

Catalog | Updated February 2019

Aspen[®] eLearning



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Aspen Knowledge

Whether you are new or experienced in AspenTech products, or prefer in-person or on-demand training, you can find the right option for you. AspenTech courses are all developed and taught by subject matter experts — whether it's on-demand eLearning, in class with a live instructor or one-on-one coaching.

AspenTech uses adult learning theory principles: teach me, show me and practice.

- **Teach me:** Follow course notes and workshop solutions in class or in a video.
- **Show me:** Observe demonstrations of software features.
- **Practice:** Participate in workshops to apply concepts.

Some classes also offer a certification of excellence in AspenTech products upon completion, showing competency in concepts and application.

Registration Options

Aspen eLearning can be purchased on a per-user basis or at an enterprise level.

Go to [aspentech.com/elearning](https://www.aspentech.com/elearning) to learn more about these options and to contact a sales representative for more information.

“The training shows the powerful programs available through AspenTech.”

— MOTIVA

“I really liked seeing the ‘live action’ of how to set up a simulation. This will help train new engineers.”

— Major North American Refinery Company

“The localized Aspen PIMS courses are very helpful to understand the content.”

— Hengli Petrochemical

“I found it helpful that all the courses were translated into Chinese.”

— Sinopec

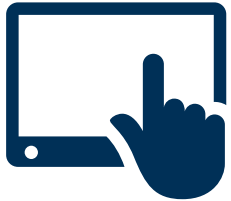
What Is Aspen eLearning?

It's comprehensive training created by experts, delivered on demand in bite-sized modules and courses. Guided learning paths help you find the right training courses for your application, and on-demand access means you can take courses 24/7.



Bite-Sized Modules

30-minute modules are designed to fit into your busy schedule. Each module contains information about the concept, a demonstration, a quiz and an exercise to maximize knowledge retention.



On-Demand Delivery

Aspen eLearning is available 24/7 from AspenTech's Learning Management System, which is accessible from any internet-enabled device. Connectivity to corporate networks is not necessary unless required by your company.



Learning Paths

Modules are organized into learning paths, making it easy for you to progress from beginner to advanced in your focus area, without having to sift through irrelevant topics.



Certifications

Proficiency excellence programs assess knowledge levels as you progress through a learning path. Upon completing any learning path, certification is given. After completing advanced training levels, you can print a certificate indicating your mastery of the topic.

Support Contact Information

Aspen Technology, Inc.
20 Crosby Drive
Bedford, MA 01730

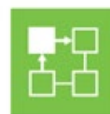
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To locate the appropriate call center for your business and view a list of all contact information, please go to the contact us section on the support center homepage found here: esupport.aspentech.com

Courses

ELEARNING CLASSES BY LEARNING PATH — ENGINEERING

aspenONE® Engineering
 Energy, Chemicals, Engineering and Construction
 Application: **Basic Engineering**



DESIGN



OPERATE



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Aspen Basic Engineering™: Basic Engineering

Aspen Basic Engineering allows the sharing of information among global project teams to promote collaboration and generate FEED packages. This learning path is designed for new and experienced process engineers who need to learn how to shorten the time to complete FEED activities. Complete this course to learn how to use Aspen Basic Engineering to create a FEED deliverable.

Course Name	Knowledge Delivered	Description
Aspen Basic Engineering (ABE): Learn the Basics	<ul style="list-style-type: none"> Fundamentals of Aspen Basic Engineering 	Get an overview of Aspen Basic Engineering (ABE) and how ABE can integrate with and benefit your work process. You'll learn two installation modes.
Process Flow Diagrams: Learn the Essentials for Creating Process Flow Diagrams (PFDs)	<ul style="list-style-type: none"> Create process flow diagrams (PFD) 	Learn how to create your first datasheet. Transfer simulation results from Aspen Plus®/Aspen HYSYS® and draw a process flow diagram (PFD) followed by specifying the datasheet. When specifying the datasheet, you will examine options to protect certain fields and add watermarks to the datasheet, as well as print it.
Equipment Datasheets: Learn the Essentials of Working with Datasheets	<ul style="list-style-type: none"> Work with equipment datasheets 	Once you have created a datasheet, you can begin specifying the datasheet and sending it through the review process. Gain an introduction to the document tracking and markup/annotation features built into Aspen Basic Engineering. You'll also learn how to upload sketches to datasheets.

aspenONE® Engineering
 Energy, Chemicals, Engineering and Construction
 Application: **Bidding and Estimating**



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Aspen Capital Cost Estimator™: Estimating with Aspen Capital Cost Estimator

Delivering bids and estimates earlier in the engineering process, faster and with less risk is key as more capital costs run over and projects fall behind schedule. Follow the sequence of courses in this learning path to learn how to use one common method of model-based estimating from conceptual to detailed engineering. This enables reuse and streamlines workflows, and you can leverage reusable templates and configurable reports to decrease estimation time and increase transparency. You will also learn how to rapidly and confidently evaluate capital investment projects earlier in the design process, understand the economic implications of engineering and project execution decisions and effectively produce comprehensive, consistent and accurate estimates.

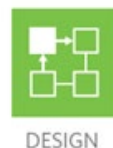
Course Name	Knowledge Delivered	Description
Aspen Capital Cost Estimator (ACCE): Learn the Basics	<ul style="list-style-type: none"> Basics of Aspen Capital Cost Estimator 	Get an overview of the estimating practices and capabilities of Aspen Capital Cost Estimator.
Estimating Background: Learn the Breakdown Structure and Classification Systems	<ul style="list-style-type: none"> Set up your cost breakdown structure Classification set-up 	Learn various cost estimating engineering practices related to Aspen Capital Cost Estimator.
User Interface: Discover Optimized Workflows in ACCE	<ul style="list-style-type: none"> Develop directories 	Get familiar with the Aspen Capital Cost Estimator user interface and learn how to manage the directories
Project Area Concepts: Determine Types and Specifications	<ul style="list-style-type: none"> Construct project areas 	Master what project areas are and how to specify them in Aspen Capital Cost Estimator.
Volumetric Models: Eliminate Factor-Based Estimating	<ul style="list-style-type: none"> Basics of model-based estimates 	Learn Aspen Capital Cost Estimator's recommended practice of factor-based estimating and how AspenTech overcomes the associated challenges by using model-based estimating in Aspen Capital Cost Estimator.
Basis of Estimate: Document Your Scope, Assumptions and Methodologies	<ul style="list-style-type: none"> Document basis of estimate 	Find out why the basis of estimate or estimate plan document is so important and learn how to modify the document in Aspen Capital Cost Estimator.

<p>Specifying Manpower: Adding Manpower and Productivity Specifications</p>	<ul style="list-style-type: none"> Specify manpower 	<p>Go through the manpower specifications available in Aspen Capital Cost Estimator and learn the system basis, productivity and wage rate adjustments, specifications by craft, workforces and link to contractors and crew mixes.</p>
<p>Cost and Price Escalation: Anticipate Price Changes</p>	<ul style="list-style-type: none"> Understand price escalations 	<p>Discover the Aspen cost database, which is used within Aspen Capital Cost Estimator and supplies data for five global regions. Learn about the system base index, and how Aspen Capital Cost Estimator costs different types of models, including full fabrication, non-full fabrication and bulk item models. Video demonstrations allow you to explore the associated forms, and then you can try it yourself with a self-paced exercise.</p>
<p>Process Design: Reuse Designs, Change Capacities, Create Templates</p>	<ul style="list-style-type: none"> Design reuse Template development 	<p>Review different process design features available in Aspen Capital Cost Estimator. Learn the basis of the integration with the process simulators and how to create templates, changing plant capacity and reusing elements from previous estimates through import and merge.</p>
<p>Mechanical and Piping Costing: Learn the Basics</p>	<ul style="list-style-type: none"> Mechanical and piping 	<p>Learn about the pipe envelope in Aspen Capital Cost Estimator. Learn about component piping and rack piping and how to specify these, as well as how to create and use external fitting frequency rules for piping, as well as how to create and use custom pipe spec files.</p>
<p>Electrical and Instrumentation Costing: Learn the Basics</p>	<ul style="list-style-type: none"> Electrical and instrumentation 	<p>Review key electrical distances that need to be specified in Aspen Capital Cost Estimator and learn how these distances are used to estimate the length of electrical cables and cable supports. Discover how to specify electrical heat tracing on pipes and vessels and how to translate a single line diagram into Aspen Capital Cost Estimator power distribution architecture.</p>
<p>Contracting Strategies: Specify and Manage Contractors</p>	<ul style="list-style-type: none"> Contractor strategy development 	<p>Learn the following:</p> <ul style="list-style-type: none"> How to specify contractors and their scope of work in Aspen Capital Cost Estimator. The workflow for converting a contractor reporting structure into a tree diagram and linking appropriate workforces to contractors. Examine the workflow for creating contractor work packages or CONSETs required, assigning scope of work to contractors, and linking areas and systems to CONSETs. Review the contractor reporting options available in Aspen Capital Cost Estimator's evaluation report and the interactive report.

