

NATIONAL ELECTROTECHNOLOGY TRAINING PACKAGE (UTE-99 Version 2)

CERTIFICATE III in ELECTROTECHNOLOGY SYSTEMS ELECTRICIAN QUALIFICATION

COMPETENCY DEVELOPMENT SCHEDULE

AND

TRAINING PROGRAM



**ElectroComms and EnergyUtilities Qualifications Standards Body
of Australia Ltd, trading as EE-Oz Training Standards**

October 2002 – Version 2

Certificate III in Electrotechnology Systems Electrician Competency Development Program

Introduction

The purpose of this resource is to provide readers with a detailed overview of the industry preferred requirements that apply to delivery of training for the *Certificate III in Electrotechnology Systems Electrician* qualification and related units of competency, as contained in the National Electrotechnology Training Package – UTE 99 Version 2. The National Training Quality Council (NTQC) has endorsed the package. This resource in particular, will assist Registered Training Organisations (RTOs), State Training Authorities (STAs) and Licensing bodies gain an improved understanding of the key elements that constitute the industry recommended Training Program. The Program forms part of the Competency Development Schedule for the qualification. It is recommended by the industry that the Training Program as detailed herein, and any enhancement thereof, be delivered to learners/apprentices for the CIII in Electrotechnology Systems Electrician qualification.

It should be noted that Electrical Regulatory requirements in each state/territory only permit electrical work to be carried out by licensed Electrical Workers or, those in approved Apprenticeship Training Programs. In developing the industry recommended apprenticeship Training Program for the Certificate III in Electrotechnology Systems Electrician qualification, which is intended to provide an electrical (Electrician) licensed outcome, care has been given to incorporating all the requirements enunciated by the Electrical Regulatory Authorities Council (ERAC) in their policy of 1 July 2001. These are the:

- “*Essential Performance Capability Requirements for Electricians*” and
- “*capstone assessment test*”

A copy of the Policy requirements can be obtained from Electrical Licensing Authorities or **EE-Oz Training Standards**.

The ERAC policy requires that where a Training Program is recommended by the industry that RTOs shall deliver such. The policy states that, “*Failure by an RTO to provide evidence (to the satisfaction of the relevant licensing authority) that the training (including assessment) delivered to a licence applicant satisfies the stated requirements and forms an integral part of an ¹approved National Training Package qualification, which means the applicant has successfully passed a “capstone assessment” in accordance with specified requirements, will result in the applicant being required to undertake further assessments at the discretion of the licensing authority.*”

The **EE-Oz Training Standards** industry recommended Training Program for the Certificate III in Electrotechnology Systems Electrician has been designed such that:

- it is educationally sound
- it is appropriate for the industry context
- it is relevant to the performance of work in the Electrotechnology industry

¹ Approved National Training Package means an ANTA National Training Quality Council (NTQC) endorsed National Training Package qualification, that includes the “Capstone Assessment Test” as approved by ERAC/NUELAC, within the respective industry’s Training Program where recommended (ERAC Policy released 1st July 2001).

- it directly supports development against the units of competency making up the qualification,
- it is delivered under the auspices of an Apprenticeship, which complies with respective State Training Authority (STA) apprenticeship requirements,
- it meets ERAC’s requirements, and
- successfully completing the program and achieving all of the Units of competency and attaining the qualification, entitles an individual to become eligible to apply for an Electrical (Electrician’s) License with the relevant State/Territory Licensing Authority.

An RTO using the industry recommended Training Program will confirm inclusively that a learner/apprentice successfully completing the program has demonstrated all of the listed knowledge skills and practice. This includes affirming that the following Critical Aspects of Evidence that reside in each unit of competency making up the Certificate III in Electrotechnology Systems Electrician qualification have been met:

- currency of the evidence, which has occurred over the period of development;
- essential and critical safe electrical work skills, that includes relevant underpinning knowledge and workplace practice; and
- critical non-frequently used skills and knowledge.

For the purposes of the Training Program and, prior to the issuance of the qualification, the critical aspects of evidence from each unit of competency are combined into a final (holistic end of program) “*capstone assessment test*” to assist RTOs in their assessment processes and practices. This assessment test, known as NUE 505 A is delivered prior to issuing the qualification and transcripts; related to the Statements of Attainment for each unit of competency. It should be noted that the requirements to conduct the “*capstone assessment test*” for the qualification also correspond with the requirements for an electrical license as enunciated by ERAC.

An RTO registered under the new Australian Quality Training Framework (AQTF) requirements, is given full responsibility for deeming a learner/apprentice competent for the respective units of competency making up the Certificate III in Electrotechnology Systems Electrician qualification. Where the learner/apprentice is deemed competent by the RTO and, will be issued the qualification and statement for the units of competency and, *followed the industry recommended training program* they become eligible to apply for an electrical “Electrician’s” licence in the respective State/Territory.

The “Training Program”

The industry recommended competency development Training Program for the Certificate III in Electrotechnology Systems Electrician apprenticeship is one that is based on an *on-and-off-the-job training model* (the Training Program is based on the **EE-Oz Training Standards** Training Model Policy Version 2, released October 2001). The key elements of the Training Program are:

1. *off-the-job training (knowledge and skills modules/subjects), and*
2. *on-the-job training (Profiling), and*
3. *a specific holistic “capstone assessment test”*

