General Technical

Damelin correspondence
The Career Development College

Enrol • Qualify • Achieve
With one of the most employer-recognised colleges
Programme Types offered at Damelin Correspondence College (DCC)

1. National Qualifications are credit-bearing qualifications registered on the NQF (National Qualifications Framework) and accredited by a Quality Assurance Body, such as a SETA (Sector Education and Training Authority). A skills programme is an accredited component of a National qualification.

2. Agent Programmes are programmes for which Damelin Correspondence College offers tuition, but where DCC does not issue the final certificate. The Agent Body issues the final certificate and manages the final examinations.

3. Damelin Correspondence College Programmes are DCC’s own programmes that are not linked to the NQF and are not credit-bearing. However, they are in high demand and carry the approval of the Damelin Correspondence College Academic Board.

Damelin Correspondence College Programmes fall into four categories:

- **Damelin Correspondence College Career Programmes** are DCC’s own programmes that are designed to teach you the skills and knowledge to succeed in a particular career.

- **Damelin Correspondence College Continuous Professional Development (CPD) Short Courses** are courses that help you add to your current professional knowledge in a particular field, and hence boost your abilities within your career.

- **Damelin Correspondence College Orientation Programmes** are short courses that introduce you to a particular field or career and that offer you the opportunity to explore an interest or skills set without having to enrol on a full programme.

- **Damelin Correspondence College Self-Employment Programmes** are designed to refine your skills in a particular field of interest; to teach you how to make a living from a particular skill, interest or hobby, and to help you start your own business.

Your future in Electrical Studies

Every stage in the generation and distribution of electricity directly involves electronics specialists who are responsible for the design, operation and installation of all types of electrical operating equipment. They are also responsible for everything from the control of industrial processes to domestic installation practice.

Now, you can prepare for this rewarding career in your own home, in your own time, at your own pace. Our easy-to-understand courses start with the basics, and then step by step teach you everything you need to get started.
This qualification could assist with the achievement of national government and industrial development policies and strategies to grow a pool of scarce and other related skills in support of sustainable economic growth. People working in the electrical engineering fields require specialised technical skills and knowledge in order to meet the requirements of a continually changing environment of the various industries. Through its design, this qualification will meet the needs of learners within the electrical engineering sectors who require technical expertise and essential knowledge needed to earn formal qualifications.

This electrical engineering qualification provides the foundational competencies required to work on designated electrical circuits and installations.

This electrical engineering qualification provides the foundational competencies required to work on designated electrical circuits and installations. Achieving the full qualification will provide the learner with accessibility to be employed within the electrical engineering field and provide the flexibility to pursue different careers across various industry sectors.

Programme Type
DCC is acting as an agent for the Industries Education and Training Institute (IETI) by providing the theory component of this qualification. It is therefore classified as an agent programme. However, if you pass the exams and practical sessions set by the IETI, you can achieve a national qualification.

Admission Requirements
Grade 9 (std 7) with Communication and Mathematical Literacy, or N1 with Engineering Science and Technology, or relevant work experience (2 years).

Course Duration
You should be able to complete this course within 24 months.

Accreditation with CETA
DCC offers this qualification in collaboration with Industries Education and Training Institute (IETI). DCC will provide the theoretical tuition while IETI conducts the assessment, moderation and practical/s. IETI is accredited by the Construction Education and Training Authority (CETA) (Accreditation number: 5830005) to offer the National Certificate: Electrical Engineering NQF 2: Learning programme: Electrical Construction (LP ID 67430). IETI is the Lead Training Provider and will be responsible for ensuring that the uploading of the Learner competencies on the National Learner Record Database (NLRD) with CETA and SAQA is executed.

