# Victorian Purchasing Guide for UEE Electrotechnology Training Package Release 2

May 2021





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# Victorian Purchasing Guide — Release History

**Note**: RTOs should refer to the <u>National Register</u> for the detail of changes made in each Release.

| Training Package<br>Release                               | Date VPG<br>Approved | Comments  |
|---|----------------------|---|
| UEE Electrotechnology<br>Training Package<br>Release No 2 | 25 May<br>2021       | This is the second release of this Training Package. Release 2.0 contains:  • Seventy nine (79) qualifications  • Thirty six (36) new units of competency  • Four hundred and ninety four (494) revised units of competency |
| Electrotechnology<br>Training Package<br>Release 1        | 18 May<br>2017       | Initial Release of the UEE Electrotechnology Training Package This Release incorporates 2 Units of Competency   |

# **UEE Electrotechnology Training Package Release 2 Victorian Purchasing Guide**

# **CONTENTS**

| INTRODUCTION                          | 2  |
|---------------------------------------|----|
| What is a Victorian Purchasing Guide? | 2  |
| Registration                          | 2  |
| Transition                            | 2  |
| QUALIFICATIONS                        | 3  |
| UNITS OF COMPETENCY AND NOMINAL HOURS | 7  |
| CONTACTS AND LINKS                    | 34 |
| GLOSSARY                              | 36 |



#### INTRODUCTION

#### What is a Victorian Purchasing Guide?

The Victorian Purchasing Guide provides information for use by Registered Training Organisations (RTOs) in the provision of Victorian government subsidised training.

Specifically the Victorian Purchasing Guide provides the following information related to the delivery of nationally endorsed Training Packages in Victoria:

- The maximum and minimum payable hours available for each qualification.
- Nominal hours for each unit of competency within the Training Package.

#### Registration

RTOs must be registered by either the Victorian Registration and Qualifications Authority (VRQA) or the Australian Skills Qualification Authority (ASQA) regulatory body to be eligible to issue qualifications and Statements of Attainment under the Australian Qualifications Framework (AQF).

The VRQA is the regulatory authority in Victoria responsible for the registration of Vocational Education and Training (VET) providers who offer courses to domestic students in Victoria only.

ASQA is the regulatory authority responsible for the registration of VET providers who offer training in Victoria, nationally and / or internationally.

#### **Transition**

The relationship between new units and any superseded or replaced units from the previous version of **UEE Electrotechnology Training Package Release 2** is provided in the Training Package Companion Volume Implementation Guide, available <u>here</u>.

Information regarding transition arrangements can be obtained from the state or national VET Regulatory Authority (see Contacts and Links section).

RTOs must ensure that all training and assessment leading to issuance of qualifications or Statements of Attainment from the **UEE Electrotechnology Training Package Release 2** is conducted against the Training Package units of competency and complies with the assessment requirements.



# **QUALIFICATIONS**

| Code     | Title   | Minimum<br>Payable<br>Hours | Maximum<br>Payable<br>Hours |
|----------|---|-----------------------------|-----------------------------|
| UEE10120 | Certificate I in ElectroComms Skills                              | 209                         | 220                         |
| UEE20120 | Certificate II in Split Air Conditioning and Heat Pump<br>Systems | 361                         | 380                         |
| UEE20520 | Certificate II in Computer Assembly and Repair                    | 342                         | 360                         |
| UEE20720 | Certificate II in Data and Voice Communications                   | 427                         | 450                         |
| UEE20920 | Certificate II in Electronic Assembly                             | 342                         | 360                         |
| UEE21020 | Certificate II in Fire Alarms Servicing                           | 342                         | 360                         |
| UEE21220 | Certificate II in Antennae Equipment                              | 342                         | 360                         |
| UEE21420 | Certificate II in Remote Area Power Supply Maintenance            | 342                         | 360                         |
| UEE21620 | Certificate II in Security Assembly and Set-up                    | 342                         | 360                         |
| UEE21720 | Certificate II in Technical Support                               | 342                         | 360                         |
| UEE21920 | Certificate II in Electronics                                     | 342                         | 360                         |
| UEE22020 | Certificate II in Electrotechnology (Career Start)                | 389                         | 410                         |
| UEE22120 | Certificate II in Sustainable Energy (Career Start)               | 399                         | 420                         |
| UEE30120 | Certificate III in Business Equipment                             | 969                         | 1020                        |
| UEE30220 | Certificate III in Computer Systems Equipment                     | 969                         | 1020                        |
| UEE30320 | Certificate III in Custom Electronics Installations               | 969                         | 1020                        |
| UEE30420 | Certificate III in Data and Voice Communications                  | 1035                        | 1090                        |
| UEE30620 | Certificate III in Electrical Machine Repair                      | 1045                        | 1100                        |
| UEE30720 | Certificate III in Switchgear and Controlgear                     | 1073                        | 1130                        |
| UEE30820 | Certificate III in Electrotechnology Electrician                  | 1083                        | 1140                        |
| UEE30920 | Certificate III in Electronics and Communications                 | 969                         | 1020                        |
| UEE31020 | Certificate III in Fire Protection Control                        | 1002                        | 1055                        |
| UEE31220 | Certificate III in Instrumentation and Control                    | 969                         | 1020                        |
| UEE31420 | Certificate III in Security Equipment                             | 969                         | 1020                        |
| UEE32020 | Certificate III in Renewable Energy - ELV                         | 969                         | 1020                        |
| UEE32120 | Certificate III in Appliance Service                              | 997                         | 1050                        |



| Code     | Title   | Minimum<br>Payable<br>Hours | Maximum<br>Payable<br>Hours |
|----------|---|-----------------------------|-----------------------------|
| UEE32220 | Certificate III in Air Conditioning and Refrigeration                       | 1121                        | 1180                        |
| UEE33020 | Certificate III in Electrical Fitting                                       | 1102                        | 1160                        |
| UEE40120 | Certificate IV in Computer Systems  | 1216                        | 1280                        |
| UEE40220 | Certificate IV in Electrical - Data and Voice Communications                | 475                         | 500                         |
| UEE40320 | Certificate IV in Installation Inspection and Audits                        | 532                         | 560                         |
| UEE40420 | Certificate IV in Electrical - Instrumentation                              | 475                         | 500                         |
| UEE40520 | Certificate IV in Electrical - Air Conditioning Split Systems               | 484                         | 510                         |
| UEE40620 | Certificate IV in Electrotechnology - Systems Electrician                   | 665                         | 700                         |
| UEE40720 | Certificate IV in Electronics and Communications                            | 1216                        | 1280                        |
| UEE40820 | Certificate IV in Electrical - Fire Protection Control Systems              | 475                         | 500                         |
| UEE40920 | Certificate IV in Industrial Electronics and Control                        | 494                         | 520                         |
| UEE41020 | Certificate IV in Energy Management and Control                             | 589                         | 620                         |
| UEE41120 | Certificate IV in Electrical - Lift Systems                                 | 437                         | 460                         |
| UEE41220 | Certificate IV in Electrical – Rail Signalling                              | 332                         | 350                         |
| UEE41520 | Certificate IV in Video and Audio Systems                                   | 1216                        | 1280                        |
| UEE41620 | Certificate IV in Renewable Energy  | 1206                        | 1270                        |
| UEE41720 | Certificate IV in Rail - Communications and Network<br>Systems              | 1216                        | 1280                        |
| UEE41920 | Certificate IV in Electrical - Renewable Energy                             | 551                         | 580                         |
| UEE42020 | Certificate IV in Electrical - Photovoltaic systems                         | 551                         | 580                         |
| UEE42120 | Certificate IV in Electrotechnology - Electrical Contracting                | 513                         | 540                         |
| UEE42220 | Certificate IV in Instrumentation and Control                               | 1216                        | 1280                        |
| UEE42620 | Certificate IV in Hazardous areas - Electrical                              | 475                         | 500                         |
| UEE42720 | Certificate IV in Air Conditioning and Refrigeration Servicing              | 1292                        | 1360                        |
| UEE42820 | Certificate IV in Air-conditioning Systems Energy<br>Management and Control | 1330                        | 1400                        |
| UEE42920 | Certificate IV in Refrigeration and Air Conditioning Systems                | 1311                        | 1380                        |
| UEE43020 | Certificate IV in Electrical Equipment and Systems                          | 703                         | 740                         |



