Course Outline

UEE32211 (CRICOS code 094819A)
Certificate III in Air Conditioning and Refrigeration

Course Description

This qualification provides competencies to select components, install, set up, test, fault find, repair and maintain refrigeration systems and equipment that apply to food storage and preservation, air conditioning and air distribution equipment in buildings and premises. It includes regulatory requirements for purchasing and handling refrigerants. The duration of the 094819A Certificate III in Air-Conditioning and Refrigeration is 20 contact hours per week, for 94 weeks (training and work placement) and 18 weeks of holidays throughout the course.

Job Roles and Career Pathways

The qualification is designed for students wishing to enter the Electrotechnology industry for roles including an Air Conditioning and Refrigeration mechanic covering domestic, industrial and commercial premises. Full details can be found at www.training.gov.au

Entry Requirements

Course entry
There are no formal course entry requirements into this qualification.

RTO Entry
This course is recommended for students who wish to enter the industry and has vocational experience in the industry but without any formal qualifications. Students are required to have a limited knowledge and skill base in a variety of Electrotechnology contexts including making judgements, completing routine activities and taking limited responsibility in the Electrotechnology workplace.

Students are required to have language, literacy and numeracy skills as required to undertake these workplace functions. Proof of IELTS 5.5 is required as well as year 12 high school level completed.

Intake
Course start dates are as listed on the RTO training schedule.

Further Learning

Students who complete the 094819A Certificate III in Air Conditioning and Refrigeration can continue their studies by advancing to the UEE42711 Certificate IV in Air Conditioning and Refrigeration Servicing or any other relevant Certificate IV level qualification.
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Course Structure
This course comprises all the required 25 Core competency units to a total of 1000 points and elective unit totalling 60 points. The following units of competency will be delivered for this qualification

Core units

- UEEENEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace
- UEEENEE137A Document and apply measures to control OHS risks associated with electrotechnology work
- UEEENEEC025B Participate in refrigeration and air conditioning work and competency development activities
- UEEENEEK142A Apply environmentally and sustainable procedures in the energy sector
- UEEENEEJ104A Establish the basic operating conditions of air conditioning systems
- UEEENEEJ103A Establish the basic operating conditions of vapour compression systems
- UEEENEEJ107A Use drawings, diagrams, schedules, standards, codes and specifications
- UEEENEEJ102A Fabricate, assemble and dismantle utilities industry components
- UEEENEEJ110A Select refrigerant piping, accessories and associated controls
- UEEENEEJ102A Prepare and connect refrigerant tubing and fittings
- UEEENEEJ105A Fix and secure electrotechnology equipment
- UEEENEEJ106A Install refrigerant pipe work, flow controls and accessories
- UEEENEEJ201A Disconnect / reconnect composite appliances connected to low voltage installation wiring
- UEEENEEJ204A Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply
- UEEENEEJ205A Attach cords, cables and plugs to electrical equipment for connection to 1000 Va.c. or 1500 Vd.c. supply
- UEEENEEJ203A Solve problems in ELV single path circuits
- UEEENEEJ194A Solve problems in low voltage refrigeration circuits
- UEEENEEJ108A Recover, pressure test, evacuate, charge and leak test refrigerants
- UEEENEEJ107A Locate and rectify faults in low voltage composite appliances using set procedures
- UEEENEEJ153A Find and rectify faults in motors and associated controls in refrigeration and air conditioning systems
- UEEENEEJ107A Diagnose and rectify faults in air conditioning and refrigeration control systems
- UEEENEEJ107A Intall air conditioning and refrigeration systems, major components and associated equipment
- UEEENEEJ111A Diagnose and rectify faults in air conditioning and refrigeration systems and components
- UEEENEEJ113A Commission air conditioning and refrigeration systems
- UEEENEEJ109A Verify functionality and compliance of refrigeration and air conditioning installations

(25 Units - Total 1000 points)

Elective units A & B

Group A electives [a minimum of 0 points and a maximum of 30 points]
- UEEENEE001B Maintain documentation
- UEEENEE018B Deliver a service to customers

