Electronics

LEVEL 3	15 TCE CREDIT POINTS
COURSE CODE	ELT315114
COURSE SPAN	2014 — 2023
READING AND WRITING STANDARD	NO
MATHEMATICS STANDARD	NO
COMPUTERS AND INTERNET STANDARD	NO

This course was delivered in 2022. Use A-Z Courses to find the current version (if available).

Electronics Level 3 encompasses the theory and practice behind the analysis, design and construction of electronic circuits

This course is designed to allow learners to develop their skills, knowledge and understanding of electronics design. This course links the fundamental principles of science, mathematics and technology, reinforcing conceptual ideas through practical workshop and laboratory activities. The development of technical communication skills applicable to engineering is integrated throughout. Learners use a broad range of testing and prototyping techniques. They are encouraged to use high order thinking to analyse and design circuits, culminating in construction projects that synthesises their knowledge and skills in electronics. Learners use the engineering design process that draws on scientific, mathematical and engineering knowledge.

Course Description

Electronics Level 3 is designed for learners who wish to expand their knowledge of the theoretical and practical aspects of electronics design. It is the study of how different electronic components can be connected to perform a task. It examines how information can be entered into, passed between, processed, and interpreted from electronic circuits. Both analogue and digital circuits are studied, with acknowledged relevance to computing, communications technology, and audio/visual technologies. Combinations of theoretical and practical activities are provided to assist learning. Construction projects enable the integration of the theoretical knowledge and practical skills gained, giving learners a comprehensive experience of the engineering design process.

Rationale

Electronics Level 3 encompasses the theory and practice behind the analysis, design and construction of electronic circuits. This course is designed to allow learners to develop their skills, knowledge and understanding of electronics design.

This course links the fundamental principles of science, mathematics and technology, reinforcing conceptual ideas through practical workshop and laboratory activities. The development of technical communication skills applicable to engineering is integrated throughout.

Learners use a broad range of testing and prototyping techniques. They are encouraged to use high order thinking to analyse and design circuits, culminating in construction projects that synthesises their knowledge and skills in electronics. Learners use the engineering design process that draws on scientific, mathematical and engineering knowledge.

Learning Outcomes

On successful completion of this course, learners will be able to:

1. recall and apply information about electronics
2. identify and compare circuits and their components
3. plan and organise to complete activities
4. experiment with a range of digital circuits including counters and logic gates
5. experiment with a range of analogue circuits including amplifiers and filters
6. analyse and understand the operation of circuits and their components through theory and experiments
7. model and predict circuits behaviour using mathematical and analytical skills and techniques
8. select appropriate electronic circuits to perform a task and evaluate its performance
9. design, modify, combine and improve upon circuits using examples and theory
10. create circuits using a range of workshop skills
11. research and report on electronics concepts and ideas, and communicate findings through a range of media
12. identify hazards related to the use of electronics, and comply with health and safety procedures, including using appropriate personal protective equipment
13. identify and solve problems using a range of skills and equipment.

Pathways

Electronics – Foundation Level 2 provides a pathway to this course. VET Certificate II in Electro-technology also provides some related foundation knowledge and skills.

Electronics Level 3 may lead to further studies at tertiary level, with courses such as Bachelor of Engineering, Bachelor of Science, or related technical trades.

Resource Requirements

Access to equipment such as multimeters, oscilloscopes, breadboards, DC power supplies, and equipment for circuit board manufacturing is necessary for this course. Access to signal generators and computers with circuit design software is desirable.

Course Size And Complexity

This course has a complexity level of 3.

At Level 3, the learner is expected to acquire a combination of theoretical and/or technical and factual knowledge and skills and use judgement when varying procedures to deal with unusual or unexpected aspects that may arise. Some skills in organising self and others are expected. Level 3 is a standard suitable to prepare learners for further study at tertiary level. VET competencies at this level are often those characteristic of an AQF Certificate III.

This course has a size value of 15.

