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Petroleum Refining & Petrochemicals: A Practical Overview for Non-Technical Professionals

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Introduction

Petroleum Refining & Petrochemicals: A Practical Overview for Non-Technical Professionals provides a structured understanding of how crude oil is transformed into fuels and petrochemical products, and how these processes influence financial performance, operational efficiency, and strategic decision-making. Refining and petrochemical operations are capital-intensive, technology-driven, and tightly integrated with global supply chains. Decisions taken in finance, procurement, strategy, risk, compliance, and commercial functions are directly affected by technical realities within refineries and petrochemical complexes.

This course explains core refining processes, product slates, margin drivers, feedstock selection, and downstream integration without requiring an engineering background. It connects operational concepts with business performance indicators such as gross refining margin, asset utilization, turnaround planning, and value chain optimization. The content bridges technical terminology with commercial and strategic implications to strengthen cross-functional communication and informed leadership decisions.

Course Objectives

By the end of this course, participants will be able to:

- Explain the structure of the petroleum refining and petrochemical value chain.
- Interpret key refining processes and conversion units.
- Analyze how crude quality affects product yield and margins.
- Evaluate the relationship between refining configuration and profitability.
- Identify major petrochemical production pathways and product families.
- Assess integration strategies between refining and petrochemicals.
- Interpret refining margin indicators and performance metrics.
- Analyze supply and demand fundamentals influencing product pricing.
- Understand operational risks affecting production continuity.
- Apply structured thinking to business decisions influenced by refining operations.



Course Outlines

Day 1: Fundamentals of Petroleum Refining and Industry Structure

- Overview of the global oil and refining value chain.
- Crude oil composition and classification.
- Refinery configurations and complexity levels.
- Primary refining process: atmospheric and vacuum distillation.
- Major refined products and their market applications.
- Exercise: mapping the refining value chain to business functions.

Day 2: Refinery Processes and Product Economics

- Conversion units including catalytic cracking and hydroprocessing.
- Treatment and upgrading processes for product quality compliance.
- Product yield optimization strategies.
- Refining margin calculation fundamentals.
- Impact of feedstock selection on profitability.
- Case exercise analyzing a simplified refinery margin scenario.

Day 3: Petrochemical Production and Downstream Integration

- Introduction to petrochemical feedstocks and cracking processes.
- Olefins and aromatics production pathways.
- Integration between refining and petrochemical complexes.
- Value creation through downstream diversification.
- Demand drivers for petrochemical derivatives.
- Case study: evaluating integration benefits in a refining complex.

Day 4: Commercial, Financial, and Strategic Drivers

- Supply and demand fundamentals in energy markets.
- Pricing mechanisms and benchmark products.
- Capital investment planning and project evaluation.
- Turnaround management and operational downtime impact.
- Asset utilization and performance indicators.
- Exercise: linking operational performance to financial reporting outcomes.



Day 5: Risk, Sustainability, and Industry Transformation

- Operational and market risk exposure in refining businesses.
- Environmental and regulatory considerations affecting operations.
- Energy transition impacts on refining and petrochemicals.
- Digital transformation in asset management and optimization.
- Portfolio diversification strategies.
- Final workshop: structured analysis of a refinery strategic decision scenario.

Why Attend This Course: Wins & Losses!

- Strengthen cross-functional understanding of refining operations.
- Improve financial interpretation of operational performance.
- Enhance strategic decision-making grounded in technical realities.
- Support more effective communication between technical and non-technical teams.
- Improve evaluation of capital investment proposals.
- Strengthen understanding of margin volatility drivers.
- Increase awareness of integration opportunities in petrochemicals.
- Improve risk assessment related to operational and market exposure.

Conclusion

Petroleum Refining & Petrochemicals: A Practical Overview for Non-Technical Professionals delivers a structured understanding of how refining and petrochemical operations influence financial performance, risk exposure, and long-term strategic positioning. Refining is not only a technical activity but a capital-intensive business shaped by feedstock selection, configuration complexity, margin volatility, regulatory constraints, and evolving market demand.

This course integrates operational fundamentals with commercial and financial perspectives. It begins with crude oil characteristics and refinery configurations, progresses through conversion technologies and petrochemical integration, and concludes with strategic risk and sustainability considerations. The framework enables clearer interpretation of performance indicators, more informed participation in investment discussions, and stronger alignment between operational realities and business objectives.

Understanding refining and petrochemical fundamentals enhances institutional decision quality, strengthens cross-functional collaboration, and supports sustainable performance in a highly competitive and transforming energy landscape.