Group B Electives [A minimum of 30 points and a maximum of 60 points]
- UEEENEEJ167A Resolve problems in central plant air conditioning systems
## Core Units Syllabus
(25 Units-Total 1000 points)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Outcome (Required Skills &amp; Knowledge)</th>
</tr>
</thead>
</table>
| UEEEEE101A - Apply Occupational health Safety regulations, codes and practices in the workplace | Understanding the basic legal requirements covering occupational health and safety in the workplace  
Understanding the work environment  
Understanding Manual Handling  
Understanding Working at heights  
Understanding Confined spaces  
Understanding Physical and psychological hazards  
Understanding Working safely with electricity  
Understanding Life support - CPR in the workplace |
| UEEEEE102A - Fabricate, dismantle, assemble of utilities industry components | Understanding Mechanical drawing interpretation and sketching  
Understanding Workshop planning and materials  
Understanding Measuring and marking out  
Understanding Holding and cutting  
Understanding Drills and drilling  
Understanding Tapping and threading  
Understanding General Hand Tools  
Understanding Joining techniques  
Understanding Portable electric power tools  
Understanding Sheet metal work  
Understanding Low tolerance measurement  
Understanding Dismantling and assembly techniques |
| UEEEEE105A - Fix and secure electrotechnology equipment | Understanding a device for securing and mounting electrical/electronic/instrumentation/refrigeration/ air-conditioning/telecommunications accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories to hollow walls  
Understanding a device for securing and mounting electrical/electronic/instrumentation/refrigeration/ air-conditioning/telecommunications accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories to solid walls  
Understanding a device for securing and mounting electrical/electronic/instrumentation/refrigeration/ air-conditioning/telecommunications accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories to metal fixing  
Understanding securing and mounting electrical/electronic/instrumentation/refrigeration/ air-conditioning/telecommunications accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories using fixing adhesives and tapes |
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<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Unit Title</th>
<th>Key Learning Outcomes</th>
</tr>
</thead>
</table>
| UEEENEEE137A | Documents and apply measures to control OHS risks associated with electrical work | Understanding risk management and assessment of risk  
Understanding hazards and risks and control measures in working on construction sites  
Understanding hazards associated with extra-low voltage, low-voltage and high-currents  
Understanding hazards and risks and control measures associated with high-voltage  
Understanding hazards and risks and control measures in working with low voltage equipment |
| UEEENEC025B | Participate in refrigeration and air conditioning work and competency development activities | Understanding responsibilities under a competency development plan  
Understanding methods of monitoring and reporting competency development activities  
Understanding enterprise work activities policies and procedures |
| UEENEEK142A | Apply environmentally and sustainable procedures in the energy sector | Understanding sustainable work practices  
Understanding techniques for reducing carbon produced energy and hence greenhouse gases |
| UEEENEJ104A | Establish the basic operating conditions of air conditioning systems | Understanding The Air Conditioning Industry  
Understanding Working safely with air conditioning systems  
Understanding Temperature & relative humidity measuring devices  
Understanding Air velocity measuring devices (Anemometers only)  
Understanding Psychrometrics  
Understanding Basic air conditioning processes  
Understanding Ventilation  
Understanding Regulations  
Understanding Heat loads |
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| UEEEEJ103A - Establish the basic operating conditions of vapour compression systems | Understanding refrigeration Industry  
| Understanding introduction to the Vapour Compression System  
| Heat  
| Understanding temperature and relative humidity  
| Understanding sensible and Latent Heat  
| Understanding pressure  
| Understanding refrigerant conditions  
| Understanding the vapour compression cycle  
| Understanding working safely with refrigeration vapour compression systems  
| Understanding leak detectors  
| Understanding service gauges  
| Understanding Refrigeration Compressors  
| Understanding condensers and related components  
| Understanding evaporators and related components  
| Understanding common Refrigerant Metering Devices  
| Understanding Basic Operating Conditions |