<p>Modular Projects: Learn the Basics</p>	<ul style="list-style-type: none">• Leverage modularization	<p>Get an overview of modular project design, modular types available in Aspen Capital Cost Estimator, contract specification considering modular project design and useful reports while working with modular project design.</p>
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aspenONE® Engineering
 Energy, Chemicals, Engineering and Construction
 Application: **Exchanger Design and Rating**



DESIGN



OPERATE



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Aspen Exchanger Design & Rating™ (EDR): Rigorous Design and Rating of Heat Exchangers

This learning path is designed for the new and experienced process engineers. Complete this learning path to learn how to model, monitor and troubleshoot heat exchangers of various types using Shell and Tube, Fired Heater, Air Cooled, Plate Fin, Plate and Coil wound exchanger types. You will also learn examples such as crude preheat train monitoring to apply rigorous models in operation and designs.

Course Name	Knowledge Delivered	Description
Aspen Exchanger Design and Rating: Learn the Basics	<ul style="list-style-type: none"> Heat exchanger design and rating basics 	Learn about the Aspen Exchanger Design and Rating suite of programs and the tools bundled with it. Get an overview of the workflow for heat exchanger design and see some best practices for defining your case.
Shell and Tube Thermal: Learn the Basics for all Major Equipment Types	<ul style="list-style-type: none"> Shell and Tube heat exchanger design 	Understand where shell and tube exchangers are used and how to simulate, rate and design them in Aspen Shell and Tube Exchanger™. We will discuss the program interface, enter process and physical data, specify the exchanger configuration and geometry and then run the case. Once the case is run, we will analyze the results and make decisions about exchanger performance, design, operations, optimization and more.
Plate Heat Exchanger Modeling: Simulate Gasketed, Welded or Brazen Types	<ul style="list-style-type: none"> Plate heat exchanger design 	Learn how to simulate plate exchangers in Aspen Exchanger Design and Rating. We will discuss the program interface, import process data from an Aspen HYSYS case, learn to specify exchanger parameters such as materials of construction and then run the case. Once the case is run, we can analyze the results and look at the optimization path to see how improvements can be made to the design of the exchanger. Finally, we will convert the previously entered data to a rating/checking case.
Fired Heater Heat Exchanger Modeling: Rigorously Analyze Fired Heater Operations	<ul style="list-style-type: none"> Fired heat exchanger design 	Understand the general features and applications of fired heaters and how they are modeled in Aspen Fired Heater®. Learn about entering or generating process data, the property packages available, fluid properties and calculation modes. Review Fuels and Oxidants,

		geometry input and program options, and learn where to get the most important results and how to interpret them.
Plate Fin Heat Exchanger Modeling: Address Modern Gas Processing Applications	<ul style="list-style-type: none"> Plate fin heat exchanger design 	Learn about the general features and applications of plate fin heat exchangers and how to model them in Aspen Plate Fin Exchanger™. Understand process data, the property packages available and fluid properties. Learn terminology and geometry, how geometry is entered and options for controlling design, thermal analysis, and convergence in Aspen Plate Fin Exchanger. Find out where to go to get the most important results and useful tips for evaluating results.
Shell and Tube Mechanical: Optimize the Mechanical Design of Shell and Tube Heat Exchangers	<ul style="list-style-type: none"> Shell and tube heat exchanger design 	Understand how Aspen Shell and Tube Mechanical™ is used for the mechanical design of shell and tube exchangers. We discuss the mechanical design codes and material standards available, the program interface, how to specify the exchanger configuration and geometry, options for load analysis and costing. Data transfer between Shell and Tube Thermal and Shell and Tube Mechanical is shown, Shell and Tube Mechanical results sections are described, including ASME code calculation results.
Coil Wound Heat Exchanger Modeling: Optimize Complex Cryogenic Processes	<ul style="list-style-type: none"> Coil wound heat exchanger design 	Learn why coil wound exchangers are used and how to simulate them in Aspen Exchanger Design and Rating. We will discuss the program interface, enter process and physical data, specify the exchanger configuration and geometry, and then run the case. Once the case is run, we can analyze the results and make decisions about exchanger performance, design, operations, optimization and more.
Thermosiphon: Learn How to Model a Thermosiphon Heat Exchanger	<ul style="list-style-type: none"> Thermosiphon reboiler design 	Understand the working principles of a thermosiphon reboiler and their areas of application. We discuss typical geometry, key Aspen Exchanger Design and Rating input for thermosiphons and modes of calculation, the thermosiphon circuit and piping elements associated with it, and stability issues and how to address them.
Full Process Model: Leverage Heat Exchanger Models from within Aspen HYSYS	<ul style="list-style-type: none"> EDR integration with Aspen HYSYS 	Learn about the integration of Aspen Exchanger Design and Rating heat transfer models with Aspen HYSYS. You will be introduced to the exchanger models in both Aspen HYSYS and Aspen Exchanger Design and Rating and the advantages of the different types. Discover how to implement dual- and multi-stream rigorous Aspen EDR models within Aspen HYSYS and how to access the results.
Full Process Model: Leverage Heat Exchanger Models from within Aspen Plus®	<ul style="list-style-type: none"> EDR integration with Aspen Plus 	Learn about available heat exchanger models in Aspen Plus and Aspen Exchanger Design and Rating. Once the heat exchanger is designed, we will analyze the results and evaluate the exchanger's performance, design, operations and more.

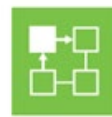
Chemical Processes: Model Heat Exchangers from Within Aspen Plus	<ul style="list-style-type: none"> • EDR integration with Aspen Plus 	Discover the five models that are commonly to simulate heat exchange. Learn about the Heater, HeatX and HXFlux models, including their definitions, UI information and applications.
Crude Preheat Train: Learn the Basics of Modeling a Network Heat of Exchangers	<ul style="list-style-type: none"> • Refinery crude preheat train optimization 	Review the components of a crude preheat train and how to build a simulation model for a preheat train. We discuss the best practices used while building these models, including both simple and rigorous models. Reports for the preheat train will also be shown.
Crude Preheat Train: Monitor HX Fouling and Cleaning Sequence	<ul style="list-style-type: none"> • Refinery crude preheat train optimization through operational decision support 	Get an understanding of the online and offline applications for exchanger fouling monitoring within various units in a plant. We will go through the data requirements and technologies used and discuss the main benefits of having an automatically calibrated system for live monitoring or offline reports.



aspenONE® Engineering

Energy, Engineering and Construction

Applications: **Gas Plant Optimization, Operations Decision Support**



DESIGN



OPERATE



MAINTAIN



Aspen HYSYS®, Aspen Simulation Workbook™: Gas Plant

A gas processing plant takes raw natural gas and produces gas that meets sales specifications. This learning path is designed for new and experienced engineers working with Acid Gas Removal, Dehydration, Sulfur Recovery and other integrated processes.

Complete the learning path to discover how to bring new gas and liquids processing facilities to market faster with a higher return on investment, reduce capital costs through process optimization and lower operating costs by integrating simulation models.

Course Name	Knowledge Delivered	Description
Aspen HYSYS: Learn the Basics	<ul style="list-style-type: none"> Process simulation basics Flowsheet creation 	Learn about the concept of process simulation, its main advantages and its applications. We guide you through the steps of creating a simple simulation of your process in Aspen HYSYS, starting with defining the physical properties required for the process and then developing and calculating the flowsheet of a simple hydrocarbon separation.
Leveraging Aspen Simulation Workbook with Aspen HYSYS	<ul style="list-style-type: none"> Operational decision support leveraging Aspen Simulation Workbook 	Get up and running with Aspen Simulation Workbook! Start with a fresh installation and work through activating Aspen Simulation Workbook and linking it to your model, and then progress to advanced features like form controls and working with plant data tags. This is a great place to begin, whether you are just getting started using the software or you are a long-time user who would like to learn about some of the more advanced features.
Get an Overview of Simulating the Full Gas Plant	<ul style="list-style-type: none"> Understand and optimize major processes of a gas plant 	Within a typical gas plant, the following units are key to reaching sales gas specifications: Acid Gas Treating, Sulfur Recovery, Tail Gas Treating, and Dehydration. Review the characteristics and purposes of these units and learn how Aspen HYSYS can be used to model them.
Acid Gas Removal: Learn the Basics to Minimize Costs	<ul style="list-style-type: none"> Basics of acid gas removal in the gas plant 	Explore how to build an acid gas cleaning model from scratch. Common operating conditions are prescribed, and demonstrations are given to build a flowsheet, from properties selection to advanced modeling configuration. The process will utilize an amine solvent, methyldiethanolamine (MDEA), to remove acid gases from natural gas. Recycle capability and heat integration are also introduced.

