Oil and Gas Metering, Sampling and Pigging

**Duration:** 150 mins  |  **Level:** Intermediate  |  **Pass mark:** 80%

Course Description:

**Who is the course for?**

This course is aimed at individuals working in the oil and gas industry who are required to carry out metering or sampling, or to be involved in pigging operations.

**Is previous experience required?**

It is expected that as a participant in this course you will have received formal training for your role and that you hold suitable qualifications.

**How will the course benefit me?**

Metering, sampling and pigging are carried out at oil and gas production facilities to monitor the quality and quantity of oil and gas produced. This course will identify how and why each of these operations are carried out on site. You will also learn about the differences between oil metering and gas metering.

The knowledge gained in this course will help you understand the need to ensure product quality, and will enable you to carry out metering, sampling and pigging correctly and safely.
How will the course benefit my company?

By correctly monitoring production fluids, you can help ensure that your company meets its product specifications and its legal reporting obligations.

What standards are referenced in the course?

This course does not refer to specific legislation or laws but is written to current HSE guidelines, industry best practice and standard operating procedures.

Is there an assessment?

Once you have completed the course, you will be asked a series of questions to check your knowledge and understanding. These are based on the learning objectives for the course and have a pass mark of 80%.

Learning Objectives:

• Define metering
• Explain why flow is measured
• Identify the two main types of metering
• Explain briefly the two main types of metering
• Explain the importance of metering in the oil and gas industry
• Identify the different types of uncertainties in measurement systems
• Identify the different principles of flow measurement
• Describe the different principles of flow measurement
• Identify the principles behind gas behaviour and compressibility
• Describe the principles behind gas behaviour and compressibility
• Define the Bernoulli principle
• Explain how the Bernoulli principle is applied to fluid flow measurement
• Identify the main gas flow and gas density measuring devices
• Describe the main gas flow and gas density measuring devices
• Explain how gas flow and gas density measuring devices operate
• Explain the use of multiple stream applications
• Describe how gas metering computers are used
• Explain the operation of a typical gas metering application for export gas
• Identify the main liquid flow measuring devices used in fiscal metering
• Describe the main liquid flow measuring devices used in fiscal metering
• Describe the principle of operation of the commonly used oil flow measuring devices for fiscal metering

• Describe bi-directional and master meter provers

• Explain how bi-directional and master provers operate

• Identify the main liquid density and specific gravity measurement devices

• Describe the usage of oil metering computers

• Define mass flow and mass balance

• Explain how mass flow is calculated for oil and gas metering systems

• Explain how mass balance is calculated across a typical oil and gas operation

• Describe the principles and application of metering allocation

• Describe the tax allocations associated with metering allocation

• Identify typical oil sampling methods

• Describe the typical oil sampling methods

• Describe the components of the automatic sampling system

• Describe the principles and application of metering allocation

• Describe the laboratory treatment and measurement applied to typical oil samples

• Define the term pigging

• Explain the purpose of pigging

• Identify the different types of pigs

• Explain the purpose of different types of pigs

• Identify the equipment used in pigging operations

• Explain the purpose of pig launchers