| Code     | Title   | Minimum<br>Payable<br>Hours | Maximum<br>Payable<br>Hours |
|----------|---|-----------------------------|-----------------------------|
| UEE43120 | Certificate IV in Energy Efficiency and Assessment                        | 627                         | 660                         |
| UEE43220 | Certificate IV in Industrial Automation and Control                       | 1235                        | 1300                        |
| UEE50120 | Diploma of Computer Systems Engineering                                   | 1520                        | 1600                        |
| UEE50220 | Diploma of Electrical and Instrumentation                                 | 988                         | 1040                        |
| UEE50320 | Diploma of Electrical and Refrigeration and Air Conditioning              | 1833                        | 1930                        |
| UEE50420 | Diploma of Electrical Engineering   | 893                         | 940                         |
| UEE50520 | Diploma of Electronics and Communications Engineering                     | 1520                        | 1600                        |
| UEE50720 | Diploma of Renewable Energy Engineering                                   | 855                         | 900                         |
| UEE50920 | Diploma of Industrial Electronics and Control Engineering                 | 798                         | 840                         |
| UEE51020 | Diploma of Instrumentation and Control Engineering                        | 1520                        | 1600                        |
| UEE51120 | Diploma of Engineering Technology - Refrigeration and Air<br>Conditioning | 1486                        | 1564                        |
| UEE51220 | Diploma of Air Conditioning and Refrigeration Engineering                 | 1596                        | 1680                        |
| UEE53020 | Diploma of Electrical Systems Engineering                                 | 893                         | 940                         |
| UEE60220 | Advanced Diploma of Electronics and Communications<br>Engineering         | 2052                        | 2160                        |
| UEE60420 | Advanced Diploma of Computer Systems Engineering                          | 2090                        | 2200                        |
| UEE60620 | Advanced Diploma of Industrial Electronics and Control Engineering        | 1216                        | 1280                        |
| UEE60920 | Advanced Diploma of Renewable Energy Engineering                          | 1330                        | 1400                        |
| UEE61220 | Advanced Diploma of Engineering - Explosion protection                    | 1159                        | 1220                        |
| UEE61720 | Advanced Diploma of Engineering Technology - Electronics                  | 2014                        | 2120                        |
| UEE61820 | Advanced Diploma of Engineering Technology - Computer Systems             | 2014                        | 2120                        |
| UEE62020 | Advanced Diploma of Engineering Technology - Renewable<br>Energy          | 2071                        | 2180                        |
| UEE62120 | Advanced Diploma of Engineering Technology - Electrical                   | 2061                        | 2170                        |
| UEE62220 | Advanced Diploma of Electrical - Engineering                              | 1349                        | 1420                        |
| UEE62320 | Advanced Diploma of Electrical Engineering - Coal Mining                  | 1197                        | 1260                        |



| Code     | Title  | Minimum<br>Payable<br>Hours | Maximum<br>Payable<br>Hours |
|----------|--|-----------------------------|-----------------------------|
| UEE62420 | Advanced Diploma of Engineering Technology - Air<br>Conditioning and Refrigeration | 1985                        | 2090                        |
| UEE62520 | Advanced Diploma of Air Conditioning and Refrigeration<br>Engineering              | 2052                        | 2160                        |
| UEE63020 | Advanced Diploma of Electrical Systems Engineering                                 | 1425                        | 1500                        |



