

Training  
Course

**Refinery Process Design,  
Improvement, and Operation  
Troubleshooting**



**Skills** سكلز  
International الدولية  
for Training & Consulting للتدريب والاستشارات



## Course Plan

### Introduction

This training course focuses on the critical aspects of refining processes, emphasizing the design, improvement, and troubleshooting of operations within refineries. Refineries are complex facilities where crude oil is transformed into valuable products like gasoline, diesel, and other petrochemicals. Effective process design and optimization are essential to maintain high efficiency, safety, and profitability in these operations. Moreover, identifying potential problems early and troubleshooting effectively can prevent costly downtime and ensure smooth operations. This course provides participants with the knowledge, tools, and techniques required to improve refining processes, troubleshoot operational issues, and implement best practices to maximize performance and reduce operational risks.

### Course Objectives:

- ✓ To provide an in-depth understanding of refinery process design and its role in optimizing production efficiency.
- ✓ To teach participants how to improve existing processes to enhance refinery performance and profitability.
- ✓ To equip participants with troubleshooting skills to quickly identify, diagnose, and resolve operational issues.
- ✓ To introduce best practices in safety, environmental compliance, and operational excellence.



- ✓ To highlight key factors in process reliability, maintenance, and monitoring in refineries.

## Who Should Attend?

- Process Engineers
- Operations Managers
- Maintenance Engineers
- Refinery Technicians
- Safety and Compliance Officers
- New Graduates
- Experienced Engineers

## Training Methods:

- ✓ Online Video material.
- ✓ Presentation.
- ✓ Live Interactive sessions.
- ✓ Course presenter will make extensive use of all tools that will be needed for the virtual environment.
- ✓ Questions & Answers

## Course Outline:

### Day One

- Introduction to Refining Processes – Overview of refinery operations, units, and products.
- Fundamentals of Process Design – Principles of designing efficient refining processes.
- Crude Oil Characteristics and Refining – Understanding crude oil types and their influence on refining.
- Distillation Processes – Design and optimization of atmospheric and vacuum distillation units.

### Day Two

- Catalytic Cracking and Reforming – Process design and improvement for key refining reactions.
- Hydrotreating and Hydrocracking – Upgrading crude oil fractions using hydrogen.
- Process Flow Diagrams (PFDs) and Piping and Instrumentation Diagrams (P&IDs) – Reading and interpreting critical refinery diagrams.
- Process Simulation and Modeling – Using software tools to simulate and improve refinery operations.

### Day Three

- Energy Efficiency in Refineries – Techniques for optimizing energy consumption and reducing costs.
- Heat Exchangers and Furnaces – Design and troubleshooting of thermal equipment in refineries.
- Control Systems and Instrumentation – The role of automation and control systems in refinery operations.
- Process Safety and Risk Management – Implementing safety practices and mitigating operational risks.

### Day Four

- Troubleshooting Distillation Units – Common issues and solutions in distillation processes.
- Troubleshooting Catalytic Processes – Identifying problems and corrective actions in catalytic cracking/reforming.
- Process Optimization Techniques – Methods for improving refining processes and maximizing yields.
- Turnaround and Shutdown Management – Best practices for managing refinery turnarounds and shutdowns.

## Day Five

- Environmental Compliance and Emissions Control – Ensuring refinery processes meet environmental standards.
- Reliability and Maintenance Strategies – Improving equipment reliability and reducing downtime.
- Case Studies in Refinery Troubleshooting– Real-world examples and lessons learned from refinery operations.
- Future Trends in Refining – Innovations and advancements in refinery technology and operations.

## Training Details

Course Duration	5 Days
Pre-Schedule	4 – 8 Nov 2024
Venue	London – Double Tree by Hilton Kindersington
Training Fees Per Person	KWD 1500 ( One Thousand Five Hundred )
Course Fees Include	<ul style="list-style-type: none"> <li>✓ Tuition documentation</li> <li>✓ Curriculum and Training Handout</li> <li>✓ Five Star Lunch</li> <li>✓ Completion Certificates</li> </ul>