22670VIC Diploma of Data Analytics

Version 1
01/07/2024

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

Accredited for the period:

1 July 2024 – 30 June 2029

VICTORIA State Government | Jobs, Skills, Industry and Regions

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Section A – Copyright and course classification information

1. Copyright owner of the course	Copyright of this material is held by the Department of Jobs, Skills, Industry and Regions, Victoria, Australia. © State of Victoria (Department of Jobs, Skills, Industry and Regions) 2024
2. Address	Deputy CEO Victorian Skills Authority Department of Jobs, Skills, Industries and Regions (DJSIR) GPO Box 4509 MELBOURNE VIC 3001 **Organisational contact** Manager, Training and Learning Products Unit Engagement Branch Victorian Skills Authority Department of Jobs, Skills, Industries and Regions (DJSIR) Email: course.enquiry@djsir.vic.gov.au **Day-to-Day contact:** Executive Officer Curriculum Maintenance Management Service - Business Industries Chisholm Institute 2 New Holland Drive, Cranbourne, VIC 3977 Telephone: (03) 9238 8501 Email: CMMBusinessIndustries@chisholm.edu.au
3. Type of submission	This submission is for accreditation.
4. Copyright acknowledgement	The following units of competency have been imported from training packages administered by the Commonwealth of Australia: © Commonwealth of Australia • BSBDAT501 Analyse data The following units of competency: • ICTAII501 Automate work tasks using machine learning • ICTAII502 Train and evaluate machine learning models • ICTDAT501 Gather, analyse and verify data from different source inputs • ICTDAT503 Use unsupervised learning for clustering • ICTDAT602 Review data lifecycles • ICTDAT603 Assess advanced data processes • ICTPRG550 Perform ICT data conversions

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5. Licensing and franchise	
6. Course accrediting body	Victorian Registration and Qualifications Authority (VRQA)
7. AVETMISS information	***ANZSCO code – 6 digit*** • Australian and New Zealand Standard Classification of Occupations 224114 Data Analyst ***ASCED code – 4 digit*** Australian Standard Classification of Education • Field of Education 0203 Information Systems ***National course code*** 22670VIC
8. Period of accreditation	1 July 2024 – 30 June 2029

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Section B – Course information

1. Nomenclature	Standard 4.1 and 5.8 AQTF 2021 Standards for Accredited Courses
1.1 Name of the qualification	Diploma of Data Analytics
1.2 Nominal duration of the course	Nominal duration of the course is 1110 - 1290 hours.
2. Vocational or educational outcomes	**Standard 5.1 AQTF 2021 Standards for Accredited Courses**
2.1 Outcome(s) of the course	This course aims to provide the vocational outcomes required to support the growing industry need for skills in data analytics. The course provides access to skills and knowledge required to perform the data analytics function within organisations. The course will provide participants with a range of knowledge and skills to: • use data analytics technologies • apply critical thinking to data analysis • apply ethical protocols to data management • manage data risks and issues • work with data across the data life cycle • undertake written and oral business communication • prepare technical reports • prepare technical presentations • understand the industry • work in an organisational context • work effectively in a team. Technology based knowledge and skills include: • processing datasets • converting data • AI methods for data analytics • developing basic machine learning • applying data security protocols • using remote and cloud data services • establishing data validity • diagnostic, predictive and prescriptive analytics • data storytelling • data mining techniques • advanced visualisation dashboards. Graduates will have career opportunities in typical data analyst roles and functions including: • data analytics lead • data storyteller • data insights visualisation implementor