Course Content
Fundamental Unit Standards (36 credits)
119463 Access and use information from texts
119454 Maintain and adapt oral/signed communication
119460 Use language and communication in occupational learning programmes
119456 Write/present for a defined context
9009 Apply basic knowledge of statistics and probability to influence the use of data and procedures in order to investigate life-related problems
7480 Demonstrate understanding of rational and irrational numbers and number systems
9008 Identify, describe, compare, classify, explore shape and motion in 2- and 3-dimensional shapes in different contexts hand tools
7469 Use mathematics to investigate and monitor the financial aspects of personal and community life
9007 Work with a range of patterns and functions and solve problems
National Certificate NQF 2
Electrical Construction
(LP ID 67430)

Core Unit Standards (84 credits)
258925  Apply and maintain safety in a working environment
258932  Apply soldering techniques
258935  Design and construct a single phase circuit
12466   Explain the individual’s role within business
259017  Identify, inspect, clean and maintain electrical rotating machines
258957  Identify, inspect, use, maintain and care for engineering hand tools
258960  Install electric wire ways
258942   Install luminaires
258919   Install or replace electrical metering units or measuring instruments
258921   Install, join and terminate low voltage cables and conductors
258937   Install, maintain or replace low voltage distribution boards, protection devices and components
258962   Maintain transformers
9881     Mark off basic regular engineering shapes
258918   Select, use and care for electrical measuring and testing instruments
10255    Select, use and care for power tools
258967   Understand fundamentals of electricity

Elective Unit Standards (21 credits)
258939   Carry out basic electric arc welding in an electrical environment
12465    Develop a learning plan and a portfolio for assessment
116932   Operate a personal computer system
116938   Use a graphical user interface (GUI)-based word processor to create and edit documents

Assessment and fees
All the required formative assessments must be completed and sent to DCC College for marking. Assessments of your competency are based on the evidence you will submit in your formative assessments. The practical component will be conducted by IETI, our Practical Partner for the programme. The practical and final examinations will be conducted nationally at IETI training facilities via contact sessions. For further information about the practical sessions, contact IETI Head Office on 021 5118048 or via e-mail at ietict@ietisa.co.za.
All learners must arrange to be available for the practical assessments on the predetermined dates and times, and at the venues prescribed by IETI.
Please note: Fees for final exams and practical assessments are not included in your DCC tuition fee; this should be paid directly to IETI.

National Certificate NQF 2
Electrical Construction
(LP ID 67430)

Award
Industries Education and Training Institute (IETI) will upload your details and results onto the National Learner Record Database (NLRD) when you have been declared competent, and will also provide you with a Certificate on completion of the practicals and final assessments. CETA will award you with your final results. You will also receive a statement of results from DCC.

The following Skills Programmes are also offered:

Skills Programme 1: Basic Electrical Safety
This Skills Programme is compulsory for entrance into SP2 and SP3

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<tr>
<th>TITLE</th>
<th>TYPE</th>
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<tbody>
<tr>
<td>Apply &amp; maintain safety in a working environment</td>
<td>C</td>
<td>258925</td>
<td>5</td>
</tr>
<tr>
<td>Understand fundamentals of electricity</td>
<td>C</td>
<td>258967</td>
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</table>

Skills Programme 2: Electrical Maintenance

<table>
<thead>
<tr>
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<th>TYPE</th>
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</thead>
<tbody>
<tr>
<td>Maintain transformers</td>
<td>C</td>
<td>258962</td>
<td>5</td>
</tr>
<tr>
<td>Install, maintain or replace low voltage distribution boards, protection devices and components.</td>
<td>C</td>
<td>258937</td>
<td>6</td>
</tr>
<tr>
<td>Identify, inspect, maintain, use and care for engineering hand tools</td>
<td>C</td>
<td>258957</td>
<td>6</td>
</tr>
<tr>
<td>Apply soldering techniques</td>
<td>C</td>
<td>258932</td>
<td>2</td>
</tr>
<tr>
<td>Identify, inspect, clean and maintain electrical rotating machines</td>
<td>C</td>
<td>259017</td>
<td>6</td>
</tr>
<tr>
<td>Carry out basic electric arc welding in an electrical environment</td>
<td>E</td>
<td>258939</td>
<td>8</td>
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</table>
### Skills Programme 3: Electrical Design and Installation