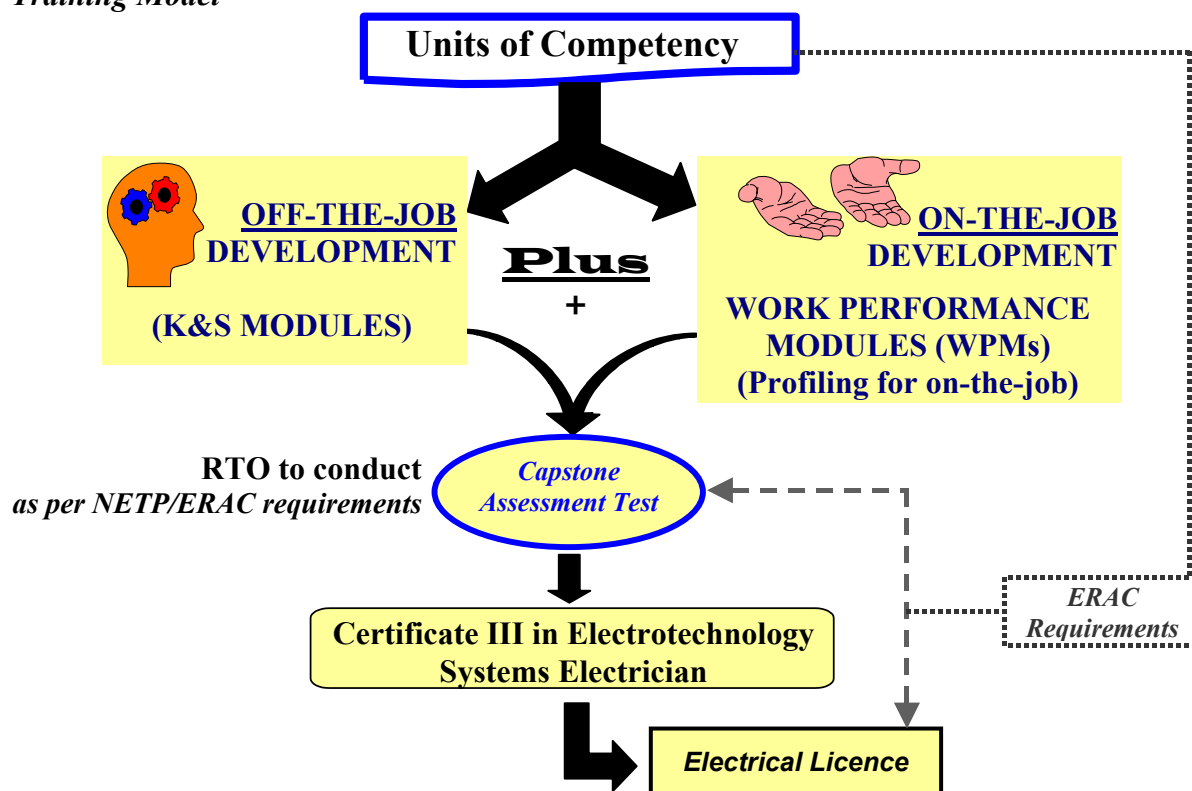
To be confirmed competent by an RTO Assessor in all of the Units of competency making up the qualification, a learner/apprentice is required to:

- successfully complete all of the **off-the-job component** (knowledge and skills modules) of industry recommended Technical training utilising a graded assessment system that is percentile based, and
- demonstrate across a *specified Range* of equipment, tools, standards, processes, procedures and experiences **sufficient practice in the workplace** for the **on-the-job component**.

Sufficient practice in the workplace includes planning, doing, and completing whole jobs under varying levels of supervision applied across and in context with the *specified Range*. The aim is to progress from direct supervision to demonstrating, under broad supervision all of the performance requirements related to the *Range*. Detailed information regarding the specific evidence to be gathered for the on-the-job component is contained in Work Performance Modules (WPMs). The **EE-Oz Training Standards** has developed a ready to use workplace evidence gathering and reporting tool for RTOs, employers, and apprentices to use in monitoring respective on-the-job performance, which aligns directly with the Work Performance Modules (WPMs). It is the Profiling System.

Content specification for assessing learners/apprentices in relation to the off-the-job component, is contained in Knowledge and Skills Module (K&S Modules) Descriptors. The K&S Modules contain the necessary information to assist RTOs in the development of appropriate learning strategies and resources for the learner/apprentice.

Training Model



EE-Oz Training Standards Electrician Training Model

The above diagram provides a simplified version of the key elements of the Certificate III in Electrotechnology Systems Electrician’s industry recommended competency development Training Program.

The Registered Training Organisation (RTO) will issue the National Electrotechnology Training Package Certificate III in Electrotechnology Systems Electrician qualification (including a Statement of Attainment for the defined industry competency standards) once the learner/apprentice has successfully completed all the components.

The period of competency development for a learner/apprentice to complete the Training Program is anticipated to be four years. Typically and on the balance of probabilities, the industry considers, that in order to gain the appropriate breadth of knowledge, skills and practice in the workplace across a sufficient *Range* with appropriate autonomy, it would take a learner four years to complete the apprenticeship.

Given that the development of competency for most of the technically based units of competency can often take a considerable period of time, notionally four years, a “*capstone assessment test*” has been introduced into the Training Program. This is to ensure there is sufficient currency of evidence is present for the RTO Assessor to confirm competence as is required for all aspects of the competency development schedule.

The “*capstone assessment test*” assists the RTO in overcoming issues related to critical aspects of performance for the units of competency making up the qualification of System Electrician, with respect to:

- the currency of evidence present for each unit of competency;
- essential safe electrical work skills;
- knowledge and practice, and
- high risk non-frequently used critical skills and knowledge.

The “*capstone assessment test*” is a final holistic test event that:

- encompasses the critical components within the competency standards
- is relative to what is required by the group of units that make up the qualification
- assesses the currency and integration of the on and off-the-job learning relative to safety and performance, and
- for the purposes of electrical licensing, correlates with and, addresses the needs of respective State/Territory Electrical Regulatory Authorities.

Competency Development Schedule

The information outlined in the following pages outlines the competency development schedule and the industry Training Program that applies for the Certificate III in Electrotechnology Systems Electrician apprenticeship. RTOs can use the Schedule to manage and determine their respective delivery arrangements. Copies of individual components and a range of industry Policies can be obtained from the **EE-Oz Training Standards** directly or via the website – www.ee-oztrainingstandards.com.au, and include:

Certificate III in Electrotechnology Systems Electrician – components;

- qualification structure,

- units of competency,
- National Electrotechnology Training Package *Module Map*
- K&S Module descriptors
- WP Module descriptors, and
- relevant teacher/learner resources such as the ““*capstone assessment test*” – NUE505 A/B”,
- or information about the Profiling System

Policies and Strategic Development:

- Annual Industry VET EE Strategic Plan & Labour Force Analysis VET in Schools
- **EE-Oz Training Standards** Training Model – V2
- Nominal Training Hours
- Training Package Implementation Guide, supporting graded assessment for off-the-job component Integrated on and off-the job assessment
- Intensive up-front off-the-job training in an off-the-job and on-the-job training model
- Simulation
- Supervision of Trainees/Apprentices (Electrotechnology)

It should be noted that all modules are maintained by the **EE-Oz Training Standards** using the National Electrotechnology Training Advisory Group (NETAG²). This is undertaken together with respective State/Territory Electrotechnology Training Advisory Groups (ETAGs). The ETAGs are managed by respective State/Territory Industry Advisory Bodies (ITABs).

