UEENEEE101A Apply Occupational Health Safety regulations, codes and practices in the workplace

[12]Essential Performance Capabilities (EPCs) supported by this unit: 53; 54; 56; 57; 58.

RSAK[3] and related CAE[4]	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EE101A	*Occupational Health and Safety principles*	Vol.1: Chapter 2. Workplace and electrical safety Safety Alerts/Warning relevant to a subject are given throughout Volumes 1 and 2.	
T1	The basic legal requirements covering occupational health and safety in the workplace	Vol.1: 2.1 Occupational/workplace health and safety	
T2	The work environment	Vol.1: 2.2 Workplace hazards and risk control methods	
T3	Manual Handling		
T4	Chemicals in the workplace		
T5	Working at heights		
T6	Confined spaces		
T7	Physical and psychological hazards		
T8	Working safely with electricity	Vol.1: 2.3 Safety of electrical installations and equipment Vol.1: 2.4 Hazards of working with electricity	
T9	Life support - CPR in the workplace	Vol.1: 2.5 Electrical accidents	

In addition to these texts current ‘Codes of Practice’ should to be used.

UEENEEE102A Fabricate, dismantle and assemble electrotechnology components

Essential Performance Capabilities (EPCs) supported by this unit: 55; 56

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EE102A	*Hand and power tools and their application*	Vol.1: Chapter 5. Fixing methods and accessories for electrical and data/communication installations	Vol.2: Ch.3 Electric machines
T1	Mechanical drawing interpretation and sketching		
T2	Workshop planning and materials		
T3	Measuring and marking out		
T4	Holding and cutting		
T5	Drills and drilling		
T6	Tapping and threading		
T7	General Hand Tools		
T8	Joining techniques		
T9	Portable electric power tools		
T10	Sheet metal work		
T11	Low tolerance measurement		
T12	Dismantling and assembly techniques		Vol2.: 3.4 Disassembly—reassembly

UEENEEE104A Solve problems in d.c. circuits

Essential Performance Capabilities (EPCs) supported by this unit: 1; 2; 3; 4; 5; 6; 7.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EE104A	*Direct current electrical circuits*		Vol.1: Chapter.4 DC Circuit Vol.1: Chapter 5. Resistors Vol.1: Chapter 7. Capacitors Vol.1: Chapter 11. Cells and batteries Vol.2: Chapter 11. Test equipment
T1	Basic electrical concepts		Chapter 1: Elementary electricity
T2	Basic electrical circuit		Vol.1: 4.1 Parts of electric circuits Vol.1: 4.2 Circuit types
T3	Ohm's Law		Vol.1: 1.9 Ohm's Law
T4	Electrical power		Vol.1: 1.10 Electrical power and energy
T5	Effects of electrical current		Vol.1: 1.12 Effects of electricity
T6	EMF Sources energy sources and conversion electrical energy		Vol.1: 1.5 Dynamic electricity
T7	Resistors		Vol.1: Chapter 5. Resistors
T8	Series circuits		Vol.1: 4.4 Series circuit analysis
T9	Parallel circuits		Vol.1: 4.5 Parallel circuit analysis
T10	Series/parallel circuits		Vol.1: 4.6 Compound circuit analysis
T11	Factors affecting resistance		Vol.1: 5.1 Factors affecting resistance
T12	Effects of meters in a circuit		Vol.2: 11.17 Use, selection and care of instruments
T13	Resistance measurement		Vol.2: 11.12 Resistance measuring circuits
T14	Capacitors and Capacitance		Vol.1: Chapter 7. Capacitors
T15	Capacitors in Series and Parallel		Vol.1: 7.2 Capacitance

UEENEEE105A Fixing and support devices and techniques

Essential Performance Capabilities (EPCs) supported by this unit: 43; 45.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EE105A	*Fixing and support devices and techniques*	Vol.1: Chapter 5: Fixing methods and accessories for electrical and data/communication installations Vol.1: Chapter 7: Wiring and cabling systems	
T1	Device for securing and mounting accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories to hollow walls	Vol.1: 5.1 Accessories for fixing and supporting — Fixing to hollow structures Vol.1: 5.3 General switching, lighting and socket-outlet accessories Vol.1: 5.4 Protection and control accessories Vol.1: 5.5Accessories for specific situations Vol.1: 5.6 Data and communication accessories Vol.1: 7.2 Wiring and cabling systems	
T2	Device for securing and mounting accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories to solid walls	Vol.1: 5.1 Accessories for fixing and supporting — Fixing to concrete and masonry Vol.1: 5.1 Accessories for fixing and supporting — Powder and gas fixing methods Vol.1: 5.2 Mounting brackets, plates and boxes	
T3	Device for securing and mounting accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories to metal fixing	Vol.1: 5.1 Accessories for fixing and supporting	
T4	Securing and mounting accessories for supporting, fixing and protecting wiring/cabling/piping and functional accessories using fixing adhesives and tapes	Vol.1: 5.1 Accessories for fixing and supporting — Fixing to concrete and masonry Vol.1: 7.4 Enclosed wiring and cables — Trunking and dust systems	

UEENEEE 107A Use drawings, diagrams, schedules, standards, codes and specifications

