

Scandinavian Academy Training Center

Mobile | 00966536473335 : Mobile | 00966112695229 : Phone : 00966552365295
Email | info.en@scandinavianacademy.co Web site:https://scandinavianacademy.co/en :
Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5 | P.O.BOX : 13224

Course: Measurement Uncertainty

Code	City	hotel	Start	End	price	Language - Hours
OG-808SA	Al Baha	Hotel Meeting	2027-03-21	2027-03-25	13950 SR	En - 25

PROGRAMME SUMMARY

In oil and gas industrial situation where it is required to measure and control some aspect of a process, it is often the application of the knowledge and the ingenuity of the Engineer or Technician which is relied upon to solve the measurement and control problem. Therefore, a fundamental understanding of the principle of operation of a range of sensors / transducers and instrumentation techniques applicable in an industrial situation combined with an understanding and knowledge of Process control techniques and tuning methods equips the Engineer or Technician with the necessary skills and makes them invaluable in their workplace.

Delegates will investigate the operating principles and concepts of instrumentation and measurement systems and will acquire the knowledge relating to the characteristics and properties of the variables being measured.

No measurement is entirely precise, no matter how excellent the instrument or how perfect the conditions for measurement. This inaccuracy may be due to a variety of factors, such as how the instrument is used, the person carrying out the measurement, the procedure employed, environmental conditions, and more. It is important to understand the associated uncertainty because it is crucial to the quality of the process and the goods and services provided. While there are numerous guides and standards available, they are primarily mathematical. As a result, it is critical to first comprehend the concept and significance of measurement uncertainty.

This Measurement Confidence course introduces the foundational concepts of measurement traceability, measurement assurance and measurement uncertainty as well as provides a detailed review of applicable requirements from ISO/IEC 17025 and ISO/IEC 17020. Participants will learn how to establish and demonstrate metrological

traceability, will review and consider various measurement assurance activities and will be provided with a practical approach for evaluating/estimating and reporting measurement uncertainty. Additionally, metrology terminology as it relates to measurement traceability and uncertainty will be discussed.

OBJECTIVE

- Give an understanding of the principles of operation of a range of sensors and transducers
- By using a hands-on approach, enable the delegate to investigate the operation of an instrumentation system through designing, building and testing typical sensor combined with appropriate signal conditioning circuits
- To allow the delegate to become familiar and confident with a range of measurement techniques
- To understand the concepts of Process Control and acquire the knowledge relating to the characteristics and properties of a process variable being measured
- To become familiar and knowledgeable with PID control and develop the ability to ‘tune’ a process control system using PID control
- To have the confidence and knowledge to apply the above techniques and principles to solve an unfamiliar and bespoke measurement situation in the workplace
- Identify sources of measurement uncertainty
- Implement good measurement practices
- Read and understand an uncertainty statement
- Understand the process of calculating an expanded uncertainty
- Distinguish concepts such as ‘standard deviation’, ‘standard uncertainty’ and ‘expanded uncertainty’
- Understand a coverage interval with a desired coverage probability
- Understand how risks are estimated to sustain good measurement-related decision-making.
- Acquire knowledge regarding the relevant ISO/IEC 17025 and ISO/IEC 17020 requirements for measurement traceability, assurance and uncertainty

- Learn terminology used in ISO/IEC 17025 and ISO/IEC 17020 as it relates to measurement traceability, uncertainty and assurance
- Gain an understanding about the interrelationship between measurement traceability, measurement assurance and measurement uncertainty

WHO SHOULD ATTEND

- Technical managers who manage and evaluate uncertainty
- Technical team members who are part of the evaluation and estimation process
- Practitioners of uncertainty budgets looking to develop their skills and understanding.
- Electronic and Engineers and Technicians
- Chemical Engineers and Technicians
- Electrical Engineers and Technicians
- Electronic Design Engineers
- Instrumentation Technicians
- Electricians
- Installation and Maintenance Technicians
- Instrument and Process Control Technicians
- Instrument Fitters
- Maintenance Engineers
- Mechanical Engineers and Technicians
- Operations Engineers
- Process Technicians
- Production Professionals
- System Integrators
- Other Professions (Engineers, Technicians) involved in the Process Industry who require an appreciation and understanding of the techniques used in Process Measurement and Control

THE SCIENTIFIC CONTENT OF THE PROGRAM

Introduction to Process Control:-

- On/Off
- Proportional
- Integral
- Derivative
- Pneumatic Control
- Operation of the nozzle and flapper value
- Bellows receiver unit.

Measurement of "Pressure"

- Units and Pressure Standards
- Construction and Operation of typical industrial pressure instruments
- Calibration of pressure transducers and transmitters

Measurement of "Level"

- Units and Level Standards
- Construction and Operation of typical industrial level instruments
- Calibration of level transducers and transmitters

Measurement of "Flow"

- Units and Flow Standards
- Construction and Operation of typical industrial flow instruments
- Calibration of flow transducers and transmitters

Measurement of "Temperature"

- Units and Temperature Standards
- Construction and Operation of typical industrial temperature instruments
- Calibration of temperature transducers and transmitters.

Measurement of electric units:-

- Voltage (V).
- Current (I).
- Resistance (R).
- Power (P).

Measurement Uncertainty:-

- Describing what Measurement Uncertainty is
- The principles and the need for Measurement Uncertainty
- The role in ISO/IEC 17025:2017 testing and calibration
- Measurement Uncertainty on certificates and reports
- Application to decision rules
- Explanation of some confusing terms

The Scandinavian Academy for Training Center adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training Center.

Program Timings: 9:00 AM to 2:00 PM

The program includes:

- A daily buffet provided during the sessions to ensure participants comfort.
- A closing ceremony on the final day to distribute certificates and celebrate participants achievements.
- **Note: All prices are exclusive of 15% Value Added Tax (VAT).**

Our Success Partners

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المملكة العربية السعودية - الرياض - حي الخليج - شارع الشيخ عبد العزيز بن عبد الرحمن بن بشر - 13223 - مكتب رقم 5
Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5