# **UNITS OF COMPETENCY AND NOMINAL HOURS**

| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEAS0001 | Assemble electronic components   | 40               |
| UEEAS0002 | Conduct quality and functional tests on assembled electronic apparatus         | 20               |
| UEEAS0003 | Modify electronic sub-assemblies   | 40               |
| UEEAS0004 | Select electronic components for assembly                                      | 20               |
| UEEAS0005 | Set up and check electronic component assembly machines                        | 40               |
| UEEAS0006 | Use lead-free soldering techniques   | 40               |
| UEEAS0007 | Assemble, mount and connect control gear and switchgear                        | 120              |
| UEEAS0008 | Fabricate and assemble bus bars  | 60               |
| UEEAS0009 | Mount and wire control panel equipment   | 60               |
| UEECD0001 | Analyse materials for suitability in electrical equipment                      | 80               |
| UEECD0002 | Analyse static and dynamic parameters of electrical equipment                  | 80               |
| UEECD0003 | Apply industry and community standards to engineering activities               | 20               |
| UEECD0004 | Apply material science to solving electrotechnology engineering problems       | 60               |
| UEECD0005 | Apply physics to solving electrotechnology engineering problems                | 60               |
| UEECD0006 | Apply technologies and concepts to energy sector work activities               | 120              |
| UEECD0007 | Apply work health and safety regulations, codes and practices in the workplace | 20               |
| UEECD0008 | Carry out preparatory energy sector work activities                            | 60               |
| UEECD0009 | Carry out routine work activities in an energy sector environment              | 40               |
| UEECD0010 | Compile and produce an energy sector detailed report                           | 60               |
| UEECD0011 | Comply with scheduled and preventative maintenance program processes           | 20               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEECD0012 | Contribute to risk management in electrotechnology systems  | 20               |
| UEECD0013 | Develop and implement energy sector maintenance programs  | 60               |
| UEECD0014 | Develop design briefs for electrotechnology projects  | 40               |
| UEECD0015 | Develop engineering solutions to photonic system problems   | 80               |
| UEECD0016 | Document and apply measures to control WHS risks associated with electrotechnology work           | 20               |
| UEECD0017 | Establish and follow a competency development plan in an electrotechnology engineering discipline | 20               |
| UEECD0018 | Establish, maintain and evaluate energy sector WHS/OHS systems                                    | 60               |
| UEECD0019 | Fabricate, assemble and dismantle utilities industry components                                   | 40               |
| UEECD0020 | Fix and secure electrotechnology equipment  | 20               |
| UEECD0021 | Identify and select components, accessories and materials for energy sector work activities       | 20               |
| UEECD0022 | Identify building techniques, methods and materials used in energy sector work activities         | 60               |
| UEECD0023 | Identify effects of energy on machinery and materials in an energy sector environment             | 120              |
| UEECD0024 | Implement and monitor energy sector WHS policies and procedures                                   | 20               |
| UEECD0025 | Lay wiring/cabling and terminate accessories for extra-low voltage (ELV) circuits                 | 40               |
| UEECD0026 | Manage risk in electrotechnology activities   | 60               |
| UEECD0027 | Participate in development and follow a personal competency development plan                      | 20               |
| UEECD0028 | Plan an integrated cabling installation system  | 40               |
| UEECD0029 | Plan electrotechnology projects   | 60               |
| UEECD0030 | Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software | 60               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEECD0031 | Prepare engineering drawings using manual drafting and CAD for electrotechnology applications   | 60               |
| UEECD0032 | Produce detailed electrotechnology/utilities drawings using CAD equipment and software          | 60               |
| UEECD0033 | Produce products for carrying out energy sector work activities                                 | 80               |
| UEECD0034 | Produce routine tools/devices for carrying out energy sector work activities                    | 120              |
| UEECD0035 | Provide basic instruction in the use of electrotechnology apparatus                             | 20               |
| UEECD0036 | Provide engineering solutions for problems in complex multiple path circuits                    | 60               |
| UEECD0037 | Provide engineering solutions for uses of materials and thermodynamic effects                   | 100              |
| UEECD0038 | Provide solutions and report on routine electrotechnology problems                              | 60               |
| UEECD0039 | Provide solutions to basic engineering computational problems                                   | 60               |
| UEECD0040 | Solve basic problems electronic and digital equipment and circuits                              | 80               |
| UEECD0041 | Solve electrotechnical engineering problems   | 60               |
| UEECD0042 | Solve problems in ELV single path circuits  | 40               |
| UEECD0043 | Solve problems in direct current circuits   | 80               |
| UEECD0044 | Solve problems in multiple path circuits  | 40               |
| UEECD0045 | Solve problems in multiple path extra-low voltage (ELV) a.c. circuits                           | 40               |
| UEECD0046 | Solve problems in single path circuits  | 40               |
| UEECD0047 | Supervise and coordinate energy sector work activities  | 40               |
| UEECD0048 | Undertake computations in an energy sector environment  | 120              |
| UEECD0049 | Use advanced computational processes to provide solutions to energy sector engineering problems | 120              |
| UEECD0050 | Use and maintain the integrity of a portable gas detection device                               | 20               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEECD0051 | Use drawings, diagrams, schedules, standards, codes and specifications              | 40               |
| UEECD0052 | Use routine equipment/plant/technologies in an energy sector environment            | 60               |
| UEECD0053 | Write specifications for computer systems engineering projects                      | 40               |
| UEECD0054 | Write specifications for electronics and communications engineering projects        | 40               |
| UEECD0055 | Write specifications for industrial electronics and control projects                | 40               |
| UEECD0056 | Apply methods to maintain currency of industry developments                         | 20               |
| UEECD0057 | Manage electrotechnology projects   | 40               |
| UEECD0058 | Observe safety practices are followed in the vicinity of isolated electrical cables | 20               |
| UEECD0059 | Write specifications for electrical engineering projects                            | 40               |
| UEECD0060 | Write specifications for electrotechnology engineering projects                     | 40               |
| UEECD0061 | Write specifications for refrigeration and air conditioning engineering projects    | 40               |
| UEECD0062 | Write specifications for renewable energy engineering projects                      | 40               |
| UEECD0063 | Write work activity reports   | 20               |
| UEECO0001 | Estimate electrotechnology projects   | 40               |
| UEECO0002 | Maintain documentation  | 20               |
| UEECO0003 | Manage contract variations  | 40               |
| UEECO0004 | Participate in appliance servicing work and competency development activities       | 20               |
| UEECO0005 | Participate in business equipment work and competency development activities        | 20               |
| UEECO0006 | Participate in computer equipment work and competency development activities        | 20               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEECO0007 | Participate in electronics and communications work and competency development activities        | 20               |
| UEECO0008 | Participate in fire protection control work and competency development activities               | 20               |
| UEECO0009 | Participate in instrumentation and control work and competency development activities           | 20               |
| UEECO0010 | Participate in refrigeration and air conditioning work and competency development activities    | 20               |
| UEECO0011 | Participate in security equipment work and competency development activities                    | 20               |
| UEECO0012 | Participate in voice and data communications work and competency development activities         | 20               |
| UEECO0013 | Prepare specifications for the supply of materials and equipment for electrotechnology projects | 40               |
| UEECO0014 | Prepare tender submissions for electrotechnology projects                                       | 60               |
| UEECO0015 | Provide quotations for installation or service jobs   | 20               |
| UEECO0016 | Receive and store materials and equipment for electrotechnology work                            | 20               |
| UEECO0017 | Source and purchase material/parts for installation or service jobs                             | 20               |
| UEECO0018 | Contribute to the commercialisation of products / applications / services                       | 80               |
| UEECO0019 | Contribute to the conduct of a research project   | 80               |
| UEECO0020 | Contribute to the development of a product / application / service                              | 80               |
| UEECO0021 | Contribute to the planning of a research project  | 80               |
| UEECO0022 | Participate in electrical machine repair work and competency development activities             | 20               |
| UEECO0023 | Participate in electrical work and competency development activities                            | 20               |
| UEECO0024 | Participate in switchgear and control gear work and competency development activities           | 20               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEECO0025 | Provide quotations for inspection and compliance audit services        | 40               |
| UEECS0001 | Administer computer networks   | 80               |
| UEECS0002 | Analyse and implement biometric measuring techniques and applications  | 120              |
| UEECS0003 | Assemble, set up and test computing devices                            | 80               |
| UEECS0004 | Commission industrial computer systems                                 | 20               |
| UEECS0005 | Design and implement advanced routing for internetworking systems      | 100              |
| UEECS0006 | Design and implement multi-layer switching for internetworking systems | 100              |
| UEECS0007 | Design and implement network systems for internetworking               | 120              |
| UEECS0008 | Design and implement remote access for internetworking systems         | 100              |
| UEECS0009 | Design and implement security for internetworking systems              | 100              |
| UEECS0010 | Design and implement wireless LANs/WANs for internetworking systems    | 100              |
| UEECS0011 | Design and manage enterprise computer networks                         | 80               |
| UEECS0012 | Design embedded controller control systems                             | 80               |
| UEECS0013 | Develop and validate biometric equipment/systems installation          | 120              |
| UEECS0014 | Develop computer network services                                      | 120              |
| UEECS0015 | Develop energy sector computer network applications infrastructure     | 80               |
| UEECS0016 | Develop energy sector directory services                               | 80               |
| UEECS0017 | Develop industrial control programs for microcomputer equipped devices | 60               |
| UEECS0018 | Develop web pages for engineering applications                         | 40               |
| UEECS0019 | Develop, implement and test object-oriented code                       | 140              |
| UEECS0020 | Evaluate and modify object-oriented code programs                      | 40               |
| UEECS0021 | Install and administer UNIX/LINUX-based networked computers            | 80               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEECS0022 | Install and configure a client computer operating system and software               | 40               |
| UEECS0023 | Install and configure network systems for internetworking                           | 120              |
| UEECS0024 | Integrate multiple computer operating systems on a client server local area network | 80               |
| UEECS0025 | Modify/redesign industrial computer systems   | 20               |
| UEECS0026 | Plan industrial computer systems projects   | 60               |
| UEECS0027 | Provide programming solution for computer systems engineering problems              | 60               |
| UEECS0028 | Select, install, configure and test multimedia components                           | 40               |
| UEECS0029 | Set up and configure basic local area network (LAN)                                 | 40               |
| UEECS0030 | Set up, configure and test biometric devices  | 40               |
| UEECS0031 | Set up, create and implement content for a web server                               | 120              |
| UEECS0032 | Support computer hardware and software for engineering applications                 | 120              |
| UEECS0033 | Use engineering applications software on personal computers                         | 40               |
| UEEDV0001 | Assemble and connect telecommunication frames and cabinets                          | 60               |
| UEEDV0002 | Install aerial telecommunication cables   | 40               |
| UEEDV0003 | Install and connect cabling for direct access to telecommunications service         | 20               |
| UEEDV0004 | Install and connect data and voice communication equipment                          | 60               |
| UEEDV0005 | Install and maintain cabling for multiple access to telecommunication services      | 120              |
| UEEDV0006 | Install and modify optical fibre performance data communication cabling             | 40               |
| UEEDV0007 | Install underground communication cables  | 40               |
| UEEDV0008 | Install, modify and verify coaxial and structured communication copper cabling      | 40               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEEDV0009 | Select and arrange data and voice equipment for local area networks                       | 80               |
| UEEDV0010 | Select and arrange equipment for wireless communication networks                          | 60               |
| UEEDV0011 | Set up and configure basic data communication systems                                     | 40               |
| UEEDV0012 | Set up and configure the wireless capabilities of communications and data storage devices | 40               |
| UEEDV0013 | Solve problems in voice and data communications circuits                                  | 40               |
| UEEDV0014 | Test, report and rectify faults in data and voice installations                           | 60               |
| UEEEC0001 | Analyse the performance of wireless-based electronic communication systems                | 40               |
| UEEEC0002 | Assemble and install reception antennae and signal distribution equipment                 | 60               |
| UEEEC0003 | Assemble and set up basic security systems  | 80               |
| UEEEC0004 | Assemble and set up fixed video/audio components and systems in buildings and premises    | 120              |
| UEEEC0005 | Assess electronic apparatus compliance  | 60               |
| UEEEC0006 | Carry out repairs of predictable faults in video and audio replay/recording apparatus     | 120              |
| UEEEC0007 | Commission electronics and communications systems   | 20               |
| UEEEC0008 | Commission large fire protection systems  | 40               |
| UEEEC0009 | Commission satellite and microwave communication systems                                  | 40               |
| UEEEC0010 | Design and develop advanced digital systems   | 40               |
| UEEEC0011 | Design and develop electronics/computer systems projects                                  | 40               |
| UEEEC0012 | Design custom electronic equipment installations  | 120              |
| UEEEC0013 | Design electronic printed circuit boards  | 40               |
| UEEEC0014 | Design signal-conditioning sub-systems  | 80               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEEC0015 | Develop basic plans for integrating security systems                       | 40               |
