22588VIC

Certificate III in Enabling Technologies

This course has been accredited under Part 4.4 of the Education and Training Reform Act 2006.

Accreditation period: 1 March 2022 to 28 February 2027

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Section A: Applicant and course classification information

1. Person in respect of whom the course is being accredited	Copyright of this course is held by the Department of Education and Training, Victoria.	
	© State of Victoria (Department of Education and Training) 2022	
2. Address	Executive Director Engagement, Participation and Inclusion Higher Education and Workforce Division Department of Education and Training (DET) GPO Box 4367 Melbourne Vic 3001 Organisational Contact: Manager, Training and Learning Products Unit Higher Education and Skills Telephone: 13 18 23 Email: course.enquiry@education.vic.gov.au Day-to-day contact: Curriculum Maintenance Manager (CMM) CMM Business Industries Chisholm Institute 121 Stud Road Dandenong Vic 3175 Telephone: (03) 9238 8501 Email: cmmbi@chisholm.edu.au	
3. Type of submission	This submission is for accreditation.	
4. Copyright acknowledgement	The following units of competency:	
	BSBXCS301 Protect own personal online profile from cyber security threats	
	BSBXCS302 Identify and report online security threats	
	BSBXCS303 Securely manage personally identifiable information and workplace information	
	BSBXCS402 Promote workplace cyber security awareness and best practices	
	BSBWHS211 Contribute to the health and safety of self and others	
	are from the BSB Business Services Training Package administered by the Commonwealth of Australia.	
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	The following units of competency:	

	ICTCLD301 Evaluate characteristics of cloud computing solutions and services
	ICTICT303 Connect internal hardware components
	ICTSAS304 Provide basic system administration
	ICTSAS305 Provide ICT advice to clients
	ICTSAS308 Run standard diagnostic tests
	ICTSAS309 Maintain and repair ICT equipment and software
	ICTSAS310 Install, configure and secure a small office or home office network
	ICTTEN202 Use hand and power tools
	ICTTEN207 Install and test internet protocol devices in convergence networks
	ICTTEN208 Use electrical skills when working with telecommunications networks
	ICTTEN315 Determine and apply technologies within a telecommunications system
	are from the ICT Information and Communications Technology Training Package administered by the Commonwealth of Australia.
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	The following unit of competency:
	ICPPTD302 Set up and produce 3D prints
	is from the ICP Printing and Graphic Arts Training Package administered by the Commonwealth of Australia.
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	The following unit of competency:
	CPCCWHS1001 Prepare to work safely in the construction industry
	Is from the CPC Construction, Plumbing and Services Training Package administered by the Commonwealth of Australia.
	© Commonwealth of Australia
	The following unit of competency:
	UEEDV0012 Set up and configure the wireless capabilities of communications and data storage devices
	is from the UEE Electrotechnology Training Package administered by the Commonwealth of Australia.
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	The following units of competency:

AVIY0052 Control remote pilot aircraft systems on the ground

AVIY0023 Launch, control and recover a remotely piloted aircraft

AVIE0003 Operate aeronautical radio

are from the AVI Aviation Training Package administered by the Commonwealth of Australia.

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The following units of competency:

VU22324 Build a simple network and establish end to end connectivity

VU22338 Configure and program a basic robotic system

VU22340 Use 3D printing to create products

VU22829 Install, set up and test an embedded control system

are from 22527VIC - Certificate II in Integrated Technologies (Pre-vocational).

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The following units of competency:

VU23136 Develop enterprise skills for solving workplace challenges

VU23137 Apply enterprise skills in a team to develop solutions to workplace problems

VU23142 Investigate applications for smart cities technology

VU23143 Investigate block chain technology uses and application

VU23144 Determine uses for artificial intelligence with robotic process automation tools

VU23145 Investigate wearable objects and app innovations

VU23146 Plan and design a wearable object or app component |

	VU23147 Develop code for the design of wearable objects and apps
	VU23148 Test and evaluate a wearable object or app
	VU23149 Investigate robotic systems
	VU23150 Design a basic robotic solution for a specific problem
	VU23164 Explore and prepare for 3D printing in industry
	are from 22589VIC - Certificate III in Emerging Technologies.
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	This work is licensed under a Creative Commons Attribution-NoDerivs 3.0 Australia licence. See website *here*. You are free to use, copy and distribute to anyone in its original form as long as you attribute Higher Education and Skills Group, Department of Education and Training as the author and you license any derivative work you make available under the same licence.
6. Course accrediting body	Victorian Registration and Qualifications Authority
7. AVETMISS information	***ANZSCO code – 6 digit*** *Australian and New Zealand Standard Classification of Occupations* 399999 Technicians and Trades Workers ***ASCED Code – 4 digit*** *Field of Education* 1299 Other Mixed Field Programmes ***National course code*** 22588VIC
8. Period of accreditation	1 March 2022 to 28 February 2027

Section B: Course information

1	Nomenclature
1.1 Name of the qualification	*Standard 4.1 AQTF 2021 Standards for Accredited Courses* Certificate III in Enabling Technologies
1.2 Nominal duration of the course	*Standard 5.8 AQTF 2021 Standards for Accredited Courses* 340-510 hours
2	**Vocational or educational outcomes of the course**
2.1 Outcome(s) of the course	*Standard 5.1 AQTF 2021 Standards for Accredited Courses* This course enables learners to explore industry career options, prepare for further education and training, or gain employment. Learners will develop transferrable enterprise and technical skills and knowledge applicable in the use of enabling technologies in a range of industry, business, and community contexts. They will: • select, adapt and apply a range of human and enterprise skills across a range of work contexts • demonstrate technical skills to undertake routine and some non-routine tasks across a range of work contexts • explore the use of enabling technologies in a variety of work environments to inform career and further educational choices. This course prepares learners for entry level job roles across a range of industry sectors. Depending on the streams selected, students may undertake a range of support roles in: • Cyber threat awareness and risk • Basic technician for the installation and configuration of hardware for clients • Installation of new hardware components in a network • Cabling and wireless networks in telecommunications • Core cloud service support • Maintenance and troubleshooting solutions for three-dimensional (3D) printing • Remote pilot aircraft systems (RPAS).

2.2 Course description	*Standard 5.1 AQTF 2021 Standards for Accredited Courses*
	This course provides learners with the opportunity for career exploration and builds knowledge and skills applicable to:
	• exploring industry career options • preparing for further vocational education and training and/or higher education • gaining employment and further training through a traineeship or apprenticeship • gaining employment in entry level jobs where the use of enabling technology is a core function.
	A range of specialty streams provide students with technical skills and knowledge in the use of enabling technologies in industry. These specialty streams include:
	• technicians of the future • networking • cybersecurity • hardware technician • communication systems • wireless generation technology • cloud computing • internet of things • industry 4.0 • 3D printing drones • wearable objects and apps • robotics and evolving technologies.

3 Development of the course	
3.1 Industry, education, legislative, enterprise or community needs	*Standards 4.1, 5.1, 5.2, 5.3 and 5.4 AQTF 2021 Standards for Accredited Courses* Industry need The Report for CITT Scoping Study (Eason 2019) commenced in mid-2019 when only a handful of mobile operators world-wide had announced that they had moved beyond trials to offer commercial 5G services. By early August that year, the number of commercial 5G networks that had been launched globally already stood at 44, across 26 countries. That number was expected to grow rapidly as operators seek first-mover advantage in their domestic markets and as national governments pursue policies designed to encourage network deployment. It was evident that skills needed for this sector were broad and students needed to have skills that could be developed further on the job or in post-secondary qualifications.

5G is the most recent stage in the evolution of cellular mobile networks. It represents, in the first instance, a response to the exponential growth of mobile data traffic, especially video, over the last decade. The technical standards being developed for 5G will, however, do more than support higher data speeds and a better viewing experience. 5G is designed to be a more pervasive technology set than its predecessors, supporting a wide range of social and industrial uses over both fixed and mobile access platforms. As wireless connectivity sits at the heart of this larger 5G 'ecosystem', radiocommunications skills and knowledge will be increasingly in demand not only within the telecommunications sector but across all sections of the economy.

Some of the use cases projected for 5G, such as remote medical procedures performed by robots, may be regarded as aspirational. Others such as Internet of Things already exist in early forms. It is clear, however, that 5G networks will be required to simultaneously support a range of applications with widely differing traffic characteristics operating across multiple spectrum bands. The application of 5G is immense and has critical impacts into most careers.

Students and ultimately employers need to be flexible and rapidly responsive to demand. These requirements will drive changes to network architecture and increased reliance on big data technologies, automation and Artificial Intelligence (AI) at all network levels. Such changes are already underway and form part of the evolutionary pathway between 5G and advanced 4G networks. In the course of this evolution many existing workforce roles will disappear while new skill needs will arise. Such developments will not, however, occur overnight. The pathway to full 5G is still strewn with many technical and commercial uncertainties, from spectrum availability through to the challenge of monetising potential applications.

In the past two years, satellites, Internet of Things and mobile/wireless development cycles have accelerated. Industry reports that the skills available in the current radiocommunications workforce have not kept pace with network evolution and that there is a lack of publicly available training to remedy such shortages. Ideally, this would be available at the vocational education and training level and specifically during senior secondary years.

Industry consultations have unearthed concerns focused primarily on the Radio Access Network (RAN) field workforce. In recent years industry leaders have also repeatedly voiced concerns about skill shortages in emerging core networking skills such as those in Software Defined Networking (SDN) and Network Function

	Virtualisation (NFV) along with related areas such as AI and cyber security. Addressing such needs now will help build the workforce resources required for the transition to full 5G networks and, potentially, for the wider spread of 5G-enabled applications.
	Report findings
	It was identified by the Report for CITT Scoping Study (2019) that completing a qualification that related purely to the 5G and networks would render the program in a potential "thin market". The persistent theme that emerged was that students needed the opportunity to explore careers and potentially pivot and explore aligned roles that included telecommunications, 5G and networks.
	This could reflect this future generation of workers' need to change careers, evolve their careers to reflect emerging technologies and work in a gig economy. Skill sets and capability sets that included 5G and telecommunication would provide a broader entry point to the industry that has significant skill shortages that are expected to worsen over the next five years.
	Knowledge of the broader emerging technologies industry specifically relating to network and systems is critical to interest, engage and skill newer generations. Enrolling them into narrow qualifications too early will not resolve our current skill shortage and will result in students with limited knowledge of the breadth and scope of the sector. Provision of skills that are more generic and transferrable in nature would support our students to understand the infrastructure needed to make the Internet of Things, cloud computing and mobile continues to grow and evolve in a global world.
	The design of the 22588VIC Certificate III in Enabling Technologies reflects the research and industry consultation outcomes as well as industry support by providing a broader based qualification that focuses on a range of enabling technologies and extended students beyond 5G and networks.
	Educational need
	VET course completion rates for secondary school students are historically low. In 2018, fewer than half of Victoria's VET students (44.6 per cent) completed their qualification.
	The design of the course is underpinned by the following principles:
	• Optimise students' ability to build transferable enterprise and technical skills that can be used in a range of occupations.