<table>
<thead>
<tr>
<th>TITLE</th>
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<tbody>
<tr>
<td>Design &amp; construct a single-phase circuit</td>
<td>C</td>
<td>258935</td>
<td>5</td>
</tr>
<tr>
<td>Install electric wire ways</td>
<td>C</td>
<td>258960</td>
<td>6</td>
</tr>
<tr>
<td>Install luminaires</td>
<td>C</td>
<td>258942</td>
<td>4</td>
</tr>
<tr>
<td>Install or replace electrical metering units or measuring instruments</td>
<td>C</td>
<td>258919</td>
<td>4</td>
</tr>
<tr>
<td>Select, use and care for electrical measuring and testing instruments</td>
<td>C</td>
<td>258918</td>
<td>4</td>
</tr>
<tr>
<td>Mark off basic regular engineering shapes</td>
<td>C</td>
<td>9881</td>
<td>6</td>
</tr>
<tr>
<td>Select, use and care for power tools</td>
<td>C</td>
<td>10255</td>
<td>5</td>
</tr>
<tr>
<td>Explain the individual’s role within business</td>
<td>C</td>
<td>12466</td>
<td>4</td>
</tr>
<tr>
<td>Install, join and terminate low voltage cables and conductors</td>
<td>C</td>
<td>258921</td>
<td>8</td>
</tr>
<tr>
<td>Develop a learning plan and a portfolio for assessment</td>
<td>E</td>
<td>12465</td>
<td>6</td>
</tr>
<tr>
<td>Operate a personal computer</td>
<td>E</td>
<td>116932</td>
<td>3</td>
</tr>
<tr>
<td>Use a graphical-user-interface-based word processor to create and edit documents</td>
<td>E</td>
<td>116938</td>
<td>4</td>
</tr>
</tbody>
</table>

### Programme Type
These Skills Programmes are Agent Programmes. DCC offers the theory component of these Skills programmes on behalf of our partner, IETI (Industries Education and Training Institute).

### Course Duration
You should be able to complete each Skills Programme within 12 months.

### Admission Requirements
Grade 9 (std 7) with Communication and Mathematical Literacy, or N1 with Engineering Science and Technology, or relevant work experience (2 years).

### Assessment and fees
All the required formative assessments must be completed and sent to DCC College for marking. Assessments of your competency are based on the evidence you will submit in your formative assessments. The practical component will be conducted by IETI, our Practical Partner for the programme. The practical and final examinations will be conducted nationally at IETI training facilities via contact sessions. For further information about the practical sessions, contact IETI Head Office on 021 5118048 or via e-mail at ietict@ietisa.co.za.

All learners must arrange to be available for the practical assessments on the predetermined dates and times, and at the venues prescribed by IETI.

Please note: Fees for final exams and practical assessments are not included in your DCC tuition fee; this should be paid directly to IETI.

### Award
Industries Education and Training Institute (IETI) will upload your details and results onto the National Learner Record Database (NLRD) when you have been declared competent, and will also provide you with a Certificate on completion of the practicals and final assessments. CETA will award you with your final results. You will also receive a statement of results from DCC.
The FETC Electrical Engineering (NQF Level 4) is intended to produce a highly competent person who will be able to meet the challenges of a competitive and demanding environment. This electrical engineering qualification provides the advanced competencies required to work on integrated electrical systems and installations. This qualification provides the learner with accessibility to be employed within the electrical engineering field and provides the flexibility to pursue different careers across various industry sectors.

**Qualifying learners at NQF Level 4 will be able to:**

- Understand electrical equipment and protection technology and interpret integrated system schematics.
- Install and commission electrical equipment on integrated electrical systems.
- Maintain and repair electrical equipment on integrated electrical systems.
- Evaluate and solve familiar problems pertaining to electrical equipment, integrated electrical systems and related processes.
- Accept responsibility for utilising and maintaining equipment without working under direct supervision.

**Programme Type**

DCC is acting as an agent for the Industries Education and Training Institute (IETI) by providing the theory component of this qualification. It is therefore classified as an agent programme. However, if you pass the exams and practical sessions set by the IETI, you can achieve a national qualification.

