This course provides learners with an underpinning knowledge on separation using a variety of rich multi-media techniques. It explains the purpose and principles of separation and reservoir fluids. It also examines: different types of separators; separator construction; and, separator control and operation.

**Learning Methods**

- e-learning

**Course Duration**

2 hours 50 minutes

**Targeted Participants**

These e-learning courses are aimed at Technicians working in the upstream Oil and Gas Industry. The materials are suitable for new starts to the industry or long-term employees who wish to gain formal vocational qualifications. This course Leads to a BTEC Advanced Award in Oil and Gas Extraction Theory.

**Business Benefits of E-learning**

Our e-learning courses will not only improve your business efficiency and employee performance, but will also reduce training costs and down time compared to traditional learning, whilst improving knowledge retention and compliance.

**Features**

- Capability for individual companies to add plant-specific materials (video clips / presentations / web-links / pdfs etc.)
- E-learning modules tie into paper-based modules covering Mathematics and Communications and IT skills
- Bookmarking allows learners to leave the course and re-join at the same point
- SCORM™ 1.2 compliant
- Leads to a BTEC Advanced Award in Oil and Gas Extraction Theory
- Continuous and final assessment
- Interactive 3D models as well as consistent use of detailed animated graphics to represent the concepts being discussed
- Technical content geared for the target audience and presented in a clear and concise manner
- Fully accessible glossary that can be accessed at any point throughout the course
- Modules can be purchased independently or as a complete package
- Integrated trainee results management system
- Courses have been produced in collaboration with a recognised training leader in the field of Oil and Gas

**Course Content**

- Module 1: The Purpose of Separation
- Module 2: Reservoir Fluids
- Module 3: The Principles of Separation
- Module 4: Types of Separators
- Module 5: Separator Construction
- Module 6: Multi-Stage Separation
- Module 7: Separator Control
- Module 8: Separator Operation
- Module 9: Problems Associated with Separators
- Module 10: New Separation Technology

**Learning Objectives**

- Explain why gas is compressed
- Identify the different types of compressors
- Explain how gas is compressed in a reciprocating compressor
Separation

- Explain how pulsation is removed
- Explain how gas is compressed in a centrifugal compressor
- Identify the influences that determine the type of compressor to be used
- Identify the various components of a typical Gas Compression System
- Recognise the LP, MP and HP Compression Systems.
- Explain the basic Gas Injection System
- Explain how and why the gas is supplied to the Gas Lift System
- Describe the basic Fuel Gas System
- Identify the components of a Single Stage Reciprocating Compressor
- Explain the operating principles of a Double Acting Compressor
- Explain the purpose of Multistage Compressors
- Explain the reasons for Interstage Cooling
- Explain how to determine the efficiency of a Reciprocating Compressor
- Explain capacity control and unloading devices
- Explain the principles of cooling and lubrication
- Describe a Frame Type Compressor
- Describe the four basic separation processes that are completed using separators
- Identify the different types of separators
- Discuss what a caisson is and how it operates
- Describe what a Free-Water Knock Out Separator is and how it operates
- Describe what a tilted plate separator is and how it operates
- Describe what a slugcatcher is and how it operates
- Describe what a bubble agitator is and how it operates
- Explain what a two-phase separator is and how it operates
- Explain what a three-phase separator is and how it operates
- Describe how vertical and horizontal separators are and identify when they are used for separation
- Describe what filters are and identify when they are used for separation
- Describe what a molecular sieve vessel is and how it operates
- Describe what a heater treater is and how it operates
- Describe what a hydrocyclone is and how it operates
- Discuss the basic principles of separator design and construction
- Identify the ten basic functions of a separator
- Identify what a centrifugal separator is and how it operates
- Discuss the importance of achieving a state of equilibrium for multi-stage separation
- Describe how to achieve equilibrium for multi-stage separation
- Identify the design constraints associated with designing separators
- Discuss the need for control in the separation process
- Describe the key components of a control loop
- Identify the four process control parameters that operate in a separator system
- Identify how pressure is monitored and controlled
- Identify how levels are monitored and controlled
- Identify how flow is monitored and controlled
- Identify how temperature is monitored and controlled
- Identify the purpose of alarms in control instrumentation
- Discuss the principles of separator shutdown
- Discuss the effects of unit and process shutdowns on separator shutdown
- Identify the importance of providing and following company procedures for separation
- Outline the separator start up procedure
- Describe start up through a test separator
- Describe start up after a short term shutdown
- Describe the main problems that can occur during the separation process
- Describe what is meant by the term carry over and identify the main causes of carry over
- Describe what is meant by the term oil in the gas stream and identify the main causes of this type of carry over
- Describe what is meant by the term gas break through and identify the main causes of gas break through
Separation

- Identify the main causes and consequences of produced water in the oil stream
- Identify the main causes and consequences of oil in the water stream
- Identify the purpose of maintenance override switches (MOR) in separators
- Describe the main causes and effects of blockages in the separator inlet or outlet streams
- Identify how emulsions form, stabilise and affect the separation process
- Identify how froth and foam form, stabilise and affect the separation process
- Identify that slug formation can affect the separation process
- Identify how slugs form and affect the separation process
- Identify the key functions of the slugcatcher
- Explain how a typical slugcatcher is constructed and operated
- Explain what hydrates are, how they form and how they affect the separation process
- Identify the key technological advances in extracting oil and gas
- Identify new subsea and downhole separation technologies
- Identify what a twister supersonic separator is and how it operates
- Discuss the disposal of, and new uses for, produced water

To request a demonstration or to purchase this course please contact your Atlas Account Manager or email info@atlasknowledge.com