Course Structure

The course consists of three (3) **compulsory** core areas of skills and knowledge in:

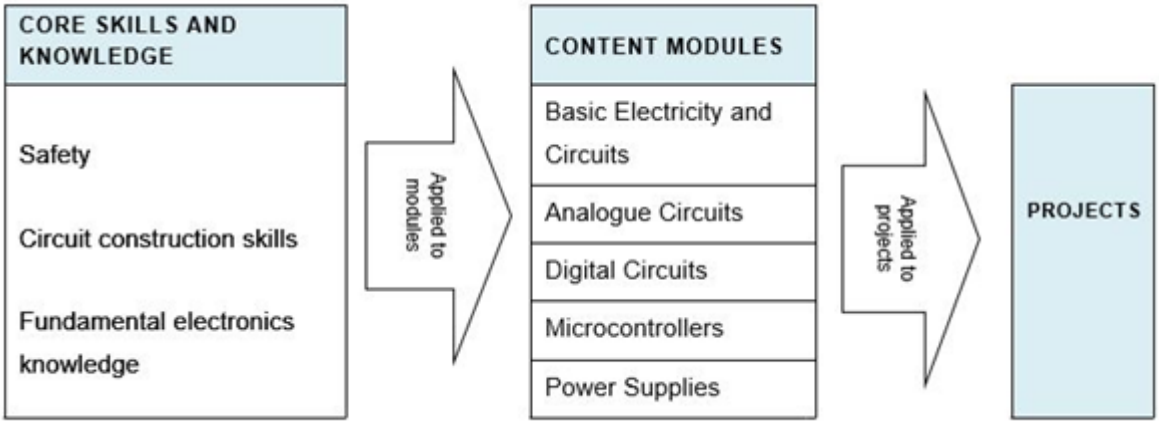
- safety
- simple circuit construction skills
- essential electronics knowledge.

These core areas of skills and knowledge are applied to applied to five (5) compulsory content modules:

- Basic Electricity and Circuits
- Digital Circuits
- Analogue Circuits
- Microcontrollers
- Power Supplies.

Core electronics skills and knowledge are applied throughout the content of the modules.

DIAGRAMMATICAL OVERVIEW OF COURSE STRUCTURE



Course Delivery

The course content modules will be presented as theory reinforced by experimentation and analysis of circuits in both a conceptual and mathematical sense.

Circuits can be built on breadboard, or made into permanent Printed Circuit Boards (PCBs). Circuits can be tested using a range of equipment, such as Cathode Ray Oscilloscopes (CROs), multimeters or other relevant testing equipment. Learners will become familiar with both breadboarding and PCB manufacturing. Discussion and reporting results of experiments on circuits built is an important aspect with study of electronics.

The construction of projects will integrate a significant portion of the skills and knowledge learned in this course.

SAFETY

Providers will ensure that there is appropriate management of the risks of the hazards associated with learning and assessment activities used in this course consistent with their responsibilities under government and statutory regulations and guidelines including occupational health and safety requirements.

Course Content

CORE SKILLS AND KNOWLEDGE

SAFETY

Using equipment that is potentially hazardous is a requirement of this course. Learners will be instructed in the safe use of equipment, including:

- power tools, such as drills, saws, soldering irons, etc...
- chemical etching equipment
- appropriate storage and handling of chemicals including spill management
- toxic substances likely to be encountered including procedures to minimise risk of poisoning
- electrical safety including sources of dangerous voltage or current levels, and what to do in an emergency, e.g. when someone is receiving an electric shock
- workshop safety including safe practices for using equipment, basic first aid and what to do in an emergency
- safety equipment including Residual Current Devices (RCD's, or safety switches), fuses, circuit breakers, Personal Protective Equipment (PPE).

