MCD Training Centre
Refrigeration & Air-conditioning dept
58 Umgeni street
Three Rivers
Vereeniging

Jannie Kotze
Cell - 083 377 1713
Tel / Fax - 016 454 0201
Fax -2-Email – 086 625 3242
E-mail - jalkot@iafrica.com

Training Centre is at the back of KFC in Three Rivers.

Next to Telkom

Air-conditioning, Refrigeration & Ventilation

Short Courses

2014

UNIT STANDARD

Basic Refrigeration: (10 days)

Entry Requirements: ALL candidates must have basic literacy and numeracy.

Objective: This course is the first phase of training in the fields' air-conditioning and refrigeration. Air conditioning installation & maintenance, Basic Electrical and Commercial course follow. Basic Refrigeration can be used as a stand-alone course. No previous knowledge or experience is required.

Outcomes: Upon successful completion of this course the student will have the understanding and some basic practical experience to perform the following jobs:

- 116236 - Define and explain the principles of thermodynamics and carry out basic calculations involving heat.
- 262177 - Explain the operation of basic vapour compression refrigeration systems, and identify and explain the function of the components and accessories as well as their retrieval and storage procedures.
- 116335 - Identify, use and maintain refrigeration trade specific tools and instruments.
- 116223 - Demonstrate knowledge of the OHS Act as it applies to employees in the air-conditioning, refrigeration and ventilation industries.
- 116224 - Sketch and construct electrical circuits applicable to single-phase air conditioning, refrigeration and ventilation installations.
- 116230 - Identify materials, piping, fitting, jointing methods and insulation materials used for air-conditioning and refrigeration installations.
- 116229 – Join and install refrigerant piping
- 116334 - Identify refrigerant containers, explain handling procedures and discuss the use of refrigerants.
- 116355 - Handle refrigerant containers and transfer refrigerants into service cylinders.
- 116700 - Maintain safety in the handling group 1 and 2 refrigerants.
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Examples of skills: pipe work/ recovery/ flushing/ evacuation/ flaring/ swaging/ charging/ testing of compressors (electrical & mechanical), capacitors/ tools and instruments/ safety/ refrigerants/ refrigerant containers.

Fault Finding of: Split, Console & Window Units: (5 days)

Entry Requirements: ALL candidates must have basic literacy and numeracy. The Basic Refrigeration Course is recommended prior to Installation and Fault Finding course. This training excludes repair of printed circuit boards.

Objective: This course includes basic theory of the functions of the components as well as the practical safety and installation procedures of the above-mentioned units. This course is the first phase of training in the fields unitary air-conditioning systems.

Outcomes: Upon successful completion of this course the student will have the understanding and the basic practical skills (competencies) needed on the worksite for the installation and fault finding of air conditioning unitary systems. The student will perform on actual installations as part of training.

- 116234 – Identify and apply fixing methods for piping, ducting and equipment used in the trade of air-conditioning, refrigeration and ventilation.
- 116709 – Explain the operation of the vapour compression refrigeration cycle, and identify and explain the operation of the components and the associated controls, safety devices and defrost systems
- 116710 – List the commonly applied air-conditioning systems, state their application and explain their operation.
- 116697 – Fault finding an air-conditioning, refrigeration or ventilation plant stoppage or failure.
- 116712 – Dismantle and assemble air conditioning and refrigeration equipment.

Examples of skills: For Window/ Console/ and split unit air conditioning: installation pipe work/ recovery/ flushing/ evacuation/ flaring/ swaging/ charging/ testing/ tools and instruments/ safety/ refrigerants/ refrigerant containers.

Copper Piping (Semi-skill): (3 days)

- 116335 - Identify, use and maintain refrigeration trade specific tools and instruments.
- 116230 - Identify materials, piping, fitting, jointing methods and insulation materials used for air-conditioning and refrigeration installations.
- 116229 – Join and install refrigerant piping.

Examples of skills: For Window/ Console/ and split unit air conditioning: installation pipe work/ recovery/ flushing/ evacuation/ flaring/ swaging/ charging/ testing/ tools and instruments/ safety/ refrigerants/ refrigerant containers.

Basic Electrical Course: (10 days)

Entry Requirements: All candidates must have basic literacy, numeracy and the Basic Refrigeration Course.

