



The **Binary Distillation Course** provides comprehensive knowledge on the distillation components, principles, control and normal operations. Also, some examples are provided on troubleshooting. The knowledge gained from the Computer Based Tutorial is reinforced and enhanced using a Universal Simulator on 'Binary Distillation'.

	 Tutorials	 Simulator Exercises										
ENTRY	CBT: Distillation Fundamentals <ul style="list-style-type: none"> - Ch.1: Overview - Ch.2: Basic Principles - Ch.3: Distillation Control 	Simulator: Binary Distillation: Unit Overview and Control <table border="1"> <tr> <td>- Process and Unit Familiarization</td> <td><i>Learn the process and the role of each equipment and unit's key controllers.</i></td> </tr> <tr> <td>- Exercise 1: Tower Tray Temperature Control</td> <td><i>Relationship between the 'product composition' and the 'tower temperature' at a constant 'tower top pressure'.</i></td> </tr> <tr> <td>- Exercise 2: Tower Pressure Control</td> <td><i>Relationship between the 'product composition' and the 'tower pressure' at a constant 'tower tray temperature'.</i></td> </tr> </table>	- Process and Unit Familiarization	<i>Learn the process and the role of each equipment and unit's key controllers.</i>	- Exercise 1: Tower Tray Temperature Control	<i>Relationship between the 'product composition' and the 'tower temperature' at a constant 'tower top pressure'.</i>	- Exercise 2: Tower Pressure Control	<i>Relationship between the 'product composition' and the 'tower pressure' at a constant 'tower tray temperature'.</i>				
	- Process and Unit Familiarization	<i>Learn the process and the role of each equipment and unit's key controllers.</i>										
- Exercise 1: Tower Tray Temperature Control	<i>Relationship between the 'product composition' and the 'tower temperature' at a constant 'tower top pressure'.</i>											
- Exercise 2: Tower Pressure Control	<i>Relationship between the 'product composition' and the 'tower pressure' at a constant 'tower tray temperature'.</i>											
INTERMEDIATE	CBT: Distillation Operations <ul style="list-style-type: none"> - Ch.4: Startup Operation - Ch.5: Normal Operation - Ch.6: Shutdown Operation 	Simulator: Binary Distillation: Normal Operations & Battery Limits <table border="1"> <tr> <td>- Exercise 3: Reflux Flow</td> <td><i>Learn the effect of a change in the tower reflux flow.</i></td> </tr> <tr> <td>- Exercise 4: Feed Flow</td> <td><i>Learn the effect of a change in the tower feed flow.</i></td> </tr> <tr> <td>- Exercise 5: Feed Composition</td> <td><i>Learn the effect of a change in the tower feed composition.</i></td> </tr> <tr> <td>- Exercise 6: Feed Temperature</td> <td><i>Learn the effect of a change in the tower feed temperature.</i></td> </tr> <tr> <td>- Exercise 7: Shutdown Operation</td> <td><i>Learn to perform a normal shutdown of a binary distillation unit.</i></td> </tr> </table>	- Exercise 3: Reflux Flow	<i>Learn the effect of a change in the tower reflux flow.</i>	- Exercise 4: Feed Flow	<i>Learn the effect of a change in the tower feed flow.</i>	- Exercise 5: Feed Composition	<i>Learn the effect of a change in the tower feed composition.</i>	- Exercise 6: Feed Temperature	<i>Learn the effect of a change in the tower feed temperature.</i>	- Exercise 7: Shutdown Operation	<i>Learn to perform a normal shutdown of a binary distillation unit.</i>
- Exercise 3: Reflux Flow	<i>Learn the effect of a change in the tower reflux flow.</i>											
- Exercise 4: Feed Flow	<i>Learn the effect of a change in the tower feed flow.</i>											
- Exercise 5: Feed Composition	<i>Learn the effect of a change in the tower feed composition.</i>											
- Exercise 6: Feed Temperature	<i>Learn the effect of a change in the tower feed temperature.</i>											
- Exercise 7: Shutdown Operation	<i>Learn to perform a normal shutdown of a binary distillation unit.</i>											

Tutorials		Simulator Exercises	
EXPERT	CBT: Distillation Troubleshooting		
	- Ch.7: Troubleshooting		
	Simulator: Binary Distillation: Troubleshooting Operations		
	- Exercise 8: BL: Loss of Cooling Water	<i>Learn to diagnose a cooling water failure and take appropriate counter measures.</i>	
	- Exercise 9: Reflux Pump Motor Failure	<i>Learn to diagnose a pump failure and take appropriate corrective measures.</i>	
	- Exercise 10: Reflux Drum Level Transmitter Drifts	<i>Learn to diagnose a transmitter drift.</i>	
	Simulator: Binary Distillation: Critical Thinking Exercises		
	<i>Perform a 'root cause analysis' to identify the issue and conclude on appropriate actions. Develop skill in good reasoning.</i>		
	- Exercise 11: Scenario A		
	- Exercise 12: Scenario B		
Simulator: Competency Assessment: Level-1 Trainee Performance			
<i>Identify the malfunction and take appropriate corrective action.</i>			
- Scenario A			
- Scenario B			
- Scenario C			
- Scenario D			
Simulator: Competency Assessment: Level-2 Trainee Performance			
- Scenario E	<i>Identify the malfunction and take appropriate corrective action.</i>		
- Scenario F: Startup from Cold Condition	<i>Perform the startup operation from the cold condition.</i>		