Any comments or feedback regarding the currency/relevance of the respective components used in the Certificate III in Electrotechnology System Electrician competency development Training Program is welcomed by **EE-Oz Training Standards** and NETAG, and should be initially directed to the relevant State/Territory ITAB or, the **EE-Oz Training Standards** as listed further on in this schedule.

Competency Development Schedule follows

² NETAG – is the pre-eminent body comprising all State/Territory ITAB Executive Officers and State/Territory ETAG representatives from Registered Training Organisations (RTOs) servicing the industry and is chaired by the **EE-Oz Training Standards**. It is responsible for providing advice to the National Electrotechnology Competency Advisory Council (NECAC) on matters related to technical training and learning strategies. NETAG meets formally at least twice annually to review National Electrotechnology Training Package training and assessment issues.

Competency Development Schedule

National Training Package	National Electrotechnology Training Package UTE 99 V2
Qualification Title	CIII in Electrotechnology Systems Electrician
Qualification Number	UTE 3 11 99
Qualification Description	<p>Those gaining this qualification will be considered competent to install, maintain, test, diagnose and repair electrical components, wiring, equipment, and systems and may work in specialised areas of the electrical industry.</p> <p>This includes:</p> <ul style="list-style-type: none"> ▪ carrying out electrical work safely ▪ ensuring that electrical systems worked-on are safe to use ▪ ensuring measures for protection against faults are in place and will operate as intended, and ▪ selecting appropriately rated equipment and cables <p>Subject to any State/Territory Licensing Regulation to the contrary, achieving the Certificate III in Electrotechnology Systems Electrician in accordance with this schedule, or an approved equivalent program, entitles an applicant to be eligible for issuance of the “A” Grade Electrical (Electrician) Licence or equivalent.</p>
Specialisations available within the qualification	<p>Specialisations relate to the work environment in which the core technical requirements are contextualised and applied. One of the following will have been chosen to give effect to the qualification:</p> <ul style="list-style-type: none"> ▪ Installation and Servicing, ▪ Maritime Installation, Mining, ▪ Plant Servicing, ▪ Control, ▪ Energy Supply, ▪ Fire Protection, ▪ Process, ▪ Security, ▪ Signalling (Rail). <p>Descriptions regarding each Specialisation are detailed later pages to this document.</p>
Nominated Electrical Licence to be eligible for	“A” Grade Electrical (Electrician) Licence or equivalent, as promulgated and determined from time to time by respective State/Territory Licensing Authorities.

Apprenticeship and Training Agreement to be in place

Learners undertaking the Certificate III in Electrotechnology Systems Electrician industry recommended Training Program, in order to achieve an Electrical “A” Grade Electrical (Electrician) Licence or equivalent, are to carry out electrical work under appropriate supervision and in accordance with:

- the relevant electrical regulatory requirements,
- an approved Apprenticeship, and
- an approved Training Agreement/Contract of Training

Nominal Duration

The “*nominal*” period of training is 7,500-8,000 hours, inclusive of an amount of 900-1,100 hours of off-the-job technical education training

Supervision Requirements

Given the importance of safety, as related to electrical work, a learner/apprentice undertaking the Certificate III in Electrotechnology Systems Electrician training program is to be appropriately supervised by the employer.

Supervision is to be in accordance with the electrical regulatory requirements pertaining to the relevant State/Territory. Inclusively, in relation to training for the qualification, the level of supervision shall be such that the supervising electrical worker is in close proximity to the learner and the electrical work being carried out. In the early stages of the apprenticeship that means, in sight of, and able to communicate directly with each other, leading to broader supervision as competency develops.

For further information on supervision refer to the **EE-Oz Training Standards** Supervision Policy.

Units of Competence to be completed

The National Electrotechnology Training Package Certificate III qualification requirements, is the completion of all core units, and one elective unit, *and where appropriate*, one optional technical unit.

Core

Core Units are compulsory units within the overall group that make up the structure of Certificate III in Electrotechnology Systems Electrician qualification. All must be achieved for the purposes of meeting the qualification requirements with the respective units having the *Category of Electrical*.

- | | |
|---------------|---|
| UTE NES105G A | Install and terminate wiring systems – <i>cabling/wiring support and protection</i> |
| UTE NES105J A | Install and terminate wiring systems – <i>power and control – low voltage</i> |
| UTE NES106B A | Install electrical/electronic apparatus - <i>electrical</i> |

UTE NES206B A	Maintain and repair apparatus and associated circuits - <i>electrical</i>
UTE NES301B A	Undertake commissioning procedures of apparatus & associated circuits - <i>electrical</i>
UTE NES402B A	Test apparatus and circuits - <i>electrical</i>
UTE NES501B A	Diagnose and rectify faults in apparatus and associated circuits - <i>electrical</i>
UTE NES009 A	Participate in the training of others

Electives – one to be completed

Elective Units are those units that provide flexibility related to particular enterprise quality assurance arrangements including administrative matters related to work outcomes. One to be chosen and completed.

UTE NES002 A	Attend to breakdown
UTE NES005 A	Co-ordinate materials
UTE NES007 A	Supply projects
UTE NES008 A	Provide technical leadership in the workplace

Optional Units – only where selected

Optional Units are used to further support unique workplace conditions that may apply to a specialisation. Thus *a further selection can be made by choosing one further unit per specialisation if required* in accordance with the Qualification requirements detailed at 12.2 Qualifications Framework of Part C of the National Electrotechnology Training Package.

