

Domain

Instrumentation and Control

Title:**Apply knowledge of Distributed Control Systems****Level: 4****Credits: 8****Purpose**

This unit standard specifies the competencies required to apply knowledge of Distributed Control Systems. It includes demonstrating an understanding of basic concepts of Distributed Control Systems (DCSs), designing and Setting up DCSs and Configure DCSs. This unit standard is intended to those who work in a instrumentation and control environment

Special Notes

1. Entry information:

Prerequisite

- *Unit I&C24 - Apply knowledge of combinational digital electronic circuits*

2. Assessment evidence may be collected from a real workplace or an appropriate simulated realistic environment in which Instrument and Control operations are carried out.

3. To demonstrate competence, minimum evidence of understanding, designing, configuring and testing a Distributed Control System as per functional specification requirement, ensuring economic viability.

4. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' guidelines and instructions

4. Glossary of terms:

- *specifications'* refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements
- *Historian capacity'* refer to the data kept in the archive for a defined period of time
- *Security configuration'* refer to the administration of user password and access levels
- IEC 61499 – standard for function block diagrams
- IEC 61131- standard for programmable logical controller

5. Regulations and legislation relevant to this unit standard include the following:

- Labour Act 2007, No. 11, 2007
- IEC 61499
- IEC 61131
- Regulations relating to the health & safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007
- And all subsequent amendments

6. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na.

Elements and Performance Criteria

Element 1: Demonstrate an understanding of basic concepts of Distributed Control Systems (DCSs)

Performance Criteria

- 1.1 Types of DCSs supplied by various manufacturers are identified and the differences in their architecture and capabilities explained
- 1.2 Basic components of computer based measurement and control systems are defined based on their functionality
- 1.3 The Advantages and disadvantages of DCS systems are outlined
- 1.4 DCS selection criteria is applied according to regulatory requirement and job instruction
- 1.5 Roles of computers in measurement and process control are explained

Element 2: Design and Set up DCSs

Performance Criteria

- 2.1 Engineering work station is designed and set up according job requirements and manufacture's specifications
- 2.2 Data server and historical archive processes is set up as per archive specific requirements and historian capacity
- 2.3 Process control unit is set up according to the design and functional specification and system requirement
- 2.4 DCSs networking communication is set up according to communication protocol (set of rules) and work place requirements
- 2.5 operator inter-phase is set up according to ergonomic requirements, manufacture's specifications and work place requirements

Element 3: Configure DCSs

Performance Criteria

3.1 Architecture' configuration is configured according job requirements and manufacture's specifications

3.2 device diagram configuration is configured as per the job instruction

3.3 configure control devices are configured as per manufactures' requirements

3.4 alarm and logging configuration is configured as per job instruction and work place requirement

3.5 security configuration is configured as per job instruction and work place requirements

Registration Data

Subfield:	Electrical Engineering
Date first registered:	
Date this version registered:	
Anticipated review:	
Body responsible for review:	Namibia Training Authority