Essential Performance Capabilities (EPCs) supported by this unit: 51.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EE107A	*Drawings, diagrams and schedules*	Vol.1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work Vol.1: Chapter 7: Wiring and cabling systems	Vol.2 Chapter 12: Electrical drawing practices
T1	Architectural drawings	Vol.1: 6.4 Undertaking electrical work	12.6 Other circuit representations — architectural electrical diagrams
T2	Electrical drawings	Vol.1: 6.1 Series and parallel circuits in wiring Vol.1: 6.2 Electrical circuits and wiring diagrams Vol.1: 6.3 Circuits in general wiring	Vol.2: 12.1 Circuit diagrams Vol.2: 12.2 Conventions in line work Vol.2: 12.3 Symbols used in electrical circuit diagrams Vol.2: 12.4 Placement of circuit components
T3	Circuit diagrams		
T4	Wiring diagrams		
T5	Building construction drawings and diagrams	Vol.1: 6.4 Undertaking electrical work Vol.1: 7.1: Wiring and cabling routes through buildings and structures — Building components and construction methods.	
KS02-EE107A	*Introduction regulations, technical standards, codes and specifications*	Vol.1: Chapter 3: Regulations and standards Vol.1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work.	
T1	Regulation for undertaking electrical work	Vol.1: 3.1 Electrical licensing	
T2	Standards philosophy and format	Vol.1: 3.2 Standards Vol.1: 3.3 Format of the Wiring Rules AS/NZS 3000 Vol.1: 3.4 Using Wiring Rules Vol.1: 3.5 Wiring Rules —Clause 1.4 Definitions Vol.1: 3.6 Fundamental requirements (Wiring Rules Part1)	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T3	Purpose, format and content of typical job specifications	Vol.1: 6.5 Working with specifications, schedules and drawings	

UEENEEE137A Document and apply measures to control OHS risks associated with electrotechnology work

Essential Performance Capabilities (EPCs) supported by this unit: 55; 56; 59;60;61.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EE137B	*Risks and control measures for dealing with workplace hazards*	Vol.1: Chapter 2: Workplace and electrical safety Vol.1: Chapter 9: Testing techniques and compliance verification	
T1	Risk management and assessment of risk	Vol.1: 2.1 Occupational/workplace health and safety	
T2	Hazards and risks and control measures in working on construction sites.	Vol.1: 2.2 Workplace hazards and risk control methods	
T3	Hazards associated with low-voltage, extra-low voltage and high-currents		
T4	Hazards and risks and control measures associated with high-voltage		
T5	Hazards and risks and control measures in working with low voltage equipment		
T6	Hazards and risks and control measures associated with harmful devices, materials, dusts and airborne contaminants.		
T7	Determine the degree of the risk	Vol.1: 2.1 Occupational/workplace health and safety Vol.1: 2.2 Workplace hazards and risk control methods	
T8	Use control measures to eliminate or control the risk .	Vol.1: 2.2 Workplace hazards and risk control methods	
T9	Engaging in monitoring and reviewing processes to ensure control measures remain valid.	Vol.1: 2.1 Occupational/workplace health and safety	

In addition to these texts current ‘Codes of Practice’ should to be used.

UEENEEEG006A Solve problems in single and three phase low voltage machines (Transformers)

Essential Performance Capabilities (EPCs) supported by this unit: 23; 24; 25; 26; 40.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG006A	*Single and three-phase transformers*	Vol. 1: Chapter 8 Protection – Earthing and protective methods Vol.2: Chapter 1: Electrical protection and protection devices Vol. 2: Chapter 4 Switchboards, control panels and metering	Vol.2: Chapter 2 Transformers
T1	Transformer construction		Vol.2: 2.4 Transformer construction
T2	Transformer operation	Vol. 1: 8.6 Other protective methods — Electrical separation	Vol.2: 2.1 Operating principle Vol.2: 2.5 Transformer ratings Vol.2: 2.7 Winding polarities
T3	Transformer losses, efficiency and cooling		Vol.2: 2.3.3 Transformer losses — transformer efficiency Vol.2: 2.6 Transformer cooling
T4	Transformer voltage regulation and per cent impedance	Vol. 2: 2.1 Protection against overcurrent — Short-circuit protection	Vol.2: 2.3.5 Transformer losses — voltage regulation
T5	Parallel operation of transformers and transformer auxiliary equipment		Vol.2: 2.7 Winding polarities Vol.2: 2.8 Parallel connection of transformers
T6	Auto-transformers and instrument transformers	Vol. 2: 4.7 Energy metering arrangements — Using instrument transformers	Vol.2: 2.9 Special transformers

UEENEEEG006A Solve problems in single and three phase low voltage machines (Rotating Machines)