Objective: This course is an electrical course specifically developed for persons in the air conditioning and / or refrigeration industry. The course compliments the basic refrigeration course as well as the air conditioning course. On successful completion of this course the student will have the necessary electrical knowledge and practical skills to perform most of the electrical duties as may be required from a person working in the air conditioning and refrigeration fields. (Electrical faultfinding and installation)

Outcomes: Upon successful completion of this course the student will have the understanding and the practical skills (competencies) needed on the worksite including single and three phase, cables, tools and instruments, volt drop, compressor / motor connections, diagrams etc.

- 116232 – Demonstrate understanding of fundamentals of electricity and its application in air conditioning, refrigeration and ventilation equipment.
- 116241 – Work safely and use safety equipment when carrying out mechanical or electrical work on air conditioning, refrigeration and ventilation installations.
- 116243 – Install, connect and maintain electrical cables and conductors as applied in air conditioning, refrigeration and ventilation installations.
- 116244 – Sketch and construct electrical circuits applicable to single-phase air conditioning, refrigeration and ventilation installations.
- 116461 – Understand basic electrical and mechanical engineering principles as applicable to air conditioning, refrigeration and ventilation.
- 116463 – Fault find, repair and maintain AC motors, circuitry and controls as applied to air conditioning, refrigeration and ventilation installations.
- 116464 – Sketch and construct three-phase circuits as used in air-conditioning, refrigeration and ventilation installations.
- 116466 – Inspect and maintain electrical control panels and circuitry as used for air-conditioning, refrigeration and ventilation installations.

Safe Handling of Refrigerants: (5 days; Theory & Practical)

- 116223 - Demonstrate knowledge of the OHS Act as it applies to employees in the air-conditioning, refrigeration and ventilation industries.
- 116334 - Identify refrigerant containers, explain handling procedures and discuss the use of refrigerants.
- 116355 - Handle refrigerant containers and transfer refrigerants into service cylinders.
- 116700 - Maintain safety in the handling group 1 and 2 refrigerants.

Commercial Refrigeration Course (10 days)

Entry Requirements: All candidates must have basic literacy, numeric, ***Basic refrigeration*** and the ***Basic electric course***.

Objective: On successful completion of this course the student will have the necessary knowledge and practical skills to perform more of the advanced aspects of the trade EG: Commissioning cold room and critical charging. This course follows on from the first course and is the second phase of the diploma course but can be used alone ending at this level.

Outcomes: Upon successful completion of this course the student will have the understanding and the more advanced practical skills (competencies) needed on the worksite. Examples of skills: fault finding/ commissioning/ critical charging/ bearings/ fan belts/ recovery of refrigerants.

- 116709 – Explain the operation of the vapour compression refrigeration cycle, and identify and explain the operation of the components and the associated controls, safety devices and defrost systems.
- 116233 – Identify and state application of belt drives; couplings, gearboxes and bearings used on air-conditioning, refrigeration and ventilation plants and recognize misaligned, mismatched and worn components.
- 116406 – Diagnose operational faults in refrigeration systems and take remedial action or propose corrective action
- 116403 – Service a refrigeration system and set it in operation.
- 116415 - Commission refrigeration systems

LEARNING ASSUMED TO BE IN PLACE AND RECOGNITION OF PRIOR LEARNING

This qualification assumes that the candidate has already achieved a General Education and Training Certificate at NQF Level 1 or ABET Level 4 or Grade 9 school level.

Duration & Dates:

- **Monday to Friday. (08h30 – 16h00)**

Pricing:

- **See price list**

Banking details:

- **R & A Training Centre, ABSA Bank, 408 333 8824, 334 537 (Vereeniging)**
- **Please use company or surname us reference.**

Enrol Today!

Learner Name		
Learner I.D. No.		
Learner Gender		
Learner Cell No.		
Company Name		
Company Address		
Company VAT No.		
Contact Person		
Company Phone		
Company E Mail		
R6500.00	**Basic Refrigeration:** (10 days)	☐
R4000.00	**Fault Finding of: Split, Console & Window Units:** (5 days)	☐
R2800.00	**Copper Piping (Semi-skill):** (3 days)	☐
R7500.00	**Basic Electrical Course:** (10 days)	☐
R3000.00	**Safe Handling of Refrigerants:** (5 days)	☐
R6500.00	**Commercial Refrigeration Course** (10 days)	☐
R600.00 / Student	**First Aid – Level 1 Course** (2 days) min 4 students	☐
R 950.00 / Student	**Scaffolding Course** (1 days) min 4 students	☐
R2300.00 / Student	**Work in a team** (2 days) min 2 groups - 4 students/group	☐