| UEEEEJ107A - Install air conditioning and refrigeration systems, major components and associated equipment | Understanding refrigeration equipment installation requirements and procedures  
| Understanding cool room and freezer room systems installation requirements and procedures  
| Understanding merchandising and display cabinets installation requirements and procedures  
| Understanding residential air conditioning systems installation requirements and procedures  
| Understanding package air conditioning systems installation requirements and procedures |

| UEEEEJ110A - Select refrigerant piping, accessories and associated controls | Understanding drawings, Specifications, Regulations & Codes  
| Understanding Equipment Installation Requirements  
| Understanding Refrigerant Piping and Accessories  
| Understanding Pipe Selection and Sizing  
| Understanding Refrigerant Liquid Flow Controls  
| Understanding Refrigerant Vapour Flow Controls  
| Understanding Refrigeration System Controls  
| Understanding System Capacity Controls |

| UEEEEJ102A - Prepare and connect refrigerant tubing and fittings | Understanding Piping  
| Understanding Cutting  
| Understanding Bending  
| Understanding Joining  
| Understanding Soldering and brazing equipment  
| Understanding Silver solder  
| Understanding Soldering techniques |
# Course Outline

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<table>
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<tr>
<th>Code</th>
<th>Description</th>
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</table>
| UEEEEEJ106A | Install refrigerant pipe work, flow controls and accessories  
Understanding Environmental and building regulation  
Understanding Refrigeration pipework  
Understanding Refrigerant pipework accessories  
Understanding Refrigerant liquid flow controls and distributors  
Understanding Refrigerant vapour flow controls |

<table>
<thead>
<tr>
<th>Code</th>
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</table>
| UEEEEP012A | Disconnect / reconnect composite appliances connected to low voltage installation wiring  
Understanding The basic electrical circuit  
Understanding Relationships in an electrical circuit  
Understanding Electrical diagrams  
Understanding Test equipment – selection and care  
Understanding Test equipment - Voltage measurement  
Understanding Test equipment - Resistance measurement  
Understanding Test equipment - Current measurement encompassing  
Understanding Cable connections  
Understanding Protection for Safety  
Understanding Safety testing preparation and procedures  
Understanding Isolating supplies  
Understanding Disconnecting composite electrical equipment – ELV  
Understanding Reconnecting composite electrical equipment – ELV  
Understanding Disconnecting composite electrical equipment – LV  
Understanding Reconnecting an composite electrical equipment – LV  
Understanding Produce documentation and reports  
Understanding Enterprise reporting and recording system |

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
</table>
| UEEEEP024A | Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply  
Understanding Safety  
Understanding The basic electrical circuit  
Understanding Relationships in an electrical circuit  
Understanding Test Equipment - resistance measurement  
Understanding Selection of flexible cords and plugs to suit given applications  
Understanding Connecting flexible cords and plugs to appliances  
Testing  
Understanding Producing documentation and reports |
## Course Outline