Sulfur Recovery: Learn the Basics to Conquer the Sulfur Recovery Unit (SRU)	<ul style="list-style-type: none"> Basics of sulfur recovery in the gas plant 	Learn how to build and simulate the typical Claus Process in an SRU) with Sulsim™ Sulfur Recovery in Aspen HYSYS.
Glycol Dehydration: Learn the Basics to Minimize Solvent Costs	<ul style="list-style-type: none"> Optimize dehydration by leveraging chemical glycol absorbents 	Explore how to build a natural gas dehydration model from scratch. Common operating conditions are prescribed and demonstrations are given to build a flowsheet, from properties selection to hydrate formation analysis. The process will utilize a glycol absorbent, triethylene glycol (TEG), to remove water from natural gas. Recycle capability and heat integration are also introduced.
Acid Gas Removal: Meet Sales Gas Specs with Rate-Based Modeling	<ul style="list-style-type: none"> Optimizing acid gas column performance leveraging rate-based modeling 	Review a natural gas acid gas treating unit that has degraded to the point of failing a key specification and is in danger of failing a second. Use the Aspen HYSYS hydraulics analysis environment to investigate the current column intervals and test substitutes for the current column internals before opting for a column revamp. Finally, with the enhanced separations achieved in the column, use a case study to investigate opportunities for savings in operation expenses (OPEX) in solvent circulation and recovery.
Sulfur Recovery: Optimize Operating Conditions to Reduce Costs	<ul style="list-style-type: none"> Increase sulfur recovery in the gas plant 	Learn how to optimize basic operating conditions of sulfur recovery unit, such as converter temperatures and fuel gas flow rates, using the capabilities available in Aspen HYSYS.
Sulfur Recovery: Respond to a Challenged Crude Feed	<ul style="list-style-type: none"> Understand how crude feed changes affects sulfur recovery 	A gas plant is going to process a more challenged crude feed with a greater concentration of sulfur. In this example, to evaluate the effect that this feed will have on the existing unit, we will change the crude feed compositions and feed flow rate and check the change in process conditions.
Glycol Dehydration: Meet Dew Point Specifications	<ul style="list-style-type: none"> Compare the effects of operational changes in gas plant dehydration 	Review a natural gas dehydration unit that has degraded and is currently failing to meet specifications. Use an Aspen HYSYS case study to compare various operational changes and employ the results of the study to optimize the process, allowing key specifications to be met. Review the hydraulics of absorber column and investigate if a change in column intervals could lead to increased vapor and liquid flowrates to the column. Finally, enhance the safety of the unit by calculating when hydrates would form in the process.
Expanded Gas Plant Model: Whether to Process a Heavy Sour Feed	<ul style="list-style-type: none"> Overcome heavy sour feeds into your gas plant 	Learn how to use Aspen HYSYS petroleum refining and gas plant integrated model to assess whether or not a refinery can process a heavy sour feed for great profits while still meeting product specifications and emissions requirements.

aspenONE® Engineering
 Energy, Engineering and Construction
 Application: **Pipeline Flow Hydraulic Analysis**

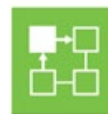


Aspen HYSYS® Upstream: Upstream Flow Assurance

When transferring process liquids and gases, it is critical to avoid pipeline downtime in order to maintain both upstream and downstream operations. In the Upstream Flow Assurance Learning Path, both new and experienced process engineers will learn how to accurately model pipe flow and characterize fluids using rigorous correlations. You will also discover how to assess and mitigate the risk of hydrates, wax formation, CO2 corrosion, erosion and slugging. Lastly, you will learn the fundamentals of oil characterization, fluid flow models and steady-state as well as transient pipeline analysis.

Course Name	Knowledge Delivered	Description
Pipe Hydraulics: Model Flow in a Pipe Segment	<ul style="list-style-type: none"> Overcome pipe and pipeline flow constraints 	Learn how to model a pipe and pipe network using the Aspen HYSYS Pipe Segment unit operations. We will discuss the advantages and disadvantages of the Pipe Segment unit operations, as well as key assumptions that may limit the systems for which this unit operation is applicable. Then we will learn how to define key parameters in the pipe and mixer unit operations in Aspen HYSYS to properly set up a pipe network model. Finally, we will solve the pipe network.
Pipeline Hydraulics: Optimize Flow in a Pipeline Network	<ul style="list-style-type: none"> Optimize flow in a pipeline network 	Learn to model fluid flow in pipeline networks with the Hydraulics sub-flowsheet in Aspen HYSYS.

aspenONE® Engineering
 Energy, Engineering and Construction
 Application: **Dynamic Studies**



DESIGN



OPERATE



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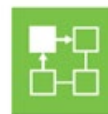
Aspen HYSYS®: Dynamic Simulation

Dynamic simulation allows you to simulate a wider range of operating scenarios including start-up, shut-down and transition states. This learning path is designed for new or experienced engineers who need to learn how to improve the overall safety, operability and controllability of their design. Complete this learning path to learn how to convert existing models to dynamics, to model transient behavior of key pieces of equipment, automate emergency scenarios and perform many other key applications in dynamics.

Course Name	Knowledge Delivered	Description
Aspen HYSYS: Learn the Basics	<ul style="list-style-type: none"> Develop insights into dynamic processes 	We introduce the concept of process simulation, including its main advantages and applications, as well as provide an overview of the main uses of Aspen HYSYS. Learn the steps of creating a simple simulation of your process in Aspen HYSYS, starting with defining the physical properties required for the process and then developing and calculating the flowsheet of a simple hydrocarbon separation.
Aspen HYSYS Dynamics: Learn the Basics	<ul style="list-style-type: none"> Learn the basics of Aspen HYSYS Dynamics 	Learn how to get started with Aspen HYSYS Dynamics to model dynamic behavior in your plant. Learn how to configure your simulation case for dynamics, add controllers and view plant behavior graphically. We also provide a review of the mathematics being used to measure dynamic plant behavior, pressure-driven flow, process control and more. Additionally, we demonstrate how to model plant disturbances and black box processes in Aspen HYSYS Dynamics.
Single Stage Compressor: Leverage Pre-Configured Template to Build Models	<ul style="list-style-type: none"> Limit surge conditions in your compressors 	Discover how to use Activated Dynamics™ to simulate compressor failure scenarios and examine compressor performance. Start by going through basic theory of compressor surge, and then walk through how the anti-surge valve can be used to prevent a compressor from going into surge. Finally, we demonstrate how to use pre-built failure scenarios and make design changes to ensure safe operation during emergency scenarios.
Multi-Stage Compressor: Leverage Pre-Configured Template to Build Models	<ul style="list-style-type: none"> Develop strategies to prevent compressor surge 	Find out how to use Activated Dynamics to simulate compressor failure scenarios and examine compressor performance. We provide a quick overview of compressor surge and anti-surge control strategies, discuss the pre-built template available in Activated Dynamics and

		then demonstrate how to use pre-built failure scenarios and make design changes to ensure safe operation during emergency scenarios.
Dynamic Fire Scenario: Model Custom Scenarios with Spreadsheets	<ul style="list-style-type: none"> Optimize FLARE, maximizing process safety 	Learn the basics of spreadsheet unit operations in Aspen HYSYS. This module demonstrates a simple manually executed fire scenario and the use of a spreadsheet in a dynamic simulation to calculate heat input for a fire.
Dynamics Event Scheduler: Set up an Emergency Scenario	<ul style="list-style-type: none"> Prepare for emergency control valve failures with Event Scheduler 	Learn the basics of Event Scheduler in Aspen HYSYS Dynamics, including a walk-through of how to add a basic event in the Scheduler Manager to set up an emergency scenario. A demonstration is added to simulate the closing of the control valves in a fire scenario, and we observe the pressure and liquid level in the separator after turning off the feed.
Compressor Settle-Out: Meet API 521 Compliance	<ul style="list-style-type: none"> Experience a compressor shutdown and verify the compressor has not entered surge conditions 	Learn about compressor settle-out using Aspen HYSYS Dynamics. This will show a dynamic case where the event scheduler is used to simulate a compressor trip, calculate settle-out pressure, and verify that the compressor does not enter surge during the trip.
Dynamic Compressor Modeling: Ensure Safe and Reliable Compressor Operations	<ul style="list-style-type: none"> Understand surge conditions and monitor anti-surge controllers 	Explore how to set up a dynamic compressor model in Aspen HYSYS and monitor the performance of anti-surge controllers using head curves. Learn how to set up custom events and strip charts to analyze the compressor in custom surge scenarios and monitor key process variables.
Dynamic Column Modeling: Ensure Reliable Distillation Operation	<ul style="list-style-type: none"> Gain insights to complex dynamic column processes 	Learn how different control schemes can be set up and used for controlling the columns in Aspen HYSYS. Create custom events and analyze the control scheme performance in strip charts.
Cause and Effect Matrix: Ensure Safe Operations	<ul style="list-style-type: none"> Improving Safety leveraging Cause and Effect Matrixes 	Learn the basic concepts and applications of the Cause and Effect Matrix in Aspen HYSYS® are introduced. Then, the user interface and its associated functions are presented. Finally, a demonstration case is attached to enforce understanding of this Boolean Logic block.
Safety Workflow: Enhance Safety Analysis with Dynamic Simulation	<ul style="list-style-type: none"> : Enhance Safety Analysis with Dynamic Simulation 	Learn about the safety solution tools from AspenTech. These tools help you with the planning and modeling of safety systems. Aspen HYSYS, PSV, and Aspen Flare System Analyzer™ will allow you to model an emergency scenario, size pressure relieving devices, and setup flare systems.

aspenONE® Engineering
 Energy, Engineering and Construction
 Application: **Distillation Improvement**



DESIGN



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Aspen HYSYS®: Fractionation & Distillation

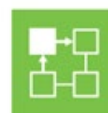
Separation by distillation is a key step in many oil and gas processes. This learning path is designed for new and experienced process engineers who need to understand how factors including feedstock and feed conditions, internal flow conditions and state of internals affect column performance. The optimized CDU operation allows refiners to quickly troubleshoot operational issues, put in place the most effective heat exchanger maintenance schedules and improve refinery profits by maximizing the unit's crude flexibility. Complete this learning path to learn how to meet product demands and simultaneously reduce energy consumption with a single solution to optimize the entire crude distillation unit operation.