| UEEEC0016 | Develop engineering solutions to RF amplifier problems                     | 40               |
| UEEEC0017 | Develop engineering solutions to analogue electronic problems              | 80               |
| UEEEC0018 | Develop engineering solutions to audio electronic problems                 | 60               |
| UEEEC0019 | Develop software solutions for microcontroller-based systems               | 60               |
| UEEEC0020 | Develop solutions for air surveillance apparatus and systems               | 120              |
| UEEEC0021 | Diagnose and rectify faults in air navigation circuits and systems         | 120              |
| UEEEC0022 | Diagnose and rectify faults in camera circuits and equipment               | 60               |
| UEEEC0023 | Diagnose and rectify faults in digital transmission circuits and systems   | 80               |
| UEEEC0024 | Diagnose and rectify faults in electronic display circuits                 | 60               |
| UEEEC0025 | Diagnose and rectify faults in recording and replay equipment              | 60               |
| UEEEC0026 | Enter and verify programs for fire protection systems                      | 40               |
| UEEEC0027 | Enter instructions and test wired and wireless security systems            | 40               |
| UEEEC0028 | Fault find and repair complex power supplies                               | 40               |
| UEEEC0029 | Fault find and repair electronic apparatus                                 | 40               |
| UEEEC0030 | Fault find and repair electronic medical equipment                         | 120              |
| UEEEC0031 | Fault find and repair global positioning systems                           | 60               |
| UEEEC0032 | Fault find and repair high-volume office equipment                         | 120              |
| UEEEC0033 | Fault find and repair navigation systems                                   | 60               |
| UEEEC0034 | Fault find and repair radar apparatus and systems                          | 120              |
| UEEEC0035 | Fault find and repair satellite-based surveillance and observation systems | 60               |
| UEEEC0036 | Fault find and repair sonar apparatus and systems                          | 120              |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEEEC0037 | Fault find and repair telecommunication apparatus and systems                   | 60               |
| UEEEC0038 | Find and repair microwave amplifier section faults in electronic apparatus      | 40               |
| UEEEC0039 | Install and test microwave antennae and waveguides                              | 60               |
| UEEEC0040 | Install commercial video/audio system components                                | 120              |
| UEEEC0041 | Install fire detection and warning system apparatus                             | 40               |
| UEEEC0042 | Install large security systems  | 100              |
| UEEEC0043 | Manage computer systems/electronics projects                                    | 40               |
| UEEEC0044 | Modify - redesign electronics and communications systems                        | 20               |
| UEEEC0045 | Modify digital signal processing (DSP) based sub-systems                        | 80               |
| UEEEC0046 | Operate and maintain amateur radio communication stations                       | 40               |
| UEEEC0047 | Plan large electronic projects  | 60               |
| UEEEC0048 | Program and commission commercial access control security systems               | 60               |
| UEEEC0049 | Program and commission commercial security closed-circuit television systems    | 60               |
| UEEEC0050 | Program and commission commercial security systems                              | 60               |
| UEEEC0051 | Program and commission commercial video/audio systems                           | 40               |
| UEEEC0052 | Program and test large security systems   | 120              |
| UEEEC0053 | Provide engineering solutions to air traffic control system problems            | 40               |
| UEEEC0054 | Provide gate array solutions for complex electronics systems                    | 60               |
| UEEEC0055 | Repair basic computer equipment faults by replacement of modules/sub-assemblies | 40               |
| UEEEC0056 | Repair predictable faults in audio components                                   | 40               |
| UEEEC0057 | Repair predictable faults in general electronic apparatus                       | 40               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEEC0058 | Repair predictable faults in television receivers                                    | 120              |
| UEEEC0059 | Repair routine business equipment faults   | 120              |
| UEEEC0060 | Repairs basic electronic apparatus faults by replacement of components               | 40               |
| UEEEC0061 | Set up and adjust commercial radio frequency (RF) transmission and reception systems | 60               |
| UEEEC0062 | Set up and test residential video/audio equipment                                    | 40               |
| UEEEC0063 | Solve fundamental electronic communications system problems                          | 40               |
| UEEEC0064 | Solve oscillator problems  | 40               |
| UEEEC0065 | Solve problems in basic electronic circuits  | 100              |
| UEEEC0066 | Troubleshoot amplifiers in an electronic apparatus                                   | 80               |
| UEEEC0067 | Troubleshoot basic amplifier circuits  | 40               |
| UEEEC0068 | Troubleshoot communication systems   | 80               |
| UEEEC0069 | Troubleshoot digital sub-systems   | 80               |
| UEEEC0070 | Troubleshoot faults in television receivers  | 120              |
| UEEEC0071 | Troubleshoot fire protection systems   | 40               |
| UEEEC0072 | Troubleshoot microcontroller-based hardware systems                                  | 40               |
| UEEEC0073 | Troubleshoot professional audio reproduction components                              | 120              |
| UEEEC0074 | Troubleshoot resonance circuits in an electronic apparatus                           | 80               |
| UEEEC0075 | Troubleshoot single phase input d.c power supplies                                   | 40               |
| UEEEC0076 | Verify compliance and functionality of fire protection system installations          | 60               |
| UEEEC0077 | Verify functionality and compliance of custom electronic installations               | 40               |
| UEEEL0001 | Apply compliance requirements to all aspects of electrical work                      | 20               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEEL0002 | Apply currency of safe working practices and compliance verification of electrical installations | 20               |
| UEEEL0003 | Arrange circuits, control and protection for electrical installations                            | 40               |
| UEEEL0004 | Carry out basic repairs to electrical components and equipment                                   | 40               |
| UEEEL0005 | Develop and connect electrical control circuits  | 80               |
| UEEEL0006 | Develop detailed and complex drawings for electrical systems using CAD systems                   | 80               |
| UEEEL0007 | Develop detailed electrical drawings   | 60               |
| UEEEL0008 | Evaluate and modify low voltage heating equipment and controls                                   | 20               |
| UEEEL0009 | Evaluate and modify low voltage lighting circuits, equipment and controls                        | 20               |
| UEEEL0010 | Evaluate and modify low voltage socket outlets circuits  | 20               |
| UEEEL0011 | Evaluate performance of low voltage electrical apparatus   | 40               |
| UEEEL0012 | Install low voltage wiring, appliances, switchgear and associated accessories                    | 40               |
| UEEEL0013 | Install, set up and commission interval metering   | 20               |
| UEEEL0014 | Isolate, test and troubleshoot low voltage electrical circuits                                   | 80               |
| UEEEL0015 | Manage large electrical projects   | 40               |
| UEEEL0016 | Provide advice on effective and energy efficient lighting products                               | 40               |
| UEEEL0017 | Repair and maintain mechanical components of electrical machines                                 | 60               |
| UEEEL0018 | Select wiring systems and select cables for low voltage electrical installations                 | 80               |
| UEEEL0019 | Solve problems in direct current (d.c.) machines   | 30               |
| UEEEL0020 | Solve problems in low voltage (a.c.) circuits  | 80               |
| UEEEL0021 | Solve problems in magnetic and electromagnetic devices   | 30               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEEL0022 | Supply effective and efficient lighting products for domestic and small commercial applications    | 20               |
| UEEEL0023 | Terminate cables, cords and accessories for low voltage circuits                                   | 40               |
| UEEEL0024 | Test and connect alternating current (a.c.) rotating machines                                      | 40               |
| UEEEL0025 | Test and connect transformers  | 40               |
| UEEEL0026 | Align and install traction lift equipment  | 40               |
| UEEEL0027 | Carry out low voltage electrical field testing and report findings                                 | 60               |
| UEEEL0028 | Conduct compliance and functional verification of electrical apparatus and existing circuits       | 40               |
| UEEEL0029 | Conduct compliance inspection of LV electrical installations with demand exceeding 100 A per phase | 40               |
| UEEEL0030 | Conduct compliance inspection of single phase LV electrical installations                          | 60               |
| UEEEL0031 | Conduct compliance inspection of special LV electrical installations                               | 60               |
| UEEEL0032 | Conduct electrical tests on HV electrical machines   | 60               |
| UEEEL0033 | Conduct electrical tests on LV electrical machines   | 40               |
| UEEEL0034 | Conduct mechanical tests on electrical machines and components                                     | 40               |
| UEEEL0035 | Design effective and efficient lighting for public, open and sports areas                          | 60               |
| UEEEL0036 | Design effective and efficient lighting for residential and commercial buildings                   | 60               |
| UEEEL0037 | Design electrical installations with a low voltage demand greater than 400 A per phase             | 40               |
| UEEEL0038 | Design switchboards rated for high fault levels (greater than 400 A)                               | 60               |
| UEEEL0039 | Design, install and verify compliance and functionality of general electrical installations        | 60               |
| UEEEL0040 | Develop compliance policies and plans to conduct an electrical contracting business                | 80               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEEL0041 | Develop engineering solution for synchronous machine and control problems                            | 60               |
| UEEEL0042 | Develop engineering solutions for d.c. machine and control problems                                  | 60               |
| UEEEL0043 | Develop engineering solutions for induction machine and control problems                             | 60               |
| UEEEL0044 | Diagnose and rectify faults in complex lift systems  | 40               |
| UEEEL0045 | Diagnose and rectify faults in traction lift systems   | 80               |
| UEEEL0046 | Find and repair faults in LV d.c. electrical apparatus and circuits                                  | 60               |
| UEEEL0047 | Identify, shut down and restart systems with alternate supplies                                      | 20               |
| UEEEL0048 | Install and maintain emergency lighting systems  | 60               |
| UEEEL0049 | Install and maintain emergency safety systems  | 60               |
| UEEEL0050 | Install and replace low voltage current transformer metering   | 20               |
| UEEEL0051 | Investigate and report on electrical incidents and causes  | 60               |
| UEEEL0052 | Maintain and service traction lift systems and equipment   | 40               |
| UEEEL0053 | Maintain operation of electrical marine equipment and systems  | 60               |
| UEEEL0054 | Maintain operation of electrical mining equipment and systems  | 60               |
| UEEEL0055 | Overhaul and repair major switchgear and control gear  | 60               |
| UEEEL0056 | Place and connect electrical coils   | 40               |
| UEEEL0057 | Plan electrical installations with a low voltage demand up to 400 A per phase                        | 40               |
| UEEEL0058 | Plan large electrical projects   | 60               |
| UEEEL0059 | Plan low voltage switchboard and control panel layouts   | 40               |
| UEEEL0060 | Prepare quotations for the supply of effective and efficient lighting products for lighting projects | 40               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEEEL0061 | Provide advice on the application of energy efficient lighting for ambient and aesthetic effect | 20               |
| UEEEL0062 | Provide engineering solutions to problems in complex polyphase power circuits                   | 60               |
| UEEEL0063 | Provide photometric data for illumination system design   | 80               |
| UEEEL0064 | Rewind HV three phase induction machines rated for voltages above 3.3 kV                        | 60               |
| UEEEL0065 | Rewind HV three phase induction machines rated for voltages to 3.3 kV                           | 60               |
| UEEEL0066 | Rewind LV direct current machines   | 120              |
| UEEEL0067 | Rewind single phase machines  | 120              |
| UEEEL0068 | Rewind three phase low voltage induction machines   | 120              |
| UEEEL0069 | Select and arrange equipment for special LV electrical installations                            | 60               |
| UEEEL0070 | Select effective and efficient light sources and luminaries for given locations and designs     | 60               |
| UEEEL0071 | Select low voltage power factor correction equipment  | 40               |
| UEEEL0072 | Set up and place LV electrical apparatus and associated circuits into service                   | 40               |
| UEEEL0073 | Verify compliance and functionality of special LV electrical installations                      | 40               |
| UEEEL0074 | Wind electrical coils   | 40               |
| UEEHA0001 | Conduct detailed inspection of electrical installations for hazardous areas                     | 40               |
| UEEHA0002 | Conduct visual and close inspection of electrical installations for hazardous areas             | 40               |
| UEEHA0003 | Determine the explosion-protection requirements to meet a specified classified hazardous area   | 40               |
| UEEHA0004 | Enter a classified hazardous area to undertake work related to electrical equipment             | 20               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEHA0005 | Install explosion-protected equipment and associated apparatus and wiring systems              | 60               |
| UEEHA0006 | Maintain equipment associated with hazardous areas   | 60               |
| UEEHA0007 | Plan electrical installations for hazardous areas  | 20               |
| UEEHA0008 | Design gas detection systems   | 20               |
| UEEHA0009 | Develop and manage periodic electrical inspection and maintenance programs for hazardous areas | 20               |
| UEEHA0010 | Supervise repair and overhaul of explosion-protected equipment type Group III ('t')            | 60               |
| UEEHA0011 | Supervise repair and overhaul of explosion-protected equipment type flameproof (Ex d)          | 60               |
| UEEHA0012 | Supervise repair and overhaul of explosion-protected equipment type increased safety (Ex e)    | 60               |
| UEEHA0013 | Supervise repair and overhaul of explosion-protected equipment type intrinsically safe (Ex i)  | 60               |
| UEEHA0014 | Supervise repair and overhaul of explosion-protected equipment type pressurised (Ex p)         | 60               |
| UEEHA0015 | Supervise repair and overhaul of explosion-protected rotating machines                         | 60               |
| UEEIC0001 | Analyse complex electronic circuits controlling fluids   | 80               |
| UEEIC0002 | Assemble, enter and verify operating instructions in microprocessor equipped devices           | 20               |
| UEEIC0003 | Assist in commissioning process and instrumentation control systems                            | 40               |
| UEEIC0004 | Calibrate, adjust and test measuring instruments   | 40               |
| UEEIC0005 | Configure and maintain industrial control system networks                                      | 60               |
| UEEIC0006 | Design and configure human-machine interface (HMI) networks                                    | 60               |
| UEEIC0007 | Design and use advanced programming tools, PC networks and HMI Interfacing                     | 120              |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEEIC0008 | Design electronic control systems   | 60               |
