SAQCC FIRE

D&GS TRAINING SUB COMMITTEE

COURSE CURRICULUM

COURSE	**Fire Detection Principles**	
ORIGINATOR	**Nichola Allan**	
DATE	23rd August 2013	
Amendment 1	5th October 2013	Technical changes - Issued
Amendment 2	6th October 2013	Word change
Issued	30th October 2013	Issued

EQUIVALENT TRAINING COURSES AVAILABLE		
TITLE	TRAINING SCHOOL	CONTACT DETAILS
Introduction to fire detection	Fire Systems Training	Keith Norgate

STATUS OF CURRICULUM - Issued

EQUIVALENT UNIT STANDARD	

SAQA Unit Standard 254317- Install fire alarm and detection systems covers some of the elements expected within this unit

PURPOSE OF TRAINING COURSE

This training course is for learners to gain knowledge of the fire detection principles based on the recommendations detailed in the relevant SANS fire detection standards.

Learners who have completed this course will have a thorough knowledge and understanding of the key principles of fire detection.

LEARNING ASSUMED TO BE IN PLACE

This course assumes the learner is already proved competent in:
Safety & Workshop Practice
Cabling and Conduit
Basic electrical and electronic theory

OUTCOMES REQUIRED

Topics Covered:

1. Basic chemistry of combustion
2. Fire detection devices
3. Manual Call points
4. Audible and Visual alarms
5. System selection
6. System Interlocks
7. System Testing and fault finding

Outcome 1: The basic chemistry of combustion

Learning Outcomes:

The learner should be able to understand:

- Basic chemistry of combustion
- Different types of fires
- Characteristics of fires dependent on type i.e. heat, smoke, flame, gases
- Identify different fire risk zones

Assessment:

- Learner to understand how fires start and how they present.
- Understanding fire characteristics and their associated senses

Outcome 2: Automatic Fire detection devices

Learning Outcomes:

The learners should be able to understand:

- Introduction to types of fire detection devices
  - Heat detection and the difference between fixed temperature and rate of rise
  - Smoke detectors, both optical and ionization
  - Multi sensors
  - Aspirating systems
  - Flame detectors

    - Beam detectors
    - Linear heat cables
- Detector usage and suitability in line with fire risk
- Understanding each technology and its main use and limitations
- Spacing and siting of detectors
- Safe disposal of old detectors
- Special precautions for hazardous areas
    - Intrinsically safe devices

Assessment:

Learner to describe the various types of detectors available and identify which applications are suitable for a particular use and where they should be installed.

Outcome 3: Manual Fire detection devices

Learning Outcomes:

The learner should be able to understand:

- Manual call points
    - Importance of Call points
    - Components and operation
    - Single and dual action units and where they are likely to be used
    - Colour code of units dependent on use; red, green, blue, yellow, white
    - General mounting guidelines as per SANS

Assessment:

Learner to identify suitable use and installation of manual call points.

Outcome 4: Audible and visual alarms

Learning Outcomes:

The learner should be able to understand:

- The importance of alerting people to a fire
- The different types of alert devices
    - Sirens and bells
    - Staged evacuation
    - Visual warnings
    - Voice alarm systems
- To match the appropriate alert device to the environment
- Understand decibel readings
- Alarms for hearing impaired persons
- Alarms in hospitals

- Remote signalling systems for unoccupied buildings
  - Remote radio links
  - GSM communications
  - Telephone Modems
  - Email
  - PLC Systems (industrial)
- Advantages and disadvantages of the various remote monitoring systems
- Repeater panels or remote display units

Assessment:

- Learner to demonstrate his knowledge of selecting an appropriate alert device
- Learner to list the difference between the different remote monitoring methods and justification for specific selections

Outcome 5: System selection

Learning Outcomes:

The learner should be able to understand:

- Introduction to manual and automatic fire detection systems
- Understand the difference between conventional and addressable systems
- Single knock and double knock operation
- Control panel requirements and selection criteria
- Appropriate selection of power supply and back-up power
- Overview of wiring systems, conventional, Addressable Class A and Class B

Assessment:

Learner to describe the selection of fire detection system.

Outcome 6: Interlocks

Learning Outcomes:

The learner should be able to understand:

- monitoring sprinkler activation,
- monitoring fire doors
- Monitoring gas systems
- Shutting down air conditioning
- Lift homing
- Stair pressurisation fans
- Smoke extraction fans and vents

Assessment:

Learner to describe the importance of monitoring and control of other fire related building services.

Outcome 7: System testing and fault finding

Learning Outcomes:

The learner should be able to understand:

- Testing of the various detection devices
- Clearing panel of any wiring faults
  - Cable continuity
  - Earth faults
  - Open circuits
  - Short Circuits
- Testing of alerts and outputs

Assessment:

Learner to describe the setting up and testing selected detection devices.