

# 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](http://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.

# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



## 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

UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace  
UEENEEE137A Document and apply measures to control OHS risks associated with electrotechnology work  
UEENEEC025B Participate in refrigeration and air conditioning work and competency development activities  
UEENEEK142A Apply environmentally and sustainable procedures in the energy sector  
UEENEEJ104A Establish the basic operating conditions of air conditioning systems  
UEENEEJ103A Establish the basic operating conditions of vapour compression systems  
UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications  
UEENEEE102A Fabricate, assemble and dismantle utilities industry components  
UEENEEJ110A Select refrigerant piping, accessories and associated controls  
UEENEEJ102A Prepare and connect refrigerant tubing and fittings  
UEENEEE105A Fix and secure electrotechnology equipment  
UEENEEJ106A Install refrigerant pipe work, flow controls and accessories  
UEENEEP012A Disconnect / reconnect composite appliances connected to low voltage installation wiring  
UEENEEP024A Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply  
UEENEEP025A Attach cords, cables and plugs to electrical equipment for connection to 1000 Va.c. or 1500 Vd.c. supply  
UEENEEE103A Solve problems in ELV single path circuits  
UEENEEJ194A Solve problems in low voltage refrigeration circuits  
UEENEEJ108A Recover, pressure test, evacuate, charge and leak test refrigerants  
UEENEEP017A Locate and rectify faults in low voltage composite appliances using set procedures  
UEENEEJ153A Find and rectify faults in motors and associated controls in refrigeration and air conditioning systems  
UEENEEJ170A Diagnose and rectify faults in air conditioning and refrigeration control systems  
UEENEEJ107A Install air conditioning and refrigeration systems, major components and associated equipment  
UEENEEJ111A Diagnose and rectify faults in air conditioning and refrigeration systems and components  
UEENEEJ113A Commission air conditioning and refrigeration systems  
UEENEEJ109A 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 maximum of 30 points)

UEENEEC010B Deliver a service to customers

#### Group B Electives: A minimum of 30 points and maximum of 60 points

UEENEEJ167A Resolve problems in central plant air conditioning systems

# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



## Core Units Syllabus

(25 Units-Total 1000 points)

Subject	Outcome (Required Skills & Knowledge)
<b>UEENEEE101A - Apply Occupational health Safety regulations, codes and practices in the workplace</b>	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
<b>UEENEEE102A - Fabricate, dismantle, assemble of utilities industry components</b>	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
<b>UEENEEE105A - Fix and secure electrotechnology equipment</b>	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



# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



<p><b>UEENEEE137A - Documents and apply measures to control OHS risks associated with electrical work</b></p>	<p>Understanding risk management and assessment of risk</p> <p>Understanding hazards and risks and control measures in working on construction sites</p> <p>Understanding hazards associated with extra-low voltage, low-voltage and high-currents</p> <p>Understanding hazards and risks and control measures associated with high-voltage</p> <p>Understanding hazards and risks and control measures in working with low voltage equipment</p>
<p><b>UEENEEC025B – Participate in refrigeration and air conditioning work and competency development activities</b></p>	<p>Understanding responsibilities under a competency development plan</p> <p>Understanding methods of monitoring and reporting competency development activities</p> <p>Understanding enterprise work activities policies and procedures</p>
<p><b>UEENEEK142A Apply environmentally and sustainable procedures in the energy sector</b></p>	<p>Understanding sustainable work practices</p> <p>Understanding techniques for reducing carbon produced energy and hence greenhouse gases</p>
<p><b>UEENEEJ104A - Establish the basic operating conditions of air conditioning systems</b></p>	<p>Understanding The Air Conditioning Industry</p> <p>Understanding Working safely with air conditioning systems</p> <p>Understanding Temperature &amp; relative humidity measuring devices</p> <p>Understanding Air velocity measuring devices (Anemometers only)</p> <p>Understanding Psychrometrics</p> <p>Understanding Basic air conditioning processes</p> <p>Understanding Ventilation</p> <p>Understanding Regulations</p> <p>Understanding Heat loads</p>



# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



<p><b>UEENEEJ103A - Establish the basic operating conditions of vapour compression systems</b></p>	<p>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</p>
<p><b>UEENEEJ107A - Install air conditioning and refrigeration systems, major components and associated equipment</b></p>	<p>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</p>
<p><b>UEENEEJ110A - Select refrigerant piping, accessories and associated controls</b></p>	<p>Understanding drawings, Specifications, Regulations &amp; 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</p>
<p><b>UEENEEJ102A - Prepare and connect refrigerant tubing and fittings</b></p>	<p>Understanding Piping                  Understanding Cutting                  Understanding Bending                  Understanding Joining                  Understanding Soldering and brazing equipment                  Understanding Silver solder                  Understanding Soldering techniques</p>

# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



<p><b>UEENEEJ106A - Install refrigerant pipe work, flow controls and accessories</b></p>	<p>Understanding Environmental and building regulation                  Understanding Refrigeration pipework                  Understanding Refrigerant pipework accessories                  Understanding Refrigerant liquid flow controls and distributors                  Understanding Refrigerant vapour flow controls</p>
<p><b>UEENEEP012A - Disconnect / reconnect composite appliances connected to low voltage installation wiring</b></p>	<p>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</p>
<p><b>UEENEEP024A - Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply</b></p>	<p>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</p>



# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



<p><b>UEENEEP025A – Attach cords, cables and plugs to electrical equipment for connection to 1000 Va.c. or 1500 Vd.c. supply</b></p>	<p>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</p>
<p><b>UEENEEE103A - Solve problems in ELV single path circuits</b></p>	<p>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</p>
<p><b>UEENEEJ194A Solve problems in low voltage refrigeration circuits</b></p>	<p>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</p>
<p><b>UEENEEJ108A Recover, pressure test, evacuate, charge and leak test refrigerants</b></p>	<p>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</p>
<p><b>UEENEEP017A - Locate and rectify faults in low voltage composite appliances using set procedures</b></p>	<p>Understanding Safe fault finding                  Understanding Single and three phase composite equipment                  Understanding Produce documentation and reports</p>

# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



<p><b>UEENEEJ153A Find and rectify faults in motors and associated controls in refrigeration and air conditioning systems</b></p>	<p>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</p>
<p><b>UEENEEJ170A - Diagnose and rectify faults in air conditioning and refrigeration control systems</b></p>	<p>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</p>
<p><b>UEENEEJ107A - Install air conditioning and refrigeration systems, major components and associated equipment</b></p>	<p>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</p>
<p><b>UEENEEJ111A - Diagnose and rectify faults in air conditioning and refrigeration systems and components</b></p>	<p>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</p>



# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



<p><b>UEENEEJ113A Commission air conditioning and refrigeration systems</b></p>	<p>Understanding Refrigeration systems operation and performance including refrigeration effect; flow rate; specific volume; system capacity; discharge temperature; total heat rejection; heat of compression and refrigerant properties and effect</p> <p>Understanding Compressor operation and performance including</p> <p>Air conditioning testing/measuring devices applicable to air volume, air velocity, air pressure, air temperature, air relative humidity and sound levels.</p> <p>Understanding System design cooling/heating capacity and conditions</p> <p>Understanding Pre-commissioning inspections and checks</p> <p>Testing, measurements and adjustments of the system</p> <p>Understanding System operating conditions and cooling/heating capacity vs system design conditions and cooling/heating capacity</p> <p>Marking up “as installed” drawings</p> <p>Understanding Commissioning reports</p> <p>Understanding Commissioning refrigeration and air conditioning systems including</p> <p>Understanding Retrofitting systems with a replacement refrigerant</p>
<p><b>UEENEEJ109A Verify functionality and compliance of refrigeration and air conditioning installations</b></p>	<p>Understanding Refrigeration and air conditioning installations, testing and verification methods</p> <p>Understanding Electrical safe working practices</p> <p>Understanding Refrigeration and air conditioning safe working practices</p>

### Elective units group A

(a minimum of 0 and maximum 20 points)

Subject	Outcome (Required Skills & Knowledge)
<p><b>UEENEEC010B Deliver a service to customers</b></p>	<p>Understand enterprise communication methods</p> <p>Understand work activities records</p> <p>Understand problem solving concepts and techniques</p> <p>Understand enterprise customer relations protocols</p> <p>Understand enterprise quality management system</p> <p>Understand instructing users in the use of specific items of equipment and systems</p>

# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



### Elective units group B

(minimum of 30 points and maximum of 60 points)

Subject	Outcome (Required Skills and Knowledge)
<b>UEENEEJ167A Resolve problems in central plant air conditioning systems</b>	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

## 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:

Categories	Academic Hours
Classroom Based Learning	1200
Simulated/Practical Assessments	690
Workplace Learning	416
<b>Total</b>	<b>2306*</b>

*\*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

## Course Outline

### UEE32211 (CRICOS code 094819A)

## Certificate III in Air Conditioning and Refrigeration



## 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 & Vol 2 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

\$ 1,000	Deposit ONSHORE (non-refundable). This amount comes out of subsequent course fees.
\$ 5,000	Deposit OFFSHORE (AUD\$1,000 non-refundable). This amount comes out of subsequent course fees.
\$26,000	Course Fees (paid by payment plan)
\$ 1,000	Resource Fee for all books and materials



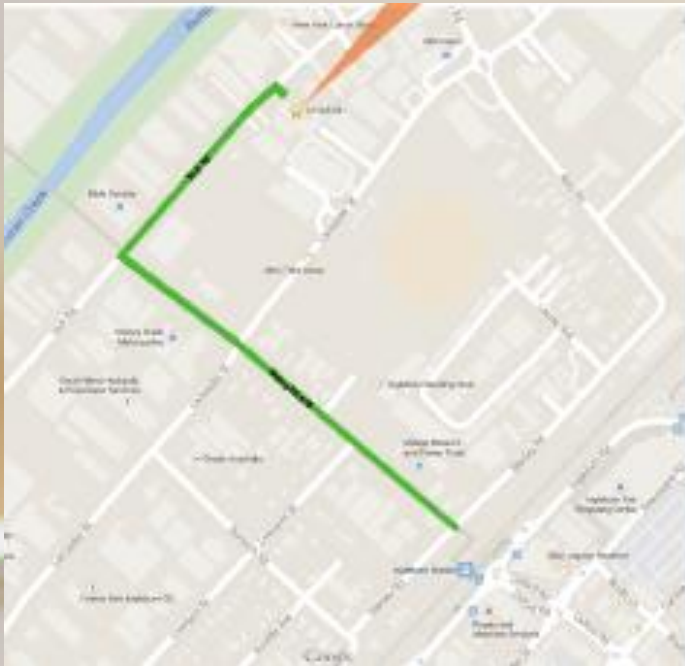
# Course Outline

## UEE32211 (CRICOS code 094819A)

### Certificate III in Air Conditioning and Refrigeration



## 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](mailto:Info@stc.nsw.edu.au)

# Course Outline

## UEE32211 (CRICOS code 094819A)

### 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](http://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.