| UEEIC0009 | Develop an electrical integrated system interface for access through a touch screen             | 20               |
| UEEIC0010 | Develop and test code for microcontroller devices   | 60               |
| UEEIC0011 | Develop electrical integrated systems   | 20               |
| UEEIC0012 | Develop structured programs to control external devices   | 40               |
| UEEIC0013 | Develop, enter and verify discrete control programs for programmable controllers                | 60               |
| UEEIC0014 | Develop, enter and verify programs in supervisory control and data acquisition systems          | 60               |
| UEEIC0015 | Develop, enter and verify word and analogue control programs for programmable logic controllers | 60               |
| UEEIC0016 | Diagnose and rectify faults in a.c. motor drive systems   | 60               |
| UEEIC0017 | Diagnose and rectify faults in d.c. motor drive systems   | 60               |
| UEEIC0018 | Diagnose and rectify faults in digital controls systems   | 60               |
| UEEIC0019 | Diagnose and rectify faults in servo drive systems  | 60               |
| UEEIC0020 | Fault find and repair analogue circuits and components in electronic control systems            | 60               |
| UEEIC0021 | Find and rectify faults in process final control elements                                       | 40               |
| UEEIC0022 | Install instrumentation and control apparatus and associated equipment                          | 20               |
| UEEIC0023 | Install instrumentation and control cabling and tubing  | 20               |
| UEEIC0024 | Plan the electrical installation of integrated systems  | 20               |
| UEEIC0025 | Provide solutions to extra-low voltage (ELV) electro-pneumatic control systems and drives       | 60               |
| UEEIC0026 | Provide solutions to fluid circuit operations   | 60               |
| UEEIC0027 | Provide solutions to pneumatic-hydraulic system operations                                      | 80               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEEIC0028 | Provide solutions to problems in industrial control systems                   | 60               |
| UEEIC0029 | Set up and adjust PID control loops   | 40               |
| UEEIC0030 | Set up and adjust advanced PID process control loops                          | 40               |
| UEEIC0031 | Set up and configure human-machine interface (HMI) and industrial networks    | 60               |
| UEEIC0032 | Set up electronically controlled robotically operated complex systems         | 80               |
| UEEIC0033 | Set up gas analysis measuring and control instruments                         | 20               |
| UEEIC0034 | Set up industrial field control devices                                       | 60               |
| UEEIC0035 | Set up scientific analysis measuring and control instruments                  | 20               |
| UEEIC0036 | Set up water analysis measuring and control instruments                       | 20               |
| UEEIC0037 | Set up weighting measuring and control instruments                            | 20               |
| UEEIC0038 | Solve problems in density/level measurement components and systems            | 40               |
| UEEIC0039 | Solve problems in flow measurement components and systems                     | 40               |
| UEEIC0040 | Solve problems in polyphase electronic power control circuits                 | 60               |
| UEEIC0041 | Solve problems in pressure measurement components and systems                 | 40               |
| UEEIC0042 | Solve problems in single phase electronic power control circuits              | 60               |
| UEEIC0043 | Solve problems in temperature measurement components and systems              | 40               |
| UEEIC0044 | Troubleshoot measuring and analysis systems                                   | 40               |
| UEEIC0045 | Troubleshoot medical equipment control systems                                | 120              |
| UEEIC0046 | Troubleshoot process control systems  | 60               |
| UEEIC0047 | Use instrumentation drawings, specifications, standards and equipment manuals | 40               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEEIC0048 | Verify compliance and functionality of instrumentation and control installations | 40               |
| UEEIC0049 | Manage instrumentation and control projects                                      | 40               |
| UEEIC0050 | Plan instrumentation and control projects  | 60               |
| UEERA0001 | Analyse the operation of HVAC air and hydronic systems                           | 80               |
| UEERA0002 | Analyse the psychometric performance of HVAC/R systems                           | 50               |
| UEERA0003 | Analyse the thermodynamic performance of HVAC/R systems                          | 40               |
| UEERA0004 | Analyse vibration and noise in refrigeration and air conditioning systems        | 80               |
| UEERA0005 | Apply safety awareness and legal requirements for ammonia refrigerant            | 10               |
| UEERA0006 | Apply safety awareness and legal requirements for carbon dioxide refrigerant     | 10               |
| UEERA0007 | Apply safety awareness and legal requirements for flammable refrigerants         | 10               |
| UEERA0008 | Audit HVAC/R control systems for compliance with regulations and standards       | 60               |
| UEERA0009 | Audit energy use for commercial HVAC/R systems                                   | 40               |
| UEERA0010 | Commission complex heating, ventilation and air conditioning (HVAC) systems      | 80               |
| UEERA0011 | Commission complex refrigeration systems and equipment                           | 80               |
| UEERA0012 | Commission complex refrigeration/air conditioning control systems                | 80               |
| UEERA0013 | Commission refrigeration/air conditioning hydronic systems                       | 80               |
| UEERA0014 | Design ammonia refrigerated systems  | 40               |
| UEERA0015 | Design carbon dioxide refrigerated systems                                       | 40               |
| UEERA0016 | Design commercial refrigeration systems and select components                    | 80               |
| UEERA0017 | Design complex air conditioning systems and select equipment                     | 120              |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEERA0018 | Design complex commercial refrigeration systems and select equipment                               | 40               |
| UEERA0019 | Design complex control systems for refrigeration or heating, ventilation, air conditioning systems | 80               |
| UEERA0020 | Design complex industrial refrigeration systems and select equipment                               | 40               |
| UEERA0021 | Design control systems for refrigeration or heating, ventilation and air conditioning systems      | 80               |
| UEERA0022 | Design heating, ventilation and air conditioning (HVAC) systems and select components              | 60               |
| UEERA0023 | Design hydrocarbon refrigerated systems  | 40               |
| UEERA0024 | Design hydronic systems and select equipment   | 80               |
| UEERA0025 | Design industrial refrigeration systems and select components                                      | 80               |
| UEERA0026 | Design mechanical ventilation/exhaust systems and select equipment                                 | 40               |
| UEERA0027 | Design secondary refrigerant systems   | 40               |
| UEERA0028 | Determine noise and vibration encountered in HVAC/R applications                                   | 40               |
| UEERA0029 | Develop heat exchanger design specifications   | 80               |
| UEERA0030 | Develop specifications and prepare drawings for HVAC/R projects                                    | 60               |
| UEERA0031 | Diagnose and rectify faults in air conditioning and refrigeration control systems                  | 80               |
| UEERA0032 | Diagnose and rectify faults in complex air conditioning/refrigeration systems                      | 100              |
| UEERA0033 | Diagnose faults in complex HVAC/refrigeration control systems                                      | 80               |
| UEERA0034 | Establish heat loads for commercial refrigeration and/or air conditioning applications             | 80               |
| UEERA0035 | Establish the basic operating conditions of air conditioning systems                               | 20               |
| UEERA0036 | Establish the basic operating conditions of vapour compression systems                             | 60               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEERA0037 | Establish the basic operating conditions of vapour compression systems - appliances              | 50               |
| UEERA0038 | Establish the thermodynamic parameters of refrigeration and air conditioning systems             | 80               |
| UEERA0039 | Evaluate and report on building services energy management systems                               | 80               |
| UEERA0040 | Evaluate and report on the indoor air quality of buildings                                       | 40               |
| UEERA0041 | Evaluate new and alternative technologies applicable to electrotechnology applications           | 40               |
| UEERA0042 | Evaluate thermodynamic and fluid parameters of refrigeration systems                             | 100              |
| UEERA0043 | Find and rectify faults in appliance control systems and devices                                 | 60               |
| UEERA0044 | Find and rectify faults in single phase motors and associated controls                           | 40               |
| UEERA0045 | Find and rectify faults in three phase motors and associated controls                            | 30               |
| UEERA0046 | Install and commission ammonia refrigeration systems, components and associated equipment        | 20               |
| UEERA0047 | Install and commission carbon dioxide refrigeration systems, components and associated equipment | 20               |
| UEERA0048 | Install and commission flammable refrigerant air conditioning and refrigeration systems          | 20               |
| UEERA0049 | Install and start up single head split air conditioning and water heating heat pump systems      | 70               |
| UEERA0050 | Install refrigerant pipe work, flow controls and accessories                                     | 60               |
| UEERA0051 | Install, commission, service and maintain air conditioning systems                               | 80               |
| UEERA0052 | Install, commission, service and maintain low temperature systems                                | 40               |
| UEERA0053 | Install, commission, service and maintain medium temperature systems                             | 40               |
| UEERA0054 | Maintain microbial control of refrigeration and air conditioning systems                         | 20               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEERA0055 | Manage refrigeration and air conditioning projects                                   | 40               |
| UEERA0056 | Monitor and adjust refrigeration energy management systems                           | 40               |
| UEERA0057 | Operate ammonia refrigeration plant  | 40               |
| UEERA0058 | Plan refrigeration and air conditioning projects                                     | 60               |
| UEERA0059 | Prepare and connect refrigerant tubing and fittings                                  | 40               |
| UEERA0060 | Produce HVAC/R control system diagrams   | 40               |
| UEERA0061 | Produce HVAC/R system design drawings  | 80               |
| UEERA0062 | Recover and charge refrigerants  | 40               |
| UEERA0063 | Recover, pressure test, evacuate, charge and leak test refrigerants - appliances     | 50               |
| UEERA0064 | Recover, pressure test, evacuate, charge and leak test refrigerants - split systems  | 60               |
| UEERA0065 | Repair and service ammonia refrigeration systems                                     | 20               |
| UEERA0066 | Repair and service carbon dioxide refrigeration systems                              | 20               |
| UEERA0067 | Repair and service secondary refrigeration systems                                   | 20               |
| UEERA0068 | Repair and service self-contained carbon dioxide refrigeration and heat pump systems | 20               |
| UEERA0069 | Resolve problems in beverage dispensers  | 40               |
| UEERA0070 | Resolve problems in central plant air conditioning systems                           | 40               |
| UEERA0071 | Resolve problems in dairy refrigeration systems                                      | 20               |
| UEERA0072 | Resolve problems in hydronic systems   | 40               |
| UEERA0073 | Resolve problems in ice making systems   | 20               |
| UEERA0074 | Resolve problems in industrial refrigeration systems                                 | 20               |
| UEERA0075 | Resolve problems in post-mix refrigeration systems                                   | 20               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEERA0076 | Resolve problems in refrigerated beverage vending cabinets  | 20               |
| UEERA0077 | Resolve problems in transport refrigeration systems   | 20               |
| UEERA0078 | Resolve problems in ultra-low temperature refrigeration systems                                     | 20               |
| UEERA0079 | Safely handle refrigerants and lubricants   | 40               |
| UEERA0080 | Select basic commercial refrigeration system equipment, components and accessories                  | 40               |
| UEERA0081 | Select refrigerant piping, accessories and associated controls                                      | 60               |
| UEERA0082 | Select residential air conditioning system equipment, components and accessories                    | 40               |
| UEERA0083 | Service and repair microwave ovens  | 40               |
| UEERA0084 | Service and repair self-contained flammable refrigerants air conditioning and refrigeration systems | 20               |
| UEERA0085 | Service clothes washing machines and dryers   | 40               |
| UEERA0086 | Service dishwasher machines   | 40               |
| UEERA0087 | Service electrical heating appliances   | 60               |
| UEERA0088 | Service gas heating appliances  | 40               |
| UEERA0089 | Service refrigeration appliances  | 60               |
| UEERA0090 | Service room air conditioners   | 30               |
| UEERA0091 | Service small electrical appliances and power tools   | 60               |
| UEERA0092 | Solve problems in low voltage refrigeration and air conditioning circuits                           | 60               |
| UEERA0093 | Verify functionality and compliance of appliances   | 20               |
| UEERA0094 | Verify functionality and compliance of refrigeration and air conditioning installations             | 20               |
| UEERA0095 | Recover refrigerant from stationary self-contained end of life decommissioned equipment             | 20               |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEERE0001 | Apply environmentally and sustainable procedures in the energy sector                         | 20               |
| UEERE0002 | Assemble and connect remote area power supplies   | 60               |
| UEERE0003 | Assess energy loads and uses for energy efficiency in commercial facilities                   | 40               |
| UEERE0004 | Assess energy loads and uses for energy efficiency in industrial properties and enterprises   | 40               |
| UEERE0005 | Assess energy loads and uses for energy efficiency in residential, office and retail premises | 40               |
| UEERE0006 | Conduct periodic maintenance of remote area power supply battery banks                        | 40               |
| UEERE0007 | Conduct periodic maintenance of remote area power supply generator sets                       | 40               |
| UEERE0008 | Conduct periodic maintenance of remote area power supply photovoltaic arrays                  | 40               |
| UEERE0009 | Conduct periodic maintenance of remote area power supply wind generators                      | 40               |
| UEERE0010 | Design energy management controls for electrical installations in buildings                   | 80               |
| UEERE0011 | Design grid-connected photovoltaic power supply systems                                       | 60               |
| UEERE0012 | Develop effective engineering strategies for energy reduction in buildings                    | 100              |
| UEERE0013 | Develop strategies to address environmental and sustainability issues in the energy sector    | 20               |
| UEERE0014 | Develop strategies to address sustainability issues for electrical installations              | 20               |
| UEERE0015 | Implement and monitor energy sector environmental and sustainable policies and procedures     | 20               |
| UEERE0016 | Install, configure and commission LV grid-connected photovoltaic power systems                | 80               |
| UEERE0017 | Maintain and repair facilities associated with remote area essential service operations       | 120              |