**Admission Requirements**

- Electrical Engineering NQF Level 3 or an equivalent
- Language and Maths at NQF Level 3

**Course Duration**

You should be able to complete this course within 24 months.

**Accreditation with CETA**

DCC offers this qualification in collaboration with Industries Education And Training Institute (IETI). DCC will provide the theoretical tuition while IETI conducts the assessment, moderation and practical/s. IETI is accredited by the CETA (Accreditation number: 5830005) to offer the Further Education and Training Certificate: Electrical Engineering NQF 4: Learning programme: Electrical Construction (LP ID 72070). IETI is the Lead Training Provider and will be responsible for ensuring that the uploading of the Learner competencies on the National Learner Record Database (NLRD) with CETA and SAQA is executed.
Further Education and Training
Certificate NQF 4 Electrical Construction (LP ID 72070)

Course Content

Fundamental Unit Standards (56 credits)
119472 Accommodate audience and context needs in oral/sign communication
119457 Interpret and use information from text
119467 Use language and communication in occupational learning programmes
119465 Write/present/sign texts for a range of communicative contexts
119471 Use language and communication in occupational learning programmes
119462 Engage in sustained oral/sign communication and evaluate spoken/signed texts
119469 Read/view, analyse and respond to a variety of text
119459 Write/present/sign for a wide range of contexts
9015 Statistics and probability
9016 Analyse/calculate shape and motion 2/3 dimensional space
7468 Maths in financial aspects

Core Unit Standards (54 credits)
113899 Demonstrate an understanding of basic programmable logic controllers
259200 Design, construct and commission three phase electrical circuits
259217 Install and commission AC machines and control gear
259177 Maintain, test and repair AC machines and control gear
259197 Test and inspect a three-phase industrial/commercial installation
113873 Understand basic electrical and mechanical engineering principles

Elective Unit Standards (22 credits)
113898 Complete certificate of compliance for a single phase domestic installation
13818 Maintain low voltage switch gear
113897 Troubleshoot on programmable logic controllers
259182 Select a back-up generator for a standalone renewable energy system
259218 Apply the principles of energy efficiency

Assessment and fees
All the required formative assessments must be completed and sent to DCC College for marking. Assessments of your competency are based on the evidence you will submit in your formative assessments. The practical component will be conducted by IETI, our Practical Partner for the programme. The practical and final examinations will be conducted nationally at IETI training facilities via contact sessions. For further information about the practical sessions, contact IETI Head Office on 021 5118048 or via e-mail at ietict@ietisa.co.za.
All learners must arrange to be available for the practical assessments on the predetermined dates and times, and at the venues prescribed by IETI
Please note: Fees for final exams and practical assessments are not included in your DCC tuition fee; this should be paid directly to IETI.

Award
Industries Education And Training Institute (IETI) will upload your details and results onto the National Learner Record Database (NLRD) when you have been declared competent, and will also provide you with a Certificate on completion of the practicals and final assessments. CETA will award you with your final results. You will also receive a statement of results from DCC.
The following Skills Programmes are also offered:

### Skills Programme 1: Electrical Installation

<table>
<thead>
<tr>
<th>TITLE</th>
<th>TYPE</th>
<th>US ID</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>Understand basic electrical and mechanical engineering principles</td>
<td>Core</td>
<td>113873</td>
<td>8</td>
</tr>
<tr>
<td>Install and commission AC machines and control gear</td>
<td>Core</td>
<td>259217</td>
<td>8</td>
</tr>
<tr>
<td>Design, construct and commission three-phase electrical circuits</td>
<td>Core</td>
<td>259200</td>
<td>10</td>
</tr>
<tr>
<td>Demonstrating and understanding of basic programmable logic controllers (PLCs)</td>
<td>Core</td>
<td>113899</td>
<td>6</td>
</tr>
<tr>
<td>Apply the principles of energy efficiency</td>
<td>Elective</td>
<td>259218</td>
<td>4</td>
</tr>
<tr>
<td>Select a back-up generator for a stand-alone renewable energy system</td>
<td>Elective</td>
<td>259182</td>
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</tr>
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### Skills Programme 2: Electrical Maintenance & Repair