- Ensure that students gain understanding of a breadth of industries and job roles, including jobs of the future.

Findings of The Essential Technologies Curriculum Research Project: Head Start Enterprises, Department of Education (Farrell, P & Stumpf, B 2020, Head Start Enterprises Emerging Technologies White Paper, Department of Education, June) clearly indicated that the field of ICT, IT and Digital Literacy has a broader purview to follow. Current course offerings are not attracting appropriate recruitments numbers despite a growing skill and job shortage in this area. All students will need digital capability not just digital literacy.

In addition, The Report for CITT Scoping Study (Eason 2019) determined that knowledge of broader emerging technologies and enrolling students into narrow qualifications too early will not resolve current skill shortages and will result in students with limited knowledge of the breadth and scope of the sector

Research and consultation

Two research projects including consultation were instrumental in the formation of the qualification.

CITT Scoping Study

Through the CITT Scoping Study (2019), an extensive desktop literature review was undertaken. In addition, extensive industry consultation was completed with stakeholders including:

- Curriculum Maintenance Managers
- Industry partners
- TAFE IT and Business Management staff
- DET staff
- Potential students

Essential Technologies Curriculum Research Project: Head Start Enterprises

The Essential Technologies Curriculum Research Project included the desktop analysis of contemporary research globally and identified emerging trends in curriculum design and development, policy and legislative frameworks and research analysis of existing programs to identify opportunities and challenges.

The research team consulted with key stakeholders, sharing the research and working collaboratively to co-design models to reflect the opportunities identified. The educational model was designed to offer learners the ability to specialise and build skill sets and/or capability sets that will allow them to be employable with tangible

early job skills that are diverse and allow further exploration.

The stakeholders included:

- Technical school directors
- Department of Education staff
- Education Leaders including principals
- Industry leaders
- Teachers and students
- Curriculum Maintenance Managers
- HeadStart staff

This qualification is a result of this stakeholder engagement, consultation, support and commitment to the course model.

Target group

The immediate target group is senior secondary school students.

Anticipated course demand

The 22588VIC Certificate III in Enabling Technologies is expected to attract strong demand from senior secondary students who are looking to gain valuable workplace knowledge and practical skills that will allow them to transition successfully into apprenticeships, traineeships, further education and training or directly into employment.

The qualification has been designed with reference to DET's program implementation of improving vocational and applied learning pathways in Senior Secondary School, via delivery of vocational specialisation pathways certificates. The strengthening of the role of VET and the increased flexibility within Senior Secondary years is predicted to create course demand.

Additional uptake will be driven by the Victorian Government support of priority industry and sectors that will drive Victoria's economic growth and jobs and the Connecting Regional Communities Program.

Two TAFEs, one metro and one regional will be involved in the initial delivery of the qualification in 2022, an indication of the demand as identified within the sector.

The qualification has been developed for the identified needs of secondary school students however it is recognised that it could have broader appeal beyond the target market to enable upskilling to meet current and

future technological needs in the workplace. Other potential cohorts include:

- those disengaged from formal training
- disability sector
- long term unemployed
- recent redundancies
- post-secondary students seeking clarity on their potential next steps

This qualification also reflects the need to deliver on the successful implementation of the reforms proposed in the Future Skills for Victoria, driving collaboration and innovation in post-secondary education and training review (Macklin, 2020) including:

- on-the-ground support available to local learners & businesses
- adoption of a place-based approach to building school–industry partnerships
- stronger coordination role in these partnerships to provide students with more industry and employer exposure.

Course consultation and validation processes

A Project Steering Committee (PSC) was formed to oversee the development of the accredited qualification consisting of:

Dominic Schipano (Chair), National Executive Officer, Communications and Information Technology Training Ltd (CITT)

Pauline Farrell, Managing Director, Skills for the Future

Omar Hammoud, Managed Services Delivery Manager, Ericsson

Bobb Swanton, State Manager, Field Operations – Vic/Tas and Oceania, Nokia

Rick Frank, Account Manager, Cisco Systems

Stuart Gurney, Apprenticeship Master, ANCA Group

Craig Taylor, Director and Business Development Manager, Mobile Automation

Joe D'amico, Manager, Business & IT, Chisholm Institute

Daryl Sutton, Manager VET Unit, Victorian Curriculum & Assessment Authority (VCAA)

In attendance:

	Alan Daniel, Curriculum Maintenance Manager, Business Industries, Chisholm Institute
	Colleen Mandaliti, Project Manager / Writer
	Bernadette Stumpf, Curriculum Writer
	Gabriele Giofre, Curriculum Advisor
	The outcomes of several national training package qualifications were carefully reviewed during research and consultation with respect to their potential application to the course context. Feedback from the consultation indicated that packaging rules and existing units did not adequately cover the breadth and depth of skills and knowledge to enable career exploration and development of skills for working with a range of enabling technologies.
	This resulted in new unit development to meet these additional needs.
	This course:
	• does not duplicate, by title or coverage, the outcomes of an endorsed training package qualification or skill set • is not a subset of a single training package qualification that could be recognised through one or more statements of attainment or a skill set. • does not include units of competency additional to those in a training package qualification that could be recognised through statements of attainment in addition to the qualification • does not comprise units that duplicate units of competency of a training package qualification.
3.2 Review for re-accreditation	*Standards 5.1, 5.2, 5.3 and 5.4 AQTF 2021 Standards for Accredited Courses* Not applicable
4 Course outcomes	
4.1 Qualification level	*Standards 5.5 AQTF 2021 Standards for Accredited Courses* The 22588VIC CIII in Enabling Technologies is consistent with AQF Level 3 requirements of the Australian Qualifications Framework as follows: Knowledge Graduates will have factual, technical, procedural and theoretical knowledge in technical activities spanning a range of technologies. Skills Graduates will have:

	• cognitive, technical and communication skills to interpret and act on available enabling technologies information • cognitive and communication skills to apply within relevant enabling technology contexts • capacity to communicate known solutions to a variety of predictable problems and to deal with unforeseen contingencies using known solutions • technical and communication skills to provide technical information to a variety of specialist and non-specialist audiences • technical skills to undertake routine and some non-routine tasks in a range of skilled enabling technologies operations. Application of knowledge and skills Graduates will be able to demonstrate the application of knowledge and skills in the use of enabling technologies: • with discretion and judgement in the selection of equipment, services or contingency measures • to adapt and transfer skills and knowledge within known routines, methods, procedures and time constraints • in contexts that include taking responsibility for own outputs in work and learning including participation in teams and taking limited responsibility for the output of others within established parameters. Volume of learning The volume of learning for this qualification is typically one to two years. This is made up of the structured learning component of the course combined with the self-directed learning activities such as information gathering, workplace-based learning, completing assessment tasks within the context of an inquiry-based learning theory.
4.2 Foundation skills	*Standard 5.6 AQTF 2021 Standards for Accredited Courses* The Foundation Skills Qualification Summary (Appendix A) provides a summary of the foundation skills to be achieved in the course. Foundation skills relevant to the course are further detailed in each unit of competency.
4.3 Recognition given to the course	*Standard 5.7 AQTF 2021 Standards for Accredited Courses* Not applicable
4.4 Licensing/regulatory requirements	*Standard 5.7 AQTF 2021 Standards for Accredited Courses* Not applicable

5 Course rules

Standards 5.8 and 5.9 AQTF 2021 Standards for Accredited courses

5.1 Course structure

To achieve the qualification 22588VIC Certificate III in Enabling Technologies the learner must successfully complete a total of 14 units comprising:

- 6 core units
- 8 elective units

The eight elective units must be selected as follows:

- A minimum of two full streams to be selected from the list below as follows:
  - Two Enabling Streams

OR

  - One Enabling Stream and One Specialty Stream

- Where the two streams selected contain less than the eight units required, the following applies:
  - Select up to two elective units that have been designed for career exploration. These have been drawn from the streams and can be selected from any of the following:
    - VU23142 Investigate applications for smart cities technology
    - VU23143 Investigate block chain technology uses and application
    - VU23144 Determine uses for artificial intelligence with robotic process automation tools
    - VU23145 Investigate wearable objects and app innovations
    - VU23149 Investigate robotic systems
    - VU23154 Investigate technician work of the future
    - VU23156 Explore the role of cloud computing in business
    - VU23158 Explore the Internet of Things (IoT) in industry
    - VU23161 Understand organisational applications of Industry 4.0 concepts and technologies
    - VU23155 Evaluate the impacts of the generations of wireless technologies
    - VU23164 Explore and prepare for 3D printing in industry

  OR

  - Select the first one or two units from one Emerging Stream or one Specialty Stream in the order listed in the stream

Where the full course is not completed, a VET Statement of Attainment will be issued for each unit successfully completed.

Unit of competency code	Field of Education code (six-digit)	Unit of competency title	Pre-requisite	Nominal hours
Core units				
VU23136	129999	Develop enterprise skills for solving workplace challenges	Nil	30
VU23137	129999	Apply enterprise skills in a team to develop solutions to workplace problems	Nil	20
VU23151	120501	Develop a career plan for technology and digital futures	Nil	20
VU23152	080905	Present information to support decision making using common business applications	Nil	30
VU23153	120505	Explore evolving technology and impact on jobs	Nil	20
BSBWHS211	061301	Contribute to the health and safety of self and others	Nil	20

ENABLING STREAMS				
Enabling Stream One – Technicians of the Future				
VU23154	031399	Investigate technician work of the future	Nil	30
CPCCWHS1001	061301	Prepare to work safely in the construction industry	Nil	6
ICTTEN202	030717	Use hand and power tools	Nil	40
ICTTEN208	031309	Use electrical skills when working with telecommunications networks	Nil	40
Enabling Stream Two – Networking				
ICTSAS304	029999	Provide basic system administration	Nil	20
VU22324	020113	Build a simple network and establish end to end connectivity	Nil	80

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ICTSAS310	020113	Install, configure and secure a small office or home office network	Nil	50

Enabling Stream Three – Cyber Security

BSBXCS301	029901	Protect own personal online profile from cyber security threats	Nil	30
BSBXCS302	029901	Identify and report online security threats	Nil	30
BSBXCS303	029901	Securely manage personally identifiable information and workplace information	Nil	40
BSBXCS402	029901	Promote workplace cyber security awareness and best practices	Nil	40

Enabling Stream Four – Hardware Technician

ICTICT303	031305	Connect internal hardware components	Nil	20
ICTSAS309	080905	Maintain and repair ICT equipment and software	Nil	20
ICTSAS308	029999	Run standard diagnostic tests	Nil	20
ICTSAS305	029999	Provide ICT advice to clients	Nil	40

Enabling Stream Five – Communication Systems

ICTTEN208	031309	Use electrical skills when working with telecommunications networks	Nil	40
ICTTEN315	031309	Determine and apply technologies within a telecommunications system	Nil	40
ICTTEN207	031309	Install and test internet protocol devices in convergence networks	Nil	50

Enabling Stream Six – Wireless Generation Technology

VU23155	031307	Evaluate the impacts of the generations of wireless technologies	Nil	30
UEEDV0012	031309	Set up and configure the wireless capabilities of communications and data storage devices	Nil	40

