JUPITER PRIME
Consulting • Training • Advisory
جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Refinery Scheduling and Bottleneck Testing by Simulation Training Course

4 – 8 July 2027
Abu Dhabi

Refinery Scheduling and Bottleneck Testing by Simulation Training Course

Ref: 2909_110875 **Date:** 4 – 8 July 2027 **Location:** Abu Dhabi **Fees:** 6500 GBP

Refinery Scheduling and Bottleneck Testing by Simulation is a 1-week training course for refinery planning and process improvement engineers who must prove that a change to units, tankage or logistics will work before it is made, producing a simulation test plan for one refinery change. Tighter margins and shifting crude and product slates leave little room for trial and error. Jupiter Prime Training treats simulation as a rehearsal space for refinery decisions.

Why Refinery Scheduling and Bottleneck Testing by Simulation Matters Now

Three pressures shape the subject today. Crude diets and product demand change more often, so schedules built for one slate break under the next. Tank farms, jetties and pipelines are shared by many movements, so one late berth can starve a unit. Investment committees ask for evidence that a new tank, a revised blending rule or an extra loading arm will remove the constraint rather than move it. Sites that rehearse changes in a simulation avoid costly surprises; sites that rely on spreadsheet averages miss the queues and interactions that decide real throughput.

Who Gains Most from Refinery Scheduling and Bottleneck Testing by Simulation

- Engineers who build short-term unit and blending schedules and resolve daily conflicts
- Specialists who plan crude receipts, tank allocation and product dispatch
- Process improvement engineers who propose debottlenecking and capacity projects
- Engineers who prepare the technical case for new tankage, berths or transfer lines
- Staff who coordinate shutdown windows and their effect on stocks and deliveries

Refinery sites gain most when a scheduler, a logistics planner and a process engineer attend together.

Refinery Scheduling and Bottleneck Testing by Simulation Capabilities

The outcomes turn units, tanks and transport into rule-following elements that reveal where the plant stalls.

- Specify each unit, tank and transport element with its own operating rules and limits — model scope approval
- Design scheduling rule experiments that compare dispatch and blending priorities — scheduling policy choice
- Test disruption scenarios such as late cargoes, unit trips and tank outages — contingency planning
- Calculate queue lengths, tank cover and unit utilisation from simulation runs — bottleneck location
- Assess model validity against historical movements and stock records — trust in results
- Communicate simulated outcomes and uncertainty to investment reviewers — capital decisions

Key Refinery Scheduling and Bottleneck Testing by Simulation Terms

- Rule-based element — a unit, tank, vessel or truck that follows its own rules and reacts to others.
- Bottleneck — the step whose limited capacity sets the throughput of the whole refinery chain.
- Tank cover — the number of days of feed or product a tank inventory can supply at the planned rate.
- Scheduling rule — a priority that decides which movement, blend or unit run is served first when resources conflict.
- Warm-up period — the early simulated time discarded so results reflect steady operation.
- Replication — a repeat run with different random events that shows the spread of outcomes.

Refinery Scheduling and Bottleneck Testing by Simulation Day by Day

Day 1: The Refinery as an Interacting System

- Crude-To-Product Flow Mapping — Locating Where Units, Tanks And Logistics Interact
- Static Spreadsheet Versus Dynamic Simulation — Choosing The Right Testing Approach
- Change Proposal Screening — Selecting Questions Worth Simulating
- Throughput, Stock And Demurrage Measures — Defining What Success Looks Like
- Stakeholder Question Register — Agreeing What Reviewers Need Answered

Day 2: Building Rule-Based Elements

- Process Unit Elements With Rates And Changeovers — Representing Campaign Constraints
- Tank Elements With Heels, Settling And Certification — Capturing Real Storage Limits
- Vessel, Pipeline And Truck Elements — Modelling Arrival Patterns And Loading Times
- Interaction Rules Between Elements — Reproducing Queues And Starvation
- Input Data Collection From Movement Records — Setting Realistic Distributions

Day 3: Running Experiments

- Verification And Validation Against History — Confirming The Model Behaves Credibly
- Warm-Up And Replication Settings — Producing Stable Comparable Results
- Scheduling Rule Comparison Runs — Ranking Dispatch And Blending Priorities
- Bottleneck Detection From Utilisation And Queues — Finding The True Constraint
- Sensitivity Runs On Key Assumptions — Showing Which Inputs Drive Results

Day 4: Disruptions and Change Options

- Unit Trip And Shutdown Scenarios — Measuring Stock And Delivery Impact
- Late Cargo And Weather Delay Scenarios — Sizing Tank And Berth Buffers
- New Tank Or Loading Arm Options — Checking Whether The Constraint Moves
- Blend Recipe And Rundown Rule Changes — Testing Product Quality Give-Away
- Result Uncertainty Bands — Presenting Ranges Instead Of Single Answers

Day 5: Practising the Simulation Test Plan

- Change Case Definition For A Selected Refinery — Framing The Test Question
- Element And Rule Specification Sheet — Fixing Model Scope For Review
- Experiment Matrix Of Scenarios And Rules — Planning Runs And Replications
- Validation And Acceptance Criteria — Agreeing When Results Can Be Trusted
- Simulation Test Plan For One Refinery Change — Presenting To Decision Makers

Applying Refinery Scheduling and Bottleneck Testing by Simulation After the Course

- Map one recurring tank or berth conflict as interacting elements and list the movement records needed to model it.
- Run a scheduling rule comparison for a current blending or dispatch decision.

Refinery Scheduling and Bottleneck Testing by Simulation Questions FAQ

What is refinery scheduling and bottleneck testing by simulation and why does it matter now?

It is the use of a computer model in which units, tanks and transport follow their own rules, so changes can be rehearsed before they are made. It matters now because frequent slate changes and shared logistics make interactions hard to predict.

Which roles gain most from refinery scheduling and bottleneck testing by simulation?

Refinery schedulers, logistics planners and process improvement engineers gain most.

How does refinery scheduling and bottleneck testing by simulation differ from a linear programming planning course?

It tests how a plan behaves over time with queues, delays and disruptions, whereas planning optimisation courses choose monthly crude and product volumes from averaged constraints.

What do you bring back from refinery scheduling and bottleneck testing by simulation?

You bring back a test plan for one refinery change, with scope, experiments and acceptance criteria.

Refinery Scheduling and Bottleneck Testing by Simulation: The Way Forward

The simulation test plan for one refinery change first informs whether the proposed change deserves a full model and investment study. Schedulers, logistics planners and project sponsors use it to agree scope and evidence before money is committed. After its first use, revisit the interaction rules against fresh movement records, because site practice drifts and the model must follow it.