Hydrocracking Technology Training Course

Professional Development Training Course Outline

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

Course Introduction

Hydrocracking technology plays a pivotal role in modern petroleum refining by converting heavy oil fractions into high-value, clean-burning products such as diesel, jet fuel, and naphtha. This training course provides an in-depth understanding of the hydrocracking process, catalyst selection, reactor configurations, process control, and operational optimization. With increasing demand for ultra-low sulfur fuels and cleaner energy solutions, hydrocracking has become a core refining process globally. Hydrocracking Technology Training Course equips participants with the latest innovations and practical insights into process integration, environmental compliance, energy efficiency, and troubleshooting strategies.

Participants will gain expertise in hydrocracking unit design, feedstock evaluation, performance analysis, and process economics. This knowledge empowers refinery engineers, chemical professionals, and operational personnel to drive productivity and maintain competitive performance in a challenging market. The course combines theoretical frameworks with real-world industrial case studies to enhance practical application and strategic decision-making.

Programme Curriculum

Hydrocracking Technology Training Course

Introduction

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Course Objectives

1. Understand hydrocracking fundamentals and core reaction mechanisms.
2. Analyze the role of catalysts in hydrocracking efficiency and longevity.
3. Evaluate feedstock properties and their impact on product yields.
4. Design and optimize reactor configurations for diverse refining goals.
5. Implement process control strategies for safe, stable operations.
6. Explore hydrogen management and integration in refinery operations.
7. Assess catalyst deactivation causes and regeneration techniques.
8. Identify key environmental regulations affecting hydrocracking.
9. Monitor process performance using real-time data analytics.
10. Enhance energy efficiency and minimize operational costs.
11. Apply advanced troubleshooting and fault diagnosis methodologies.
12. Review case studies on commercial hydrocracking installations.
13. Examine future trends in hydrocracking, including green technologies.

Target Audiences

1. Process Engineers
2. Petroleum Refinery Technicians
3. Chemical Engineers
4. Production Supervisors
5. Environmental Compliance Officers
6. Energy Auditors and Managers
7. Catalyst and Additives Specialists
8. Technical Training Coordinators

Course Duration: 5 days

Course Modules

Module 1: Introduction to Hydrocracking Fundamentals

- Overview of hydrocracking in refinery processes
- Key reactions and mechanisms
- Hydrogen’s role in hydrocracking
- Types of hydrocracking units
- Benefits over other cracking processes
- **Case Study:** Hydrocracking in Middle East Refineries

Module 2: Feedstock Characterization and Preparation

- Properties of typical hydrocracking feedstocks
- Pretreatment processes (hydrotreating)
- Impurities and their effects on catalysts
- Crude assay interpretation
- Selection of suitable feedstock
- **Case Study:** Feedstock Selection in African Refineries

Module 3: Catalyst Technology and Management

- Catalyst types and properties
- Catalyst life cycle and activity
- Poisoning and deactivation mechanisms
- Regeneration and replacement schedules
- Catalyst performance evaluation
- **Case Study:** Catalyst Failure in Southeast Asia Refinery

Module 4: Reactor Design and Configuration

- Reactor types and flow schemes
- Reactor internals and temperature control
- Heat integration and pressure systems
- Safety measures and control loops
- Scale-up from pilot to full plant
- **Case Study:** Optimizing Reactors in US Gulf Coast Refineries

Module 5: Process Control and Optimization

- Key operating parameters (temperature, pressure, space velocity)
- Real-time monitoring systems
- Process automation and SCADA integration
- Alarm management and system feedback
- Performance optimization techniques
- **Case Study:** Digital Process Control at European Refinery

Module 6: Hydrogen Management and Utilities Integration

- Hydrogen production and purification
- Hydrogen distribution networks
- Utilities planning and integration
- Balancing hydrogen consumption
- Cost-benefit of hydrogen use
- **Case Study:** Hydrogen Integration in Asia-Pacific Refineries

Module 7: Environmental Compliance and Safety

- Emissions control and regulation standards
- Sulfur removal and effluent treatment
- Occupational and process safety
- Leak detection and hazard mitigation
- HAZOP and risk assessments
- **Case Study:** Safety Upgrade in Canadian Hydrocracking Unit

Module 8: Performance Evaluation and Troubleshooting

- Key performance indicators (KPI) for hydrocracking
- Troubleshooting common issues
- Turnaround and maintenance planning
- Process debottlenecking
- Data-driven root cause analysis
- **Case Study:** Performance Audit in Latin American Refinery

Training Methodology

- Interactive instructor-led sessions with expert practitioners
- Real-life industrial case studies and scenarios

- Simulation tools for process modeling
- Group assignments and collaborative workshops
- Assessment quizzes and feedback
- Course handouts, charts, and process schematics

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

Start Date	End Date	Location	Price
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