ICTTEN207	031309	Install and test internet protocol devices in convergence networks	Nil	50
Enabling Stream Seven – Cloud Computing				
VU23156	020113	Explore the role of cloud computing in business	Nil	30
VU23157	020113	Support the implementation of a cloud computing technology	Nil	50
ICTCLD301	020113	Evaluate characteristics of cloud computing solutions and services	Nil	40
Enabling Stream Eight – Internet of Things				
VU23158	020113	Explore the Internet of Things (IoT) in industry	Nil	30
VU23159	031317	Select, program and refine an IoT solution for use in a home or small business	Nil	50
VU23160	029901	Test and evaluate vulnerabilities and mitigate threats for IoT solutions	Nil	40
Enabling Stream Nine – Industry 4.0				
VU23161	030199	Understand organisational applications of Industry 4.0 concepts and technologies	Nil	30
VU23162	030199	Use additive manufacturing technologies to produce an industry specified component	Nil	50
VU23163	030199	Modify, test and evaluate an industry specified component	Nil	40
SPECIALTY STREAMS				
Specialty Stream One – 3D Printing				
VU23164	030103	Explore and prepare for 3D printing in industry	Nil	20
VU22340	030103	Use 3D printing to create products	Nil	40
ICPPTD302	030103	Set up and produce 3D prints	Nil	80
Specialty Stream Two – Drones				

AVIY0052	031505	Control remote pilot aircraft systems on the ground	Nil	25
AVIY0023	031505	Launch, control and recover a remotely piloted aircraft	Nil	30
AVIE0003	031309	Operate aeronautical radio	Nil	25

Specialty Stream Three – Wearable Technologies, Objects and Apps

VU23145	029999	Investigate wearable objects and app innovations	Nil	20
VU23146	029999	Plan and design a wearable object or app component	Nil	30
VU23147	029999	Develop code for the design of wearable objects and apps	Nil	40
VU23148	029999	Test and evaluate a wearable object or app	Nil	40

Specialty Stream Four – Robotics

VU23149	030799	Investigate robotic systems	Nil	20
VU23150	030703	Design a basic robotic solution for a specific problem	Nil	30
VU22338	030703	Configure and program a basic robotic system	Nil	60
VU22829	031305	Install, set up and test an embedded control system	Nil	30

Specialty Stream Five – Evolution of Technologies

VU23142	030999	Investigate applications for smart cities technology	Nil	30
VU23143	020199	Investigate block chain technology uses and application	Nil	30
VU23144	020119	Determine uses for artificial intelligence with robotic process automation tools	Nil	30
			Total nominal hours	340-510

5.2 Entry requirements	*Standard 5.11 AQTF 2021 Standards for Accredited Courses*
	There are no entry requirements for the 22588VIC Certificate III in Enabling Technologies.
	The following is a general guide to entry in relation to the language, literacy and numeracy skills of learners aligned to the Australian Core Skills Framework (ACSF), details of which can be accessed from *here*.
	Learners are best equipped to achieve the course outcomes in the 22588VIC Certificate III in Enabling Technologies if they have minimum language, literacy and numeracy that are equivalent to Level 2 of the ASCF.
	Learners with language, literacy and numeracy skills at lower levels than those suggested will require additional support to successfully undertake the qualifications.

6 Assessment	
6.1 Assessment strategy	*Standard 5.12 AQTF 2021 Standards for Accredited Courses*
	All assessment, including Recognition of Prior Learning (RPL), must be compliant with the requirements of:
	• Standard 1 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 4.1 and 4.2 of the VRQA Guidelines for VET Providers,
	or
	• the Standards for Registered Training Organisations 2015 (SRTOs),
	or
	• the relevant standards and Guidelines for RTOs at the time of assessment.
	Assessment strategies must therefore ensure that:
	• all assessments are valid, reliable, flexible and fair
	• learners are informed of the context and purpose of the assessment and the assessment process

	- feedback is provided to learners about the outcomes of the assessment process and guidance given for future options - time allowance to complete a task is reasonable and specified to reflect the context in which the task takes place. Assessment strategies should be designed to: - cover a range of skills and knowledge required to demonstrate achievement of the units of competency - collect evidence on a number of occasions to suit a variety of contexts and situations - be appropriate to the knowledge, skills, methods of delivery, and needs and characteristics of learners - assist assessors to interpret evidence consistently - recognise existing skills - be equitable to all learners. It is recommended that the assessment strategy for the 22588VIC Certificate III in Enabling Technologies is hands-on, practical and involves enabling technologies. It should invoke an inquiry-based approach that: - require*s* students to seek information, analyse sources, pose questions and discover answers - operates within a framework supported by a driving question or problematic scenario - incorporates project-based learning, problem-based learning, the use of case studies and workplace-based learning Types of assessment instruments/methods to be considered when developing the training and assessment strategy (TAS) include: - Work performance: includes structured observation/demonstration and questioning using written checklists to collect evidence - Product: includes project planning, project process, project final product and questioning (produced using design thinking processes) - Projects: includes workplace project investigation and report or presentation and questioning using written checklists to collect evidence on case studies and workplace scenarios) - Portfolio: collection of evidence such as observation of performance, project product, investigation, presentation and questioning using checklists to collect evidence Holistic assessment that reflects realistic job tasks is encouraged.

	Units of competency may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations.
	Assessments of units of competency from nationally endorsed training packages and/or accredited courses must be in accordance with the assessment requirements incorporated in the endorsed component of the relevant training package or outlined in the assessment strategy in the accredited course.
6.2 Assessor competencies	*Standard 5.14 AQTF 2021 Standards for Accredited Courses* Assessment must be undertaken by a person or persons in accordance with: • Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 3 of the VRQA Guidelines for VET Providers, or • the Standards for Registered Training Organisations 2015 (SRTOs), or • the relevant standards and Guidelines for RTOs at the time of assessment. Units of competency imported from training packages or accredited courses must reflect the requirements for assessors specified in that training package or accredited course.
7 Delivery	
7.1 Delivery modes	*Standard 5.12 and 5.14 AQTF 2021 Standards for Accredited Courses* This qualification aims to develop skills for entry level jobs or further education and training using an applied learning approach. Units of competency may be delivered on the job, off the job or a combination of both. Where delivery occurs off the job, conditions should reflect realistic workplace situations. Delivery mode types may include: • Time tabled face-to-face group and/or individual sessions (on campus or off-campus)

- Work placements (time spent in workplace consolidating skills/knowledge)

- Online (asynchronous and/or synchronous)

- Independent self-paced learning (time spent by student involve in specified activities without direct teacher/trainer supervision while undertaking those activities)

- Workplace (delivered in the workplace using a variety of modes)

- A combination of the above delivery modes (blended delivery mode)

Some areas of content may be common to more than one unit and therefore integration may be appropriate. Delivery strategies should actively involve the learner and learning should be experiential, relevant and age appropriate.

The following information outlines an educational approach that may be assist in the delivery of the course.

This approach reflects the learning architecture and educational model designed for the qualification and has its genesis in Inquiry Based Learning Theory (IBLT) and Human Centred Design Thinking (HCDT) which is currently emphasised in innovative businesses, industries, and community organisations.

The model seeks to link fundamental pedagogy with the future of how work will be undertaken. The diagram below provides a process view of the Educational Model.
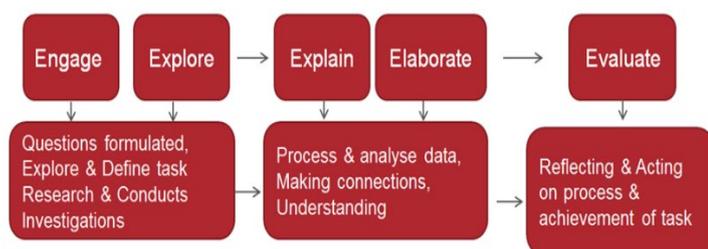
IBLT processes:

- structure approaches to developmental learning
- operate within a framework supported by a driving question or problematic scenario
- require students to seek information, analyse sources, pose questions and discover answers

	• incorporate project-based learning, problem-based learning, the use of case studies and workplace-based learning. HCDT processes encourage a phased approach to tackle problems.
7.2 Resources	*Standard 5.14 AQTF 2021 Standards for Accredited Courses* Critical to the delivery and assessment of this course is the need to maintain currency of specialised facilities, equipment and materials over the duration of the accreditation period. The rapidly evolving nature of the technologies identified as required for delivery may mean that newer substitute technologies that meet unit of competency requirements may be deemed more suitable by providers. Specialised facilities and equipment which is currently used within the emerging technologies field and therefore required for the delivery and assessment of this course is outlined below. This is not a definitive list but provides an indication of the scope and type of resource needs. It includes both proprietary and open source. Integration of courses with industry, community and local governments indicates that equipment and software can be supplied by a third party. Typical specialised software not already listed in units of competency that is suitable for delivery within the streams includes: • Games and Digital Content – Office 365, Azure Dev Tools, Adobe Spark, Snappa, Unity Development, TiltBrush or similar • Social Media and Digital Skills – Adobe Spark, Snappa or similar • 3D printing and Industry 4.0 – CAD/CAM software such as Autodesk, SmartDraw, Fusion 360 or similar • Wearables – Python, Blockly or similar • Robotics and evolving technologies – Thymio, Arduino, Fritzing, mBlock, Blockly or similar Typical equipment and materials including those already listed in units of competency that is suitable for delivery includes: • Drones • Various 3D printers • CNC, laser cutters

	- Robot kits - IoT electronics such as light sensors, security and other programmables General facilities, equipment and other resources required to deliver the qualification include: - training facilities and equipment - appropriate industry standard software technologies - relevant texts and references - occupational health and safety facilities and equipment - occupational health and safety policy and work procedures/instructions - access to relevant legislation, standards and codes of practice - access to relevant equipment, tools, machines, materials and consumables - access to plans, drawings and instructions - manufacturer specifications/manuals - workplace environment or simulated workplace environment appropriate to the assessment tasks. The use of video conferencing and collaborative digital spaces and makerspace environments provides an emerging learning adjunct. Training must be undertaken by a person or persons in accordance with: - Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guideline 3 of the VRQA Guidelines for VET Providers, or - the Standards for Registered Training Organisations 2015 (SRTOs), or - the relevant standards and Guidelines for RTOs at the time of assessment. Units of competency imported from training packages or accredited courses must reflect the requirements for resources/trainers specified in that training package or accredited course.