CORE CIRCUIT CONSTRUCTION SKILLS

Selecting, testing, measuring and calculating is to be incorporated into each module and, at the end of the course, learners will have encompassed:

- breadboarding
- PCB manufacturing
- measurement and calculation of current, voltage, resistance, power, gain, period and frequency, reactance, impedance, inductance, capacitance
- function and operation of select digital circuits
- uses of signal generators, injectors and other waveform sources (e.g. microphones, antennas) types of waveforms, output impedance
- continuity testing
- AC measurement, peak, average and RMS measurements
- circuit loading
- transistor and diode testing
- uses of cathode ray oscilloscopes for measuring and displaying waveforms, triggering, synchronisation, showing phase relationships.

CORE ELECTRONICS KNOWLEDGE (*FUNDAMENTALS*)

The following knowledge is relevant and basic to most aspects of the course. They are to be encountered and applied frequently:

- safe working practices
- standard symbols, SI units and prefixes
- communication in all forms
- uses of block diagrams
- identification, and orientation of components
- measuring, recording, discussing, researching and reviewing
- electronic systems in homes and industries: what they are, who designs, uses, operates, services and sells them
- uses of computer applications for simulation and drawing circuits and design of printed circuit boards.

In addition the following are to be revised, demonstrated or introduced within the modules as applicable:

- AC and DC sources
- voltage or current control in power supplies
- series, parallel and series/parallel resistive networks
- power dissipation, effects of voltage or current changes, $P = IV$, $P = I^2R$, $P = \frac{V^2}{R}$, power ratings
- magnets, magnetic materials, attraction, repulsion, fields, lines of force

- field around a straight conductor carrying a current, fields around loops and coils carrying a current
- electromagnets, electric motors
- uses of electromagnets in relevant technology
- Faraday's law
- Lenz's law.

CONTENT MODULES

Each of the following modules must be covered by the end of the course. Due to the sequential nature of these modules, it is recommended for learners to be proficient with module 1 before attempting the other modules. It is recommended that module 3 on digital circuits be covered before module 4 on microcontrollers.

Module 1: Basic Electricity And Circuits (SUGGESTED 10% OF DELIVERY TIME)

Example experiments and practical projects: Compare voltage and current in a resistor and/or a diode using graphs, create a light activated circuit.

Derived from or related to these projects are topics including:

- voltage, current, resistance and power
- Ohm's law
- series and parallel circuits
- voltage dividers
- resistors, capacitors, inductors
- resistor colour code and E12 series
- capacitor values and pF code
- continuity
- switches
- semiconductors – diodes, LEDS, transistors
- integrated circuits – voltage regulators (see power supplies), Digital IC's (see digital) amplifier ICs (see analogue), 555 timer.

Module 2: Analogue Circuits (SUGGESTED 25% OF DELIVERY TIME)

OPERATIONAL AMPLIFIERS
Example practical projects: Light or heat sensing switching circuits, a pre-amplifier for audio applications.

Derived from or related to these projects are topics including:

- IC op-amps and pin-outs
- dual voltage supplies
- inverting and non-inverting amplifiers
- comparators, differential or subtractive amplifiers
- feedback; negative for amplifiers, positive for comparators with hysteresis
- gain as a ratio between input and output voltages, $V_{\text{out}} = G \times V_{\text{in}}$
- gain of an amplifier in terms of input and feedback resistances, $G = -\dfrac{R_f}{R_i}$, $G = 1 + \dfrac{R_f}{R_i}$
- uses of a CRO and multimeter to display or measure input and output levels
- input and output voltage ranges, clipping
- single supply operation
- systems which uses amplifiers.

WAVES

Practical project: build a square wave oscillator, build a tone generator.

Derived from or related to these projects are topics including:

- shapes: square, triangle, sawtooth, sine

- frequency
- wavelength
- astable multivibrator circuits.

FREQUENCY SELECTIVE NETWORKS

Example practical projects: Cross-over network for speakers, high frequency noise rejection in a heartbeat monitor.