UTE NES105H	Install & Terminate Wiring Systems (Network communications)
UTE NES107^	Install Explosion-protected Equipment & Wiring Systems (^)
UTE NES214^	Maintain Equipment in Hazardous Areas (^)
UTE NES105J	Install & Terminate Wiring Systems (Power and control – low voltage)
UTE NES011	Monitor Energy Usage in an Electrotechnology Context

National Electrotechnology Training Package - Unit Category definition

B. Electrical: Encompasses the systems associated with wiring reticulation, distribution centres, utilising devices and electrical machines for the conversion of electrical energy into other forms and conversely for the conversion of other forms of energy into electromotive force.

National Training Program Industry recommended (**EE-Oz Training Standards**) Training Program

A) General

The outcome, or standard to be reached in becoming a competent Electrician are described in the National Electrotechnology Training Package - competency standards as grouped together and aligned to form the Certificate III in Electrotechnology Systems Electrician. This is the standard required by industry for certifying relevant technical, productive and safe work practices. The competency standards are comprehensive and focus on what is expected of an Electrician, in the workplace, rather than on the learning process and embodies the ability to transfer and apply skills and knowledge to new situations and environments.

The National Electrotechnology Training Package contents are comprised of three parts: Part A – Competency Standards (Units of Competency); Part B - Assessment Guidelines; and Part C - Qualifications for vocational training in the electrical, electronic and associated industry areas.

The Training Package Competency Standards list the individual units of competency and their content. The qualification section details the title each qualification is given and the related rules governing the core and elective arrangements for respective units of competency. It shows how individual Units of Competency are grouped to form the National Qualification that will be issued by a RTO. Assessment Guidelines provide general information mostly related to broad processes, which informs and, guides Registered Training Organisations (RTOs) about their own policy arrangements for managing and administering assessment activities.

The National Electrotechnology Training Package provides no specific advice regarding the delivery of training to aid the achievement of competence. Therefore, to assist RTOs in identifying appropriate delivery and management arrangements, this Competency Development Schedule for the Certificate III in Electrotechnology Systems Electrician with the industry recommended Training Program has been developed for use by RTOs.

The **EE-Oz Training Standards** recommended training program commences with a learner who has had no prior experiences (novice - new entrant) in the industry and, is one that recognises that learning occurs:

- from directed workplace learning activities followed by recurring practice of these activities, together with

- a structured educational program.

That is, the Training Program is based on a combination of on-the-job and off-the-job learning experiences. It recognises that learning occurs in an active way and involves appropriate learning strategies and resources. The program purpose is to provide coherence between the respective components. It also represents:

- a most effective and efficient means of delivering quality education and training, and
- a means of assessing if learning has occurred and competence has been attained.

Note: A learner's/apprentice's relevant prior experience (learning or competency) is recognised and judged along the continuum of novice to competent. RTOs will determine the respective RPL/RCC to apply in the event of such.

1) off-the-job program

In order to carry out electrical work safely; ensure that electrical systems worked-on are safe to use; ensure measures for protection against faults are in place and will operate as intended; and that appropriately rated equipment and cables are selected, the following industry recommended Training Program is to be undertaken.

The off-the-job training program for the Certificate III in Electrotechnology Systems Electrician is premised on the nominal hours of technical education referred to in “*Nominal Duration*” training period above (*ie. typically this is equal to 24 modules – of nominally 36-40 hours duration*), and which delivers all of the off-the-job ERAC requirements for electrical (Electrician's) licensing.

A) Core:

The core off-the-job training component that meets the core qualification units of competency requirements and, concurrently the ERAC “*Essential Performance Capability Requirements*” (EPCRs) is:

NBB002.1	Occupational Health & Safety (Revised)
NE163.1	Electrical Heating (Revised)
NE164.1	Lighting (Revised)
NE172.2	Electrical Wiring & Equipment 1 (Revised)
NE173.1	Electrical Wiring & Equipment 2 (Revised)
NUE044	Electrical Safe Working Practice
NUE045	Applied Electromagnetism
NUE046	Alternating Current Machines
NUE048.1	Single & Three Phase Transformer
NUE049	Applied Electricity - d.c. circuits, or NUE052 & NUE054, or Applied Electricity 1 & Applied Electricity 2

NUE059	Applied Electricity - a.c. systems, or NUE056 and NUE057, or Applied Electricity 4 and Applied Electricity 5
NUE062	Drawing & Diagram for Electrical Work
NUE063	Elect Wiring & Equipment 4, or NE032, or Circuit Development 1
NUE064	Electronic Power & Control
NUE400	Electrical Installation - Protection Methods & Devices
NUE403	Electrical Installation-Design & Equipment Selection
NUE407	Electrical Wiring Systems
NUE408	Electrical Installation Testing & Verification
	<i>NUE505A & B Electrical Systems Safety*</i>

Total core Electrical Modules – 20 modules

** This module is the “capstone assessment test” that is to be delivered towards the end of the Training Program and, just prior to the issue of the qualification. It is used as a means of affirming the presence of all evidence for awarding the qualification and transcript for the units of competency. At same time it will confirm for Electrical Regulators evidence that the learner has met the necessary ERAC “Critical Items” component of the Essential Performance Capability Requirements. See below, 3 - Final Assessment.*

**B) Specialisation component of training program:
4 modules**

The program is supplemented by training modules prescribed within the National Electrotechnology Training Package **Module Map** for the specific *Specialisation*, amounting to four modules. Refer to the National Electrotechnology Module Map on the **EE-Oz Training Standards** website; www.ee-oz.com.au

**Off-the-job
suggested delivery
sequence and mode**

It is suggested, as recommended by NETAG, that the most suitable and efficient delivery sequence for the off-the-job program, given the need to ensure integration and currency in evidence as well as on-the-job performance and, meeting ERAC’s requirements, is as follows:

Stage/Year 1	8 Modules
Stage/Year 2	8 Modules
Stage/Year 3	6 Modules
Stage/Year 4	2 Modules – includes NUE 505A

2) on-the-job program The *on-the-job training component* of the Training Program focuses on developing a learner's/apprentice's skills and workplace knowledge relative to the '*elements of competence*', '*performance criteria*' and '*Range*' as detailed within the unit(s) of competency. Typically the units of competency are constructed in such a manner, with rules enunciated in Part C – Qualifications, of the National Electrotechnology Training Package, as to how to provide a learner/apprentice with the respective national qualification.