<table>
<thead>
<tr>
<th>TITLE</th>
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<tbody>
<tr>
<td>Test &amp; inspect a three-phase industrial or commercial installation</td>
<td>Core</td>
<td>259197</td>
<td>10</td>
</tr>
<tr>
<td>Maintain, test and repair AC machines and control gear</td>
<td>Core</td>
<td>259177</td>
<td>12</td>
</tr>
<tr>
<td>Troubleshoot on programmable logic controllers</td>
<td>Elective</td>
<td>113897</td>
<td>5</td>
</tr>
<tr>
<td>Complete certificate of compliance for a single-phase domestic installation</td>
<td>Elective</td>
<td>113898</td>
<td>5</td>
</tr>
<tr>
<td>Maintain low voltage switch gear- Proposed</td>
<td>Elective</td>
<td>13818</td>
<td>4</td>
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</tbody>
</table>
Award
Industries Education And Training Institute (IETI) will upload your details and results onto the National Learner Record Database (NLRD) when you have been declared competent, and will also provide you with a Certificate on completion of the practicals and final assessments. CETA will award you with your final results. You will also receive a statement of results from DCC.

This skills programme consists of the following unit standards:
• 262784- Mount solar water heating system
• 244499- Install and maintain solar water heating systems

Programme Type
The Skills Programme in Solar Heating Installation is an agent programme.

262784- Mount solar water heating system
Learners who achieve this unit standard will understand the relevant theory regarding solar water heating systems and be able to install the system taking due cognisance of roof types and other related matters. Importantly, the installer will work under the supervision of a qualified plumber at all times.

Learners credited with this standard will be able to:
• Explain the theory regarding solar water heating systems.
• Demonstrate and apply knowledge of roof trusses in order to complete installation of solar water heating systems.
• Plan and prepare for installation of solar water heating systems.
• Install solar water heating systems.

Learning assumed to be in place
• Communication at NQF level 1.
• Mathematical literacy at NQF level 1.
• Unit standard: apply plumbing principles as they pertain to the installation of a hot water system.

244499- Install and maintain solar water heating systems
This unit standard will enable plumbers and related role-players to improve professionalism and enhance the quality and effectiveness of services by being able to install and maintain solar water heating systems.
A person credited with this unit standard is able to:

• Understand solar energy as a source of heat.
• Prepare and plan for the installation of solar water heating systems.
• Install solar water heating components, pipes and fittings.
• Maintain solar water heating components, pipes and fittings.

This unit standard will contribute to the development of the learner within the context of the plumbing discipline. Learners who have achieved this unit standard will increase their opportunities for further development and employability within the plumbing environment.

Learning assumed to be in place

• Communication at NQF level 3.
• Mathematical literacy at NQF level 3.

Accreditation with CETA

DCC offers this qualification in collaboration with Industries Education And Training Institute (IETI). DCC will provide the theoretical tuition while IETI conducts the assessment, moderation and practicals. IETI is accredited by CETA (Accreditation number: 5830005) to offer 262784- Mount solar water heating system and 244499- Install and maintain solar water heating systems. IETI is the Lead Training Provider and will be responsible to ensure that the uploading of the learner competencies on the National Learner Record Database (NLRD) with the SETA and SAQA is executed.

Assessment and fees

All the required formative assessments must be completed and sent to DCC College for marking. Assessments of your competency are based on the evidence you will submit in your formative assessments. The practical component will be conducted by IETI, our Practical Partner for the programme. The practical and final examinations will be conducted nationally at IETI training facilities via contact sessions. For further information about the practical sessions, contact IETI Head Office on 021 5118048 or via e-mail at ietict@ietisa.co.za.

All learners must arrange to be available for the practical assessments on the predetermined dates and times, and at the venues prescribed by IETI.

Please note: Fees for final exams and practical assessments are not included in your DCC tuition fee; this should be paid directly to IETI.