Derived from or related to these projects are topics including:

- concept of frequency selective networks
- RC and RL networks, effects of components on frequency spectrum, effects of two component systems on the frequency spectrum
- concept and definition of cut-off frequency, reactance and impedance
- open loop gain, frequency response, bandwidth and its relationship to gain
- concept and definition of bandwidth
- impedance of LCR circuits
- active and passive high pass, low pass, band pass and band stop filters
- LC resonant filters
- decibels (voltage and power).

Module 3: Digital Circuits (SUGGESTED 20% OF DELIVERY TIME)

BASIC DIGITAL CIRCUITS

Example practical projects: a stopwatch, a two digit frequency meter, any counting circuit which involves a clock, counter, decoder and display.

Derived from or related to these projects are topics including:

- difference between digital and analogue signals
- logic gates
- Boolean algebra
- complex gate circuits, truth tables
- flip-flops: SR, D, JK type, and how to configure to a T type
- synchronous and asynchronous circuits
- counters and shift registers
- number bases, octal, binary, hexadecimal compared to decimal, simple addition and subtraction, conversion between bases
- binary code
- decoders demonstrated
- 7-segment display, 5 x 9 display
- simple timing diagrams
- binary coded decimal (BCD) and ASCII code
- simple d/a and a/d converters, e.g. a ladder network of resistors
- multiplexing
- special function IC's, such as BCD to 7 segment decoder.

Module 4: Microcontrollers (SUGGESTED 7.5% OF DELIVERY TIME)

It is recommended that PICAXE microcontrollers be used:

- they are developed with electronics novices in mind
- they have comprehensive documentation, in language that learners can access
- the programming language is BASIC, and is accessible to learners.

Example practical projects: temperature controlled fan speed controller, LED flashing game.

Derived from or related to these projects are topics including:

- analogue and digital inputs and outputs, voltage and current limitations
- sensors, transducers, and other input/output components
- mechanical switch bouncing, and methods of debouncing
- types and range of sizes of microcontrollers. Manufacturers, performance of different microcontrollers.

Module 5: Power Supplies (SUGGESTED 7.5% OF DELIVERY TIME)

Example practical projects: set or variable voltage power supply, overload protection circuit.

Derived from or related to these projects are topics including:

- AC and DC, rectifiers, transformers
- voltage ripple, smoothing
- voltage regulator IC's
- circuit protection, Zener clamping, active overload protection, reverse bias protection.

CONSTRUCTION PROJECTS (SUGGESTED 30% OF DELIVERY TIME)

Learners must build their own projects, comprising an original or modified design from concepts covered in the course, appropriately housed and complete with an appropriate level of documentation.

The construction projects will reflect approximately 50 hours total of in-class work including: research; design; building; testing and troubleshooting; and documentation.

Documentation of projects will be formatted and structured in a logical manner and include, as appropriate:

- a rationale or description of the problem that the circuit would provide a solution for
- appropriate reporting and research on options for circuits and components, and on the operation of the selected circuits and components
- the circuit design process, including:
    - block diagrams
    - any relevant calculations or programs
    - tests performs and results of these tests
    - schematic diagrams and PCB layout
    - an evaluation of the completed circuit
- an operators manual
- a time log of work planned and completed.

The projects will be internally assessed against criteria 1, 2, 3 and 6, as well as any relevant criteria for topic specific projects.

It is suggested that three projects be completed throughout the year; a project containing a digital circuit, a project containing an analogue circuit, and a project of the learners choosing.

Example – Digital Projects:

- PICAXE project involving sensors and displays
- two digit frequency meter
- counting circuit which involves a clock, decoder and display.

Example – Analogue Projects:

- heart rate monitor
- audio amplifier
- crossover network for an audio system.

Work Requirements

Learners **must** construct internally assessed construction projects that:

- consists of an original or modified design
- reflects approximately 50 hours of work time
- includes a report on at least one construction project detailing the research, design, construction and operation of the circuit.

The projects will integrate aspects of the core safety, electronics skills, core electronics knowledge and relevant content areas.

Other assessment tasks will include: practical work; assignments; project report; in class tests; and examinations.