Essential Performance Capabilities (EPCs) supported by this unit: 15; 19; 40.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS02-EG006A	*Alternating Current Rotating Machines*	Vol.1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work Vol.2: Chapter 1: Electrical protection and protective devices Vol.2: Chapter 6: Appliances — electric heating and motors	Vol.2: Chapter 3 Electric machines Vol.2: Chapter 5 Thee-phase motors Vol.2: Chapter 6 Single-phase motors Vol.2: Chapter 7 Synchronous machines Vol.2: Chapter 8 Electric motor control Vol.2: Chapter 9 Electric motor protection
T1	Operating Principles of three phase induction motors		Vol.2: 5.2 Operating principles
T2	Three phase induction motor construction		Vol.2: 5.2 Three-phase induction motors
T3	Three phase induction motor characteristics		Vol.2: 5.3 Induction and its effects Vol.2: 5.4 operating characteristics
T4	Single phase motors – split phase		Vol. 2: 6.1.1 The split-phase motor
T5	Single phase motors – capacitor and shaded pole types		Vol. 2: 6.1.2 Capacitor-start motor Vol. 2: 6.1.3 Capacitor-start, capacitor-start motor Vol. 2: 6.1.4 Permanently split capacitor motor Vol. 2: 6.1.5 Shaded pole motor
T6	Single phase motors – universal		Vol. 2: 6.1.5 Series motor
T7	Motor protection	Vol.2: 1.2 Overcurrent protective devices — motor overload protection Vol.2: 6.6 Motors — Installing motors	Vol.2: 9.1 Motor protection Vol.2: 9.2 Protection devices
T8	Three-phase synchronous machines operation and construction		Vol.2: 7.1 Three-phase alternator construction Vol.2: 7.2 Parallel operation of alternators Vol.2: 7.4 Three phase synchronous motor
T9	Alternators and generators		

UEENEEG033A Solve problems in single and three phase electrical apparatus and circuits

Essential Performance Capabilities (EPCs) supported by this unit: 51; 65.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG033A	*Electrical circuits and appliances*	Vol.1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work Vol.1: Chapter 7: Wiring and cabling systems Vol.1: Chapter 9 Testing techniques and compliance verification Vol.2: Chapter 2: Electrical installations for safety services—fire protection and evacuation equipment Vol.2: Chapter 3: Renewable energy and other alternative supply installations Vol. 2: Chapter 5: Installation planning and design — selecting cables and protective devices Vol.2: Chapter 6: Appliances: electric heating and motors Vol.2: Chapter 7: Lighting applications	Vol.1: Chapter 11: Cells and batteries
T1	Circuits for lighting	Vol.1: 6.3 Circuits in general wiring — Lighting circuits Vol. 1: 9.4 Verification and compliance — basic compliance testing	
T2	Circuits for socket outlets	Vol.1: 6.3 Circuits in general wiring — Socket outlet circuits — circuits and wiring arrangements Vol. 1: 9.4 Verification and compliance — basic compliance testing Vol. 2: 5.2 Arranging an electrical installation into circuits — Number of points on a circuit	
T3	Final sub-circuits and segregation	Vol.1: 7.3 Installing wiring systems Vol. 1: 9.4 Verification and compliance — basic compliance testing	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T4	Electrical heating control devices	Vol.2: 6.2 Heating methods and control	
T5	Fixed electrical heating appliances	Vol.2: 6.4 Heating systems	
T6	Electrical water heater operation	Vol.2: 6.3 Water heating	
T7	Alternative supplies	Vol.2: 3.1 Renewable energy sources within a consumer's installation Vol.2: 3.2 Stand-alone and grid-connection Vol.2: 3.3 Uninterruptable power supplies Vol.2: 3.4 Stand-by and stand-alone generators	Vol.1: 11.7 Fuel cells Vol.1: 11.8 Solar, standby power supplies and UPS
T8	Installation of batteries	Vol.2: 3.2 Stand-alone and grid-connection — Battery systems	Vol.1: 11.1 Cell and battery construction Vol.1: 11.2 Cell and battery parameters Vol.1: 11.3 Safety precautions Vol.1: 11.4 Battery maintenance Vol.1: 11.5 Primary cells and batteries
T9	Fire protection – residential fire and smoke alarms	Vol.2: 2.3 Fire detection, alarm and warning systems Vol.2: 2.6 Locating and installing smoke alarms in domestic dwellings	
T10	Emergency and evacuation lighting and lighting control	Vol.2: 2.2 Fire safety standards and regulations Vol.2: 2.4 Evacuation and fire control Vol.2: 2.5 Safety services (fire safety)— installation arrangements	
T11	Lighting concepts and incandescent lighting	Vol.2: : 7.1: Basic lighting principles, terminology and units Vol.2: : 7.4 Incandescent lamps:	
T12	Fluorescent low intensity discharge lighting	Vol.2: 7.6 Gas discharge lamps Vol.2: 7.7 Fluorescent lamps	
T13	High intensity discharge lighting	Vol.2: 7.6 Gas discharge lamps	

UEENEEG063A Arrange circuits, control and protection for general electrical installations