Course Name	Knowledge Delivered	Description
Aspen HYSYS: Learn the Basics	<ul style="list-style-type: none"> Learn the basics that will lead to improved refinery fractionation and distillation 	Receive an introduction the concept of process simulation, including its main advantages and applications, as well as provide an overview of the main uses of Aspen HYSYS. Learn the steps of creating a simple simulation of your process in Aspen HYSYS, starting with defining the physical properties required for the process and then developing and calculating the flowsheet of a simple hydrocarbon separation.
Aspen HYSYS Petroleum Refining: Learn the Basics	<ul style="list-style-type: none"> Deeper insights to petroleum refining 	In the petroleum refining process, a group of unit operations in a production facility is used to convert crude oil into valuable fuel products that can be sold in the marketplace. In this module, you will learn the refining process in the petroleum refining products in Aspen HYSYS. The models and workflows of Aspen HYSYS Petroleum Refining will be showed in detail in this lesson.
Crude Distillation Unit: Build a Rigorous Crude Distillation Column Model	<ul style="list-style-type: none"> Improve profits of your crude distillation unit 	Learn to build a model for a crude distillation unit (CDU) in Aspen HYSYS. Simulation models of the crude distillation unit can serve many purposes. Because the feedstocks to refineries often change, models can be used to evaluate the effects of these changes in the feed. Models of the CDU are also devalued to monitor the unit, to advise on operations and to analyze column hydraulics. In addition, they can be used to update to the assay table in the planning model in Aspen PIMS™. Throughout the training there are quizzes and exercise to give you a better understanding of how to develop the different parts of the model and to reinforce the best practices.

<p>Crude Preheat Train: Learn the Basics of Modeling a Network Heat of Exchangers</p>	<ul style="list-style-type: none"> • Improve the operation efficiency of your CDU preheat train 	<p>Go over the components of a crude preheat train and how to build a simulation model for a preheat train. The components of a typical preheat train will be described, and best practices used while building these models with both simple and rigorous models will be discussed. Reports for the preheat train will also be shown.</p>
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aspenONE® Engineering
 Energy, Engineering and Construction
 Application: **Refinery Profit Improvement**



DESIGN



OPERATE



MAINTAIN



Aspen HYSYS®: Heavy Oil Conversion

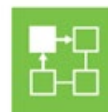
Heavy oil conversion becomes increasingly important with the new International Maritime Organization (IMO) regulations. This learning path is designed for new and experienced process engineers. Complete this learning path to learn how to characterize crude assay, model a Fluidized Catalytic Cracking (FCC) unit to represent an actual unit operation and support the refinery LP planning model. Increase refinery profits by improving operations, debottlenecking and optimizing production and product specifications.

Course Name	Knowledge Delivered	Description
Aspen HYSYS: Learn the Basics	<ul style="list-style-type: none"> Understand the importance of starting your modeling with physical properties 	Receive an introduction to the concept of process simulation, including its main advantages and applications, as well as get an overview of the main uses of Aspen HYSYS. Learn the steps of creating a simple simulation of your process in Aspen HYSYS, starting with defining the physical properties required for the process and then developing and calculating the flowsheet of a simple hydrocarbon separation.
Aspen HYSYS Petroleum Refining: Learn the Basics	<ul style="list-style-type: none"> Learn the basics improving your refinery processes 	In the petroleum refining process, a group of unit operations in a production facility is used to convert crude oil into valuable fuel products that can be sold in the marketplace. In this module, you will learn the refining process in the petroleum refining products in Aspen HYSYS. The models and workflows of Aspen HYSYS Petroleum Refining will be showed in detail in this lesson.
Assay Management: Learn the Basics	<ul style="list-style-type: none"> Leverage assays when building your refinery process models 	Receive an introduction to assay characterization, which is the first step towards using an assay in your simulation. We discuss different assay types and how they can be characterized in Aspen Assay Management™. Once an assay is characterized, we demonstrate how to use the results in an Aspen HYSYS Petroleum Refining simulation case.
Fluid Catalytic Cracker Modeling: Learn the Basics	<ul style="list-style-type: none"> Fluid catalytic cracker modeling basics 	The fluid catalytic cracking process, or FCC, is the “heart” of the modern-day refining process. It is the most important and widely used petroleum refining process for cracking heavy oil fractions into lighter valuable products. We will review the FCC process in petroleum refining and how to configure a new FCC unit operation in the Aspen

		HYSYS flowsheet. We will go over the key features of the Aspen HYSYS FCC unit operation.
Fluid Catalytic Cracker Modeling: Configure, Calibrate and Simulate	<ul style="list-style-type: none"> Improve your FCC operations 	Explore how to use the Aspen HYSYS Petroleum Refining CatCracker model in Aspen HYSYS flowsheets and the configuration, calibration and simulation features as key models of workflows. You will be introduced to the FCC modeling including configuring a FCC template, calibrating the FCC template, converting the calibrated FCC model to simulation, applying the template in an Aspen HYSYS case simulation, and adding a new feed to the FCC model. A product fractionation in the FCC flowsheet and a flowsheet to calibration round-trip is also covered.
Planning Model Update: Use Rigorous FCC Reactor Models for Accurate Planning	<ul style="list-style-type: none"> Updating planning models using refinery operational data 	Understand why planning models need to be updated and discover five high-level steps in the Planning Model Update workflow. Learn how to determine the operating ranges of jet variables and how to set up shift vectors in Aspen HYSYS. Additionally, this lesson will cover how to update the base and shift vectors in Aspen HYSYS case study to reflect any changes and then export the simulation data from Aspen HYSYS to update the planning model.



aspenONE® Engineering
 Energy, Engineering and Construction
 Application: **Refinery Profit Improvement**



DESIGN



OPERATE



MAINTAIN



Aspen HYSYS®: Naphtha Processing and Light Ends Handling

Petroleum refining products must meet stringent specifications including limits on octane, sulfur, nitrogen, olefin, etc. This learning path is designed for new and experienced engineers. Complete this learning path to characterize crude assay, model a Reformer unit to represent an actual unit operation and support the refinery LP planning model. Increase refinery profits by improving operations, debottlenecking and optimizing production and product specifications.

Course Name	Knowledge Delivered	Description
Aspen HYSYS: Learn the Basics	<ul style="list-style-type: none"> Understand the importance of starting your modeling with physical properties 	Receive an introduction to the concept of process simulation, including its main advantages and applications, as well as provide an overview of the main uses of Aspen HYSYS. Learn the steps of creating a simple simulation of your process in Aspen HYSYS, starting with defining the physical properties required for the process and then developing and calculating the flowsheet of a simple hydrocarbon separation.
Aspen HYSYS Petroleum Refining: Learn the Basics	<ul style="list-style-type: none"> Learn the basics improving your refinery processes 	In the petroleum refining process, a group of unit operations in a production facility is used to convert crude oil into valuable fuel products that can be sold in the marketplace. In this module, you will learn the refining process in the petroleum refining products in Aspen HYSYS. The models and workflows of Aspen HYSYS Petroleum Refining will be showed in detail in this lesson.
Assay Management: Learn the Basics	<ul style="list-style-type: none"> Leverage assays when building your refinery process models 	Receive an introduction to assay characterization, which is the first step towards using an assay in your simulation. We discuss different assay types and how they can be characterized in Aspen Assay Management™. Once an assay is characterized, we demonstrate how to use the results in an Aspen HYSYS Petroleum Refining simulation case.
Catalytic Reformer Modeling: Learn the Basics	<ul style="list-style-type: none"> Improve your refinery operations of your catalytic reformers 	Catalytic reforming converts low-octane naphtha into higher-octane reformate products for gasoline blending. There are three types of catalytic reformer: semi-regenerative catalytic reformer (SRR), continuous catalyst regeneration reformer (CCR) and cyclic reformers. Aspen HYSYS reformer model can be used to model the first two types. The Catalytic Reformer operation includes a feed

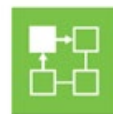
		<p>characterization system, reactor section, optional stabilizer and product mapper. The key features of the naphtha reformer include support for various reformer configurations, an unlimited number of feed streams, operating variables that can be specified to match your operation and a calibration environment that allows you to specify plant data.</p>
<p>Catalytic Reformer Modeling: Configure, Calibrate and Simulate</p>	<ul style="list-style-type: none"> • Improve your refinery operations of your catalytic reformers 	<p>Learn the following topics:</p> <ul style="list-style-type: none"> • Configuring a reformer model • Calibrating a reformer model • Converting calibration to simulation • Adding reformer model to flowsheet • Adding a feed to reformer model • Adding product fractionation to reformer model • Simulation to calibration round-trip



aspenONE® Engineering

Energy, Chemicals, Engineering and Construction

Application: **Process Safety Analysis**



DESIGN



OPERATE



MAINTAIN



Aspen HYSYS®: Process Safety

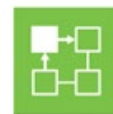
In a plant emergency, process material must be safely relieved to limit consequences. This learning path is designed for new or experienced engineers and safety engineers who need to learn how to design single or multiple relief valves for all applicable scenarios in an overpressure study. Complete this learning path to learn the BLOWDOWN® technology and how it is used to accurately determine temperature profiles during the depressurization process. You will also learn how to design a flare network to simultaneously evaluate multiple emergency scenarios, identify potential process bottlenecks and validate the capacity of the flare network to meet design constraints.