Assessment

Criterion-based assessment is a form of outcomes assessment that identifies the extent of learner achievement at an appropriate end-point of study. Although assessment – as part of the learning program – is continuous, much of it is formative, and is done to help learners identify what they need to do to attain the maximum benefit from their study of the course. Therefore, assessment for summative reporting to TASC will focus on what both teacher and learner understand to reflect end-point achievement.

The standard of achievement each learner attains on each criterion is recorded as a rating 'A', 'B', or 'C', according to the outcomes specified in the standards section of the course.

A 't' notation must be used where a learner demonstrates any achievement against a criterion less than the standard specified for the 'C' rating.

A 'z' notation is to be used where a learner provides no evidence of achievement at all.

Providers offering this course must participate in quality assurance processes specified by TASC to ensure provider validity and comparability of standards across all awards. To learn more, see TASC's quality assurance processes and assessment information.

Internal assessment of all criteria will be made by the provider. Providers will report the learner's rating for each criterion to TASC.

TASC will supervise the external assessment of designated criteria which will be indicated by an asterisk (*). The ratings obtained from the external assessments will be used in addition to internal ratings from the provider to determine the final award.

Quality Assurance Process

The following processes will be facilitated by TASC to ensure there is:

- a match between the standards of achievement specified in the course and the skills and knowledge demonstrated by learners
- community confidence in the integrity and meaning of the qualification.

Process – TASC gives course providers feedback about any systematic differences in the relationship of their internal and external assessments and, where appropriate, seeks further evidence through audit and requires corrective action in the future.

External Assessment Requirements

The external assessment requirements for this course consist of one three (3) hour examination covering criteria 1, 4, 5 and 7. The examination will consist of written responses to questions relating to these criteria, including providing descriptions of features and functions of circuits and their components, calculations, use of equipment and circuit design.

Criteria

The assessment for Electronics Level 3 will be based on the degree to which the learner can:

1. apply knowledge and skills in designing, testing, building, and experimenting with circuits*
2. convey information using a variety of graphical, symbolic and textual methods
3. plan and organise time and resources to complete activities
4. apply knowledge and understanding of digital and analogue circuits and their components*
5. apply knowledge of digital and analogue systems in describing the function and operation of components and circuits*
6. gather, access, research and evaluate information
7. apply knowledge and understanding of mathematical concepts in electronics*

* = denotes criteria that are both internally and externally assessed

Standards

Criterion 1: apply knowledge and skills in designing, testing, building, and experimenting with circuits

This criterion is both internally and externally assessed.

The learner:

Rating A	Rating B	Rating C
selects and uses appropriate equipment and technologies to design, measure, test, experiment and build circuits	selects and uses appropriate equipment and technologies to design, measure, test, experiment and build circuits	identifies and uses equipment and technologies to design, measure, test, experiment and build circuits in a given context
identifies hazards, and determines and responsibly applies health and safety procedures, including using appropriate personal protective equipment (PPE)	identifies hazards, and determines and applies health and safety procedures, including using appropriate personal protective equipment (PPE)	identifies hazards, and avoid serious risks when applying health and safety procedures including using appropriate personal protective equipment (PPE)
anticipates and identifies faults, and devises and evaluates tests or procedures to locate and correct them	anticipates and identifies most faults, and conducts a range of tests or procedures to locate and correct them	recognises and identifies faults in circuits, and undertakes tests to locate and correct them
uses, devises, expands upon and evaluates a systematic approach to solving design problems (e.g. block diagrams)	uses, devises and evaluates a systematic approach to solving design problems (e.g. block diagrams)	selects and uses an appropriate approach to solve design problems
completes construction projects with neat, durable and functional joints, connections and presentation.	completes construction projects with neat and functional joints, connections and presentation.	completes construction projects with mostly functional joints and connections with limited attention to presentation.