8   Pathways and articulation

	Standard 5.10 AQTF 2021 Standards for Accredited Courses
	There are no formal articulation arrangements for this qualification.
	Learners who complete units of competency from endorsed training packages or accredited courses will be eligible for credit into other qualifications that contain those units.
	This course includes the Nationally recognised skill set, BSBSS00094 Cyber Security Awareness Skill.
	The Enabling Streams provide a range of capability sets that cluster units that build skills and knowledge for our students with tangible early entry job outcomes: • Technicians of the Future • Hardware Technician • Networking • Communications Systems • Wireless Generations • Cloud Computing • Internet of Things • Industry 4.0

	This course aspires to provide learners with:
	
	• A solid foundation to apply for entry-level jobs requiring diverse technology-based skill sets
	• Pathway opportunities for post-secondary choices including:
	   • workforce
	   • further vocational education and training potentially leading to higher education

	Refer to the *AQF 2nd Edition, 2013 Pathways Policy*
9 Ongoing monitoring and evaluation	
	Standard 5.15 AQTF 2021 Standards for Accredited Courses
	Ongoing monitoring and evaluation of the qualification is the responsibility of the Curriculum Maintenance Manager for Business Industries.
	A formal review will take place once during the period of accreditation and will be informed by feedback from users of the curriculum and will consider at a minimum: • any changes required to meet emerging or developing needs

	• changes to any units of competency from nationally endorsed training packages or accredited curricula.
	The Victorian Registration and Qualifications Authority (VRQA) will be notified of any significant changes to the course/s resulting from course monitoring and evaluation processes.

Section C–Units of competency

The following units of competency can be accessed from the National Register of VET (See the National Register of VET).

Endorsed training package units:

BSB - Business Services training package

BSBXCS301 Protect own personal online profile from cyber security threats

BSBXCS302 Identify and report online security threats

BSBXCS303 Securely manage personally identifiable information and workplace information

BSBXCS402 Promote workplace cyber security awareness and best practices

BSBWHS211 Contribute to the health and safety of self and others

ICT - Information and Communications Technology training package

ICTCLD301 Evaluate characteristics of cloud computing solutions and services

ICTICT303 Connect internal hardware components

ICTSAS304 Provide basic system administration

ICTSAS305 Provide ICT advice to clients

ICTSAS308 Run standard diagnostic tests

ICTSAS309 Maintain and repair ICT equipment and software

ICTSAS310 Install, configure and secure a small office or home office network

ICTTEN202 Use hand and power tools

ICTTEN207 Install and test internet protocol devices in convergence networks

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTTEN315 Determine and apply technologies within a telecommunications system

ICP – Printing and Graphic Arts training package

ICPPTD302 Set up and produce 3D prints

AVI - Aviation training package

AVIY0052 Control remote pilot aircraft systems on the ground

AVIY0023 Launch, control and recover a remotely piloted aircraft

AVIE0003 Operate aeronautical radio

CPC Construction, Plumbing and Services Training Package

CPCCWHS1001 Prepare to work safely in the construction industry

UEE Electrotechnology Training Package

UEEDV0012 Set up and configure the wireless capabilities of communications and data storage devices

Accredited course units

22527VIC - Certificate II in Integrated Technologies (Pre-vocational)

VU22324 Build a simple network and establish end to end connectivity

VU22338 Configure and program a basic robotic system

VU22340 Use 3D printing to create products

VU22829 Install, set up and test an embedded control system

22589VIC – Certificate III in Emerging Technologies

VU23136 Develop enterprise skills for solving workplace challenges

VU23137 Apply enterprise skills in a team to develop solutions to workplace problems

VU23142 Investigate applications for smart cities technology

VU23143 Investigate block chain technology uses and application

VU23144 Determine uses for artificial intelligence with robotic process automation tools

VU23145 Investigate wearable objects and app innovations

VU23146 Plan and design a wearable object or app component

VU23147 Develop code for the design of wearable objects and apps

VU23148 Test and evaluate a wearable object or app

VU23149 Investigate robotic systems

VU23150 Design a basic robotic solution for a specific problem

VU23164 Explore and prepare for 3D printing in industry

Units of competency developed for the course/s

The following units of competency are contained in Section C for those units originating in this course.

VU23151 Develop a career plan for technology and digital futures

VU23152 Present information to support decision making using common business applications

VU23153 Explore evolving technology and impact on jobs

VU23156 Explore the role of cloud computing in business

VU23161 Understand organisational applications of Industry 4.0 concepts and technologies

VU23162 Use additive manufacturing technologies to produce an industry specified component

VU23163 Modify, test and evaluate an industry specified component

VU23154 Investigate technician work of the future

VU23158 Explore the Internet of Things (IoT) in industry

VU23159 Select, program and refine an IoT solution for use in a home or small business

VU23160 Test and evaluate vulnerabilities and mitigate threats for IoT solutions

VU23157 Support the implementation of a cloud computing technology

VU23155 Evaluate the impacts of the generations of wireless technologies

UNIT CODE	VU23151
UNIT TITLE	Develop a career plan for technology and digital futures
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to navigate multiple careers and meet the challenges of the rapidly changing world of work. It includes assessing personal interests, capabilities, passions and aspirations to identify potential career and educational pathways resulting in the development of a career action plan and portfolio.
	It requires the ability to collect and synthesis information to make informed career and educational pathway decisions.
	The unit applies to individuals investigating the linkages between personal attributes and, educational and career pathways.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		*Performance criteria describe the required performance needed to demonstrate achievement of the element.* *Assessment of performance is to be consistent with the evidence guide.*	
1	Conduct self-assessment	1.1	Identify personal interests, capabilities, passions and career aspirations
		1.2	Explain how self-concept can impact on personal, educational and career goals and decisions
		1.3	Outline behaviours and attitudes that contribute to achieving our personal and career goals
		1.4	Discover and summarise the impact of gender bias and stereotype influences when exploring career options
		1.5	Prepare a profile that outlines personal attributes relevant to career aspirations
2	Explore career opportunities and preferences	2.1	Access and evaluate reliable career information resources to inform career choices and pathway options
		2.2	Identify the transferable skills, knowledge and attitudes that can fulfil the requirements of a variety of work roles and work environments

		2.3	Describe how factors such as workforce trends, skill shortages, new technologies, and the changing nature of work impacts on work opportunities
		2.4	Investigate the educational/training needed for entry-level, technical, trade and professional occupations
		2.5	Review and evaluate educational and career decisions in terms of personal capabilities, goals, values and passions
		2.6	Review information collected and identify links between careers, education and transferrable skills
3	Develop a career plan and portfolio	3.1	Document the steps required to make an effective transition from school to post-secondary education/training programs or work
		3.2	Formulate a career action plan that will enable the achievement of personal, education and career goals
		3.3	Organise and assemble findings in a career portfolio

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	Source and evaluate reliable information from various sources
Writing skills to:	Prepare documentation in a format suitable for audience
	Communicate relationship between information and data presented
Learning skills to:	Reflect on how information applies to own current or future employment
Technology skills to:	Access reliable sources of information
	Use relevant digital applications to produce components of career portfolio

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23151 Develop a career plan for technology and digital futures

PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	• Develop a career portfolio to support transition from school to post-secondary education/training programs or work. The career portfolio must include but not be limited to the following:
	
	  • Personal Profile
	
	  • Career-Education Matrix showing link between career choices, education and transferrable skills for career planning
	
	  • Career Action Plan
	
	  • Transition Plan
	
	  • Letters of recommendation
	
	  • Samples of work-related documents

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:
	
	• Sources of reliable career information
	
	• Factors influencing personal goal-setting such as:
	
	  • Self-concept
	
	  • Behaviours and attitudes
	
	  • Career gender bias and stereotypes
	
	• Transferable skills and knowledge across occupations
	
	• Impact of workforce trends, skill shortages, new technologies and the changing nature of work on occupations and their availability
	
	• The relationship between education/training pathways and career options
	
	• Evaluation strategies to align educational and career decisions to personal capabilities, goals, values and passions
	
	• Strategies to combine information and resources from a range of online sites
	
	• Methods for developing plans including a career action plan, transition plan and career portfolio

ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry. This includes access to:

		- internet - desktop or notebook computer or digital device and relevant digital applications - e-self assessment tool - examples of reliable and current websites - e-templates enabling the documenting of the following: - personal profile - career-education matrix - career action plan - portfolio **Assessor requirements** Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	VU23152
UNIT TITLE	Present information to support decision making using common business applications
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to use common business applications to present information for decision making purposes. It requires the ability to use word processing, presentation and financial software as well as digital tools for presenting in a virtual environment.
	The unit applies to individuals, often working under supervision or guidance, who may be required to provide information for others when working in a range of workplace contexts.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		*Performance criteria describe the required performance needed to demonstrate achievement of the element.* *Assessment of performance is to be consistent with the evidence guide.*	
1	Prepare for digital presentation	1.1	Clarify task purpose, audience and information presentation requirements with supervisor
		1.2	Identify and collate information required for presentation
		1.3	Select software applications to produce business documents according to confirmed needs and information type
		1.4	Confirm digital environment appropriate for presentation to remote audience
2	Design and produce text document	2.1	Identify required information for document production
		2.2	Produce collated text information in required format
		2.3	Use formatting features to produce document in line with organisational style and layout requirements
		2.4	Ensure document is readable, accurate and consistent in language
3	Design and produce financial information	3.1	Identify required data and files where appropriate
		3.2	Design spreadsheet layout to meet data presentation requirements

		3.3	Produce or re-produce collated data in spreadsheet application
		3.4	Use formatting features to format the spreadsheet
		3.5	Use a range of functions to calculate data on the spreadsheet
		3.6	Examine calculated data to identify key insights for presentation
		3.7	Choose an appropriate chart layout to display the insights from the selected data range
		3.8	Produce the chart and format to ensure the layout meets presentation requirements
4	Design and produce presentation	4.1	Identify key information from text document and financial spreadsheet for presentation
		4.2	Summarise textual information for presentation in visual format
		4.3	Confirm relevant decision-making data is available for inclusion from text and financial documentation
		4.4	Design presentation layout according to organisational requirements
		4.5	Produce presentation information in required format including notes and handouts
		4.6	Incorporate graphical elements to represent key financial data
		4.7	Use formatting features to customise presentation in line with organisational style and layout requirements
		4.8	Proofread and check presentation to ensure it meets the intended purpose and audience requirements
5	Present data in digital platform	5.1	Prepare for virtual presentation by establishing environment, timelines and stakeholder access
		5.2	Make presentation available to stakeholders at agreed time
		5.3	Introduce and launch virtual presentation
		5.4	Seek feedback from stakeholders following presentation using digital tools available
		5.5	Incorporate stakeholder feedback into final presentation
		5.6	Update and store all relevant files in accordance with organisational requirements

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	Source and evaluate information suitable for inclusion in presentation
Writing skills to:	Prepare documentation in a format suitable for audience and platform
	Communicate relationship between data and information presented
Oral communication skills to:	Effectively and respectfully communicate with relevant workplace stakeholders
Numeracy skills to:	Uses mathematical equations to create simple formulae and validate numerical data
Planning and organising skills to:	Plan and implement tasks and workload to meet timelines
Technology skills to:	Prepare information for presentation and distribution using platform suitable for task

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23152 Present information to support decision making using common business applications

PERFORMANCE EVIDENCE	The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	• Design, produce and finalise an electronic presentation incorporating text, financial data and visual elements and present to remote audience in digital platform environment
	
	In preparing for the presentation, the candidate must:
	
	• design and produce documentation in accordance with organisational policies and procedures
	
	• create at least one of each of the following using appropriate digital applications:
	    o collated information and summary
	    o spreadsheet with chart
	    o presentation incorporating visual representation of summarised information and data, notes and handouts
	
	• adhere to organisational guidelines when producing documentation including:
	    o applying basic design principles
	    o applying consistent formatting
	    o using appropriate styles
	    o using consistent design and layouts
	    o editing and proofreading
	    o meeting designated timelines and platform requirements
	
	• use appropriate data storage options for all files produced.