Essential Performance Capabilities (EPCs) supported by this unit: 13; 21; 22; 27; 28; 31; 32.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG063A	*Electrical installations — arrangement, control and protection*	Vol.1: Chapter 1: Electrical energy — past, present and future Vol.1: Chapter 2: Workplace and electrical safety Vol.1: Chapter 8: Protection — earthing and protective methods Vol.2: Chapter 1: Electrical protection and protective devices Vol. 2: Chapter 2: Electrical installations for safety services — fire protection and evacuation equipment Vol.2: Chapter 4: Switchboards, control panels and metering Vol.2: Chapter 5: Installation planning and design—selecting cables and protective devices	
T1	Safety principle to which electrical systems in building and premises shall comply.	Vol.1: 3.6 Fundamental requirements (Wiring Rules Part1	
T2	Circuit and control arrangements	Vol.1: 1.6 Distribution of electricity in the consumer's installation. Vol. 1: 8.6 Other protective methods Vol.2: 5.2 Arranging an electrical installation into circuits	
T3	Hazards and risks in an electrical installation	Vol.1: 2.3 Safety of electrical installations and equipment Vol.1: 3.6 Fundamental requirements (Wiring Rules Part1	
T4	Protection against indirect contact	Vol.2: 1.3 Protection against indirect contact with live parts	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T5	Earthing	Vol.2: Ch. 8: Protection — earthing and protective methods	
T6	Protection against overload and short circuit current	Vol.2: 1.1 Protection against overcurrent	
T7	Devices for automatic disconnection of supply	Vol.2: 1.2 Overcurrent protective devices Vol.2: 1.3 Protection against indirect contact with live Vol.2: 1.5 Protection arrangement and discrimination	
T8	Protection against over voltage and under voltage	Vol.2: 1.4 Protection against overvoltage and undervoltage	
T9	Control of an electrical installation and circuits	Vol.1: 1.6 Distribution of electricity in the consumer's installation. Vol. 2: 2.5 Safety services — Installation arrangements Vol.2: 5.2 Arranging an electrical installation into circuits	
T10	Switchboards / distribution boards.	Vol.2: Ch. 4: Switchboards, control panels and metering	

UEENEEG101A Solve problems in electromagnetic devices and related circuits

Essential Performance Capabilities (EPCs) supported by this unit: 8; 9; 40.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG101A	*Electromagnetic principles and applications*	Vol.1: Chapter 5: Fixing methods and accessories for electrical and data/communication installations Vol.1 Chapter 9: Testing techniques and compliance verification Vol.2: Chapter 1: Electrical protection and protective devices	Vol.1: Chapter 3 Magnetism Vol.1: Chapter 6 Inductors Vol.1: Chapter 8 Single-phase alternating current Vol.2: Chapter 1 Electromagnetic force Vol.2: Chapter 3 Electric machines Vol.2: Chapter 4 DC machines Vol.2: Chapter 5 Thee-phase motors Vol.2: Chapter 6 Single-phase motors Vol.2: Chapter 11 Test equipment
T1	Magnetism		Vol.1: Chapter 3 Magnetism
T2	Electromagnetism		
T3	Magnetic circuits		Vol.1: Chapter 3 Magnetism Vol.2: 1.3 Solenoids Vol.2: 1.4 Electromagnet applications Vol.2: 1.5 Relays and contactors
T4	Electromagnetic induction		Vol.1: Chapter 6 Inductors
T5	Inductance		
T6	Measurement Instruments		Vol.2: 11.4 Analogue instruments Vol.2: 11.6 Meters Vol.2: 11.17 Use, selection and care of instruments
T7	Magnetic devices	Vol.1: 5.4 Protection and control accessories Vol.1: 9.3 Testing devices Vol.2: 1.2 Overcurrent protective devices	Vol.2: Chapter 1 Electromagnetic force

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T8	Machine principles		Vol.2: 4.4 DC generators Vol.2: 4.5 DC Motors Vol.2: 5.2 Operating principles
T9	Rotating machine construction, testing and maintenance		Vol.2: Chapter 4 DC machines Vol.2: Chapter 5 Thee-phase motors
T10	Generators		Vol.2: Chapter 4 DC machines Vol.2: Chapter 7 Synchronous machines
T11	Motors		Vol.2: Chapter 4 DC machines Vol.2: Chapter 5 Thee-phase motors Vol.2: Chapter 6 Single-phase motors
T12	Machine efficiency		Vol.2: Chapter 3 Electric machines Vol.2: Chapter 4 DC machines

UEENEEG102A Solve problems in low voltage a.c. circuits

Essential Performance Capabilities (EPCs) supported by this unit: 10; 11; 12; 14; 40; 59.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG102A	*Alternating current principles – power*	Vol.1: Chapter 1: Electrical energy — past, present and future Vol.1: Chapter 3: Regulations and standards Vol.1: Chapter 8: Protection — earthing and protective methods Vol.2: Chapter 5: Installation planning and design—selecting cables and protective devices	Vol.1: Chapter 8 Single-phase alternating current Vol.1: Chapter 9 Alternating current circuits
T1	Alternating current quantities		Vol.1: 8.7 Voltage and current cycles Vol.1: 8.9 Sinusoidal wave values
T2	Phasors diagrams		Vol.1: 8.10 Phasors
T3	Single element a.c. circuits		Vol.1: 9.2 Resistance in ac circuits Vol.1: 9.3 Inductance in ac circuits Vol.1: 9.4 Capacitors in ac circuits
T4	RC and RL series a.c. circuits		Vol.1: 9.5 Series R–L–C circuits on ac current Vol.1: 9.6 Parallel R–L–C circuits on ac current
T5	RLC series a.c. circuits		
T6	Parallel a.c. circuits		
T7	Power in an a.c. circuit		Vol.1: 9.7 Power in ac circuits Vol.2: 11.8 Power and energy meters
T8	Power factor improvement	Vol.1 3.6 Fundamental requirements (Wiring Rules Part1)	
T9	Harmonics and resonance effect in a.c. systems	Vol. 2: 5.3 Factors affecting cable selections – Current-carrying capacity – Effects of harmonics on balance three-phase systems	Vol.1: 8.11 Harmonics Vol.1: 9.8 Resonance
T10	Three phase systems		Vol.1: Vol.1: Chapter 10 Three-phase alternating current