Criterion 2: convey information using a variety of graphical, symbolic and textual methods

The learner:

Rating A	Rating B	Rating C
identifies and uses a wide variety of graphical, symbolic and textual communication techniques and technologies in a precise and accurate manner	identifies and uses a wide variety of graphical, symbolic and textual communication techniques and technologies in an accurate manner	identifies and uses a variety of graphical, symbolic and textual communication techniques and technologies
employs appropriate techniques and technologies to accurately and clearly communicate ideas and information, including all relevant details	employs appropriate techniques and technologies to accurately and clearly communicate ideas and information, including most of the relevant details	employs techniques and technologies to accurately communicate ideas and information, including most relevant details
defines, explains and applies a broad range of relevant concepts and terms to convey appropriate meaning	defines, explains and applies relevant concepts and terms to convey appropriate meaning	defines and applies relevant concepts and terms to convey appropriate meaning
creates complex reports using appropriate formatting conventions (e.g. project report). Reports are clearly and correctly structured.	creates reports using appropriate formatting conventions (e.g. project report). Reports follow required structure.	creates simple reports using formatting conventions (e.g. project report) as directed. Reports generally follow required structure.
clearly identifies the information, images, ideas and words of others used in the learner's work	clearly identifies the information, images, ideas and words of others used in the learner's work	differentiates the information, images, ideas and words of others from the learner's own

clearly identifies sources of the information, images, ideas and words that are not the learner's own. Referencing conventions and methodologies are followed with a high degree of accuracy.	clearly identifies sources of the information, images, ideas and words that are not the learner's own. Referencing conventions and methodologies are followed correctly.	identifies the sources of information, images, ideas and words that are not the learner's own. Referencing conventions and methodologies are generally followed correctly.
creates appropriate, well-structured reference lists/bibliographies.	creates appropriate, structured reference lists/bibliographies.	creates appropriate reference lists/bibliographies.

Criterion 3: plan and organise time and resources to complete activities

The learner uses negotiation, planning, and task and time management strategies.

The learner:

Rating A	Rating B	Rating C
identifies time, materials and equipment needed to complete a task, and employ a systematic and planned approach to their use	identifies time, materials and equipment needed to complete a task, and employ a planned approach to their use	identifies time, materials and equipment needed to complete a task
identifies, proposes and negotiates complex goals for the construction projects which are measurable, achievable and realistic	proposes and negotiates complex goals for the construction projects which are measurable, achievable and realistic	negotiates goals for the construction projects which are measurable, achievable and realistic
evaluates, selects and uses planning tools and strategies to achieve objectives and manage activities within proposed times	selects and uses planning tools and strategies to achieve objectives and manage activities within proposed times	uses planning tools to achieve objectives within proposed times
reflects on progress towards meeting goals and timelines, critically evaluates progress and plans effective future actions	reflects on progress towards meeting goals and timelines, analyses progress and plans future actions	reflects on progress towards meeting goals and timelines, and articulates some ways in which goals be met in the future
meets specified/negotiated timelines and addresses all required task characteristics* with a high degree of accuracy.	meets specified/negotiated timelines and addresses all required task characteristics*.	meets specified/negotiated timelines and addresses most aspects of required task characteristics*.

* 'required task characteristics' may include: word limits; mode of response; and presentation requirements

Criterion 4: apply knowledge and understanding of digital and analogue circuits and their components

This criterion is both internally and externally assessed.

The learner:

Rating A	Rating B	Rating C
accurately and consistently recalls and identifies information about complete circuits and their functional parts	recalls and identifies information about complete circuits and their functional parts	recalls the name and characteristics of simple circuits and their functional parts in a given context
recalls names, symbols, characteristics, limitations and likely uses of key components and their effects in a range of complex circuits	recalls names, symbols, characteristics, limitations and likely uses of key components and their effects in simple circuits	recalls the names and symbols of key components, and their purpose in simple circuits

accurately recalls and applies information relating to the digital and analogue circuits and a broad range of principles studied, including number systems, measurements and units, codes and definitions	recalls and applies information relating to the digital and analogue circuits and principles studied including number systems, measurements and units, codes and definitions	applies principles relating to the digital and analogue circuits studied in a given context, including number systems, measurements and units, codes and definitions
calculates or predicts the outcomes from changes made to circuits studied, and relates circuit behaviour to theory.	describes the effects of changes made through experiments and provide explanation relating to theory.	describes the effects of changes made through experiments.