	• cyber security assessment • data marketing • data mining analyst • artificial intelligence applications • data and policy management.
2.2 Course description	The Diploma in Data Analytics is designed to support the data analytics function within organisations through development of skilled digital workers who perform data management, data analysis, insight evaluation and reporting functions. The course has application across the range of industries where data is analysed to understand and improve operations, sales, research, development, support, planning and maintenance.
3. Development of the course	**Standards 4.1, 5.1, 5.2, 5.3 and 5.4 AQTF 2021 Standards for Accredited Courses**
3.1 Industry, education, legislative, enterprise or community needs	**Background** The use of data analytics has experienced significant growth in recent years across various industries. Businesses are increasingly recognising the value of data-driven decision-making and leveraging analytics to gain insights, improve operations, and drive innovation. Key factors driving the growth of data analytics in Australia include: Advancements in Technology: The availability of advanced analytics tools, cloud computing, and big data technologies has made it easier for organisations to collect, store, and analyse large volumes of data. Government Initiatives: The Australian government has been promoting the use of data analytics through initiatives such as the National Innovation and Science Agenda (NISA) and investments in digital infrastructure. The Digital Economy Strategy 2030 highlights data analysis as a key technology for Australia's engagement in initiatives such as the Digital Atlas, Modern Manufacturing Strategy, and Consumer Data Rights. These government initiatives underscore the significance of data analytics in driving growth and innovation across various industries. *(Reference:* National Innovation and Science Agenda report | Digital economy strategy 2030) *(cited 30 May 2024)* Industry Adoption: Industries such as finance, healthcare, retail, and telecommunications have been early adopters of data analytics, using it

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to enhance customer experiences, optimise processes, and gain competitive advantages.

Skills Development: There has been a growing demand in building data analytics skills through education programs, training courses, and industry certifications to meet the increasing demand for data professionals.

Regulatory Changes: Regulatory changes, such as the EU's introduction of the General Data Protection Regulation (GDPR) and the Notifiable Data Breaches (NDB) scheme in Australia, have prompted organisations to invest in data analytics for compliance and risk management.
(Reference: General Data Protection Regulation (GDPR): What's in it for Australian Organisations? | About the Notifiable Data Breaches scheme*)*
(cited 30 May 2024)

Startup Ecosystem: Australia's, and particularly Victoria's, vibrant startup ecosystem has seen the emergence of innovative data analytics companies offering specialised solutions and services to businesses of all sizes.
(Reference: 24 top Data & Analytics companies and startups in Melbourne in June 2024*)*
(cited 30 May 2024)

With management services ubiquitous across industries, so the use of data analytics in planning and decision making is now a key requirement across all state and national industries.

With this growth the demand for data professionals (data scientists and data engineers) has increased rapidly and new roles for data analytics within organisations have emerged.

The Diploma of Data Analytics is targeted to provide graduates to operate in the field of data analytics who can perform data management, data analysis, insight evaluation and reporting functions.

Need for Course

The National Skills Commission has identified **Data Analyst** and **Data Scientist** as two of the **emerging occupations** in 2021**.**
(Reference: Jobs and Skills Australia: National Skills Commission Archive*)*
(cited 30 May 2024)

The following factors have determined the need for VET level training to support these new occupations.

- rapid development in the use of data as the foundation for business decision making
- growth in advertised job vacancies

- difficulty in employers seeking to match data related job vacancies with trained and qualified jobseekers. The Recruitment Experiences and Outlook Survey (REOS) conducted by the National Skills Commission reveals that 64% of recruiting employers (representing 36% of all employers) experienced difficulty hiring for data-related positions in April 2022.
  (Reference: Recruitment Experiences and Outlook Survey)
  (cited 30 May 2024)
- VET training that is fast to market and provides practical skill outcomes
- accessible courses that will allow for career development and transition
- evolution of industry roles from clerical, finance, administration, and ICT into specialist roles in data analytics. For example, the changing role of accounting occupations through the transition to data analytics. (Reference: Three ways data analytics will change the future of accounting)
  (cited 30 May 2024)
- the recent introduction of ANZSCO's new recognition of occupations in data analytics and data science.

With the growth of data analytics within industry, there is a need for a digital workforce who can meet this demand. These digital workers perform data management, data analysis, insight evaluation and reporting functions.

The Diploma of Data Analytics provides a career pathway for new workers in this new field.

Typical roles where data analysts are employed include:

- **Data Analyst:** This is the primary role where individuals analyse data to extract insights, trends, and patterns to support decision-making.

- **Business Analyst:** Business analysts work closely with stakeholders to understand business needs, define project requirements, and utilise data analytics to address business challenges.

- **Financial Analyst:** Financial analysts use data analytics to assess financial performance, conduct market research, and make recommendations for investment decisions.

- **Marketing Data Analyst:** Marketing analysts analyse customer data, campaign performance, and market trends to optimise marketing strategies and improve return on investment (ROI).

- **Operations Analyst:** Operations analysts focus on optimising processes, identifying inefficiencies, and improving productivity through data analytics.