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T11	Three phase star-connections		Vol.1: 10.6 Three-phase connections
T12	Three phase four wire systems	Vol. 1: 1.5 Distribution of electricity to consumers Vol. 1: 1.6 Distribution of electricity in the consumer's installation Vol. 1: 8.2 Earthing systems Vol. 1: 8.3 MEN earthing system Vol.2: 5.6 Selection of minimum cable size based on voltage drop and earth-fault-loop impedance (EFLI) limitations	Vol.1: 10.7 Power transmission
T13	Three phase delta-connections and interconnected systems		Vol.1: Vol.1: 10.6 Three-phase connections

UEENEEG103A Install wiring and accessories for low voltage circuits

Essential Performance Capabilities (EPCs) supported by this unit: 33; 34; 35; 36; 37; 49; 50.

RSAK and related CAE	Topic / Content		
KS01- EG103A	*Installation of wiring systems*	Vol.1: Chapter 3: Regulations and standards Vol.1: Chapter 5: Fixing methods and accessories for electrical and data/communication installations Vol.1: Chapter 7: Wiring and cabling systems Vol.1: Chapter 9: Testing techniques and compliance verification Vol.2: Chapter 8: Damp situations and other specific electrical installations	
T1	Standards, codes and requirements applicable to the installation of wiring systems	Vol.1: Ch. 3: Regulations and standards Vol.1: Ch. 7: Wiring and cabling systems =	
T2	Use of other installation standards called up by the Wiring Rules	Vol.2: 8.3 Installations for transportable structures and sites Vol.2: 8.4 Shows and carnivals Vol.2: 8.5 Medical treatment areas Vol.2: 8.6 Marina electrical installation Vol.2: 8.7 Construction and demolition sites	
T3	Hazardous areas	Vol.2: 8.2 Installation for hazardous areas	
T4	Requirement for the installation of cables and accessories in damp situations.	Vol.2: 8.1 Damp situations	
T5	Aerial cabling	Vol.1: 7.6 Aerial and catenary systems	
T6	Underground cabling	Vol. 1: 7.5 Underground systems	
T7	Techniques for installing cables and wiring systems	Vol.1: Ch.5: Fixing methods and accessories for electrical and data/communication installations Vol.1: Vol.1: Ch.7: Wiring and cabling systems	

UEENEEG104A Install appliances, switchgear and associated accessories for low voltage electrical installations

Essential Performance Capabilities (EPCs) supported by this unit: 33; 47.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG104A	*Installation of appliances (current-using equipment), switchgear and accessories*	Vol.1: Chapter 3: Regulations and standards Vol.1: Chapter 4: Cables, connections and terminations Vol.1: Chapter 5: Fixing methods and accessories for electrical and data/communication installations Vol.1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work Vol.2: Chapter 1: Electrical protection and protective devices Vol. 2: Chapter 2 Electrical installations for safety services — fire protection and evacuation equipment Vol.2: Chapter 7: Lighting applications	Vol.2: Chapter 2 Transformers Vol.2: Chapter 5 Thee-phase motors
T1	Installation standards, codes and requirements applicable to installing electrical equipment	Vol.1: 3.6 Fundamental requirements (Wiring Rules Part1) Vol.1: 4.5 Power cable termination and conductor connection methods Vol.1: 5.2 Mounting brackets, plates and boxes Vol.1: 5.3 General switching, lighting and socket-outlet accessories Vol.1: 5.4 Protection and control accessories Vol.1: 5.5Accessories for specific situations Vol.2: 1.2 Overcurrent protective devices Vol.2: 1.3 Protection against indirect contact with live	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T2	Terminal configuration for connection of phase, neutral and protective earthing conductors for each type of equipment.	Vol.1: 6.3 Circuits in general wiring	Vol.2: 2.7 Winding polarities — terminal polarities identification; connections Vol.2: 5.1 Three-phase induction motors — terminal block arrangements
T3	Building codes affecting the installation of current-using equipment and accessories in buildings, structures and premises	Vol.1: 3.6 Fundamental requirements (Wiring Rules Part1) Vol.2 2.5 Safety services (fire safety) — installation arrangements Vol.2: 7.10 Luminaire and lighting circuits	
T4	Issues affecting electrical installations in heritage buildings and premises	Vol.1: 5.5 Accessories for specific situations	

UEENEEEG105A Conduct compliance and functional verification of general electrical installations (Verification + testing)

Essential Performance Capabilities (EPCs) supported by this unit: 38; 39; 40; 46.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG105A	*Electrical installations verification and testing*	Vol. 1 Chapter 1 Electrical energy past, present and future. Vol.1: Chapter 9: Testing techniques and compliance verification Vol. 1.: Chapter. 2 Workplace and electrical safety	
T1	Electrical safety	Vol. 1.: Ch. 2 Workplace and electrical safety Vol.1: 9.4 : Verification and compliance	
T2	Legislated regulations	Vol. 1:1.6 Distribution of electricity in the consumer's installation —Verification of compliance Vol.1: 9.4 : Verification and compliance	
T3	Visual inspection of installations for compliance with the Wiring Rules	Vol.1: 9.4 : Verification and compliance	
T4	Testing installations	Vol.1: 9.4 : Verification and compliance — Basic compliance testing	
T5	Documentation	Vol.1: 9.4 : Verification and compliance — Verification testing process devices and accessories	