Criterion 5: apply knowledge of digital and analogue systems in describing the function and operation of components and circuits

This criterion is both internally and externally assessed.

The learner:

Rating A	Rating B	Rating C
explains concepts involved in the role, function and operation of systems, circuits and components	describes concepts involved in the role, function and operation of systems, circuits and components	lists concepts involved in the role and function of circuits and components in given contexts
accurately predicts the likely input and output signals or conditions of components and circuits, using circuit diagrams, and identifies possible alternative components or circuits that perform a similar function	describes the likely input and output signals or conditions of components and circuits, through circuit diagrams, including identifying possible alternative components or circuits that perform a similar function	describes the input and output signals or conditions of components or experiments
accurately identifies circuit elements and designs complex circuits from analysis of block diagrams.	identifies circuit elements and designs circuits from analysis of block diagrams.	identifies circuit elements that are likely to be required from analysis of block diagrams.

Criterion 6: gather, access, research and evaluate information

The learner:

Rating A	Rating B	Rating C
identifies and collects data from experiments and tests, and methodically records and represents data in appropriate formats	identifies and collects data from experiments and tests, and records and represents data in appropriate formats	collects data from experiments and tests, and records data in appropriate formats
critically analyses and interprets data and information to make clear, logical and considered predictions	analyses data and information to make reasoned predictions	makes some valid predictions based on data and information
draws reasoned and logical conclusions or develops plans for further experimentation and testing based on analysis and interpretation of data	draws valid conclusions based on interpretation of data and develops plans for further experimentation and testing based on some analysis and interpretation of data	draws some valid, basic conclusions based on interpretation of data
identifies and clearly communicates trends, relationships* and anomalies in data and information	identifies and clearly communicates trends and relationships* that exist in data and information	identifies some trends and relationships* that

		exist in data and information
critically evaluates the quality of data and information and – where needed – collects further relevant information.	evaluates quality of data and information and – where needed – collects further information.	organises data and information into appropriate categories.

* ‘Relationships’ involves identifying correlations, comparisons/contrasts, similarities/differences.

Criterion 7: apply knowledge and understanding of mathematical concepts in electronics

This criterion is both internally and externally assessed.

The learner:

Rating A	Rating B	Rating C
selects, applies and adapts appropriate mathematical concepts and techniques in order to model, predict or evaluate circuits	selects and applies appropriate mathematical concepts and techniques in order to model, predict or analyse circuits	applies given mathematical techniques to model and predict circuits
correctly calculates component values or physical quantities using appropriate mathematical formulae, including correct usage of units and evaluation of calculated values	calculates component values or physical quantities using appropriate mathematical formulae, including correct usage of units and evaluation of calculated values	uses formulae to evaluate component values or physical quantities in a given context
creates and interprets graphs, tables and other mathematical tools, making an appropriate selection to gather or communicate information for a range of purposes.	accurately reads, uses and creates graphs, tables and other mathematical tools, making an appropriate selection to gather or communicate information for identified purposes.	reads, uses and creates graphs and tables to gather or communicate information for identified purposes.

Qualifications Available

Electronics Level 3 (with the award of):

EXCEPTIONAL ACHIEVEMENT

HIGH ACHIEVEMENT

COMMENDABLE ACHIEVEMENT

SATISFACTORY ACHIEVEMENT

PRELIMINARY ACHIEVEMENT

Award Requirements

The final award will be determined by the Office of Tasmanian Assessment, Standards and Certification from the 11 ratings (7 from the internal assessment, 4 from the external assessment).