| Unit Code | Unit Title  | Nominal<br>Hours |
|-----------|---|------------------|
| UEERE0018 | Maintain and repair remote area power generation facilities                                     | 80               |
| UEERE0019 | Maintain safety and tidiness of remote area power supply systems                                | 20               |
| UEERE0020 | Promote sustainable energy practices in the community   | 60               |
| UEERE0021 | Provide basic sustainable energy solutions for energy reduction in residential premises         | 40               |
| UEERE0022 | Solve basic problems in photovoltaic energy apparatus and systems                               | 40               |
| UEERE0023 | Work safely with remote area power supply systems   | 20               |
| UEERE0024 | Attend to breakdown in remote area power supplies (RAPS)  | 20               |
| UEERE0025 | Carry out basic repairs to renewable energy (RE) apparatus                                      | 80               |
| UEERE0026 | Conduct checks in the demand side use of remote area power supplies (RAPS)                      | 40               |
| UEERE0027 | Coordinate maintenance of renewable energy (RE) apparatus and systems                           | 20               |
| UEERE0028 | Design hybrid renewable power systems   | 80               |
| UEERE0029 | Design micro-hydro systems rated to 6.4 kW  | 60               |
| UEERE0030 | Design renewable energy (RE) heating systems  | 120              |
| UEERE0031 | Design stand-alone renewable energy (RE) systems  | 40               |
| UEERE0032 | Design wind energy conversion systems (WECS) rated to 10 kW                                     | 60               |
| UEERE0033 | Develop engineering solutions to renewable energy (RE) problems                                 | 60               |
| UEERE0034 | Diagnose and rectify faults in renewable energy (RE) control systems                            | 60               |
| UEERE0035 | Install ELV stand-alone photovoltaic power systems  | 60               |
| UEERE0036 | Install small wind energy conversion systems rated up to 10 kW for ELV stand-alone applications | 20               |
| UEERE0037 | Install, configure and commission LV micro-hydro systems rated up to 6.4 kW                     | 40               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEERE0038 | Install, configure and commission LV wind energy conversion systems rated up to 10 kW                | 40               |
| UEERE0039 | Install, set up and maintain ELV micro-hydro systems rated up to 6.4 kW                              | 20               |
| UEERE0040 | Maintain and monitor remote area essential service operations  | 120              |
| UEERE0041 | Maintain operation of remote area power generation plant   | 120              |
| UEERE0042 | Manage renewable energy (RE) projects  | 40               |
| UEERE0043 | Plan periodic maintenance schedules of remote area power supplies (RAPS)                             | 40               |
| UEERE0044 | Plan renewable energy (RE) projects  | 60               |
| UEERE0045 | Solve basic problems in micro-hydro systems  | 20               |
| UEERE0046 | Solve problems in stand-alone renewable energy (RE) systems  | 60               |
| UEERE0047 | Solve problems in wind energy conversion systems (WECS) rated up to 10 kW                            | 60               |
| UEERE0048 | Verify compliance and functionality of an extra-low voltage renewable energy installation            | 20               |
| UEERE4001 | Install, maintain and fault find battery storage systems for grid-<br>connected photovoltaic systems | 60               |
| UEERE5001 | Design battery storage systems for grid-connected photovoltaic systems                               | 80               |
| UEERL0001 | Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply      | 20               |
| UEERL0002 | Attach cords, cables and plugs to electrical equipment for connection to 1000 V a.c. or 1500 V d.c.  | 20               |
| UEERL0003 | Conduct in-service safety testing of electrical cord connected equipment and cord assemblies         | 20               |
| UEERL0004 | Disconnect - reconnect electrical equipment connected to low voltage (LV) installation wiring        | 60               |
| UEERL0005 | Locate and rectify faults in low voltage (LV) electrical equipment using set procedures              | 20               |