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<table>
<thead>
<tr>
<th>Unit Code</th>
<th>Unit Title</th>
<th>Topics</th>
</tr>
</thead>
</table>
| UEEENEEP025A | Attach cords, cables and plugs to electrical equipment for connection to 1000 Va.c. or 1500 Vd.c. supply | Understanding safety  
Understanding selection of flexible cords/cables and plugs to suit given applications  
Understanding connect flexible cords/cables and plugs to multiphase equipment  
Understanding determine that a flexible cord/cable and plug is safe and is connected correctly  
Understanding producing documentation and reports |
| UEEENEEE103A | Solve problems in ELV single path circuits | Understanding Basic electrical concepts  
Understanding Basic electrical circuit  
Understanding Ohm’s Law  
Understanding Electrical power  
Understanding Effects of electrical current  
Understanding EMF sources energy sources and conversion electrical energy  
Understanding Resistors  
Understanding Series circuits |
| UEEENEEE194A | Solve problems in low voltage refrigeration circuits | Understanding resistance measurement  
Understanding factors affecting resistance  
Understanding voltage and current measurement  
Understanding direct Current parallel circuits  
Understanding direct Current series / parallel circuits  
Understanding Capacitors and Capacitance  
Understanding Capacitors in Series and Parallel  
Understanding Electromagnetic induction  
Understanding Single phase alternating current  
Understanding Magnetic devices  
Understanding Three phase alternating current  
Understanding Circuit protection and isolation |
| UEEENEEJ108A | Recover, pressure test, evacuate, charge and leak test refrigerants | Understanding Introduction to refrigerants  
Understanding Relevant Acts, Regulations, Codes and Standards  
Understanding Refrigerant properties  
Understanding Safe handling of refrigerants  
Understanding Refrigeration oil  
Understanding Recovery and reclaim procedures  
Understanding Pressure testing  
Understanding Leak detection  
Understanding Evacuation and dehydration  
Understanding Refrigerant and oil charging  
Understanding System contamination  
Understanding Basic refrigeration component replacement |
| UEEENEEP017A | Locate and rectify faults in low voltage composite appliances using set procedures | Understanding Safe fault finding  
Understanding Single and three phase composite equipment  
Understanding Produce documentation and reports |
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| UEEEEJ153A Find and rectify faults in motors and associated controls in refrigeration and air conditioning systems | Understanding three phase induction motors  
Understanding three phase motor starters  
Understanding three phase motor protection devices  
Understanding split phase, single phase motors and starters  
Understanding capacitor and shaded pole, single phase motor and starters  
Understanding series universal, single phase motors  
Understanding single phase motor protection devices  
Understanding single phase motor speed control devices |
|---|---|
| UEEEEJ170A - Diagnose and rectify faults in air conditioning and refrigeration control systems | Understanding Power and control terminology, symbols and diagrams/drawings  
Understanding Control systems and components  
Understanding Refrigeration and air conditioning system electrical/electronic controls  
Understanding Refrigeration and air conditioning direct digital controls  
Understanding Refrigeration and air conditioning pneumatic controls  
Understanding Refrigeration and air conditioning process characteristics and control parameters  
Understanding System responses to parameter changes  
Understanding Finding and rectify control system faults |
| UEEEEJ107A - Install air conditioning and refrigeration systems, major components and associated equipment | Understanding Refrigeration equipment installation requirements and procedures  
Understanding Cool room and freezer room systems installation requirements and procedures  
Understanding Merchandising and display cabinets installation requirements and procedures  
Understanding Residential air conditioning systems installation requirements and procedures  
Understanding Package air conditioning systems installation requirements and procedures |
| UEEEEJ111A - Diagnose and rectify faults in air conditioning and refrigeration systems and components | Understanding Preventative maintenance schedules and procedures  
Understanding Normal and abnormal system and component operations including  
Understanding Finding and rectify system faults  
Understanding Diagnosing and rectifying faults on refrigeration and air conditioning systems including |
### Course Outline

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**Certificate III in Air Conditioning and Refrigeration**

#### Elective units group A

*(a minimum of 0 and maximum 20 points)*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Outcome (Required Skills &amp; Knowledge)</th>
</tr>
</thead>
</table>
| UEEENEEC001B Maintain documentation | Understand enterprise communication methods  
Understand work activities records  
Understand using basic computers and applications |
| UEEENEEC010B Deliver a service to customers | Understand enterprise communication methods  
Understand work activities records  
Understand problem solving concepts and techniques  
Understand enterprise customer relations protocols  
Understand enterprise quality management system  
Understand instructing users in the use of specific items of equipment and systems |
Elective units group B  
(minimum of 30 points and maximum of 60 points)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Outcome (Required Skills and Knowledge)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UEEENEEJ167A Resolve problems in central plant air conditioning systems</td>
<td>Understand system characteristics, design features, applications, construction, components and typical layout arrangements. Understand operating and control principles. Understand maintenance schedules. Understand system faults and testing methods. Understand secondary systems and refrigerants.</td>
</tr>
</tbody>
</table>