The minimum requirements for an award in Electronics Level 3 are as follows:

EXCEPTIONAL ACHIEVEMENT (EA)
9 'A' ratings, 2 'B' ratings (3 'A' ratings, 1 'B' rating from external assessment)

HIGH ACHIEVEMENT (HA)
3 'A' ratings, 4 'B' ratings, 3 'C' ratings (2 'A' rating, 2 'B' ratings from external assessment)

COMMENDABLE ACHIEVEMENT (CA)
5 'B' ratings, 4 'C' ratings (2 'B' ratings, 2 'C' ratings from external assessment)

SATISFACTORY ACHIEVEMENT (SA)
9 'C' ratings (3 'C' ratings from external assessment)

PRELIMINARY ACHIEVEMENT (PA)
5 'C' ratings

A learner who otherwise achieves the ratings for a CA (Commendable Achievement) or SA (Satisfactory Achievement) award but who fails to show any evidence of achievement in one or more criteria ('z' notation) will be issued with a PA (Preliminary Achievement) award.

Course Evaluation

The Department of Education's Curriculum Services will develop and regularly revise the curriculum. This evaluation will be informed by the experience of the course's implementation, delivery and assessment.

In addition, stakeholders may request Curriculum Services to review a particular aspect of an accredited course.

Requests for amendments to an accredited course will be forwarded by Curriculum Services to the Office of TASC for formal consideration.

Such requests for amendment will be considered in terms of the likely improvements to the outcomes for learners, possible consequences for delivery and assessment of the course, and alignment with Australian Curriculum materials.

A course is formally analysed prior to the expiry of its accreditation as part of the process to develop specifications to guide the development of any replacement course.

Course Developer

The Department of Education acknowledges the significant leadership of Charles Prevost in the development of this course.

Expectations Defined By National Standards

There are no statements of national standards relevant to this course.

Accreditation

The accreditation period for this course was renewed on 20 July 2021 for the period from 1 January 2022 until 31 December 2023. During the accreditation period the relevance and demand of this course within the broader Years 11/12 curriculum context can be considered via established processes.

Should outcomes of the Years 9-12 Review process find this course unsuitable for inclusion in the Tasmanian senior secondary curriculum, its accreditation may be cancelled. Any such cancellation would not occur during an academic year.

Version History

Version 1 – Accredited on 19 November 2013. This course replaces Advanced Electronics (ELT315109) that expired on 31 December 2013.

Version 1.a - Accreditation renewed on 14 December 2018 for the period from 1 January 2019 until 31 December 2020.

Version 1.b - Accreditation renewed on 13 July 2020 for the period 1 January 2021 to 31 December 2021 (no amendments made).

Version 1.c - Renewal of Accreditation on 14 July 2021 for the period 31 December 2021 until 31 December 2023, without amendments.

Supporting documents including external assessment material

- ELT315114 TASC Exam Paper 2018.pdf (2018-11-22 12:40pm AEDT)
- ELT315114 - Assessment Panel Report 2018.pdf (2019-01-31 03:37pm AEDT)
- ELT315114 Electronics TASC Exam Paper 2019.pdf (2019-11-21 11:14am AEDT)
- ELT315114 Assessment Report 2019.pdf (2020-04-16 09:33am AEST)
- ELT315114 Electronics TASC Exam Paper 2020.pdf (2020-11-16 10:52pm AEDT)
- ELT315114 Assessment Report 2020.pdf (2021-01-20 01:19pm AEDT)
- ELT315114 Electronics TASC Exam Paper 2021.pdf (2021-11-13 01:58pm AEDT)
- ELT315114 Assessment Report 2021.pdf (2022-01-24 01:07pm AEDT)
- ELT315114 Electronics External Assessment Specifications.pdf (2022-04-07 03:20pm AEST)
- ELT315114 Electronics Information Sheet.pdf (2022-06-28 03:21pm AEST)
- ELT315114 Electronics TASC Exam Paper 2022.pdf (2022-11-09 12:39pm AEDT)

Tasmanian Government

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