A learner demonstrates competence³ by performing:

- *task skills* - the requirement to perform individual tasks,
- *task management skills* - the requirement to manage a number of different tasks normally associated with more than one Unit of Competency,
- *contingency management skills* - the requirement to respond to irregularities and breakdowns in routine; the learner's off-the-job development significantly enhances this particular skill, and
- *job/role environment skills* - the requirement to deal with the responsibilities and expectations of the work environment, including working with others.

The *elements*, which are major subsets of the units of competency, relate fundamentally to the routine day-to-day activities that a learner would perform in the workplace. The unit *elements* are constructed in such a manner to reflect this;

- **planning** the function of work (the whole job),
- **carrying out** the function of work (the whole job), and
- **completing** the function of work (the whole job)

The off-the-job part of the program underpins workplace learning/practice associated with these activities. Through *repetition*⁴ of workplace activities, competence is developed in an integrated way. These activities must be *consistently performed*⁵ across a *representative range*⁶ relative to the units of competency. They must be performed, *autonomously*⁷ and to *requirements*⁸ (technical/manufacturer's standards) as identified in the *Range* statement of the units of competency.

³ Competency definition - refer to the Australian National Training Authority (ANTA) National Training Package Developers Guide for detailed information and explanation.

⁴ *Repetition* – see National Electrotechnology Training Package respective *units – Evidence Guide* for definition

⁵ *Consistent performance* – see National Electrotechnology Training Package *Glossary* for definition

⁶ *Representative Range* - see National Electrotechnology Training Package *Glossary* for definition

⁷ *Autonomously* - see National Electrotechnology Training Package *Glossary* for definition

⁸ *Requirements* - see National Electrotechnology Training Package *Glossary* for definition

The *Range* statement includes information such as; apparatus, wiring systems, diagrams, schedules, plant, equipment, tools, accessories, circuits, components, procedures and the like.

The level of complexity and autonomy of work performed by the learner in the workplace is to be governed by the learner's immediate supervisor⁹, acting as a learning mentor/coach. The work available, and access to a supervisor are to be considered readily available resources for the delivery of workplace training.

The units of competency in the National Electrotechnology Training Package provide a general standard of information to both the workplace supervisor and the learner about the breadth and depth of achievement required in relation to the workplace activities. This is typically found in the *Range* statement of the units. More detailed information however, has been developed and, is contained within Work Performance Modules (WPMs). These have been developed and approved by NETAG for **EE-Oz Training Standards**. WPMs add greater specificity to the units of competency, and are extremely useful for RTO Assessors in monitoring learners' work place performance. **EE-Oz Training Standards** has developed a national Profiling reporting system aligned to the WPMs to assist RTO Assessors in managing and monitoring such performance. The Profiling System is explained in more detail later in this Schedule.

Where the normal operations of a business cannot provide exposure to particular work or skill functions *that are critical to a learner's development*, then techniques such as appropriate workplace simulation or employee exchange arrangements are to be adopted. An RTO would be expected to monitor the learner's development using the Profiling System and, formally consult with the employer/learner to outline possible solutions. K&S Module NUE 505B provides a framework for monitoring a learner's development.

Recording evidence of on-the-job training of activities and work performed relative to the units of competence making up the qualification is important and, is to be maintained throughout the life of the program. Several approaches can be adopted in recording such information. These include systems such as sampling, profiling, or portfolio.

The industry preferred and recommended system is Profiling.

⁹ *Supervisor* - refers to a person who is competent in the same field of work as the learner and is responsible for their workplace skill development

As mentioned above the specifications for relevant evidence required from the workplace is comprehensively detailed in Work Performance Modules (WPMs). The Profiling System inputs (entry data card) and outputs (quarterly reports) are directly linked and aligned to the WPMs and, thus the relevant aspects of the units of competency. The WPMs reflect the unique unit of competency numbers and titles, and end in WP. The WPMs titles are as follows:

Core

NEWP009	Participate in the Training of Others Work Performance (WP)
NEWP105G	Install & Terminate Wiring Systems (<i>Cabling/wiring support and protection</i>) WP
NEWP106B	Install Electrical Apparatus (<i>Electrical</i>) WP
NEWP110	Install & Maintain Fluid Measurement Equipment WP
NEWP206B	Maintain & Repair Apparatus & Circuits (<i>Electrical</i>) WP
NEWP301B	Undertake Commissioning of Apparatus & Circuits (<i>Electrical</i>) WP
NEWP402B	Test Apparatus & Circuits (<i>Electrical</i>) WP
NEWP501B	Diagnose & Rectify Faults in Apparatus & Circuits (<i>Electrical</i>) WP

Elective Units – one to be completed

NEWP002	Attend to breakdown Work Performance (WP)
NEWP005	Co-ordinate materials WP
NEWP007	Supply projects WP
NEWP008	Provide technical leadership in the workplace WP

Optional Units – only where selected

NEWP105H	Install & Terminate Wiring Systems (<i>Network communications</i>) WP
NEWP107	Install Explosion-protected Equipment & Wiring Systems WP
NEWP214^	Maintain Equipment in Hazardous Areas WP
NEWP105J	Install & Terminate Wiring Systems (<i>Power and control – low voltage</i>) WP
NEWP011	Monitor Energy Usage in an Electrotechnology Context WP

Note: Minimum of 12 months demonstrated wiring installations experience. With respect to the ERAC requirements it should be noted that of importance to the ERAC Policy is that in order to qualify for eligibility for an electrical (Electrician's) license there must be, in addition to the Training Program, formal evidence presented of at least 12 months of installation wiring experience over the term of the apprenticeship. The WPMs and Profiling System have incorporated the requirements, but do not remove the obligation of the RTO to formally confirm this for ERAC.