Course Name	Knowledge Delivered	Description
Aspen HYSYS: Learn the Basics	<ul style="list-style-type: none"> Understand the importance of starting your modeling with physical properties 	Get an introduction to the concept of process simulation, including its main advantages and applications, as well as provide an overview of the main uses of Aspen HYSYS. Learn the steps of creating a simple simulation of your process in Aspen HYSYS, starting with defining the physical properties required for the process and then developing and calculating the flowsheet of a simple hydrocarbon separation.
BLOWDOWN Technology Analysis: Learn the Essentials for Sizing and Rating Blowdown Systems	<ul style="list-style-type: none"> Size and rate your BLOWDOWN® process 	Learn how BLOWDOWN can be used to model the depressurization safety system in your plant. We will demonstrate the process of creating a single-vessel BLOWDOWN analysis, from configuring the layout of the piping system to adding rating information for each vessel and pipe. After defining rating information, initial conditions and heat transfer information, we will run the simulation. Results can be viewed graphically to help analyze the performance of the plant blowdown system.
PSV Sizing: Design and Revalidate PSVs on a Separator Vessel	<ul style="list-style-type: none"> Improve overpressure analysis knowledge 	Understand the basics of performing overpressure analysis using the Safety Analysis Environment in Aspen HYSYS. Review overpressure scenario identification and some common relief calculations, with application to a single separator vessel.
PSV Sizing: Learn the Essentials for Overpressure Protection	<ul style="list-style-type: none"> Essentials of overpressure analysis 	Get an introduction to the fundamental concepts and workflow for PSV sizing by using the Safety Analysis environment in Aspen HYSYS and Aspen Flare System Analyzer™. Explore the importance of overpressure protection and the use of standards and codes in designing pressure relief devices, AspenTech's streamlined solution to protect your assets against overpressure, how to use the Safety

		<p>Analysis environment and become familiar with its user interface, how to customize default values in the Preferences Manager, how to create PRD's, how to define limiting equipment for a PSV analysis, how to specify and analyze different overpressure scenarios, Design and rate a relief valve and how to transfer a PSV system to Aspen Flare System Analyzer.</p>
<p>Dynamics Relief Scenarios: Learn the Essentials for Calculating Relief Loads</p>	<ul style="list-style-type: none"> Calculate accurate relief loads 	<p>You will learn the basics of performing dynamic simulations of relief scenarios using Aspen HYSYS Dynamics. This will show a simple manually executed dynamic scenario, use of a spreadsheet in a dynamic simulation to calculate heat input for a fire and a scenario which uses the event scheduler to make several changes simultaneously.</p>
<p>Blowdown Analysis: Design and Revalidate a Blowdown Valve</p>	<ul style="list-style-type: none"> Design and revalidate a blowdown valves 	<p>Learn about blowdown valve design and revalidation using BLOWDOWN technology in Aspen HYSYS.</p>
<p>Flare Hydraulic Modeling: Learn the Essentials for Analyzing Disposal Systems</p>	<ul style="list-style-type: none"> Improve flare header design and operation 	<p>Disposing excess material through disposal systems like flare headers in chemical and hydrocarbon processing plants is an essential part of relief systems analysis. Learn about relevant process safety guidelines for designing flare headers and learn how to use Aspen Flare System Analyzer in accordance with these guidelines.</p>
<p>Blowdown Analysis: Minimize Flare Loads by Staggering Blowdown Valve Opening Sequences</p>	<ul style="list-style-type: none"> Manage and address peak flare loads 	<p>Learn to run blowdown analysis for multiple vessels and stagger the opening time of the blowdown valves to meet the peak flow constraints in the flare tip.</p>
<p>Blowdown Analysis: Use BLOWDOWN for Analyzing Pipeline Pressurization</p>	<ul style="list-style-type: none"> Enhance safety analysis with a blowdown study 	<p>See why it's important to run a blowdown study when pressurizing a pipeline and learn how to use BLOWDOWN in Aspen HYSYS to model this scenario. You will receive an overview of the theory and assumptions, such as choked flow, as you model an ethylene pipeline pressurization system in BLOWDOWN.</p>

aspenONE® Engineering

Chemicals, Engineering and Construction

 Application: **Chemical Plant Profit Improvement, Operations**
Decision Support


DESIGN



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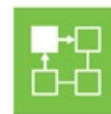

Aspen Plus®, Aspen Simulator Workbook™: Basic

This learning path is designed for new and experienced process engineers who need to address process engineering challenges in their chemical plants. Complete this learning path to learn how to use state-of-the-art physical property models and the unit operation library in Aspen Plus to optimize processes by minimizing the overall operating and capital expenses for a process. You will also learn how to accelerate equipment design and evaluate troubleshooting scenarios.

Course Name	Knowledge Delivered	Description
User Interface: Discover Optimized Workflows in Aspen Plus	<ul style="list-style-type: none"> Discover optimized workflows in Aspen Plus 	Explore how to navigate the main Aspen Plus environments and the basics of Aspen Plus. Demonstrations will be given on how to create, define, save and run flowsheet elements. Understand how to access additional resources, as well as what SM and EO solution modes are. Finally, explore a typical workflow in Aspen Plus.
Unit Operations: Familiarize Yourself with the Models Available	<ul style="list-style-type: none"> Familiarization with unit operations 	Learn about all the unit operations in Aspen Plus! We introduce all the unit operations that are built into Aspen Plus, briefly discussing how each one can be used and giving an overview of its functionalities.
Flow-sheeting: Learn the Essentials for Creating, Viewing and Modifying Flowsheets	<ul style="list-style-type: none"> Learn the basic of flowsheeting 	Here's where you can learn: <ul style="list-style-type: none"> How to create, view and modify the flowsheet How to use hierarchies as containers of blocks and streams to organize your main flowsheet How to organize various parts of the flowsheet into different section to better organize and sort different sections of the model How to use the annotation and formatting tools available in Aspen Plus
Flow-sheeting Options: Unlock Efficiency with Tips and Tricks	<ul style="list-style-type: none"> Flowsheeting best practices 	Get an overview of three blocks of flow-sheeting options: Calculator, Design Specifications and Transfer. These blocks are commonly used to facilitate the simulation process. We introduce the user interface and associated functions, while including some important notes. Applications are displayed through demonstrations to enhance the comprehension of the block capability.

<p>Data Fit: Match Simulation Models to Plant or Laboratory Data</p>	<ul style="list-style-type: none"> Leverage process data to improve your model results 	<p>Learn about the Data Fit tool in Aspen Plus, which will help you fit simulation models to existing plant or lab data through parameter estimations. This course includes multiple demos to showcase the usage of Data Fit in different example cases, as well as exercises that allow you to set up these simulations for data fitting.</p>
<p>Convergence Options: Understand the Aspen Plus Solver</p>	<ul style="list-style-type: none"> Gain an overview of Convergence Options 	<p>Gain an understanding of Convergence Options in Aspen Plus through the topics of flowsheet-level and block-level convergence, convergence options available, additional convergence options and convergence options for batch and EO (Equation-Oriented) solving. Master the convergence settings in Aspen Plus and get tips on how to manipulate the convergence to facilitate your simulation.</p>
<p>Model Analysis Tools: Find Optimums with Sensitivity and Optimization Features</p>	<ul style="list-style-type: none"> Gain insights into the integrity of your model with sensitivity and optimization features 	<p>Get familiar with the model analysis tools that are available in Aspen Plus to help you understand a process and improve its performance. A quiz and exercise will help you better master how to apply these tools when solving an engineering problem.</p>
<p>Leverage Aspen Simulation Workbook™ with Aspen Plus®</p>	<ul style="list-style-type: none"> Leverage process data that will provide improved operational decision making 	<p>Get up and running with Aspen Simulation Workbook! Start with a fresh installation and work through activating Aspen Simulation Workbook and linking it to your model, and then progress to advanced features like form controls and working with plant data tags. This is a great place to begin, whether you are just getting started using the software or you are a long-time user who would like to learn about some of the more advanced features.</p>
<p>Economic Analysis: Leverage Costing Data in Design to Reduce CAPEX</p>	<ul style="list-style-type: none"> Develop cost insight into your designs, and compare designs to optimize cost 	<p>Accelerate process development by utilizing Aspen Process Economic Analyzer™ (APEA) directly within Aspen Plus. Learn how APEA is used to map, size and evaluate the flowsheet, mapping blocks and unit operations into physical pieces of equipment. Create reports to compare different scenarios or export the model entirely to the standalone APEA environment. Apply volumetric cost models to estimate capital costs, operating costs, the payback period and other investment parameters of your process.</p>
<p>Energy Analysis: Reduce Energy Costs with Pinch Technology</p>	<ul style="list-style-type: none"> Develop energy cost and use insights into your designs, and compare designs to optimize energy savings 	<p>Learn how the Activation Dashboard of Aspen Energy Analyzer™ within Aspen Plus can provide energy savings information without impeding flowsheet simulations. Review the energy analysis form to summarize process utility usage information or investigate potential heat exchanger revamps within the Energy Analysis environment. Create and modify different scenarios for the simulation, then compare all layouts side-by-side. Finally, export the model entirely to the standalone Aspen Energy Analyzer environment to review composite curves, visualize heat exchanger networks and more.</p>

aspenONE® Engineering
 Chemicals, Engineering and Construction
 Application: **Batch Process Improvement**



DESIGN



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Aspen Plus®: Batch Process Design and Optimization

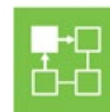
Batch processing industries are relying more and more on predictive tools to design and optimize their processes and plants. Aspen Plus offers targeted solutions to tackle these challenges. This learning path is designed for new and experienced engineers who need more insight on batch process design and optimization. Complete this learning path to learn how to develop, design and document new processes, as well as optimize existing ones, to accelerate innovation and rate of new product introduction. You will also learn recipe-based and rigorous, first-principle modeling of individual unit operations as well as entire batch and mixed batch or continuous processes.

