessment methodologies
- Pipeline transport challenges
- Flow assurance simulations
- Mitigation planning
- **Case Study:** Deepwater flow assurance management program.

Module 14: Asset Integrity and Production Chemistry

- Integrity management frameworks
- Inspection planning
- Risk-based assessment
- Failure prevention strategies
- Lifecycle asset management
- **Case Study:** Extending asset life through proactive chemistry management.

Module 15: Emerging Technologies and Industry Best Practices

- Digital oilfield applications
- Real-time chemistry monitoring
- AI-driven predictive analytics
- Sustainable chemical management
- Future production chemistry trends
- **Case Study:** Implementation of digital production chemistry systems in offshore operations.

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
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

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