3) Final Capstone Assessment Test

The industry recommended Training Program requires that a final assessment, using K&S Module NUE 505A, is to be carried out by the RTO once the learner is considered to have developed sufficient workplace attributes, using the Profiling System, as well as having successfully accomplished the knowledge and skills component of the off-the-job program.

Typically, the “*capstone assessment test*” will be conducted following an extensive competency development period of integrated on and off-the-job training by the learner, of some three and half to four years. Access to the “*capstone assessment test*” requires successful completion of all underpinning K&S modules, confirmation of sufficient wiring installation practice and achieving the appropriate profile (as analysed and determined by the RTO Assessor) of the industry Profiling system.

Nominally the duration of the actual “*capstone assessment test*” conducted by the RTO will be 6-8 hours, using the K&S Module NUE 505A, which has an allocation of 18-20 nominal hours.

As mentioned earlier the purpose of the test is to assess holistically for presence of all the qualification completion requirements. That is, currency of the evidence present; confirmation of the high-level essential safe electrical work skills; and critical skills (particularly high risk infrequently used ones); as well as affirming successful achievement of the relevant critical underpinning knowledge and skills. Importantly the “*capstone assessment test*” is intended to ensure a high degree of validity and reliability, by providing evidence, which is both qualitative and current, and differently sourced, to that of the other evidence being used (K&S modules and Profiling). The final *capstone assessment test* crosses the boundaries of all the individual units of competency that ought to have been developed throughout the training program.

At the same time the requirements of the Electrical Licensing Authorities is integrated into the final “*capstone assessment test*” that is to be conducted by the RTO.

It should be noted that State/Territory Licensing Authorities and State Training Authorities (STAs) intend monitoring the performance of RTOs in the delivery of the Training Program and in particular the final “*capstone assessment test*”. In particular, the purpose of this is to monitor the quality of the process, the performance and, due diligence of RTOs. This gives assurance to the State/Territory Licensing Authorities when administering applications for the Electrical

(Electrician's) License. STAs also monitor/audit RTOs in relation to quality of training outcomes. Respective audit arrangements should be obtained from the relevant State/Territory Licensing Authority and STA.

To concur with **EE-Oz Training Standards** and ERAC Policy requirement for qualification issuance and licence eligibility respectively, RTOs are to administer the quality assurance “*capstone assessment test*” towards the end of the learner’s apprenticeship Training Program. This process as well, confirms the presence of the most “Critical Items” of the “*Essential Performance Capability Requirements for Licensed Electricians*” as defined by ERAC.

Format: The format of the assessment is a combination of written and practical assessment test over 6-8 hours, covering all the nominated critical items, in the form detailed in K&S Module - NUE 505A Electrical Systems Safety including its prerequisite NUE505B. The **EE-Oz Training Standards** has produced a module resource for NUE 505 A.

Note 1: The final capstone assessment test is not a Trade Test and applies only to those undertaking an apprenticeship. This is because the test has been designed on the bases that prerequisite information is being gathered throughout the Training Program. That is, on and off-the-job information which results in a considerable body of formative evidence being developed and, gathered by the RTO about the learner during the program. This information will assist and RTO in its final judgment processes when determining if learning transfer has occurred.

Note 2: Where an apprentice fails the “*capstone assessment test*”, the RTO is to review the learner’s options in the usual way (remedial training, etc). ERAC Policy advises that an apprentice learner will not be permitted to continue indefinitely as an apprentice and, the advice of the Licensing Authority should be sought if necessary.

B) Assessment Strategy

i) related to off-the-job program

The off-the-job assessment is to occur in a holistic manner against the stated educational criteria/learning outcomes of the K&S modules undertaken. This process assesses the knowledge that underpins workplace performance, ensuring that a learner knows why something is done as well as knowing how to do it, and typically also assesses the integration of knowledge and skills.

Graded assessment, which is more than a pass-fail regime, is the preferred system for the off-the-job training program, using marks or a percentage score where the minimum score for the requirements of ERAC’s 66 Essential Performance Capability Requirements is fully met to the satisfaction of the RTO and no less than 50% for the remainder. The assessment shall be in accordance with the Australian Qualification

Training Framework (AQTF) requirements and confirm that all respective knowledge and skills are present, and individuals are capable of responding to unplanned and unexpected events appropriately and safely. Accordingly, final module assessment will be a combination of the two components. A transcript (*Statement of Results*) is to be issued to the learner, and where applicable the employer, as evidence for the learner seeking to make a licensing application.

ii) related to the on-the-job program

The *Range Statement* and *Evidence Guide* in the units of competency detail in general the type and extent of evidence required for a valid and reliable judgment that is to be made about a learner's performance.

A learner's on-the-job development involves the application of the knowledge and skills generally learned/acquired off-the-job at technical college. This knowledge and these skills are then more fully developed by repetitive reinforcement on-the-job. This is a process that involves directed workplace activities that are closely supervised as well as routine events that are more generally supervised. Furthermore, it will involve gradual exposure of the learner to more complex activities with increasing autonomy in on-the-job activities.

The evidence required is to be based on a learner's ability to **plan** for carrying out work (the whole job), **carrying out** the work, and **completing work** relative to the *performance criteria* outlined within the unit(s) of competency. The evidence related to these activities, along with other necessary evidence, as it relates to all units of competence making up the qualification is contained in Work Performance Modules (WPMs), which describe in more detail the evidence required.

Workplace evidence must be accurate, sufficient, timely and gathered on a regular basis across a range of work environments. This information is gathered and reported in a structured way, when using the industry recommended Profiling System. This is explained further below.

Profiling System - Activities

Profiling is a systematic method of recording and reporting (using an electronic medium) on a learner's development towards competency. This requires the frequent and progressive collection, documentation, and judgement of evidence, often over an extended period of time. The focus for the evidence is set against the key requirement outlined in the competency unit(s), and further in WPMs. The collection process staged against known and pre-planned workplace activities and occurrences. Profiling requires a series of audit assessments and/or a final holistic assessment event.

