Carbon Capture in Oil & Gas Operations Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Carbon Capture in Oil & Gas Operations Training Course is designed to equip professionals in the Oil & Gas industry with advanced knowledge of decarbonization technologies, greenhouse gas reduction strategies, and net-zero emission pathways. As global energy markets shift toward climate neutrality, ESG compliance, and carbon taxation frameworks, carbon capture has become a critical operational and strategic competency. This course provides a deep dive into post-combustion capture, pre-combustion systems, oxy-fuel combustion, and direct air capture integration within upstream, midstream, and downstream oil and gas operations.

Participants will explore real-world applications of CO? sequestration, enhanced oil recovery (EOR), carbon transport infrastructure, and industrial decarbonization systems. The training emphasizes regulatory frameworks such as Paris Agreement compliance, carbon credit markets, and Scope 1–3 emissions management. By integrating engineering principles with sustainability strategy, this program enables professionals to design, evaluate, and implement scalable CCUS solutions that align with net-zero transition goals, ESG reporting standards, and sustainable energy transformation initiatives.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Understand Carbon Capture, Utilization & Storage (CCUS) technologies in Oil & Gas systems
2. Analyze greenhouse gas (GHG) emissions reduction strategies
3. Evaluate post-combustion, pre-combustion & oxy-fuel capture systems
4. Apply net-zero emissions frameworks and decarbonization roadmaps
5. Assess carbon sequestration and geological storage integrity
6. Explore Enhanced Oil Recovery (EOR) using CO? injection
7. Understand carbon accounting, ESG reporting & sustainability metrics
8. Interpret carbon credit trading and global carbon markets
9. Design CO? transport pipelines and compression systems
10. Evaluate industrial-scale DAC (Direct Air Capture) integration
11. Apply regulatory compliance (Paris Agreement & IMO standards)
12. Conduct life-cycle assessment (LCA) of oil & gas operations
13. Develop climate risk mitigation and energy transition strategies

Target Audience

- Oil & Gas Process Engineers
- Environmental & Sustainability Managers
- Petroleum Refinery Operators
- Energy Transition Consultants
- Carbon Management Analysts
- HSE (Health, Safety & Environment) Professionals
- Government Energy Regulators
- ESG & Climate Risk Officers

Course Modules

Module 1: Fundamentals of Carbon Capture & CCUS Technologies

- Overview of CCUS value chain
- Carbon cycle and industrial emissions sources
- Types of capture technologies
- Energy penalty and efficiency trade-offs
- CCUS deployment in oil & gas sector
- **Case Study:** Norway’s Sleipner CO? Storage Project

Module 2: Post-Combustion Capture Systems

- Amine-based absorption technology
- Flue gas treatment processes
- Retrofit applications in refineries
- Solvent regeneration systems
- Operational challenges & optimization
- **Case Study:** Petra Nova Carbon Capture Project (USA)

Module 3: Pre-Combustion & Oxy-Fuel Combustion

- Gasification and syngas processing
- Hydrogen production with CO? separation
- Oxy-fuel combustion principles
- Integration with IGCC plants
- Efficiency and cost analysis
- **Case Study:** Kemper County Energy Facility

Module 4: CO? Transport, Compression & Infrastructure

- Pipeline design standards for CO?
- Compression and dehydration systems
- Leak detection and monitoring
- Offshore vs onshore transport networks
- Safety and risk mitigation
- **Case Study:** Alberta Carbon Trunk Line (Canada)

Module 5: Carbon Sequestration & Geological Storage

- Saline aquifers and depleted reservoirs
- Reservoir characterization techniques
- Long-term storage integrity
- Monitoring, reporting & verification (MRV)
- Risk assessment of leakage
- **Case Study:** North Sea CCS Storage Hub

Module 6: Enhanced Oil Recovery (EOR) Using CO?

- CO? flooding mechanisms
- Reservoir pressure management
- Incremental oil recovery techniques
- Economic feasibility models
- Environmental trade-offs
- **Case Study:** Permian Basin CO?-EOR Projects (USA)

Module 7: Carbon Markets, ESG & Regulatory Frameworks

- Global carbon trading systems
- ESG disclosure standards
- Carbon pricing mechanisms
- Scope 1, 2, 3 emissions accounting
- Compliance with international climate policy
- **Case Study:** EU Emissions Trading System

Module 8: Future of Decarbonization & Direct Air Capture (DAC)

- DAC technologies and scalability
- Integration with renewable energy systems
- Hydrogen economy linkages
- Net-zero refinery transformation
- Innovation in carbon-negative technologies
- **Case Study:** Climeworks Orca Plant (Iceland)

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

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	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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

Register Online Now

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