Course Name	Knowledge Delivered	Description
Batch Flowsheets: Build Integrated Processes	<ul style="list-style-type: none"> Improve batch operations through batch flowsheet integrated processes 	<ul style="list-style-type: none"> Learn how and when to use batch flowsheets in Aspen Plus, as well as which industries typically use batch flowsheets and their key capabilities. Using the synthesis of aspirin as an example flowsheet, you will be introduced to the several functions within batch flowsheets including Unit Procedures, the Batch Process unit operation and Strip Charts.
Batch Reactors: Master Design and Recipes	<ul style="list-style-type: none"> Specify batch reactions within your batch flow-sheeting 	<ul style="list-style-type: none"> Learn how to use the BatchOp unit operation in Aspen Plus and get familiar with its capabilities. Discover how to specify the reaction(s) to be used within your BatchOp block and see several features of BatchOp unit operation, including Unit Procedures and Strip Charts.
Batch Distillation: Design with Geometry-Based Modeling	<ul style="list-style-type: none"> Include batch distillation in your batch flow sheet 	<ul style="list-style-type: none"> Find out how to model a batch distillation process by using the BatchSep block in Aspen Plus.

aspenONE® Engineering

Chemicals, Engineering and Construction

Applications: **Batch Process Improvement, Distillation Improvement**



DESIGN



OPERATE



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Aspen Plus®: Distillation

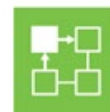
This learning path is designed for new or experienced engineers who need experience in building a representative model of a distillation column from conceptual design through detailed design and rating. Complete this learning path to learn the fundamentals of column operability and to simulate complex systems including azeotropes, three-phase regions and chemical reactions.

Course Name	Knowledge Delivered	Description
Residue Curves: Understand Two Component Separations	<ul style="list-style-type: none"> Insight into multiple component distillation parameters 	Learn about using residue curves to design feasible distillation systems. We will use the binary residue curves tool (“Binary”) to analyze the vapor-equilibrium dynamics of a mixture of components. Through the demo, we will explore the visualization tools such as “T-xy” and “y-x” to determine the presence of azeotropes, understand the effect they have on the system design and determine the composition of the distillate and the bottoms. Results will be shown graphically.
Conceptual Design: Identify Separation Schemes	<ul style="list-style-type: none"> Debottleneck distillation processes 	Discover how Aspen Distillation Synthesis can aid conceptual design based on physical properties. This includes two major components: property analysis tools and the ConSep unit operation for conceptual design. Aspen Distillation Synthesis can be applied to conceptual design for new processes as well as re-configuration of existing processes for low-cost debottlenecking and retrofits while providing insight into operational improvement.
Rigorous Modeling: Learn the Advanced Capabilities of RADFRAC	<ul style="list-style-type: none"> Address complex processes in distillation columns 	<p>Get an overview of the RADFRAC block in Aspen Plus through six topics:</p> <ul style="list-style-type: none"> Applications of RADFRAC Input Specification Design Specifications Overview of Column Hydraulic Analysis RADFRAC Convergence Results and Plotting <p>There are three demonstrations to guide you on how to setup RADFRAC block and use the design specifications to achieve your basic separation goals. You will also get familiar with the Column Hydraulic Analysis feature.</p>

Column Hydraulics: Visualize Column Operability with Trays and Packings	<ul style="list-style-type: none"> Visualize column operability with trays and packings 	Distillation column performance is evaluated by analyzing the impact of thermodynamics and vapor/liquid traffic on column internals (e.g., trays and packing). These column internals put physical limits on the operation of the distillation column which need to be considered through the design and operation of an asset. In this module, you will learn how to model a distillation column using RADFRAC in Aspen Plus, and then leverage Column Hydraulic Analysis to model the internals to visualize the column operability from a design and rating standpoint.
Distillation: Troubleshooting Column Models	<ul style="list-style-type: none"> Troubleshoot distillation column models 	Understand the best practices for converging RADFRAC distillation columns, while gaining tips and tricks to help troubleshoot failed convergence. Learn how to take advantage of RADFRAC's advanced convergence algorithms and understand error messages to improve your column's convergence.



aspenONE® Engineering
 Chemicals, Engineering and Construction
 Application: **Physical Property Estimation**



DESIGN



OPERATE



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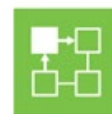
Aspen Plus®: Physical Properties

This learning path is designed for new and experienced process engineers. Complete this learning path to learn how to use physical property calculations in Aspen Plus and develop the skills and techniques required to specify and use thermodynamic property models in your simulation. You will learn how to build and validate thermodynamic models against data to better understand the thermodynamic implications of your process and improve the accuracy of your process simulation model.

Course Name	Knowledge Delivered	Description
Physical Properties in Aspen Plus: Learn the Basics	<ul style="list-style-type: none"> Understand the importance of starting your modeling with physical properties 	<p>Explore the Properties Environment in Aspen Plus through three main topics:</p> <ul style="list-style-type: none"> An introduction to the Properties Environment Components, Component Types and Databank Overview of Property Methods <p>The Properties Environment is the first stop before moving into Simulation Environment. Get familiar with all the settings required in the Properties Environment and learn to set it up according to your own needs.</p>
Thermodynamic Packages: Choose the Right Property Methods	<ul style="list-style-type: none"> Choose the right property method early in your modeling 	<p>Learn about several thermodynamic property methods in Aspen Plus, including basic concepts, commonly used models, parameters and databanks of each method. Two methods are introduced for choosing the right property methods.</p>
Property Sets: Set up and Use Property Sets	<ul style="list-style-type: none"> Learn the set-up and use of Property Sets 	<p>A Property Set is a collection of thermodynamic, transport, and other properties. These properties can be used in physical property tables and property analyses, and they are essential to advanced tools and advanced analysis. This lesson demonstrates how to set up a Property Set in Aspen Plus, as well as using Property Sets in the Simulation report to calculate stream results.</p>
Property Estimation: Estimate Missing Parameters	<ul style="list-style-type: none"> Improve your model by understanding missing parameters 	<p>Two powerful property estimation tools inside Aspen Plus are introduced: The Property Constant Estimation System and the NIST Thermo Data Engine. You will get familiar with the settings in Property Estimation and learn how to estimate missing parameters.</p>

Electrolytes: Set up and Analyze Electrolyte and Salt Systems	<ul style="list-style-type: none"> Set up of salt and electrolyte chemistry 	Learn how to model electrolytes and salts in Aspen Plus, which includes three types of solids: conventional solids, nonconventional solids and salts. The first two can be set up from the component list, while salts are set up using the Electrolyte Wizard. The focus here is how to set up salts and utilize electrolyte chemistry.
Property Analysis: Understand Your System's Chemical and Physical Interactions	<ul style="list-style-type: none"> Understand your system's chemical and physical interactions 	Explore how property models are used to represent parameters, and how to retrieve and view the parameters used within these models in Aspen Plus. You will perform analyses on pure components, binary and solubility systems, and plots will be developed for each situation. In the case of binary analysis, you will use experimental data from the National Institute of Standards and Technology (NIST) to support and validate the model contained in Aspen Plus.
Property Regression: Match Your Model to Experimental or Plant Data	<ul style="list-style-type: none"> Match your model to experimental or plant data 	Learn about data regression, including its merits, limitations and value. Explore multiple cases of data regression involving pure component, mixture, vapor-liquid equilibrium (VLE), liquid-liquid equilibrium (LLE) and three-phase vapor-liquid-liquid equilibrium (VLLE) systems. Alongside manually tabulated data, experimental data from the National Institute of Standards and Technology (NIST) ThermoData Engine is used throughout the demonstrations. Results will be shown graphically.

aspenONE® Engineering
 Chemicals, Engineering and Construction
 Application: **Polymer Process Optimization**



DESIGN



OPERATE



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Aspen Plus®: Reactor Modelling

This learning path is designed for new or experienced process engineers in Aspen Plus who need to gain experience in reactor modeling. Complete this learning path to learn the fundamentals of chemical reactors and the various reaction and reactor models inside Aspen Plus to best describe your reaction system. You will also learn how to troubleshoot models for improved convergence.