Award

Industries Education And Training Institute (IETI) will upload your details and results onto the National Learner Record Database (NLRD) when you have been declared competent, and will also provide you with a Certificate on completion of the practicals and final assessments. CETA will award you with your final results. You will also receive a statement of results from DCC.
Air Conditioning, Refrigeration and Ventilation Level 2 Skills Programmes

Course Overview
The air conditioning, refrigeration and ventilation industry provides a service to many sectors of the country's economy, such as food processing and warehousing, food transportation, distribution and retailing, deep level mining, high rise and retail property, specialised medical care, automotive and mass transport, tourism and hospitality.

These skills programmes enable a competent learner at NQF Level 2, under supervision, to demonstrate a basic ability to install, service, repair and operate mechanical equipment that is used in the air conditioning, refrigeration and ventilation industry.

The technical skills required for this purpose are scarce and there is a growing demand for technicians skilled in the mechanical, electrical and thermal sciences.

Learning assumed to be in place:
These skills programmes assume 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.

Programme Type
Skills programmes are short courses made up of credit-bearing unit standards. Skills programmes can be seen as subjects with a National Qualification.

Accreditation with MERSETA
This Skills Programme forms part of the SAQA ID 65449: National Certificate in Air Conditioning, Refrigeration and Ventilation at NQF Level 2, accredited by MERSETA.

Course Duration
You should be able to complete each of these skills programmes within 12 months.

Course Content
Skills Programme n Principles of Air Conditioning, Refrigeration and Ventilation
• Define and explain the principles of thermodynamics and carry out basic calculations involving heat (116236)
• Explain the basic vapour compression cycle, the components, the handling and storage of refrigerants (262177)
• Handle refrigerant containers and transfer refrigerants into service cylinders (116335)
• Perform basic arc welding of metals as applicable to air-conditioning, refrigeration and ventilation installations (116245)

Skills Programme in Identification and Safe Handling of Refrigerants
• Identify refrigerant containers, explain handling procedures and discuss the use of refrigerants (116334)

Skills Programme in Electrical Principles relating to ARV systems
• Demonstrate understanding of fundamentals of electricity and its application in air conditioning, refrigeration and ventilation equipment (116232)

Skills Programme in Identify and Install piping for ARV systems
• Identify materials, piping, fitting, jointing methods and insulation materials used for air-conditioning and refrigeration installations (116230)
• Join and install refrigerant piping (116229)
• Identify and apply fixing methods for piping, ducting and equipment used in the trade of air-conditioning, refrigeration and ventilation (116234)

Skills Programme in Identify mechanical components and perform cleaning activities related to ARV systems
• 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 (116233)
• Clean air-conditioning, refrigeration and ventilation plants, components and work sites (116238)

Assessment
All the required formative assessments must be completed and sent to the College for marking. Assessments of your competency are based on the evidence you will submit in your formative assessments. Summative (final exams) and practical assessments will be conducted by IETI, our partner for the programme. The practicals and final exams will be conducted nationally at IETI training facilities via contact sessions. For further information about the practical sessions, contact IETI Head Office, 021 5118048 or email ietict@ietisa.co.za.

All learners must arrange to be available for the assessments on the predetermined dates, times and at the venues prescribed by IETI. Please note the fees for the practical and exams are not included in your course fee.

Award
IETI will upload your details and results onto the National Learner Records Database (NLRD) when you have been declared competent, and will provide you with a Certificate on completion of the practicals and final exam. MerSETA will award you with your statement of results indicating the unit standards you have completed. You will also receive a statement of results from DCC.
Air Conditioning, Refrigeration and Ventilation Level 3 Skills Programmes

Course Overview
Air conditioning, refrigeration and ventilation are subfields of specialised engineering which account for the design, manufacture, installation, maintenance, and repair of systems which provide artificial cooling for the environment to improve comfort and productivity and the processing and preservation of foodstuffs. The development of the urban lifestyle with its concentration of population into centralised areas, the food chain from producer to consumer as well as the working environment and medical care would not be possible without these specialised engineering services. These skills programmes provide the learner with the skills required to service, repair, commission and operate mechanical/electrical equipment and systems in the air conditioning, refrigeration and ventilation sub-field in a variety of applications, and to supervise work teams.