| Unit Code | Unit Title   | Nominal<br>Hours |
|-----------|--|------------------|
| UEERL0006 | Attach HV flexible cables and plugs  | 40               |
| UEERL0007 | Disconnect-reconnect 3.3 kV electric propulsion components of self-<br>propelled earth moving vehicles | 60               |
| UEERL0008 | Disconnect-reconnect explosion-protected appliances and control devices connected to LV installation   | 60               |
| UEERS0001 | Assemble and wire internal electrical rail signalling equipment  | 20               |
| UEERS0002 | Decommission electrical and electromechanical rail signalling from service                             | 20               |
| UEERS0003 | Develop rail signalling system maintenance programs  | 20               |
| UEERS0004 | Find and repair rail signalling system faults  | 20               |
| UEERS0005 | Install and maintain active level crossing equipment   | 20               |
| UEERS0006 | Install and maintain computer-based interlocking rail systems  | 20               |
| UEERS0007 | Install and maintain non-vital screen-based control systems  | 20               |
| UEERS0008 | Install and maintain non-vital telemetry systems   | 20               |
| UEERS0009 | Install and maintain power-operated point actuating devices  | 20               |
| UEERS0010 | Install and maintain rail signalling power supplies  | 20               |
| UEERS0011 | Install and maintain rail track circuit leads and bonds  | 20               |
| UEERS0012 | Install and maintain trackside signal and train protection equipment                                   | 20               |
| UEERS0013 | Install and maintain train detection equipment   | 20               |
| UEERS0014 | Install and maintain vital relay interlocking systems  | 20               |
| UEERS0015 | Maintain electronic and microprocessor-based remote control systems                                    | 20               |
| UEERS0016 | Maintain mechanical rail signalling equipment and infrastructure                                       | 20               |
| UEERS0017 | Repair rail signalling power and control cables  | 20               |
| UEERS0018 | Test and commission rail power equipment   | 20               |
| UEERS0019 | Test copper rail signalling cables   | 20               |