Course Name	Knowledge Delivered	Description
Reaction Models: Address a Wide Range of Reaction Types	<ul style="list-style-type: none"> Gain insight into reaction sets and classes 	Discover reaction sets and reaction classes used in Aspen Plus to model non-electrolyte systems. Review which reactor blocks in Aspen Plus require reaction sets and break down the GENERAL reaction set. You'll also learn how to customize reaction rate expressions. Follow the demonstrations to familiarize yourself with the associated forms, and then try it yourself with self-paced exercises.
Reactor Equipment: Design Kinetic, Equilibrium and Balanced Based Reactors	<ul style="list-style-type: none"> Understand and optimize multiple reactor types 	We introduce three types of reactor models in Aspen Plus: balanced-based, equilibrium-based and kinetic-based reactors. Basic concepts, configurations and applications of the typical reactors of each type are described.

ELEARNING CLASSES BY LEARNING PATH — MANUFACTURING & SUPPLY CHAIN

aspenONE® Manufacturing and Supply Chain
 Chemicals, Energy, Engineering and Construction
 Application: **Advanced Process Control**



Aspen DMC3 Builder™: Advanced Process Control (APC)

This learning path is designed for new or experienced process engineers and operators who need to learn how to use the available APC tools to create APC applications. Follow the sequence of courses ranging from basic concepts, like the APC fundamentals, to more advanced features like APC controller modeling, tuning and deployment.

Course Name	Knowledge Delivered	Description
Advanced Process Control: Get an Overview of APC Benefits, Terminology, Deployment and Sustainment	<ul style="list-style-type: none"> Learn the fundamentals of advanced process control including tools to deploy and maintain an APC application 	Explore the fundamentals of Advanced Process Control. You will learn what APC is, its benefits when implemented and where it is typically applied. You will then get an overview of useful control terminology and the implementation methodology for a new APC project. Learn about the importance of sustaining APC benefits over time. Finally, you will learn about the different software tools that are used to deploy and maintain an APC application.
APC Server System Architecture: Learn the Basics	<ul style="list-style-type: none"> Learn recommended network configurations for a typical APC deployment 	Identify recommended network configurations for a typical Aspen Advanced Process Control (APC) deployment. You will also discover the interactions between APC and Distributed Control Systems (DCS). Learn to identify the different hardware and software requirements for APC, explore the importance of virtualization in APC and discover the Software License Manager (SLM) Server setup.
APC Implementation: DCS Interfaces	<ul style="list-style-type: none"> Learn about DCS types and guidelines for implementing DCS and Aspen DMC3 	You will be introduced to various DCS types and presented guidelines to interface between the DCS and Aspen DMC3.
Aspen DMC3 Builder: Learn How to View and Process Vector Data	<ul style="list-style-type: none"> Learn how to visualize, interpolate and plot data 	Learn about the main features available in the datasets. View the ribbon elements in Aspen DMC3 Builder™. We will start with the dataset actions ribbon group. We will then explore the available features for vectors and plot types to visualize data. We will learn how to slice and interpolate data. Finally, we will explore the plot actions features.

Learn How to Convert Existing Aspen DMCplus® Controllers to Aspen DMC3 Builder™	<ul style="list-style-type: none"> Optimize data migration from Aspen DMCplus to Aspen DMC3 Builder 	Explore the optimal workflow for migrating data from an Aspen DMCplus project to Aspen DMC3 Builder. Learn how to rebuild cases and compare the model results between the original and new models before updating the master model. In addition, get familiar with the deployment workflow and how to map IO connections to tags before the controller deployment.
Aspen DMC3 Builder: Set Up Calculations	<ul style="list-style-type: none"> Create custom calculations in Aspen DMC3 Builder 	Get a valuable introduction to calculations, where they are entered, and their place in the workflow. You'll learn about the features available in the calculations view as well as how to add user entries, connect variables in the calculations to the built-in entries and user entries, and test the calculation. Also, see how to create a formula and call it from a calculation.
PID: Configure and Tune PID Loops	<ul style="list-style-type: none"> Improve PID tuning parameters using Aspen PID Watch application 	Learn how to improve the PID tuning parameters using Aspen PID Watch applications. Gain insight into the configuration of PID Loops in the online system and how to tune a PID loop using Aspen PID Watch Desktop.



aspensONE® Manufacturing and Supply Chain

Energy

Application: Refinery Blending



DESIGN



OPERATE



MAINTAIN



Aspen Refinery Multi-Blend Optimizer™ (MBO): Blend Scheduling

This learning path is designed for new or experienced blend schedulers and model administrators who need to learn how to build a model for seamless scheduling and optimization of daily blend activities. Follow the sequence of courses in this learning path to learn how to configure and build an MBO model with all the necessary components to run the optimizer process. You will learn how to import data from Orion, set baseline conditions for the simulation, define all the MBO event types necessary to develop a blend schedule, run both the MBO and SBO, use a number of different MBO reports to interpret results and troubleshoot infeasibilities, and use cases and states to run “what if” scenarios.

Course Name	Knowledge Delivered	Description
Refinery Multi-Blend Optimizer Aspen (MBO): Learn the Basics of Refinery Blending	<ul style="list-style-type: none"> Overview of the components of refinery blending 	Learn the importance of a Blend Specific Optimization Tool, the features and system structure of Aspen Refinery Multi-Blend Optimizer, data table and Excel Integration Utility, along with the different components and modes that are part of the Aspen Refinery Multi-Blend Optimizer user interface.
Model Building: Learn the Blending Model Elements in Aspen Refinery Multi-Blend Optimizer	<ul style="list-style-type: none"> Basics in blending models 	Get familiar with the concepts relevant to modeling, working with models and dynamic data.
Model Settings: Learn the Basic Setting Configurations in Aspen Refinery Multi-Blend Optimizer	<ul style="list-style-type: none"> Basics in setting configurations of refinery blending models 	Find out all about the Settings menu tabs and look at the frequently used options in the Settings.
Event Applications: Leverage Blend Events in the Refinery Scheduling Process with Aspen Refinery Multi-Blend Optimizer	<ul style="list-style-type: none"> Learn how to work with blend events 	Understand the concepts relevant to events and how to work with events in Aspen Refinery Multi-Blend Optimizer.

aspensONE® Manufacturing and Supply Chain

Energy and Chemicals

Application: Refinery Scheduling



DESIGN



OPERATE



MAINTAIN



Aspen Petroleum Scheduler™ (APS): Refinery Scheduling

This learning path is designed for new or experienced schedulers who need to learn how to use APS effectively for daily scheduling operations. Complete this learning path to learn how to use key APS database and interfaces, practice building and simulating a refinery model, perform exercises in scheduling a variety of event types, simulate/publish a schedule to the results database and discover how APS facilitates the overall planning and scheduling work process.

Course Name	Knowledge Delivered	Description
Aspen Petroleum Scheduler (APS): Learn the Basics of Petroleum Scheduling	<ul style="list-style-type: none"> Learn the basics of petroleum scheduling 	Explore the main features of Aspen Petroleum Scheduler (APS) including its structure and main functionality. We will present ways you can use APS in your daily scheduling activities and the benefits of APS interfaces and functions. Finally, we will introduce you to the general APS interface to help you quickly get started.
Aspen Petroleum Scheduler Events Interface: Discover Key Scheduling Elements	<ul style="list-style-type: none"> Learn about the events interface and other key components 	Events are the foundation of Aspen Petroleum Scheduler. Learn about the general events interface and specific key components, such as the Gantt and Trend charts.
Aspen Petroleum Scheduler Events Applications: Leverage Scheduling Events in Aspen Petroleum Scheduler	<ul style="list-style-type: none"> Basics of scheduling events 	Learn the basics of the different types of events available, as well as their primary function in Aspen Petroleum Scheduler.
Scheduling Workflows: Leverage Scheduling Best Practices for Key Scheduling Activities	<ul style="list-style-type: none"> Learn to use the scheduling process workflow 	The scheduling workflow provides high-level steps used by schedulers to accomplish their scheduling tasks. Learn how to use Aspen Petroleum Scheduler (APS) by mapping APS features to each main step of the scheduling process workflow.
Publishing: Data Publishing and Creating Reports	<ul style="list-style-type: none"> Develop reports and outputs 	Learn about the outputs of Aspen Petroleum Scheduler at a high level, the specific output tables, unit operating parameters, workflow involved in the scheduled process and different output dialog boxes.

aspenONE® Manufacturing and Supply Chain
 Energy, Chemicals, Engineering and Construction
 Application: **Refinery and Olefins Planning**



DESIGN



OPERATE



MAINTAIN



Aspen PIMS™: Refinery & Olefins Planning

This learning path is designed for new or experienced planners who need experience in planning operations in refineries and olefins plants. Complete this learning path to learn model building and solution analyzing techniques and tools in order to make the most profitable decisions for acquiring feedstocks, producing and blending products, and operating the processes.