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of: • Technology required to produce document • Key functions and features of contemporary digital applications • Organisational policies and procedures including file storage requirements • Organisational requirements for electronic document, spreadsheet and presentation design, including style guide

	• Key features of word processing, spreadsheet and presentation applications, both cloud-based and non-cloud based
	
	• Key elements of formatting of documents, spreadsheets and presentations appropriate to workplace documents
	
	• Basic formulas and functions of spreadsheets, including the ability to calculate:
	
	      o sum totals
	
	      o averages
	
	      o counts of values
	
	• Design features for improving readability and appearance of electronic presentations
	
	• Range of digital platforms for the presentation of information to remote audiences including video conferencing presentation features

ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry. This includes access to: • workplace equipment, documentation and resources • relevant software and digital applications • style guide • relevant legislation and codes of practice • relevant organisational policies and procedures Assessor requirements Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	**VU23153**
UNIT TITLE	**Explore evolving technology and impact on jobs**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to investigate the impact of future technologies on the current and future workforce. It includes identification of the various role of technologies in business, its impact on the work environment and the workforce, and the need to establish career resilience strategies.
	It requires the ability to collect, analyse, combine and reflect on information to determine its application to current and/or future occupational choices.
	The unit applies to individuals wishing to develop sustainable career resilience strategies across the lifespan of work.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		*Performance criteria describe the required performance needed to demonstrate achievement of the element.* *Assessment of performance is to be consistent with the evidence guide.*	
1	Investigate how technology influences the workforce	1.1	Examine the growing field of evolving technologies and the anticipated future directions
		1.2	Describe the role of technology in business
		1.3	Identify the current jobs exposed to job augmentation, job disruption and job automation
		1.4	Explore the future possibilities of jobs exposed to job augmentation, job disruption and job automation
2	Examine how technology could evolve and impact jobs in the future	2.1	Outline jobs created as a result of new technology by industry sector and type
		2.2	Explore how jobs may evolve in the long-term
		2.3	Assess where job shortages and skill set shortages may be in the medium term
3	Determine the impacts of technology on the work environment	3.1	Explore how technological innovation produces alternative ways of work
		3.2	Explain how workplace culture adapts to technology-driven change

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		3.3	Describe the importance of digital wellbeing in the workplace
4	Examine the importance of career resilience in building a skills portfolio	4.1	Identify the critical aspects of career resilience and explain why career resilience is important in today's working world
		4.2	Describe the interconnection between technology-induced employment disruption and career resilience
		4.3	Identify strategies to build career resilience

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	Source and evaluate reliable information for inclusion in report
Writing skills to:	Communicate relationship between information and data presented
Learning skills to:	Reflect on how information applies to own current or future employment
Planning and organising skills to:	Plan and implement tasks and workload to meet timelines
Technology skills to:	Access reliable sources of information

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23153 Explore evolving technology and impact on jobs
PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to: • Describe the evolution of technology including its influence on jobs and impact on the work environment in both the medium term (up to 10 years) and in the longer term (up to 20 years) and reflect on the impact of the information identified for their own future in the world of work. In doing so, the candidate must: • Investigate, collate and summarise information and data • Outline the findings of their investigation using an appropriate format • Reference source material appropriately • Develop an action plan to build personal career resilience.

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:
	
	 • How technology shapes business practices including:
	   • performance and overall effectiveness of products
	   • performance of systems and services
	   • information and data security
	   • communication processes
	   • product research and development
	   • growth of business
	   • global reach
	 • Causes and impact of disruption of current jobs such as:
	   • augmentation such as artificial intelligence, collaborative robotics (cobots)
	   • automation such as process automation, fixed robotics, mobile robotics
	 • The role of technology in the creation of new jobs within industry sectors due to the impact of technology
	 • Workplace culture
	 • Ways of work including:
	   • telecommuting

	- remote working - gig economy - micro-business - Digital wellbeing in the workplace and the impact of: - work-life balance - over-use of technology (techno-overload, techno-insecurity) - design of workspaces - flexible and remote working - communication and collaboration - Career resilience strategies to cope with technological changes in the workplace including: - Growth mindset - Embrace lifelong learning - Cultivate a robust personal and professional network - Active career management - Technology-induced employment disruption
ASSESSMENT CONDITIONS	Learners should have access to: - internet - computer or digital device - examples of reliable and current websites - report and action plan templates Assessor requirements Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	**VU23154**
UNIT TITLE	**Investigate technician work of the future**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to investigate the impact of evolving and developing technologies on future job roles in the information technology and telecommunications technologies workforce.
	This unit will explore where new technician job roles will emerge, the skills and knowledge that will be needed for these roles, and how to increase resilience throughout a career in the sector. It applies to individuals wishing to understand future technician career opportunities and how to prepare for these emerging new roles.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.	
1	Examine the impact of emerging and new technologies on the technician work of the future	1.1	Identify emerging information technology and telecommunication technologies impacting existing technician job roles
		1.2	Explore new developments in information technology and telecommunication technologies that will impact future technician job roles
		1.3	Consult with industry stakeholders to gain insight into the impact of emerging and new technologies on a future technician workforce
2	Investigate skills, knowledge and experience required for future technician job roles	2.1	Consult with industry stakeholders to identify technician skills that will be in demand, and skill shortages that could develop in the short term within the workforce
		2.2	Identify job roles that could be created and those that could disappear because of the impact of emerging and new information technology and telecommunication technologies
		2.3	Investigate strategies being used by industry to maintain an agile workforce

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		2.4	Explore the strategies being used by technicians to prepare for the impact new technologies have on their current and future job roles as part of an ongoing career
3	Identify how relevance and resilience is established in a technician career	*3.1*	Investigate how to develop the skills and knowledge needed for the emerging, and yet to be created technician job roles of the future
		3.2	Identify how to maintain workforce relevance and resilience to support a future technician career
		3.3	Investigate the importance of associations, professional bodies and societies, vendor user groups and industry forums to support career currency

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below.

Skill	**Description**
Reading skills to:	integrate information and ideas to construct meaning from a range of sources
Writing skills to:	use clear, specific and industry-related terminology where appropriate
Oral communication skills to:	effectively and respectfully communicate with stakeholders, and participate in verbal exchanges using active listening and questioning to clarify and confirm understanding
Learning skills to:	reflect on information and application to current and future job roles
Technology skills to:	use a range of digital applications to access, organise, store, and present information

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23154 Investigate technician work of the future

PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	• Describe two emerging information technology and telecommunications technologies and their impact on:
	    • the technician workforce over the next five to ten years
	    • technician job roles, including the disruption to current job roles, emergence of skills shortages and creation of new job role opportunities
	• Outline the skills for a selected technician job role and identify the skills needed currently as well as the skills required for the future. Include:
	    • tasks undertaken in the role
	    • specialist emerging technical skills required for the role
	    • transferable emerging technology skills required for the role
	    • methods for keeping skills and knowledge current and acquiring new skills to support emerging technologies

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate knowledge acquired to effectively do the tasks outlined in elements, performance criteria and foundation skills of this unit. This includes knowledge of:
	• Skills required for technician job roles in information and telecommunications technologies associated with:
	    o Data storage and analysis
	    o Cyber security and network infrastructure
	    o Programming, DevOps, Cloud
	    o Web development
	    o Web and game development
	    o Wireless communication and telecommunication systems
	    o Sustainable energy systems
	    o Computer system networks
	    o Cyber security
	    o Blockchain
	• Basic features of a range of evolving and developing information technology and telecommunications technologies such as:
	    o Internet of things (IoT)
	    o IT automation and robotics
	    o Telehealth

	○ Virtual reality (VR), augmented reality (AR), mixed reality (MR) and artificial intelligence (AI)
	
	  ○ Drones
	
	  ○ Electric vehicles (EV)
	
	  ○ 3D printing
	
	  ○ Blockchain
	
	• Valid and reliable sources of information about rapidly evolving technologies
	• Effective communication techniques
	• Emerging job roles, skills and experience
	• Impact of emerging technologies on demand for current workforce skills
	• Career resilience strategies and techniques

ASSESSMENT CONDITIONS	Learners must be provided with the opportunity to select new and emerging information and communication technologies in areas of their own interest. Assessment conditions must provide access to: • Internet and computer or digital device • Valid, reliable workforce information sources • Access to industry and community representatives involved in fields that support or use new and emerging technologies Assessor requirements No specialist vocational competency requirements for assessors apply to this unit. Assessors must satisfy the requirements for assessors in training legislation, frameworks and/or standards.

UNIT CODE	VU23156
UNIT TITLE	**Explore the role of cloud computing in industry and business**
APPLICATION	This unit explores current and emerging cloud computing technologies and the roles that support these technologies in business. The unit investigates the skills and knowledge required for a career in cloud computing or building a skill set to transfer into a cloud computing role.
	The unit applies to individuals investigating current technology trends and opportunities that could lead to a future career path in cloud technologies.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.	
1	Investigate the emergence and use of cloud technologies in business	1.1	Identify emerging cloud technologies
		1.2	Identify business benefits which may arise from adopting emerging cloud technologies
		1.3	Investigate the common business operations using current cloud technologies to identify the advantages and disadvantages to business
		1.4	Determine risks, including security and privacy risks, which could impact business operations arising from the use of cloud technologies
2	Explore current cloud computing usage in the workplace	2.1	Source organisational policies, procedures and instructions for the use of cloud services
		2.2	Access and use existing cloud service following identified business procedures and instructions according to work role
		2.3	Review the current business use of cloud computing services and propose potential areas for expansion

3	Investigate occupations that utilise cloud computing	3.1	Identify a range of industry and business entry level, experienced and senior job roles that use cloud technologies
		3.2	Investigate careers that involve the development, implementation and operation of cloud technologies as a critical component of their role
		3.3	Explore the learning pathway to entry level, experienced and senior job roles in cloud computing
		3.4	Outline the skills required for future job roles needed to support emerging cloud technologies

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	integrate information and ideas to construct meaning from a range of sources
Writing skills to:	use structure and language appropriate to audience and context
Oral communication skills to:	present information using appropriate style, tone and vocabulary to meet requirements of audience, context and purpose
Learning skills to:	develop knowledge and skills relevant to role
Technology skills to:	use relevant digital applications to access, organise, store, and present information

UNIT MAPPING INFORMATION	New unit

Assessment Requirements

TITLE	Assessment Requirements for VU23156 Explore the role of cloud computing in industry and business

PERFORMANCE EVIDENCE	The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	 • Investigate and outline cloud computing trends and technologies including the current state and future uses. The learner must:
	
	   • identify and present the benefits and risks associated with current technologies in use
	
	   • propose at least two emerging technologies in cloud computing for future use within the workplace.
	
	 • Outline the skills and knowledge required for a chosen cloud computing job role identifying a clear learning pathway that can be taken for the job role.