UEENEEEUEENEEG105A Verify compliance and functionality of low voltage general electrical installations (Principles and requirements)

Essential Performance Capabilities (EPCs) supported by this unit: 37; 45; 49; 50; 56; and all critical EPCs

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS02– EG105A	*Electrical installations and equipment — principles and requirements* Note: This is required knowledge and skills covering the critical Essential Performance Capabilities specified by ERAC		
T1	Effects of electric current	Vol.1: Chapter 2: Workplace and electrical safety	Vol.1 Chapter. 1 Elementary electricity
T2	Single path practical circuit		Vol.1. Chapter. 4 DC Circuits
T3	Single-source multiple-path d.c. circuits		Vol.1. Chapter. 4 DC Circuits
T4	Alternating voltage and current generation, phase relationships, energy in an a.c. circuit		Vol.1 Chapter.8 Single-phase alternating current; Vol.1 Chapter.9 Alternating current circuits; Vol.1 Chapter.10 Three-phase alternating current
T5	Fundamental safety principles of the AS/NZS 3000 Part 1 (Section 1) and deemed to comply solution given in Part 2	Vol. 1: Chapter 3: Regulations and standards	
T6	Electric motor selection, starting method and overload protection	Vol. 2: Chapter 1: Electrical protection and protective devices	Vol. 2: Chapter 8 Electric motor control
T7	Ability to apply AS/NZ 3000 requirements for protective and functional earthing	Vol.1: Chapter 8: Protection — earthing and protective methods	
T8	MEN system and its application	Vol.1: Chapter 8: Protection — earthing and protective methods	
T9	Knowledge of the application of transformers		Vol. 2: Chapter 2 Transformers
T10	Ability to apply AS/NZ 3000 requirements for protection of circuit against overcurrent and abnormal voltages	Vol. 2: Chapter 1: Electrical protection and protective devices	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T11	Additional protection by use of RCDs and use of extra-low voltage for basic and fault protection	Vol.1: Chapter 8: Protection — earthing and protective methods Vol. 2 Chapter. 1 Electrical protection and protective devices	
T12	Ability to select cables for single and three phase mains and sub-mains for single and multiple installations that comply with requirements of AS/NZS 3000 and AS/NZS 3008.1	Vol. 2 Chapter. 5 Installation planning and design — selecting cables and protective devices.	
T13	Ability to select cables for final sub-circuits that comply with requirements of AS/NZS 3000 and AS/NZS 3008.1	Vol. 2 Chapter. 5 Installation planning and design — selecting cables and protective devices.	
T14	Ability to apply AS/NZS 3000 requirements for control and protection of installations	Vol. 2 Chapter. 1 Electrical protection and protective devices	
T15	Ability to apply AS/NZS 3000 requirements for the installation of electrical equipment in given damp situations	Vol.2 Chapter. 8 Damp situations and other special electrical installations — 8.1 Damp situations	
T16	Ability to install, modify and test electrical equipment for construction and demolition sites, complying with AS/NZS 3012 and applicable workplace safety legislation	Vol.2 Chapter. 8 Damp situations and other special electrical installations — 8.7 Construction sites	
T17	Knowledge of AS/NZS 3000 requirements for the installation of aerial conductors and underground wiring	Vol. 1 Chapter. 7 Wiring and cabling systems	
T18	Knowledge of AS/NZS 3000 requirements for electrical installations in hazardous areas	Vol. 2: Chapter. 8 Damp situations and other special electrical installations — 8.2 Installations in hazardous areas	
T19	Ability to verify compliance of an electrical installation in accordance with AS/NZS 3000	Vol. 1 Chapter. 9 Testing techniques and compliance verification	
T20	Ability to perform effective safe isolation of any equipment	Vol. 1: Chapter 2: Workplace and electrical safety	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T21	Ability to apply AS/NZS 3000 requirements to install and terminate thermoplastic insulated cables; elastomer sheathed cables; XLPE sheathed cables; and high temperature cables; armoured cables; and neutral screened cables in a wide range of applications	Vol.1: Chapter 7: Wiring and cabling systems	
T22	Ability to perform the circuit tests required for electrical cables in a range of installations and final sub-circuit	Vol. 1 Chapter. 9 Testing techniques and compliance verification	
T23	Ability to install final sub-circuit wiring into switchboards and connect to switchboard equipment in accordance with AS/NZS 3000 and electricity distributor's requirements	Vol.1: Chapter 7: Wiring and cabling systems Vol. 2: Chapter 4: Switchboards, control panels and metering	
T24	Ability to apply AS/NZS 3000 and electricity distributor's requirements for the installation and connect consumers mains	Vol. 1 Chapter. 3 Regulations and standards Vol.1: Chapter 7: Wiring and cabling systems	
T25	Ability to read, sketch and interpret electrical diagrams	Vol. 1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work	
T26	Knowledge and understanding occupational safety and health	Vol. 1: Chapter 2: Workplace and electrical safety	
T27	Knowledge and understanding of the requirements for personal safety in the workplace	Vol. 1: Chapter 2: Workplace and electrical safety	
T28	Process in rescuing a person in contact with live electrical conductors or equipment and the primary importance of the safety of the rescuer	Vol. 1: Chapter 2: Workplace and electrical safety	
T29	Application of emergency first aid requirements for an electric shock victim	Vol. 1: Chapter 2: Workplace and electrical safety	
T30	Dangers of high voltage equipment and distribution systems	Vol. 1: Chapter 2: Workplace and electrical safety	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T31	Systematic method of commissioning and decommissioning electrical equipment and installations	Vol. 1: Chapter 9: Testing techniques and compliance verification	
T32	Diagnosing and rectifying faults in electrical apparatus and associated circuits	Vol. 1: Chapter 9: Testing techniques and compliance verification — 9.5 Fault finding and performance testing Vol. 2: Chapter 6: Appliances: electric heating and motors	

