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COURSE BROCHURE

Petroleum Refining Process Units Training Course

22 – 26 November 2026
Doha

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Registered in the United Kingdom and Saudi Arabia

Petroleum Refining Process Units Training Course

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Petroleum Refining Process Units is a 1-week training course for refinery engineers, operators, planners and technical staff, built around a Unit Flow and Yield Map that each participant draws for their own refinery configuration. Changing crude slates, tighter fuel sulphur limits and the shift towards petrochemical feedstocks now make every unit's role a commercial question as much as a technical one. Jupiter Prime Training runs this petroleum refining course for downstream teams.

Why Petroleum Refining Process Units Matters Now

Three forces shape refinery operations today: crude buyers switching between light and heavy grades to chase discounts, fuel specifications that push more sulphur and aromatics out of products, and integration with petrochemical plants that value naphtha and propylene differently. Refiners that know how each unit responds to these shifts protect margin and avoid off-specification batches; those that do not run conversion units below capacity or blend give-away into every cargo. The course rests on crude assay interpretation, distillation cut-point logic and the standard conversion, reforming and hydrotreating process schemes used across fuels and integrated sites.

Who Gains Most from Petroleum Refining Process Units

- Those operating crude, vacuum and conversion units on shift
- Those monitoring unit performance, catalyst health and product quality
- Those planning crude purchases, unit rates and product blends
- Those supporting turnarounds, debottlenecking studies and process changes
- Those joining refining from upstream, petrochemical or utilities roles

A refinery operations group that sends its process engineer, shift supervisor and planner together gains most.

Petroleum Refining Process Units Capabilities

Outcomes connect each unit's chemistry to the barrels and specifications it delivers.

- Assess a crude assay to predict distillation cuts and contaminant levels — crude selection committee
- Calculate simple mass balances across atmospheric and vacuum columns — process engineer
- Weigh fluid catalytic cracking and hydrocracking routes for heavy gas oil — refinery planner
- Apply reformer and isomerisation operating levers to gasoline octane targets — unit supervisor
- Specify hydrotreating severity for diesel and jet sulphur limits — technical services lead
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Build a product blend that meets specification with minimum give-away — blending coordinator

Key Petroleum Refining Process Units Terms

- Crude assay — A laboratory report of a crude's distillation profile, density, sulphur and metals, used to predict unit yields.
- Cut point — The boiling temperature that separates one distillation product from the next.
- Fluid catalytic cracking — A conversion process that breaks heavy gas oil into gasoline and light olefins over a circulating catalyst.
- Catalytic reforming — A process that converts low-octane naphtha into high-octane reformate and hydrogen.
- Hydrotreating — Reacting a stream with hydrogen over a catalyst to remove sulphur, nitrogen and other contaminants.
- Blend give-away — Product quality delivered beyond the specification, which costs value without earning a higher price.

Petroleum Refining Process Units Day by Day

Day 1: Crude Quality and Refinery Configuration

- Crude Assay Interpretation — Predicting Cuts, Sulphur and Metals Before Purchase
- Simple, Cracking and Coking Refinery Types — Matching Configuration to Crude Slate
- Refinery Block Flow Diagrams — Tracing Streams From Tank to Product
- Fuel Specification Trends — Linking Market Limits to Unit Demands
- Refinery and Petrochemical Integration — Valuing Naphtha and Olefins Differently

Day 2: Separation Units

- Desalting and Preheat Trains — Protecting Columns From Salts and Fouling
- Atmospheric Distillation Column Operation — Setting Cut Points and Draw Rates
- Vacuum Distillation and Residue Handling — Maximising Gas Oil Recovery
- Light Ends and Gas Plant Recovery — Separating LPG and Fuel Gas
- Column Mass Balance Checks — Verifying Yields Against Assay Predictions

Day 3: Conversion Units

- Fluid Catalytic Cracking Reactor and Regenerator — Balancing Conversion and Coke Burn
- Hydrocracking Flow Schemes — Producing Middle Distillates From Heavy Feeds
- Delayed Coking and Visbreaking — Upgrading Residue at Lowest Cost
- Catalyst Selection and Deactivation — Planning Run Length and Changeouts
- Conversion Unit Yield Shifts — Responding to Heavier Crude Slates

Day 4: Upgrading, Treating and Blending

- Catalytic Reforming and Isomerisation — Raising Gasoline Octane
- Diesel and Jet Hydrotreating — Meeting Sulphur and Smoke Point Limits
- Sulphur Recovery and Amine Treating — Handling Acid Gas From Treaters
- Gasoline and Diesel Blending Rules — Meeting Specification at Lowest Cost
- Blend Give-Away Tracking — Recovering Value Lost in Quality Margin

Day 5: Practising the Unit Flow and Yield Map

- Crude Switch Case From Light to Heavy Grade — Applying Day 1 Assay Logic
- Column Cut Point Exercise — Applying Day 2 Separation Methods
- Cracker and Hydrocracker Route Comparison — Applying Day 3 Conversion Choices
- Diesel Blend Recipe Exercise — Applying Day 4 Treating and Blending Rules
- Unit Flow and Yield Map — Completing Streams, Yields and Constraints

Applying Petroleum Refining Process Units After the Course

- Compare the latest crude assay with actual column yields and report gaps to planning.
- Track blend give-away on one product for a month and propose tighter recipe targets.

Petroleum Refining Process Units Questions FAQ

What is petroleum refining process units knowledge and why does it matter now?

It is the understanding of how separation, conversion, upgrading and blending units turn crude into products. It matters now because crude slates, fuel specifications and petrochemical integration are changing what each unit must deliver.

Which roles gain most from petroleum refining process units training?

Process engineers, shift supervisors, planners and technical services staff gain most. Engineers moving into refining from gas processing or petrochemical plants also benefit.

How does petroleum refining process units training differ from a refinery yield optimisation course?

It explains what each unit does and why, rather than building optimisation models. You learn column cut points, catalyst behaviour and treating severity before tackling linear programming or simulation.

What do you bring back from petroleum refining process units training?

You bring back a flow and yield map of your own refinery. It shows each unit's feeds, products, typical yields and the constraints that limit throughput.

Petroleum Refining Process Units: The Way Forward

The Unit Flow and Yield Map first informs how a crude switch will move product yields and which unit becomes the bottleneck. Planners, process engineers and shift supervisors use it in monthly planning meetings. After the next turnaround or catalyst change, the conversion yields and treating constraints on the map deserve another look.