Learning assumed to be in place
These skills programmes assume that the candidate has already achieved one or more of the following:
• Communication and Mathematical Literacy at NQF Level 2 or an equivalent.

Programme Type
Skills programmes are short courses made up of credit-bearing unit standards. Skills programmes can be seen as subjects within a National Qualification.

Accreditation with MERSETA
This Skills Programme forms part of the SAQA ID 65489: National Certificate in Air Conditioning, Refrigeration and Ventilation at NQF Level 3, accredited by MERSETA.

Course Duration
You should be able to complete each of these skills programmes within 12 months.

Course Content
Skills Programme in Practice of Air Conditioning
• Apply an understanding of various systems, system components, the actual and the theoretical refrigeration cycle (261819)
• Identify water reticulation systems, its components, accessories and controls used in air conditioning and refrigeration installations (116718)
• Interpret air conditioning, refrigeration and ventilation plant layout and component drawings, sketches and specifications (116717)
• Adhere to legal requirements of SANS 10147 (SABS 0147) standards when handling group 1 refrigerants (116468)

Skills Programme in Electrical Practice in Air Conditioning, Refrigeration and Ventilation Systems
• Sketch and construct electrical circuits applicable to single-phase air conditioning, refrigeration and ventilation installations (116244)
• Install, connect and maintain electrical cables and conductors as applied in air conditioning, refrigeration and ventilation installations (116243)

Skills Programme in Installation of Heavy equipment and insulation
• Install and service power transmission systems for air-conditioning, refrigeration and ventilation equipment (116713)
• Remove, install and service bearings used on air-conditioning, refrigeration and ventilation equipment (116715)
• Identify, handle and sample refrigeration oils for analysis, and demonstrate how oil can indicate the general condition of a refrigeration system (116702)
• Operate water treatment systems used in air-conditioning and refrigeration installations (116706)

Skills Programme in Service ARV systems
• Dismantle and assemble air conditioning and refrigeration equipment (116712)
• Install and service power transmission systems for air-conditioning, refrigeration and ventilation equipment (116713)
• Remove, install and service bearings used on air-conditioning, refrigeration and ventilation equipment (116715)
• Identify, handle and sample refrigeration oils for analysis, and demonstrate how oil can indicate the general condition of a refrigeration system (116702)
• Operate water treatment systems used in air-conditioning and refrigeration installations (116706)

Skills Programme in Controls and fault finding associated with ARV systems
• Identify and set ON-OFF control devices as used in air conditioning and refrigeration systems, explain their operation and discuss their application and fault finding (116226)
• Identify and commission modulating control systems as used in air conditioning and refrigeration systems (116465)
• Fault find an air-conditioning, refrigeration or ventilation plant stoppage or failure (116697)

Assessment
All the required formative assessments must be completed and sent to the College for marking. Assessments of your competency are based on the evidence you will submit in your formative assessments. Summative (final exams) and practical assessments will be conducted by IETI, our partner for the programme. The practicals and final exams will be conducted nationally at IETI training facilities via contact sessions. For further information about the practical sessions, contact IETI Head Office, 021 5118048 or email ietict@ietisa.co.za.

All learners must arrange to be available for the assessments on the predetermined dates, times and at the venues prescribed by IETI. Please note the fees for the practical and exams are not included in your course fee.

Award
IETI will upload your details and results onto the National Learner Records Database (NLRD) when you have been declared competent, and will provide you with a Certificate on completion of the practicals and final exams. MerSETA will award you with your statement of results indicating the unit standards you have completed. You will also receive a statement of results from DCC.
Air Conditioning, Refrigeration and Ventilation Level 4 Skills Programmes

Course Overview
Air conditioning, refrigeration and ventilation are subfields of specialised engineering that account for the design, manufacture, installation, maintenance, and repair of systems that provide artificial cooling for the environment to improve comfort and productivity and the processing and preservation of foodstuffs. The development of the urban lifestyle with its concentration of population into centralised areas, the food chain from producer to consumer as well as the working environment and medical care would not be possible without these specialised engineering services.