KNOWLEDGE EVIDENCE	The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:
	
	 • Basic features of cloud computing technologies currently used in industry and business in service types such as:
	
	   • Software as a Service (SaaS)
	
	   • Platforms as a Service (PaaS)
	
	   • Infrastructure as a Service (IaaS)
	
	   • Communication as a Service (CaaS)
	
	 • Basic uses of emerging cloud computing technologies in service types such as:
	
	   • Monitoring as a Service (MaaS)
	
	   • Anything as a Service (XaaS)
	
	 • Organisational policies and procedures related to cloud service use
	
	 • Security and privacy standards associated with cloud computing
	
	 • Benefits and risks to business operations associated with cloud technologies
	
	 • Learning pathways that support development of skill and knowledge required for a job role in cloud computing, including:
	
	   • formal qualifications
	
	   • vendor qualifications
	
	   • industry certifications
	
	   • on the job learning

	• informal learning
ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry.
	This includes access to:
	• current cloud computing technology solutions used in business operations
	• emerging cloud technologies and services developed by industry
	• security and privacy legislation and guidelines
	Assessor requirements
	Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.
	No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	**VU23158**
UNIT TITLE	**Explore the Internet of Things (IoT) in industry**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to explore the Internet of Things (IoT), how it has been used, and its current applications in various industry. It requires the ability to collect, analyse, combine and reflect on information to investigate IoT technologies, systems and solutions and plan for a future career using IoT.
	It applies to those building skill and capability sets as either pathways into career specialisation or to build capability that can be applied in other careers.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		*Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.*	
1	Examine the current use of Internet of Things (IoT) technologies	*1.1*	Outline key features of the Internet of Things (IoT)
		1.2	Explore IoT technologies to identify how they work, their current uses, and the risks and benefits associated with their use
		1.3	Explore the evolution of jobs due to IoT technologies
		1.4	Consult with relevant stakeholders to gain insight into the current and anticipated future environment of the IoT workforce
2	Determine the impact of IoT on future job roles	*2.1*	Determine emerging technologies that might be used in sectors impacted by IoT in the future
		2.2	Explore future potential uses of IoT systems to resolve future global, national and local issues and identify how Industry 4.0 inter-relates
		2.3	Identify potential career options in IoT technologies and compare the skills, capabilities and responsibilities they have in common
		2.4	Outline strategies to develop skills and build career resilience for movement within sectors impacted by the IoT

3	Prepare for an IoT career	*3.1*	Investigate current and future industries that use or could benefit from the use of IoT systems
		3.2	Identify career and skill trends in IoT technologies
		3.3	Reflect on potential jobs and careers of the future arising from IoT technologies
4	Identify an opportunity to use IoT technologies to meet an identified need	*4.1*	Identify a business or community need for a simple IoT technology solution
		4.2	Explore IoT technologies that could provide solutions and develop a real world problem statement for the identified business or community need
		4.3	Document potential solutions and check against the real world problem statement

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	**Description**
Reading skills to:	Interpret information from a range of sources
Writing skills to:	Prepare documentation in a format suitable for the audience
Oral communication skills to:	Effectively and respectfully communicate with relevant stakeholders
Problem-solving skills to:	Identify and describe an opportunity
Learning skills to:	Identify how future trends might impact on current or future employment
	Relate project management methodologies and life cycle stages to own work role
Technology skills to:	Access reliable sources of information
	Present information in a suitable format

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23158 Explore the Internet of Things (IoT) in industry
PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to: • Investigate and identify at least three industry sectors that have evolved due to IoT systems and their applications. Document the impact of IoT technologies and explain how jobs could evolve over the next five to ten years. The learner must reflect on ways that IoT may potentially change at least one job role in the future. In doing this the candidate must: • consider and summarise the ways IoT technologies could potentially be used in the future • explain how the chosen job role will change due to the potential technologies identified • explain the skills that may need to be developed for a career in IoT technologies in the future. • Develop a real-world problem statement that: • identifies a business or community need for a simple IoT technology • clearly describes the problem • outlines potential solutions and the features and functionality required
KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. this includes knowledge of: • The evolution of IoT • Current and future jobs, knowledge and skills involved in the IoT • The intersection of IoT with Industry 4.0 • Basic concepts of IoT systems and applications in a range of areas such as: • Block chain • Driverless transportation • Smart buildings and cities • Wearable technologies • Agriculture food and watering systems • Retail • Energy management

	- Healthcare - Business and home security - Telecommunications and networks - Sustainability - Traffic control systems - Crowd and personal monitoring systems - Advanced manufacturing - Basic features of communication technologies such as: - XG - Bluetooth - Wi-Fi - ZigBee - WiMax - Steps and structure of identifying a real world problem statement - Effective communication techniques - Career resilience strategies
ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry. This includes access to: - internet - computer or digital device - examples of reliable and current websites and reports - people who work in industry - a sample problem statement template Assessor requirements Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	**VU23159**
UNIT TITLE	**Select, program and refine an IoT solution for use in a home or small business**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to select, program and test an IoT (Internet of Things). It includes ensuring that the technology, system or solution meets the identified needs of the user and is appropriate for the environment in which it will be installed and operated.
	It requires the ability to identify IoT requirements, determine the appropriate IoT technology, system or solution, and program and test the operation of the IoT solution.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.	
1	Scope, select and install IoT technology, system or solution to meet identified need	1.1	Review real world problem statement to confirm the selected solution meets the identified need
		1.2	Obtain approval for the IoT solution from relevant stakeholders
		1.3	Identify connectivity, location, and installation access requirements
		1.4	Select and install solution as per manufacturer's instructions and complying with safety requirements
		1.5	Connect and configure solution on home or small office network as required
		1.6	Investigate and configure solution to minimise security vulnerabilities and risks
2	Install, program and test IoT solution functions	2.1	Install and configure IoT solution operating system software on mobile phone, tablet, laptop or computer
		2.2	Program solution according to manufacturers' instructions
		2.3	Test operation of IoT solution functions from mobile phone, tablet, laptop or computer

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3	Operate, troubleshoot and refine programming of IoT solution for best results	3.1	Demonstrate use of IoT solution function and provide one on one instruction to other users to support correct operation
		3.2	Review solution set up and programming to ensure solution operation is maximised
		3.3	Identify and locate troubleshooting assistance and help information to support resolution of issues that may arise during IoT solution operation

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	recognise and interpret information from relevant and accurate sources
Writing skills to:	use clear, specific, industry-related terminology where appropriate
Oral communication skills to:	present information using appropriate style, tone, and vocabulary to meet requirements of audience, context, and purpose effectively and respectfully communicate with relevant stakeholders
Learning skills to:	develop knowledge and skills relevant to role
Problem solving skills to:	troubleshoot when using a range of technologies
Planning and organising skills to:	plan and implement tasks to meet workload and time commitments
Self-management skills to:	understand roles and responsibilities for tasks and make basic decisions
Technology skills to:	explore and select appropriate digitally based technologies and systems suitable for defined purposes, and implement technical solutions using relevant technologies

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23159 Select, program and test an IoT solution for use in a home or small business

PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	• Select, install, and operate an IoT solution in a home or small office environment.
	
	In doing so, the learner must:
	
	    • Review the problem statement and select an appropriate solution for the identified application and environment in which it is to operate.
	
	    • Demonstrate troubleshooting skills, to identify and resolve possible issues
	
	    • Provide one to one instruction for operation of the IoT solution
	
	    • Modify programming of solution to improve operability and outcomes

KNOWLEDGE EVIDENCE	The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:
	
	• IoT solutions commonly used in small office and home environments to provide real world solutions
	• Common simple applications IoT solutions are used to address such as:
	
	    • Entrance security solutions
	
	    • Indoor lighting systems
	
	    • Food and beverage preparation solutions
	
	    • Outdoor watering systems
	
	    • Cleaning solutions
	
	    • Wearable technologies
	
	    • Property monitoring systems
	
	    • Heating and cooling systems
	
	    • Entertainment media systems
	
	• Network connections used to support operation of IoT solutions such as:
	
	    • Bluetooth
	
	    • Wi-Fi
	
	    • WiMax
	
	    • ZigBee

	• Computer solutions used to manage operation of IoT solution such as:
	• Networked computer
	• Laptop
	• Tablet
	• Mobile phone
	• Other networked solutions
	• Sources of solution manufacturer supporting information including:
	• Install and configuration instructions
	• Operating instructions
	• Troubleshooting and help instructions
	• Safety and security instructions
	• Steps and structure of identifying a real problem statement
	• Effective communication techniques
ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where conditions are typical of those in a working environment in a home or small business.
	This includes access to the following:
	• Existing real-world problem statement
	• An IoT solution commonly used in a home or small office environment
	• Manufacturer's installation, operation, troubleshooting, safety and security information
	• Operating system software files required for installation on computer or mobile device
	• Computer or mobile device to be used to operate and manage IoT solution.
	Assessor requirements
	Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.
	No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	**VU23160**
UNIT TITLE	**Test and evaluate vulnerabilities and mitigate threats for IoT solutions**
APPLICATION	This unit describes the performance criteria skills and knowledge required to test and evaluate an Internet of Things (IoT) solution and identify vulnerabilities and mitigate threats that may impact the operation of IoT technologies, systems or solutions. This unit investigates tests, evaluates design and development modifications, and identifies threats that may emerge from cyber activity that have the potential to impact user and customer data security. The unit applies to a person who is seeking introductory knowledge and skill of real and potential threats to IoT devices and systems. It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set. No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
ELEMENTS	**PERFORMANCE CRITERIA**
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the required performance needed to demonstrate achievement of the element.* *Assessment of performance is to be consistent with the evidence guide.*

1	Explore the vulnerability of Internet of Things (IoT) technologies	1.1	Access and review the real world problem statement and update to reflect the testing and evaluation criteria required
		1.2	Investigate security guidelines and compliance standards relating to the operation of IoT and the collection, storage and securing of data
		1.3	Investigate recommended good practice frameworks for testing of IoT technologies
		1.4	Explore how testing and evaluation is used in different sectors of Industry 4.0
		1.5	Identify how testing differs on devices, apps and systems
		1.6	Explore known vulnerabilities that result from the application of IoT technologies
2	Investigate threats to IoT technologies	2.1	Review performance specifications and determine benchmark criteria for a test plan that includes cyber threats
		2.2	Identify known cyber threats to IoT systems in industry, in the community and in the home

		2.3	Investigate mitigation strategies that can be used to secure IoT technologies according to manufacturer's instructions relevant to a basic technology
		2.4	Investigate cyber security mandatory reporting guidelines for industry and how they apply to a cyber attack on selected IoT technology
		2.5	Locate and review manufacturers' instructions for set up, installation, operation and securing of IoT solution
		2.6	Monitor device security and report detected threat following organisational procedures
		2.7	Document identified threats into a test plan
3	Evaluate the test results against real world problem statement and report on initial findings and recommendations	3.1	Identify and apply mitigation strategies for securing of IoT technology and collate data and record in test plan
		3.2	Evaluate test results and identify insights into trends relevant to the real world problem statement criteria
		3.3	Prepare real world problem statement report aligning findings to test plan criteria including any recommendations including any potential or actual cyber threats
		3.4	Present test plan results against real work problem statement ensuring results are stored according to legislative and organisational requirements