Volume of Learning

The volume of learning allocated to a qualification will vary depending on the level of the qualification and the experience and competency of the student. Students must complete the allocated hours for the qualification they are undertaking in order to achieve competency. If the student applies for RPL or Credit Transfer, the volume of learning may be reduced (maximum 25%). The hours that make up the volume of learning for 094819A Certificate III in Air-Conditioning and Refrigeration are:

<table>
<thead>
<tr>
<th>Categories</th>
<th>Academic Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Based Learning</td>
<td>1200</td>
</tr>
<tr>
<td>Simulated/Practical Assessments</td>
<td>690</td>
</tr>
<tr>
<td>Workplace Learning</td>
<td>416</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2306</strong>*</td>
</tr>
</tbody>
</table>

*The total volume of learning for a Certificate III level qualification must be at least 1200 hours.

Delivery

The duration for this course in training weeks will be 20 contact hours per week for 94 weeks.

This will involve a blend of classroom based, simulated and supervised workplace based training to ensure full competency.

Assessment Methods

Assessment is structured throughout the course. If students are unable to achieve competency, additional support is provided through mentoring and access to re-assessment as outlined in our policies and procedures. Assessment requires achievement across all tasks to demonstrate competence and includes:

- Written Assessment
- Portfolio of Evidence including Third party Report
- Simulated/Practical Assessment (demonstration of skills)
- Workplace observation and demonstration
Resources

Students will be provided with the following resources required to complete the 094819A Certificate III in Air Conditioning and Refrigeration upon enrolment:

- Australian Refrigeration and Air-Conditioning Vol 1 Edition 5 & Vol 2 Edition 5 by Graham Boyle (For Full course only), RPL students will receive handouts

Relevant Industry Standards

Superior Training Centre’s delivery and assessment of the 094819A Certificate III in Air Conditioning and Refrigeration complies with the following Australian standards:

- AS1668
- AS/NZS 3000
- AS/NZS 5149
- HB40
- AS/NZS 3666
- AS 2913

Total Course Fees

$5,000 Deposit (non-refundable). This amount comes out of subsequent course fees.
$24,000 Course Fees for International Students (paid by a payment plan)
$1,000 Resource Fee for all books and materials
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Campus Details and Facilities

Superior Training Centre is located at 1/13 York Road, Ingleburn NSW 2565.

The campus at Ingleburn provides quality teaching and learning facilities for students. The training facilities have been set up to run classroom based training sessions, to support the learning and assessment programs we offer.

The campus includes well-appointed facilities that offer a comfortable learning environment.

Library Services
Ingleburn Library is available to students to assist them with their study. The library is located at 76 Oxford Rd, Ingleburn NSW 2565 and is just a 15 minute walk from the campus.  
02 46454060

How to Apply
Please contact Superior Training Centre by:
☎️ +61 2 9618 6809
✉️ info@stc.nsw.edu.au
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Certificate III in Air Conditioning and Refrigeration

Important Information – Student Handbook, Policies and Procedures, Fees and Charges

Information about our training and assessment policies and procedures are included on our website www.stc.nsw.edu.au and should be read by you, prior to enrolment in addition to the Student Handbook which is also located on our website. These documents contain important information about your training course, fees and charges including our refund policy.

Identification of Student Needs and Student Support

Student needs are declared by the applicant at the time of enrolment: the application form allows the applicant to self declare where they have learning disabilities.

Every student is interviewed either face to face or over the telephone to attempt to establish the applicant skill and knowledge levels, their current employment and how that relates to the course content and interaction.

Where language literacy and numeracy are in question, Superior Training Centre has a language literacy and numeracy assessment they may undertake to confirm their level of language, literacy and numeracy skills.

Reasonable adjustments to training and assessment will be made and additional support (e.g. LLN, assistive technology, additional training, alternative delivery and assessment modes and methods) provided where students with physical attributes or specific learning needs are identified as requiring these changes to complete their training and assessment.