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

Essential Performance Capabilities (EPCs) supported by this unit: 41; 42; 43; 44; 45; In part 49; 50; covering terminations and repair

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EG106A	*Wiring system types, application and terminations*	Vol.1: Chapter 4: Cables, connections and terminations Vol.1: Chapter 7: Wiring and cabling systems Vol.1: Chapter 9: Testing techniques and compliance verification	
T1	Cable types and terminations	Vol.1:Chapter 3 Fundamental requirements (Wiring Rules Part 1) Vol.1: Chapter 4: Cables, connections and terminations Vol.1: 7.2 Wiring and cabling systems	
T2	Cords, cables and plugs	Vol.1: 2.3 Safety of electrical installations and equipment — Flexible cords and extension leads Vol.1: 4.3 Power cable classification Vol.1: 4.4 Power cable types and applications Vol.1: 5.3 General switching, lighting and socket outlet accessories —Socket outlets and plugs	
T3	Flat TPS wiring systems	Vol.1: 4.4 Power cable types and applications Vol.1: 4.5 Power cable termination and conduct connection methods Vol.1: 7.2 Wiring and cabling systems Vol.1: 7.3 Installing wiring systems Vol.1: 7.4 Enclosed wiring and cabling	
T4	Circular TPS wiring systems	Vol.1: 4.4 Power cable types and applications Vol.1: 7.2 Wiring and cabling systems Vol.1: 7.3 Installing wiring systems Vol.1: 7.4 Enclosed wiring and cabling	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T5	Thermoplastic insulated cables in non-metallic enclosures	Vol.1: 4.4 Power cable types and applications Vol.1: 7.2 Wiring and cabling systems Vol.1: 7.4 Enclosed wiring and cabling — conduit	
T6	Thermoplastic insulated cables in metallic enclosures	Vol.1: 4.4 Power cable types and applications Vol.1: 7.2 Wiring and cabling systems Vol.1: 7.4 Enclosed wiring and cabling — conduit	
T7	Fire protection cabling and systems	Vol.1: 4.4 Power cable types and applications — fire performance cables Vol.1: 7.3 Installing wiring systems	
T8	Steel wire armoured (SWA) cables	Vol.1: 4.4 Power cable types and applications Vol.1: 4.5 Power cable termination and conduct connection methods	
T9	Trailing cables and catenary systems	Vol.1: 4.4 Power cable types and applications Vol.1: 7.2 Wiring and cabling systems Vol.1: 7.6 Aerial and catenary systems	

UEENEEG107A Select wiring systems and cables for low voltage general electrical installations

Essential Performance Capabilities (EPCs) supported by this unit: 29; 30.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01—EG107A	*Electrical installation — cable selection and co-ordination*	Vol.1: Chapter 3: Regulations and standards Vol.1: Chapter 5: Fixing methods and accessories for electrical and data/communication installations Vol. 1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work Vol.1: Chapter 7: Wiring and cabling systems Vol.2: Chapter 1: Electrical protection and protective devices Vol.2: Chapter 5: Installation planning and design—selecting cables and protective devices	
T1	Performance requirements - design and safety	Vol.1: 3.2 Fundamental requirements (Wiring Rules Part 1) Vol.2: Chapter 1 Electrical protection and protective devices	
T2	Final subcircuit arrangements	Vol.1 6.5 Working with specifications, schedules and drawings Vol.2: 5.1 Factors affecting installation design Vol.2 5.2 Arranging an electrical installations into circuits	
T3	Factors affecting the suitability of wiring systems	Vol.1 7.2 Wiring and cabling systems Vol.2: 5.3 Factors affecting cable selection	
T4	Maximum demand on consumer's mains/submains	Vol.2: 5.4 Determining maximum demand	
T5	Cable selection based on current carrying capacity requirements	Vol.2: 5.5 Selection of minimum cable size based on current-carrying capacity	
T6	Cable selection based on voltage drop requirements	Vol.2: 5.6 Selection of minimum cable size based	

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T7	Cable selection based on fault loop impedance requirements	on voltage drop and earth fault-loop impedance (EFLI) limitations	
T8	Selecting protection devices	Vol.2: Chapter 1: Electrical protection and protective devices	
T9	Selecting devices for isolation and switching	Vol.1: 5.3 General switching, lighting and socket outlet accessories —Socket outlets and plugs Vol.2: 5.1 Factors affecting installation design	
T10	Switchboards	Vol.2: Chapter 4 Switchboards, control panels and metering	