# **CONTACTS AND LINKS**

| Curriculum Maintena   | nce Manager (CMM)   |  |
|---|---|--|
| CMM – Engineering<br>Industries                                     | The CMM Service is provided on behalf of Higher Education and Skills.  CMM Service Executive Officers can assist with questions on payable and nominal hours.               | Name: George Adda, Supervising Executive Officer Postal address: Private Bag 2014 Box Hill Victoria 3128 Phone: +61 3 9286 9880 Email: g.adda@boxhill.edu.au |
| Service Skills Organ  | isation (SSO)   |  |
| Australian Industry<br>Standards                                    | This SSO is responsible for developing this UEE Electrotechnology Training Package and can be contacted for further information.  | Phone: (03) 9604 7200 See the <u>Australian Industry Standards</u> website for more information.   |
| National Register for   | VET in Australia  |  |
| Training.gov.au<br>(TGA)  | TGA is the Australian government's official National Register of information on Training Packages, qualifications, courses, units of competency and RTOs.                   | See the <u>National Register</u> for more information.   |
| Australian Governme   | ent   |  |
| Department of<br>Education, Skills and<br>Employment                | The Commonwealth Department is responsible for national policies and programmes that help Australians access quality vocational education and training.                     | See the Commonwealth Department of Education, Skills and Employment website for more information.  |
| State Government  |   |  |
| Department of<br>Education and<br>Training (DET)                    | DET is the State Training Authority responsible for supporting implementation of Vocational Education and Training (VET) in Victoria.                                       | (03) 9637 2000  See the <u>Victorian Department of Education and Training website</u> for more information   |
| National VET Regula   | tory Authority  |  |
| Australian Skills<br>Quality Authority<br>(ASQA)                    | ASQA is the national regulator for Australia's VET sector.  | Info line: 1300 701 801 See the ASQA website for more information  |
| Victorian VET Regula  | atory Authority   |  |
| Victorian<br>Registration and<br>Qualifications<br>Authority (VRQA) | The VRQA is a statutory authority responsible for the registration and regulation of Victorian RTOs and for the regulation of apprenticeships and traineeships in Victoria. | (03) 9637 2806 See the VRQA website for more information.  |
| Industry Regulatory   | Bodies  | •  |



| Energy Safe Victoria<br>(ESV) | The industry Regulatory body can provide advice on licensing, legislative or regulatory requirements that may impact on the delivery of training or the issuance of qualifications in this Training Package. | Phone: (03) 9203 9700  Email: info@esv.vic.gov.au  More information is available from the ESV website. |
|-------------------------------|--|--|
| WorkSafe Victoria             | WorkSafe needs to provide written verification before High Risk Work Units can be added to an RTO's scope of registration.   | Info line: 1800 136 089  More information is available from the WorkSafe Victoria website.             |



# **GLOSSARY**

| Code Nationally endorsed Training Package qualification code. |  |
|---|--|
| Title   | Nationally endorsed Training Package qualification title.  |
| Unit Code   | Nationally endorsed Training Package unit code.  |
| Unit Title  | Nationally endorsed Training Package unit title.   |
| Maximum Payable Hours   | The maximum number of hours the Victorian Government will subsidise under Skills First funding for the achievement of the minimum realistic vocational outcome of the qualification, as determined by the qualification packaging rules. The Maximum Payable Hours do not cover every possible combination of core and elective units available for a specific qualification.  Minimum payable hours reflect a calculated minimum number of hours that could deliver a minimum realistic vocational outcome, based on efficiencies of contextualisation and integration. |
| Scope of Registration   | Scope of registration specifies the AQF qualifications and/or units of competency the training organisation is registered to issue and the industry training and/or assessment services it is registered to provide.   |
| Nominal Hours   | Nominal hours reflect the anticipated time taken to deliver and assess the outcomes of a unit of competency excluding unsupervised delivery or the time taken for repeated practical application of skills. Nominal hours are determined by the Victorian State Training Authority (DET) and are primarily developed for funding purposes in Victoria.   |

