

Petrochemical Industry Fundamentals and Value Chain Course

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Overview

Petrochemical Industry Fundamentals and Value Chain Course is a one-week foundation course for commercial, supply chain, finance, project, operations-support and early-career technical personnel who leave with a Petrochemical Value Chain Map. Participants connect feedstocks, conversion routes, building blocks, derivatives, integrated-site flows, logistics, costs, markets and transition pressures without entering detailed process design. Agile Leaders Training Center develops practical petrochemical industry literacy.

Who Should Attend

- Commercial teams responsible for product, customer and margin decisions
- Supply chain teams responsible for feedstock, inventory and logistics coordination
- Finance and planning teams responsible for cost and performance analysis
- Project and procurement teams supporting petrochemical investments
- Operations-support and early-career technical personnel requiring industry context

The course assumes participants can interpret basic business and process information and leaves out operator qualification and detailed equipment or reaction design.

Departments and Industries

The course supports cross-functional decisions across hydrocarbon, chemical and manufacturing value chains.

- Petrochemical and integrated refining operations
- Chemical, polymer and materials manufacturing
- Trading, logistics, terminals and distribution
- Finance, strategy, projects and procurement
- Packaging, automotive, construction and consumer-products supply chains

Learning Objectives

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

- Analyze petrochemical feedstock and product pathways
- Compare olefin, aromatic and synthesis-gas value chains
- Use integrated-site flow and dependency maps
- Evaluate cost, margin and market-cycle drivers
- Analyze logistics and supply-chain constraints

- Prioritize transition and circularity responses

Course Agenda

Day 1: Feedstocks and Industry Structure

- Oil, Naphtha, Natural-Gas Liquids and Gas Feedstock Map
- Upstream, Refining, Petrochemical and Conversion Value Chain
- Commodity, Intermediate, Polymer and Specialty Product Ladder
- Integrated Site, Utility and Infrastructure Dependency Map
- Petrochemical Value Chain Map Structure

Day 2: Primary Conversion and Building Blocks

- Steam Cracking Feed-and-Product Slate Model
- Ethylene, Propylene and C4 Olefin Pathway Map
- Catalytic Reforming and BTX Aromatics Chain
- Propane Dehydrogenation and On-Purpose Olefin Route
- Methanol and Ammonia Synthesis-Gas Pathways

Day 3: Derivatives, Products and Applications

- Polyethylene and Polypropylene Derivative Tree
- Styrenics, Polyesters and Engineering-Plastics Chain
- Elastomer, Fiber, Solvent and Detergent Product Map
- Fertilizer and Industrial-Chemical Application Matrix
- Product Specification, Grade and Customer-Segment Linkage

Day 4: Economics, Logistics and Market Cycles

- Feedstock Advantage and Conversion-Cost Bridge
- Operating Rate, Yield, Co-Product and Margin Model
- Inventory, Terminal, Shipping and Contract Flow Map
- Capacity Cycle, Trade Flow and Substitution Scenario
- Integrated Planning and Cross-Functional Decision Dashboard

Day 5: Value Chain Practice and Capstone

- Exercise: Trace a Feedstock into Building Blocks and Derivatives
- Exercise: Compare Integrated and Standalone Site Dependencies
- Exercise: Diagnose a Margin Change from Market Evidence
- Exercise: Evaluate Recycling, Energy and Emissions Pressures
- Capstone Exercise: Complete a Petrochemical Value Chain Map

Practical Exercises

The course uses suggested activities to connect technical flows with business decisions.

- Suggested activity: map naphtha and gas feedstocks through primary chemicals and derivatives
- Suggested activity: compare two production routes using feedstock, yield and utility evidence
- Suggested activity: trace a logistics disruption through inventory, customers and margins
- Suggested activity: build a cross-functional response to a market or transition scenario

FAQs

Who suits the Petrochemical Industry Fundamentals and Value Chain Course?

Commercial, supply chain, finance, project, support and early-career technical personnel suit the course when they need cross-functional petrochemical context.

How does petrochemical fundamentals training differ from process-engineering training?

Petrochemical fundamentals training maps feedstocks, routes, products, economics and markets, while process-engineering training develops detailed design and operating calculations.

What are the main petrochemical building blocks?

Major building blocks include olefins such as ethylene and propylene, aromatics such as benzene and xylenes, and synthesis-gas derivatives such as methanol and ammonia.

How does refinery-petrochemical integration affect the value chain?

Integration can connect feedstocks, by-products, hydrogen, utilities, storage and logistics, changing flexibility, cost exposure and product choices.

What sustainability pressures affect petrochemical value chains?

Energy use, emissions, water, product design, recycling, waste management and alternative feedstocks influence investment, operating and market decisions across the value chain.

Conclusion

Participants complete a Petrochemical Value Chain Map that links feedstocks, routes, products, logistics, economics and transition pressures. The map improves shared understanding between commercial, technical and support functions. Its decision layers help teams trace changes from upstream inputs to customer and margin consequences.

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