These skills programmes provide the learner with the skills required to service, repair, commission and operate mechanical/electrical equipment and systems in the air conditioning, refrigeration and ventilation sub-field in a variety of applications, and to supervise work teams.

The current rate of urban development, the advance in technology and development of tourism creates an ever-increasing demand for air conditioning, refrigeration and ventilation equipment and systems and therefore a corresponding demand for technicians to repair, maintain, install and manufacture such equipment and systems.

Learning assumed to be in place
These skills programmes assume that the candidate has already achieved one or more of the following:
- Communication and mathematical literacy at NQF Level 3 or an equivalent.
- National Certificate: Air Conditioning, Refrigeration and Ventilation NQF 3 SAQA ID 65489

Programme Type
Skills programmes are short courses made up of credit-bearing unit standards. Skills programmes can be seen as subjects within a National Qualification.

Accreditation with MERSETA
This Skills Programme forms part of the SAQA ID 65509: National Certificate in Air Conditioning, Refrigeration and Ventilation at NQF Level 4, accredited by MERSETA.

Course Duration
You should be able to complete each of these skills programmes within 12 months.

Course Content
Skills Programme: Inspect and Maintain Electrical Installations Associated with ARV systems
- Sketch and construct three-phase circuits as used in air conditioning, refrigeration and ventilation installations (116463)
- Fault find, repair and maintain AC motors, circuitry and controls as applied to air conditioning, refrigeration and ventilation installations (116464)
- Inspect and maintain electrical control panels and circuitry as used for air conditioning, refrigeration and ventilation installations (116466)
- Demonstrate an understanding of logic controllers as used in air conditioning, refrigeration and ventilation applications (116460)

Skills Programme: Service and Repair ARV systems
- Repair and overhaul air-conditioning, refrigeration and ventilation equipment (116421)
- Service a refrigeration system and set it in operation (116403)
- Diagnose operational faults in refrigeration systems and take remedial action or propose corrective action (116406)
- Understand, implement, maintain and monitor general quality standards within the air conditioning, refrigeration and ventilation industries (116392)

Skills Programme: Commissioning and plant optimisation
- Determine the properties of air from a psychometric chart and carry out basic calculation involving heat and mass transfer (116695)
- Carry out elementary airflow measurements and calculations (116698)
- List the commonly applied air-conditioning systems, state their application and explain their operation (116710)
- Interpret the effect of operating conditions on components, safety and control devices (262178)
- Carry out elementary airflow measurements and calculations (116699)

Assessment
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Carry out elementary airflow measurements and calculations (116699)
From the General Manager

Take your next step now!
Follow through on your decision to enhance your life and your future prospects by enrolling for a Damelin Correspondence College General Technical course today!

Why study with Damelin Correspondence College?
• Quality study material designed specifically for home study.
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• The widest range of courses for today’s world.
• Free consultations with Damelin Correspondence College’s career counselling and development specialists.
• Free study choice advice from Damelin Correspondence College’s Student Consultants.
• The convenience of online enrolment, contact and advice.
• Affordable, easy payment options.
• Ongoing study support and attention from qualified tutors.

Umalusi Accreditation
Damelin Correspondence College (Pty) Ltd has been awarded provisional accreditation by Umalusi. Umalusi is the Council for Quality Assurance in General and Further Education and Training in South Africa - see www.umalusi.org.za.
Umalusi Provisional Accreditation No.: FET 00475 PA.

DHET Registration
Damelin Correspondence College (Pty) Ltd has been granted provisional registration by the Department of Higher Education and Training as a private FET College, until 31 December 2014.
Provisional Registration No. 2008/FE07/037 - see www.dhet.gov.za.
For further information please refer to our website: www.dcc.edu.za.
Damelin Correspondence College (Pty) Ltd is committed to meeting legislative requirements regarding accreditation and registration of private education and training providers in South Africa.

Wishing you every success in your studies and your future!

Ajanth Choudhree
Damelin Correspondence College General Manager

Notes