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	Access and interpret a variety of legislative, organisational and technical documentation
Writing skills to:	Record information and complete documentation accurately
Problem-solving skills to:	Troubleshoot when using technology
Self-management skills to:	Understand roles and responsibilities for tasks and make basic decisions
Technology skills to:	Explore and select appropriate IoT technologies and systems suitable for defined purposes, and implement technical solutions using relevant technologies

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23160 Test and evaluate vulnerabilities and mitigate threats for IoT solutions
PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to: • Investigate vulnerabilities and threats for a range of IoT technologies and apply learning to a selected real world problem IoT solution by testing and evaluating the solution against test plan criteria. In doing so, the learner must: • Identify the potential vulnerabilities of an IoT technology • Secure an IoT solution through detection and reporting of a potential or actual cyber threat • Complete a test plan that reflects the real world problem statement • Evaluate and document findings
KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of: • Industry standard testing, evaluation and reporting processes and reporting requirements • IoT technologies, systems and solutions commonly used in industry, in the community and in the home • Known IoT device and system vulnerabilities • Regulatory securing and reporting requirements for IoT devices and systems, and collated data, including federal government cyber security code of practice and information sources • Mitigation strategies that can be used to secure IoT technologies, systems and devices • Common, current threats that impact IoT technologies, systems and devices • Organisational policies and procedures relating to cyber threat reporting
ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where conditions are typical of those where an IoT device would be in operation. This includes access to the following: • Existing real-world problem statement

- Internet

- Reliable and accurate sources of information

- Manufacturers' instructions

- Operating system for an installed, networked IoT solution

- Monitoring of network traffic

- Test plan and reporting template that includes a cyber threat and mitigation section

Assessor requirements

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	VU23161
UNIT TITLE	**Understand organisational applications of Industry 4.0 concepts and technologies**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to investigate organisational applications of Industry 4.0 and gain a basic understanding of project management processes and project life cycles in the implementation of Industry 4.0 technologies.
	It includes identification of the various sectors that have so far been impacted by Industry 4.0 and how the impacts of Industry 4.0 will change the nature of work into the future.
	It applies to individuals wishing to understand the skill sets required for Industry 4.0 to evaluate potential career choices in a range of industry sectors.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.	
1	Examine Industry 4.0 in its current state	*1.1*	Investigate Industry 4.0 in the context of an industrial revolution
		1.2	Identify the characteristics of Industry 4.0 and its implementation in industry
		1.3	Explore the evolution of jobs due to Industry 4.0
		1.4	Consult with relevant stakeholders to gain insight into the current and anticipated future environment of the Industry 4.0 workforce
2	Determine the impact of Industry 4.0 on future job roles	*2.1*	Determine emerging technologies that might be used in sectors impacted by Industry 4.0 in the future
		2.2	Identify the impacts of Industry 4.0 on workers
		2.3	Identify potential career options in Industry 4.0 and compare the skills, capabilities and responsibilities they have in common
		2.4	Outline strategies to develop skills and build career resilience for movement within sectors impacted by Industry 4.0

3	Develop an understanding of project management processes in the context of Industry 4.0	3.1	Develop an understanding of project management methodologies and life cycle stages
		3.2	Determine importance of project management skills in the application of Industry 4.0 and CAD and CAM technologies
		3.3	Source information on current and emerging project management software and technologies and their use in industry
4	Determine an opportunity that uses technologies in Industry 4.0 businesses	4.1	Identify a business or community need for additive manufacturing or an equivalent technology
		4.2	Develop a real world problem statement for the identified business or community need that follows a basic project life cycle
		4.3	Describe the design features and functionality of the opportunity identified

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

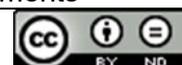| Skill	Description
Reading skills to:	Interpret information about Industry 4.0 and emerging technologies
Writing skills to:	Prepare documentation in a format suitable for the audience and report method
Oral communication skills to:	Effectively and respectfully communicate with relevant stakeholders
Problem-solving skills to:	Identify and describe an opportunity
Learning skills to:	Identify how future trends might impact on current or future employment
	Relate project management methodologies and life cycle stages to own work role
Technology skills to:	Access reliable sources of information
	Present information in a suitable format

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	VU23161 Understand organisational applications of Industry 4.0 concepts and technologies

PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	 • Investigate a range of industry sectors that have evolved due to Industry 4.0 and document the impact of Industry 4.0 and its evolution to current times.
	
	 • Explain how technologies, jobs and skills could evolve over the next five to ten years due to the impact of Industry 4.0 identifying how it may change at least one job role in the future.
	
	 • Produce a basic project proposal identifying a business or community need for additive manufacturing or an equivalent Industry 4.0 technology that clearly:
	
	     • outlines the problem
	
	     • describes the design features and functionality
	
	     • outlines the project life cycle in simple terms.

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. this includes knowledge of:
	
	 • concept and principles of Industry 4.0
	
	 • the evolution of Industry 4.0
	
	 • a range of industry sectors and jobs impacted by Industry 4.0 such as:
	
	     • construction
	
	     • beauty
	
	     • hospitality
	
	     • health
	
	     • community services
	
	     • agriculture
	
	     • education
	
	     • manufacturing
	
	     • warehousing
	
	     • transport and logistics
	
	 • a range of Industry 4.0 technologies and how they work such as:
	
	     • big data

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	- artificial intelligence (AI) - drones - electric vehicles (EV) - internet of things (IoT) - cybersecurity - simulation/digital twins 3d printers - robotics - virtual reality, augmented reality and mixed reality (VR/AR/MR) - cloud computing - current and future knowledge and skills required for Industry 4.0 technologies - impact of technology on work culture and ways of working - effective communication techniques - disruption of current jobs and skills within Industry due to the impact of technology - career resilience strategies - additive manufacturing technologies - basic project management processes and project life cycle stages - sources of information about emerging technologies and their use in Industry sectors
ASSESSMENT CONDITIONS	Assessment conditions must provide: Access to: - internet - computer or digital device - examples of reliable and current websites and reports - people who work in industry - basic project proposal/problem statement template Assessor requirements Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	**VU23162**
UNIT TITLE	Use additive manufacturing technology to produce an industry specified component
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to use additive manufacturing technologies, for example 3D printing, to produce an industry specified component.
	It requires the ability to interpret and follow work specifications, use software applications and applicable additive manufacturing equipment to produce a component.
	The unit applies to individuals investigating the application of a range of technologies associated with the additive manufacturing sector.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		*Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.*	
1	Investigate additive manufacturing technologies and their applications in Industry 4.0	1.1	Explore the various technologies used in additive manufacturing
		1.2	Outline the benefits and limitations of additive manufacturing technologies
		1.3	Identify industries using additive manufacturing technologies and their applications in industry
		1.4	Determine the key workflow stages in the production of an industry specific component using additive manufacturing technologies
2	Determine work requirements to produce industry specified component	2.1	Identify job requirements from specifications, job sheets or associated work instructions and seek clarification where required
		2.2	Identify equipment and materials required to produce industry specified component
		2.3	Identify and comply with work health and safety (WHS) requirements for job tasks
3	Set up basic 3D model	3.1	Select and customise CAD software system variables, and software defaults to suit job requirements

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		3.2	Use CAD software program and functions to set up or load required 3D model drawing
		3.3	Convert CAD model to a .STL file or alternative appropriate file format and save
		3.4	Load .STL file or alternative file format into slicer software to generate code for 3D printer
4	Produce component	4.1	Select and load consumables for 3D printing technique
		4.2	Produce industry specified component
		4.3	Remove component and check against job specifications
		4.4	Apply final finishing to component if required

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	Interpret workplace and industry relevant documents and guidelines Interpret technical drawings
Writing	Name data files according to specified naming conventions
Oral communication skills to:	Ask open and closed questions, and actively listen to seek confirmation and understanding from workplace supervisor
Planning and organising skills to:	Follow steps and procedures in work instructions
Self-management skills to:	Complete production of components within required timeframe
Technology skills to:	Access and use applicable additive manufacturing technologies and 3D printers

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	VU23162 Use additive manufacturing technology to produce an industry specified component

PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	• Investigate and identify a range of industry sectors that use additive manufacturing, specifying their application. For each industry the learner must:
	
	    • Identify the additive manufacturing technology used
	
	    • Identify the types of materials /consumables used
	
	    • Determine the benefits and limitations of additive manufacturing for its application
	
	• Produce an industry specified component by using an additive manufacturing process to meet job requirements

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:
	
	• Additive manufacturing technology and processes including:
	
	    • 3D printing
	
	    • Laser Metal Deposition & Cladding
	
	    • Fused deposition modelling
	
	    • Plastic jet printing
	
	    • Digital Light Processing
	
	• Types and purposes of materials/consumables used in additive manufacturing including:
	
	    • Metals
	
	    • Ceramics
	
	    • Plastics
	
	    • Composites
	
	• Benefits and limitations of additive manufacturing for industry applications
	
	• Additive manufacturing applications in industry sectors including:
	
	    • Aerospace
	
	    • Architecture
	
	    • Medical

	• Transportation
	• Consumer Products
	• Additive manufacturing 3D printing processes such as:
	• Model creation
	• Model conversion
	• File transfer
	• Machine set-up
	• Model build
	• Part removal
	• Post processing
	• Workflow stages during production
	• Specific WHS/OHS considerations for additive manufacturing including:
	• Personal Protective Equipment (PPE)
	• Standard Operation Procedures (SOPs)
	• Hazard Identification
	• Emissions
	• Dust, exposure, fires and explosions
	• 3D printer safety checklist
	• Features and functions of Computer-Aided Design (CAD) software
	• Formats, limitations, settings and rules when working with file types such as Standard Tessellation Language (STL) Files or equivalent

ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry.
	Access to:
	• Internet
	• Computer or digital device
	• Examples of reliable and current websites
	• Work instructions to produce an industry specified component
	• Relevant software and digital applications
	• 3D printer and appropriate consumables
	• Relevant organisational and safety procedures relevant to task

	Assessor requirements
	Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.
	No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	VU23163
UNIT TITLE	**Modify, test and evaluate an industry specified component**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to modify, produce and test an industry specified component to meet real world problem requirements.
	This unit requires the ability to evaluate real world problem requirements, adjust or modify the component using software applications and produce and test the final product to ensure it meets client requirements.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		*Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.*	
1	Determine requirements to produce component to meet client specifications	1.1	Review real world problem project proposal requirements and confirm understanding with work supervisor
		1.2	Identify and document adjustments or modifications required by client
		1.3	Explore different options for modifications including potential benefits, limitations and risks
		1.4	Determine tests required on trial product to demonstrate validity of proposed improvements
		1.5	Communicate with client to confirm modification required
		1.6	Check production constraints and work health and safety impacts of proposed changes against job specifications and workplace procedures
2	Produce component to meet modified brief	2.1	Use CAD software and functions to review, interpret and adjust drawings to deliver the modified component and check it meets project outcomes
		2.2	Confirm technical drawing specifications are accurate for CAM system being used
		2.3	Transfer file to CAM software using applicable workplace procedures

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		2.4	Produce prototype model
3.	Test that the product meets client specifications	3.1	Test prototype model against specification of project requirements and agreed modifications
		3.2	Evaluate data from testing to determine that prototype meets client specifications
		3.3	Communicate and seek feedback from client to ensure modification or adjustment meets project requirements
		3.4	Compile final project report including data testing evaluation on how modifications met real world problem and potential areas for improvement

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	Interpret real world problem statement and client specifications Interpret workplace and industry relevant documents and guidelines including technical drawings
Writing skills to:	Produce a basic project report including data from testing
Oral communication skills to:	Ask open and closed questions, and actively listen to seek confirmation and clarify understanding with workplace supervisor and client
Problem-solving skills to:	Identify modifications and adjustments as required Identify and escalate potential risks and issues
Technology skills to:	Use applicable CAD and CAM technologies according to workplace procedures

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23163 Modify, test and evaluate an industry specified component

PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	• Produce a prototype model based on the requirements of a real world problem project and:
	
	    • Seek confirmation of adjustments or modifications required
	
	    • Make adjustments or modifications using relevant digital applications
	
	    • Produce a modified prototype
	
	    • Test and evaluate the prototype to ensure it meets client requirements
	
	In doing so, the learner must:
	
	    • Accurately interpret job specifications, standard operating procedures and health and safety work practices.
	