When an electronic data capture system such as the Profiling System is used to gather and report on relevant information that is comprehensive and systematically gathered, then inquiries about learners' progress (anomalous to the expected profile) need only occur in special cases; limited site visits would be conducted with additional visits only occurring in cases of exceptional circumstances. Typically, inquiries would relate to unusual trends in a learner's profile relative to the standard industry profile of a learner that has been determined by the industry and contained within the electronic data capture system.

The Profiling System reports regularly (quarterly). It details trends in learning, supervision, and work function along with other information such as *Range*, which provide pointers towards the readiness for a judgment about competence. If the information does not clearly indicate the expected trends (industry norm) due to the lack of appropriate evidence, or for any other reason, then further intervention is to be fully or partially implemented, depending on the quality assurance requirements of the Registered Training Organisation.

The Profiling system is used by RTOs to monitor and analyse a learner's performance against industry set national competency standards (units of competency). It:

- is a powerful tool that aids in the assessment process
- is a passive non-intrusive system
- is low cost
- does not directly require workplace assessors
- avoids the most intrusive aspects of other CBT assessment systems by relying on a partnership between the learner and the mentor to report on naturally occurring workplace activities and supervision applied
- collects evidence regularly of a learner's ability to:
 - **plan** to carry out a range of whole jobs;
 - **carry out** the whole jobs; and
 - **complete** the whole job,
- is not a stand alone assessment tool

EE-Oz Training Standards has established a singular national Electronic Data Capture Service Agency (EDCSA) with local (State/Territory) agencies to manage the system. EDCSA and its agents, process the results entered by learners via specially designed data cards, and report quarterly for RTOs/learners. Data is reported against respective units of competency including elements and Range statement for the Certificate III in Electrotechnology Systems Electrician in the

National Electrotechnology Training Package.

The profiling system is the Industry's preferred and recommended approach, and has been chosen because it offers a quantitative and qualitative level of information from which a sound judgement about a learner's development can be made. More information can be obtained from the **EE-Oz Training Standards**.

C) Critical Aspects of evidence required for the purposes of qualification and in particular meeting ERAC's requirements

The purpose of electrical licensing is to safeguard workers in the electrical industry and the public exposed to the electrical installation, the embodied skills and knowledge are therefore, critical to safety. Critical aspects of evidence for licensing focuses on the skills and knowledge related to:

- carrying out electrical work safely
- ensuring that electrical systems worked-on are safe to use
- ensuring measures for protection against faults are in place and will operate as intended, and
- selecting appropriately rated equipment and cables.

Vocational Education and Training no longer relies on accredited courses to determine qualifications or quality assurance of outcomes. The declaration of qualification and standards of performance for which Registered Training Organisations (RTOs) are to train and assess against lies with the industry. The declared outcomes are to be in accord with and align to, the Australian Qualifications Framework (AQF).

State/Territory Training Authorities are responsible for monitoring the performance of RTOs under the Australian Quality Training Framework (AQTF) and their quality of outcomes against National Training Packages. Equally State/Territory Licensing Authorities are responsible for assuring public safety and worker safety with respect to electrical work and installations. This requires that State/Territory Licensing Authorities in issuing electrical licenses under their duty of care responsibilities assure that in issuing a license there is sufficient evidence presented by an applicant that is in accord with ERAC Policy requirements.

It is expected by ERAC that these requirements be embedded in National Training Packages where an electrical (Electrician's) licensed outcome is sought. The industry recommended Training Program for Certificate III in Electrotechnology Systems Electrician qualifications has been designed from the National Electrotechnology Training Package respective Units of Competency. It incorporates ERAC's requirements.

Additionally, State/Territory Licensing Authorities need to ensure that RTOs who train and assess apprentices, approved to carry out electrical work whilst in training, are able to effectively confirm that a learner has met the ERAC Policy of declared “*essential performance capability requirements*”. Thus RTOs are required to submit for approval to train in the domain of electrical work and, accept audit from the relevant State/Territory Licensing Authorities as and when determined.

To minimise the possible impact of duplicated audits by STAs and State/Territory Licensing Authorities, respective bodies in each State/Territory are consulting and, developing suitable cost effective and formal arrangements for RTO compliance.

ERAC policy states: “*To complete the quality assurance process, the application of the “Capstone Assessment” by RTOs will be audited from time to time in accordance with the audit arrangements set out in the same document – see Policy, Capstone Assessment Requirements for prospective Electricians. Implementation of the above policy may vary from jurisdiction to jurisdiction. In some States (e.g. W.A.) the requirements are expected to be integrated with the training requirements of the State Training Authority (which is the Department of Training & Employment, in the case of W.A.). This integration of regulatory and training requirements will make their application simpler and more efficient, however the success of the ERAC policy is not dependent on that form of implementation.*”

RTOs should contact their respective licensing and/or training Authorities to ascertain the relevant arrangements in the respective State/Territory.

As mentioned above ERAC have through their Policy of 1st July 2001, enunciated publicly the requirements for a person seeking an electrical licence. These requirements are to be embedded in National Training Packages and, be delivered by RTOs. The National Electrotechnology Training Package has proceeded to embed these requirements in the respective units of competency. It has also developed an industry recommended Training Program for RTOs, to support training and assessment delivery against the requirements. *It was acknowledged by ERAC that transitional arrangements would apply at local licensing levels to ensure individuals are not disadvantaged with the introduction of the new Program.*

With respect to ERAC Policy, it is a requirement that the person applying for a licence must present the following evidence:

- “*Is an entry level learner - Apprentice*”

- *Has successfully achieved the “66 Essential Capability Requirements” in the respective industry National Training Package*
- *Has successfully demonstrated achievement in the critical items of the “Essential Capability Requirements” via the completion of a “Capstone Assessment”*
- *Has or will receive the respective industry National Training Package qualification*
- *Has completed the respective industry’s training program, where recommended*
- *Has demonstrated 12 months electrical wiring installation experience within the term of the apprenticeship*

For automatic acceptance of eligibility of a licence for the prospective learner, an RTO issuing certification related to the above must have been approved by the Electrical regulator with a “Certificate of Approval”, having agreed to be audited in accordance with the Electrical Regulators requirements in the respective jurisdiction.”

