

Domain**Instrumentation and Control****Title:****Apply Knowledge on Supervisory Control and Data Acquisition (SCADA)****Level: 5****Credits: 6****Purpose**

This unit standard specifies the competencies required to Apply Knowledge on Supervisory Control and Data Acquisition (SCADA). It includes demonstrate knowledge of SCADA, Design and Set up SCADA systems and Configure SCADA Hardware and firmware. This unit standard is intended to those who work in a instrumentation and control environment

Special Notes

1. Entry information:

Prerequisite

- Apply knowledge of Programmable Logic Controllers
- Unit I&C37 - Demonstrate knowledge of data communication
- Apply knowledge of Distributed Control Systems

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 SCADA, including maintenance and fault finding

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
- IEEE C37.1 - Institute of Electrical and Electronics Engineers (standard for SCADA system and automation)

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

- Labour Act 2007, No. 11, 2007
- IEEE C37.1
- 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 knowledge of SCADA

Range

SCADA systems may include but not limited to providing the path way for communication between the master station and local controllers, such as PLCs.

The master station gathers data from various PLCs and operator interface for display of information and control of the remote sites

Performance Criteria

- 1.1 SCADA components are named and their functions are described.
- 1.2. SCADA functionality is described in terms of operator interface functions.
- 1.3. Limitations of panel mounted discrete controllers are identified.
- 1.4. Advantages of SCADA are described.
- 1.5. SCADA system interconnection methods are described and compared.
- 1.6. Cable types for connections are described and compared.
- 1.7. Basic SCADA systems are described with the aid of diagrams.
- 1.8. SCADA is described in terms of maintenance and fault diagnostic functionality.

Element 2: Design and Set up SCADA systems

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 SCADA 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 SCADA Hardware and firmware

Performance Criteria

- 3.1 The hierarchies of complex SCADA systems are defined and explained
- 3.2 Key features of SCADA software are defined
- 3.3 The essential items of SCADA system hardware and firmware are described and their purpose is explained
- 3.4 Fieldbus systems are incorporated in the automation system architecture.

Registration Data

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