Course Name	Knowledge Delivered	Description
How Refinery Optimization and Economics Determine and Improve Profits	<ul style="list-style-type: none"> An introduction to maximizing refinery profitability 	Learn how Aspen PIMS is used to quantify and optimize refinery economics. Get an overview of using Aspen PIMS as a tool for maximizing refinery profitability and take a quiz to test your knowledge. At the end of the training, you will take a quiz to test your knowledge of the material covered.
How Aspen PIMS Improves Refinery Profits	<ul style="list-style-type: none"> The basics of linear programming driving refinery profit improvement 	Understand the basics of linear programming and how it is applied to the economics of refineries and petrochemical plants. Some common LP issues such as infeasibilities and global versus local optima are also discussed.
Aspen PIMS: Learn the Basics	<ul style="list-style-type: none"> Learn the basics of how refineries and petrochemical plants use Aspen PIMS 	Discover Aspen PIMS and how industry uses it to add value. Review the options available within Aspen PIMS and basic features of the application. At the end of the training, you will take a quiz to test your knowledge of the material covered.
Workflows: How to Model Blends to Optimize Refinery Profits	<ul style="list-style-type: none"> Explore the fundamentals of blending in planning 	Explore the fundamentals of Blending in Aspen PIMS, including the basics of blending and the structures of various blending input tables. Get an overview of advanced blending method structures and learn about Aspen Blend Model Library — a portfolio of advanced linear and nonlinear blending correlations.
Workflows: Analyze Cases and Scenarios, Crude Indifference Values (CIVs) and Break-Even Values (BEVs)	<ul style="list-style-type: none"> Learn about basic process economics and how to evaluate new crudes 	Learn the fundamentals of valuing process streams in Aspen PIMS, including basic process economics concepts such as marginal costs, marginal revenues, marginal values and workflows to calculate these values using Aspen PIMS. Find out how to evaluate new crudes and calculate their break-even values using the Spot Crude Evaluation feature in Aspen Assay Management™. Finally, you will see an example of the Parametric Analysis feature in Aspen PIMS-AO™ to

		<p>visualize the sensitivity of crude purchases with variation in purchase costs.</p>
<p>Workflows: How to Model Crude and Manage Assays</p>	<ul style="list-style-type: none"> • Master the basics of crude assays in refinery planning 	<p>Explore the basics of crude assays, their importance in refinery planning and the fundamentals of creating and managing crude assay data in Aspen PIMS. Learn how to define logical crude units in a refinery model using the crude distillation tables, as well as how to set up and use Aspen Assay Management™ within Aspen PIMS to characterize crudes and manage assay data. Finally, you will learn how to update existing Aspen PIMS assay tables using Aspen Assay Management.</p>



aspenONE® Manufacturing and Supply Chain

Chemicals

Application: **Performance Management, Batch Performance Management, Batch OEE, Centralized Performance Monitoring**



DESIGN



OPERATE



MAINTAIN



aspenONE Process Explorer™: MES for Batch Processes

The aspenONE Manufacturing Execution Systems (MES) suite offers a full complement of applications to visualize process data in a wide spectrum of formats, analyze the data in manifold ways, execute process orders and monitor progress and performance with automatic alerts when deviations occur. This learning path is designed for new or experienced engineers and operators who work with batch processes. Complete this learning path to learn about Data Visualization, Data Discovery, Data Entry, Analysis and Process Monitoring. Some of the key concepts include the fundamentals of time-series trends, Key Performance Indicators (KPIs), Statistical Process Control (SPC), Alarms and Alerts, Pattern Search, and Overall Equipment Effectiveness (OEE) as applied to batch processes.

Course Name	Knowledge Delivered	Description
aspenONE Process Explorer (A1PE): Learn the Basics	<ul style="list-style-type: none"> Learn the basics of leveraging process data to improve operational excellence 	Learn to navigate aspenONE Process Explorer and review key capabilities of the product. Become familiar with the user interface at both the home page and standard trend environments. Explore a quick two-part demonstration, utilizing the intelligent search function and simple analytical tools such as annotations.
aspenONE Process Explorer (A1PE): Learn How to Use Search	<ul style="list-style-type: none"> Learn how to effectively search for information or content 	Learn how content or information is searched within the aspenONE Process Explorer environment.
aspenONE Process Explorer (A1PE): Learn the Fundamentals of Plot Manipulation	<ul style="list-style-type: none"> Learn the fundamentals of Plot Manipulation 	Explore some simple manipulations of plots in aspenONE Process Explorer, such as X and Y axis scaling, modification of line colors and styles. Learn about alarm states and how annotations can work hand in hand with alarms. Finally, use aggregates, or computed statistics, to modify the presentation of data. Demonstrations explore each topic.
aspenONE Process Explorer (A1PE): Learn the Fundamentals of Trends	<ul style="list-style-type: none"> Learn the fundamentals of Trends 	Learn some of the fundamental features of Basic Trends. This includes the zoom functionality, the plot modes and cart settings, the sharing and saving options for your chart, the time controls and the tag legend.
aspenONE Process Explorer (A1PE): Learn the Advanced Features in Trends	<ul style="list-style-type: none"> Learn the advanced features in Trends 	Discover the interoperability between aspenONE Process Explorer and other tools: Microsoft Excel, Aspen Process Explorer, and AspenTech MES client tools. Get familiar with advanced features built

		into aspenONE Process Explorer such as pen properties, scaling options, alarms and markers, aggregates and ad-hoc calculations.
Annotations: Create Markers, Notes and Comments on Events and Trends	<ul style="list-style-type: none"> Learn how to use markers, notes and comments in aspenONE Process Explorer 	Explore the different types of markers and how to use them in aspenONE Process Explorer. You will also learn about using Notes and Comments.
Key Performance Indicators (KPI): Learn to Configure Simple and Complex Calculations with KPIs	<ul style="list-style-type: none"> Master the basics of configuring KPIs 	Learn how to configure a KPI using both simple and complex calculations, as well as the steps needed to incorporate Aspen Calc Calculations.
Performance Management: Learn the Basics	<ul style="list-style-type: none"> Configure Aspen Manufacturing Master Data Manager 	Learn key performance management concepts, how they are configured in Aspen Manufacturing Master Data Manager (mMDM) and Aspen InfoPlus.21®, as well as how they are supported in aspenONE Process Explorer to achieve higher levels of performance for your production facility.
Continuous Processes: Set Alarms and Find Events in History	<ul style="list-style-type: none"> Set Alarms and Find Events in History 	Discover how to search for alarm events in History, how to find specific alarm events and how to discover complex types of events in History by parsing through the data history. You will also learn the purpose and use cases for entering comments as events and looking through comment history for analysis.
Learn the Fundamentals of Aspen Production Record Manager	<ul style="list-style-type: none"> Understand the basics of Aspen Production Record Manager 	Learn what the Aspen Production Record Manager (APRM) application is, its benefits, and how to use the aspenONE Process Explorer GUI to construct and configure plots.
Batch Performance Management: Learn the Basics	<ul style="list-style-type: none"> Learn key concepts to achieve higher batch performance 	Understand the key concepts and types of data that can be used to achieve higher levels of performance for batch processes through Aspen Production Record Manager (APRM), Aspen InfoPlus.21 (IP.21), and aspenONE Process Explorer.
Overall Equipment Effectiveness (OEE): Leverage aspenONE Process Explorer™ to Configure OEE Records and Events	<ul style="list-style-type: none"> Configure OEE records, events and analyze impact 	Get familiar with OEE concepts, including how to use the basic functionality of aspenONE Process Explorer to create and configure OEE records and events, as well as analyze the impact of various OEE events on plant asset utilization.
Batch Overall Equipment Effectiveness (OEE): Leverage Batch OEE in your Batch Processes	<ul style="list-style-type: none"> Leverage batch OEE in your batch processes 	Learn how the aspenONE Process Explorer OEE application can be applied to improve the overall effectiveness of your batch process.

aspensONE® Manufacturing and Supply Chain

Energy, Chemicals

Applications: Performance Management, OEE, Centralized Performance Monitoring



aspensONE Process Explorer™: MES for Continuous Processes

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Annotations: Create Markers, Notes and Comments on Events and Trends	<ul style="list-style-type: none"> Leverage how to use markers, notes and comments in aspenONE Process Explorer 	Explore the different types of markers and how to use them in aspenONE Process Explorer. You will also learn about using Notes and Comments.
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Overall Equipment Effectiveness (OEE): Leverage aspenONE Process Explorer to Configure OEE Records and Events	<ul style="list-style-type: none"> Learn the basics of OEE 	Get familiar with OEE concepts, including how to use the basic functionality of aspenONE Process Explorer to create and configure OEE records and events, and analyze the impact of various OEE events on plant asset utilization.
Statistical Process Control (SPC): Monitor and Control a Process with Control Charts	<ul style="list-style-type: none"> Learn how to use control charts 	Learn the concepts of Statistical Process Control (SPC) and how to use control charts to monitor and control a process using aspenONE Process Explorer.
Pattern Matching: Learn the Fundamentals of Pattern Recognition and Pattern Discovery in aspenONE Process Explorer	<ul style="list-style-type: none"> Learn the fundamentals of pattern matching 	Discover the pattern matching features in aspen One Process Explorer (A1PE). You will learn the applicable uses for pattern recognition and the value of the fit percentage, as well as the parameters that need to be specified for Pattern Discovery and the differences between Pattern Discovery and Patter Recognition. You will also learn how to interpret patterns and analyze process conditions during a specific pattern type.

AspenTech is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets faster, safer, longer and greener.

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