Successful completion of the “*Capstone Assessment Test*” is one of the cornerstone requirements for the issue of the qualification by an RTO, and an electrical (Electrician’s) licence by a State or Territory Licensing Authority.

The overarching objective with respect to the ERAC requirements is that the training for a prospective electrician must deliver at least the “*essential performance capability requirements*”, and that the “*capstone assessment test*” will confirm that the most critical of these has been attained by the applicant. Concurrently the requirements of an ¹⁰approved National Training Package qualification must have been met.

The **EE-Oz Training Standards** industry recommended Training Program in delivering the Certificate III in Electrotechnology Systems Electrician qualification has for efficacy and synergy of competency development, concurrently integrated the requirements of National Electrotechnology Training Package and ERAC, and in particular the “*capstone assessment test*”. Thus the test supports two concurrent and equal outcomes;

1. the National Electrotechnology Training Package and qualification requirements, and
2. the ERAC Policy requirements

¹⁰ Approved National Training Package means an ANTA National Training Quality Council (NTQC) endorsed National Training Package qualification, that includes the “Capstone Assessment Test” as approved by ERAC/NUELAC, within the respective industry’s Training Program where recommended.

The final “*capstone assessment test*” confirms that critical skills and knowledge, electrical safe work practices and currency of evidence required for issuance of the Certificate III in Electrotechnology Systems Electrician qualification and, an eligibility for the Electrical “A” Grade (Electrician’s) licence or equivalent are present. It is completed through:

1. successfully completing the core and Specialisation K&S modules (off-the-job training) as specified by **EE-Oz Training Standards**,
2. successfully achieving the relevant workplace attributes (on-the-job requirements as per WPMs) using the **EE-Oz Training Standards** Profiling System, and which includes formal confirmation that a minimum of twelve months experience and practice has been exhibited over a wide variety of wiring electrical installations. This is supported by documentary evidence from the RTO, via the employer
3. successfully completing the K&S Module – NUE 505A Electrical Systems Safety, which is the “*capstone assessment test*”, and its prerequisite NUE 505B, and
4. assessed as competent for the Certificate III in the Electrotechnology System Electrician’s competencies with confirmation by the Registered Training Organisation that the qualification will be issued.

Post Qualification - Maintaining Competence

To give effect to the maintenance requirements of competence post issuance of the qualification, and any electrical licensing re-evaluations, where executed by a respective State/Territory Licensing Authority, they are to be conducted concurrently, and aspects of judgement about competence and renewal are to focus on those matters pertaining to:

- changes in regulations, technical standards, procedures, practices and the like,
- whether the individual has continued to practice in the industry,
- whether the individual has attended professional development programs conducted by the relevant Licensing Authority or approved bodies.

Critical infrequently used skills should also be the primary focus of any periodic evaluation, retraining, or re-assessment.

Even critical, frequently used skills may require periodic re-assessment. This is a matter respective State/Territory Licensing Authorities, and care should be taken in re-assessing competence that has already been attributed and continually being demonstrated in industry.

**Equivalent
Qualifications/Programs**

It is recognised that there are other Qualifications and/or other approved training programs that lead to the same outcome as the Certificate III in Electrotechnology Systems Electrician. Accepted Qualifications and/or approved training programs are those that have been deemed equivalent by a formal mapping process, using the Certificate III in Electrotechnology Systems Electrician as the benchmark for equivalence, and approved by the respective industry bodies and/or State/Territory Licensing Authorities/ERAC.

CIII in Electrotechnology Systems Electrician UTE 3 11 99**Description of the specialisation within the qualification:**

<i>Specialisation</i>	Typical work function	Typical work environment
<i>Control</i>	Installation, maintenance and repair of industrial control systems and equipment that involve pneumatic; mechanical, electrical/electronic instrumentation systems and equipment.	Industrial and commercial situations in all types of industries.
<i>Energy Supply</i>	The installation and maintenance of apparatus and equipment belonging to electricity distributors ranging from equipment in consumers' switchboards to substations and control centres.	Industrial workshops, substations, switchyards and premises pertaining to the electrical distributors.
<i>Fire Protection</i>	Installation of fire protection alarm wiring in a variety of premises including residential, commercial and industrial settings and the maintenance of fire detection equipment, apparatus and devices contained therein. Options are provided for a teledata specialisation or further specialisation in installation and maintenance.	Residential, commercial and industrial situations.
<i>Installation and Servicing</i>	General installation of wiring in a variety of premises including residential, commercial and industrial settings and the maintenance of equipment, apparatus and devices contained therein. Options are provided for a teledata specialisation or further specialisation in installation and maintenance.	Residential, commercial and industrial situations.
<i>Maritime Installation</i>	The installation and maintenance of equipment and apparatus on marine vessels and off-shore drilling platforms.	Ships, submersibles, shipyards and off-shore drilling platforms.
<i>Mining</i>	The installation and maintenance of equipment and apparatus in mines and collieries and associated land drilling and mining operations.	Can include open cut and under ground mines and workshops specialising in mining equipment.
<i>Plant Servicing</i>	The installation and maintenance of equipment and apparatus associated with mobile and stationary plant.	Commercial and industrial environments.
<i>Process</i>	Installation, maintenance and repair of process control systems and equipment that involve pneumatic, hydraulic mechanical and electrical/electronic instrumentation systems and equipment.	Process situations for variety of industries.
<i>Security</i>	Installation, commissioning, maintenance and repair of equipment used to maintain the security of commercial and domestic premises.	Residential, commercial and industrial situations.
<i>Signalling (Rail)</i>	The installation and maintenance of signalling systems used for the control of public transport, especially trains, automobile traffic and the like.	Includes manufacturing workshops, industrial base workshops & equipped motor vehicles.

EE-Oz Training Standards

State and Territory Industry Training Advisory Boards (ITABs)

EE-Oz Training Standards

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DOWNER ACT 2602

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Licensing Office, Office of the Chief Electrical Inspector, Melbourne
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- South Australia:
Licensing Office, Office of Consumer & Business Affairs
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- Tasmania:
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