	    • Prepare the CAD and CAM environment by customising the environments to suit the job specifications.
	
	    • Prepare a report outlining the project processes undertaken to modify, test and evaluate the component including a reflection on areas for improvement and the importance of project life cycle in meeting outcomes

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of: • Organisational requirements, policies, procedures and documentation relevant to project processes • Project life cycle stages in the production process • Benefits, limitations and risks of different production types and materials • Prototype testing techniques • Effective workplace communication and collaboration strategies and techniques • Safe work practices and standard operating procedures • Purpose of system variables that can be customised in CAD and CAM software applications

	• Features and functions of a range of CAD and CAM software systems
	
	• Differences between different CAM processes, including:
	
	    • Additive manufacturing (metallic and non-metallic) including 3D printing
	
	    • Subtractive manufacturing (laser cutting, plasma cutting, machining, CNC machining)
	
	• Various formats in which drawing files can be saved and reasons for using different formats when saving drawing files, such as:
	
	    • IGES
	
	    • DXF
	
	    • HPGL

ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry. This includes access to all tools, equipment, materials, and documentation required, including relevant workplace procedures, product, and manufacturing specifications. Assessor requirements Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Assessors must: • have vocational competency in creating 2-D and 3D models using computer-aided design system at least to the level being assessed with relevant industry knowledge and experience. • have vocational competency in creating 2D and 3-D code files using computer-aided manufacturing system at least to the level being assessed with relevant industry knowledge and experience.

UNIT CODE	**VU23157**
UNIT TITLE	**Support the implementation of a cloud computing technology**
APPLICATION	This unit describes the skills and knowledge required to undertake a supporting role in the implementation of a cloud computing solution as part of the cloud computing strategy for a business. The unit also includes participation in the testing and review of cloud services for the purpose of improvements in providing a more effective and efficient cloud strategy.
	The unit applies to individuals engaged in the utilisation of cloud services for business or enterprise operations.
	It is recommended that this unit of competency is assessed with a holistic approach with other units within the capability set.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		*Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.*	
1	Identify requirements for implementation of a cloud technology	1.1	Participate in the identification of a cloud technology that will best support a business cloud computing strategy and/or cloud usage policy
		1.2	Identify the resources and requirements to implement the selected cloud technology
		1.3	Identify, setup and access cloud accounts according to business protocols, procedures and work role
		1.4	Identify and access data resources used in operation of the cloud technology
		1.5	Review data security and privacy policies and procedures that apply to use of cloud technology according to work role
2	Participate in cloud technology implementation	2.1	Locate cloud technology installation and setup procedures
		2.2	Participate in installation and setup of cloud technology for the business within scope of work role
		2.3	Investigate support training for use of cloud technology

3	Provide support for use of cloud technology	3.1	Contribute to the development of staff communications and instructions for introduction and use of cloud technology as part of business operations
		3.2	Source vendor help information to support use of cloud technology
		3.3	Report cloud technology and data issues to appropriate person
		3.4	Produce summary usage reports as required to appropriate person
4	Participate in testing and review of cloud computing strategy	4.1	Participate in testing and review of the cloud technology to support the business's cloud computing strategy
		4.2	Identify and make simple recommendations of changes to procedures that can improve effective use of the cloud technology
		4.3	Review recommendations with supervisor and amend to reflect feedback
		4.4	Evaluate emerging technologies to identify benefits to the business's future cloud computing strategy.

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	evaluate and interpret a variety of legislative, organisational and technical documentation
Writing skills to:	communicate technical information in a style appropriate to audience, medium and purpose
Problem-solving skills to:	determine scope of problem and potential solutions within boundaries of own role escalating where appropriate
Self-management skills to:	understand roles and responsibilities for cloud technology implementation tasks
Technology skills to:	access and use cloud technology and recognise data issues

UNIT MAPPING INFORMATION	New unit

Assessment Requirements

TITLE	Assessment Requirements for VU23157 Support the implementation of a cloud computing technology
PERFORMANCE EVIDENCE	The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to: • Support the implementation, testing and review of at least one suitable cloud technology associated with a cloud strategy in the workplace and make recommendations for improvements to the existing use as well as potential cloud technologies for future consideration. In doing so, the candidate must: • collate information to support the implementation, use and support for the operation of a cloud technology • use cloud technology functions according to work role • seek assistance from relevant people and support services to resolve issues arising from cloud technology operations • recommend improvements to procedures following testing and review • identify at least two emerging technologies to support the organisation's cloud computing strategy • comply with security and privacy policies and procedures when working with data.

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:
	
	• Common cloud technologies used in business operations including:
	
	    • setup requirements
	
	    • implementation and access requirements
	
	    • legislative and business data security and privacy requirements
	
	    • functions and features of cloud technologies
	
	• Organisational policy and procedures related to implementation and use of cloud technology including reporting requirements
	
	• Sources of relevant vendor documentation information

ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry. This includes access to:

	- Internet - Access to basic cloud technology - Vendor documentation - Reporting documentation **Assessor requirements** Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. No specialist vocational competency requirements for assessors apply to this unit.

UNIT CODE	**VU23155**
UNIT TITLE	**Evaluate the impacts of the generations of wireless technologies**
APPLICATION	This unit describes the performance outcomes, skills and knowledge required to evaluate the impact of wireless technologies on business applications and services.
	It requires the ability to collect, analyse, combine, and reflect on information relating to wireless technologies, and their relationship to Industry 4.0 and Internet of Things (IoT). It also requires the ability to analyse a specific wireless technology used within the business, learning and community environment.
	The unit applies to those interested in telecommunication as a potential career option and those interested in applications of wireless technologies to business within a rapidly evolving environment driven by Industry 4.0 and IoT.
	No occupational licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

ELEMENTS		PERFORMANCE CRITERIA	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.	
1	Explore the evolution of wireless technology	1.1	Define the term wireless technology and its impact on the telecommunications sector.
		1.2	Investigate the evolution of wireless technologies
		1.3	Outline the challenges created by Industry 4.0 for wireless technologies and the current and future impact for businesses
		1.4	Provide an overview of Internet of Things (IoT) wireless technologies and the current and future impact for businesses
2	Determine the impact of wireless technology on the workplace	2.1	Explain how wireless connectivity has transformed business applications and innovation in services
		2.2	Summarise the impact of wireless technologies on the role of IT and telecommunication jobs in the business sector
		2.3	Describe the advantages & disadvantages of wireless technologies for e-commerce business
3		3.1	Prepare a plan to measure and assess the key components of Wi-Fi technology in your local area

	Assess Wi-Fi signal strength using a heat map	*3.2*	Sketch a grid map or obtain a blueprint of a selected environment which is covered by a Wi-Fi network
		3.3	Access, download and install a Wi-Fi heat mapping tool
		3.4	Load sketch/blueprint into the heat mapping tool and use the heat mapper following on-screen instructions
		3.5	Review the Wi-Fi heat map to determine causes of variation in signal strength
		3.6	Recommend potential solutions for areas which have low signal strength

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria of this unit of competency are listed below

Skill	Description
Reading skills to:	Source and evaluate information on wireless technologies
Writing skills to:	To plan and document findings and produce information in required format Draw a grid of a selected environment
Numeracy skills to:	Measure Wi-Fi signal strengths and room dimensions
Problem-solving skills to:	To determine causes of variations in Wi-Fi signal strengths
Self-management skills to:	Produce work within designated timelines
Technology skills to: •	Access reliable sources of information Download RF power measuring application

UNIT MAPPING INFORMATION	New unit, no equivalent unit

Assessment Requirements

TITLE	VU23155 Evaluate the impacts of the generations of wireless technologies

PERFORMANCE EVIDENCE	The learner must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:
	
	• Describe wireless technology and its relationship to Industry 4.0 and IoT, including the significant evolutionary milestones, challenges, and achievements. The learner must explore and outline the impact and importance of wireless technology on:
	
	    • business models
	    • innovative practices such as e-commerce
	    • work practices
	    • current and future jobs
	    • community.
	
	• Create and present a Wi-Fi heat map for a selected environment and analyse and document the Wi-Fi performance in the environment

KNOWLEDGE EVIDENCE	The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:
	
	• Definition and features of wireless technology
	
	• Evolution of 3G through to XG wireless technology including key features, types of wireless technologies for each generation, and advantages and limitations
	
	• Types of wireless connectivity used by Industry 4.0 business & industry
	
	• Features and applications of wireless technologies for the Internet of Things (IoT) and applicability in industry such as: smart meter, smart city, smart building, smart home, wearables, connected cars, connected health, retail, logistics & asset tracking, smart agriculture
	
	• Technical challenges for wireless communication technologies such as:
	
	    • Security and privacy
	    • Resource and spectrum utilisation
	    • Infrastructure
	    • Energy efficiency enhancement
	    • Integration of wireless information & power transfer
	    • Resource and interference management

	- Impact of wireless technologies on how business and how employees work, including: - Mobility - Location - Flexibility - Productivity - Methods of communication - Work-life balance - Provision of customer service - Advantages and disadvantages of wireless technology for e-commerce - Wi-Fi basics such as: - Internet connection - Access Point/Router - Signal strength and coverage - Repeaters - Devices with built in wireless capabilities (802.11b/g, 802.11b/g/n, 802.11ac) - Features and functions of Wi-Fi heat mapping tools
ASSESSMENT CONDITIONS	Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in industry. This includes access to: - Internet - MacBook or Laptop with Wi-Fi connectivity - Free heat mapping tool - Grid paper - Wi-Fi environment for the purposes of heat mapping which may include access to augmented reality and wireless required apps Assessor requirements Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. No specialist vocational competency requirements for assessors apply to this unit.