UEENEEG108A Trouble-shoot and repair faults in electrical apparatus and circuits

Essential Performance Capabilities (EPCs) supported by this unit: 18; 20; 60; 61;62; 64; 66;

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01 - EG108A	*Circuit and equipment faults and fault finding techniques*	Vol.1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work Vol.1: Chapter 9: Testing techniques and compliance verification Vol.2: Chapter 1: Electrical protection and protective devices Vol.2: Chapter 4: Switchboards, control panels and metering Vol.2: Chapter 6: Appliances: electric heating and motors Vol.2: Chapter 7: Lighting applications	Vol.2: Chapter 3 Electric machines Vol.2: Chapter 5 Thee-phase motors Vol.2: Chapter 6 Single-phase motors Vol.2: Chapter 8 Electric motor control Vol.2: Chapter 9 Electric motor protection
T1	Troubleshooting concepts	Vol.1: 9.5 Fault finding and performance testing	
T2	Troubleshooting water heater and appliance circuits/equipment	Vol.2: 1.3 Protection against indirect contact with live parts Vol.2: Chapter 6 Appliances: electric heating and motors	
T3	Troubleshooting electrical appliance circuits/equipment		
T4	Troubleshooting lighting circuits	Vol.1: 6. 3 Circuits in general wiring — lighting circuits. Vol.2: 7.10 Luminaires and lighting circuits	
T5	Troubleshooting single phase motor and control circuits		Vol.2: 3.1 Mechanics of electric machines Vol.2: 6.3 Abnormal operating conditions for AC induction motors

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
T6	Troubleshooting three phase induction motor	Vol.2: 1.2 Overcurrent protective devices —Motor overload protection	Vol.2: 3.1 Mechanics of electric machines Vol.2: 5.5 Abnormal operating conditions for three-phase motors Vol.2: Chapter 8 Electric motor control Vol.2: Chapter 9 Electric motor protection
T7	Troubleshooting electrical installations	Vol.1: 6. 3 Circuits in general wiring Vol.1: 9.5 Fault finding and performance testing Vol.2: 1.3 Protection against indirect contact with live parts Vol.2: 1.5 Protection arrangements and discrimination	

UEENEEG109A Develop and connect electrical control circuits

Essential Performance Capabilities (EPCs) supported by this unit: 16; 17; 52; 63; 64.

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01 - EG109A	*Electrical control devices and circuits*	Vol.1: Chapter 6: Drawings, diagrams, schedules and documents used in electrical work Vol.1: Chapter 5: Fixing methods and accessories for electrical and data/communication installations	Vol.2: Chapter 8 Electric motor control Vol.2: Chapter 10 Power control devices Vol.2: Chapter 12 Electrical drawings and circuit development
T1	Basic relay circuits	Vol.1: 6.2 Electrical circuits and wiring diagrams	Vol.2: Chapter 8 Electric motor control Vol.2: Chapter 12 Electrical drawings and circuit development
T2	Relay circuits and drawing conventions		Vol.2: Chapter 12 Electrical drawings and circuit development
T3	Remote STOP-START control and electrical interlocking		
T4	Time delay relays		Vol.2: Chapter 8 Electric motor control
T5	Circuits using contactors		
T6	Jogging and interlocking		
T7	Control devices	Vol.1: 5.5Accessories for specific situations	
T8	Programmable relay basics		Vol.2 8.12 Basic concepts of static and logic control Vol.2 10.13 Solid state relays (SSRs)
T9	Three-phase induction motor starters		Vol.2: Chapter 8 Electric motor control
T10	Three-phase induction motor starters- reduced voltage		
T11	Three-phase induction motor reversal and braking		
T12	Three-phase induction motor speed control		

UEENEEK142A Apply environmentally and sustainable procedures in the energy sector

RSAK and related CAE	Topic / Content	Electrical Wiring Practice	Electrical Principles for Electrical Trades
KS01-EK142A	*Environmentally sustainable work practice*	Vol.2 Ch.3 Renewable energy and other alternative supply installations	
T1	Sustainable work practices	Vol.2: 3.5 Sustainable work practices: reducing the carbon footprint	
T2	Techniques for reducing carbon produced energy and hence greenhouse gases	Vol.2: 3.5 Sustainable work practices: reducing the carbon footprint	

[1] Context in which the Essential Performance Capabilities apply
A person seeking an electrician's licence needs to be capable of competently and safely performing the 66 Essential Performance Capabilities (EPCs) prescribed by the Electrical Regulatory Authorities Council (ERAC), in a wide variety of typical industry environments, working independently and without supervision. In addition, the person needs to know what action, if taken, will void the integrity, compliance and/or certification of electrical equipment or an electrical installation.
"Typical industry environments" is to be taken to include routine types of commercial premises and office buildings to 10 levels, industrial sites of modest complexity, which may have some HV plant and hazardous areas, institutional premises of modest complexity such as high schools and non-specialist hospitals, single domestic dwellings and, multiple domestic and residential premises.

[2] EPCs shown RED are designated as critical
[3] RSAK refers to the Required Skills and Knowledge (field 7) in each Unit
[4] CAE refers to the Critical Aspects of Evidence (field 9.2) in each Unit