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- **Healthcare Analyst:** Healthcare analysts use data analytics to evaluate patient outcomes, assess healthcare costs, and improve the efficiency of healthcare delivery systems.

- **Supply Chain Analyst:** Supply chain analysts analyse supply chain data to optimise inventory management, reduce costs, and improve logistics processes.

- **Market Research Analyst:** Market research analysts collect and analyse data on consumer preferences, market trends, and competitive landscapes to support business decision-making.

- **Risk Analyst:** Risk analysts assess potential risks associated with business decisions, financial investments, or operational activities using data analytics techniques.

- **Quality Assurance Analyst:** Quality assurance analysts use data analytics to ensure product or service quality meets established standards and identify areas for improvement.

- **Policy Analyst:** Policy analysts analyse data to evaluate the effectiveness of policies, inform policy development, and assess the impact of policy decisions.

- **Social Media Analyst:** Social media analysts analyse data from social media platforms to understand customer sentiment, monitor brand reputation, and inform social media marketing strategies.

Estimated demand

Presently there is a significant gap in demand versus supply of appropriately skilled persons in the data analytics field. The Institute of Analytics Professionals of Australia (IAPA) found in their 2023 Skills and Salary Survey that when it comes to accessing talent, 52% of this year's respondents found it harder to source suitable applicants than ever, up 8% on 2017 results.
(Reference: Skills and Salary Survey 2023 report)
(cited 30 May 2024)

For a number of data analytics occupations at this level, seek.com.au predicts grow rates over the next five years as:

- data analyst - 23.2%
- business analyst - 23.2%
- financial analyst - 32.2%
- marketing data analyst - 11.4%
- market research analyst - 11.4%
- risk analyst - 10.2%
- policy analyst - 8.7%
- social media analyst - 11.4%

(Reference: SEEK Career Advice)

(cited 30 May 2024)

Target Group

The target group includes learners from these cohorts:

- school leavers
- return to work
- career transition into IT and data analytics
- youth in career transition (general clerical, administration, IT support)
- immigrants seeking recognised Australian qualifications in IT and data analytics
- long-term unemployed
- diverse and inclusivity groups
- disabled (all-abilities) persons
- Aboriginal and Torres Strait Islanders
- refugees.

Support for Course

The high demand for new training in data analytics is strongly aligned with the objectives of the Victoria Skills Authority (*VSA Strategic Plan: 2022-2025, Strategic Object 4: Develop innovative solutions to skill design and delivery*) and the Workforce Training Innovation Fund, in the areas covering digital skills and innovation.
(Reference: VSA Strategic Plan 2022-2025)
(cited 30 May 2024)

This course's development was funded by the Victorian government **Skills First** funding stream **Workforce Training Innovation Fund.**

CITT - “Data analytics is a rapidly evolving field, and it is crucial that educational institutions adapt their curricula to reflect the latest industry trends and tools.”

NORTHLINK - “We believe these qualifications hold immense value beyond formal education, especially for practitioners within Small and Medium Enterprises (SMEs).”

CREMORNE DIGITAL HUB - “The proposed qualification will provide the skills and knowledge requirements to develop essential understanding of data and data analytic skills which are applicable across a range of industries and job functions, empowering professionals to make informed decisions, solve complex problems, drive innovation, and achieve organisational success.”

Consultation and Validation

Kangan Institute has undertaken research with employers across various industries and has confirmed the increased demand for skilled

resources undertaking data analytics. The consultation process commenced with individual one-on-one interviews, allowing for in-depth discussions and insights into their respective needs and perspectives. These interviews laid the foundation for focused workshops where stakeholders were brought together in focused groups to confirm the suitable skills and knowledge required for data analytical tasks.

Over twelve industry representatives from diverse industries (including telecommunications, finance, healthcare, retail, utilities, education and data service companies) have been consulted throughout the project period. This included representatives from Wizand Data, Telstra, SchoolData, Greater Western Water, International Medical Informatics, North Link Data Analytics Hub, Bendigo Kangan Institute and Communications and Information Technology Training (CITT). Some of these stakeholders became part of the project steering committee and contributed to the course design and supported the submission of the course proposal.

The detailed course content was developed after seeking input from technical experts. An iterative approach ensured that the accreditation submission was thoroughly reviewed, refined, and aligned with the expectations and requirements of both technical experts and potential employers, fostering a comprehensive and effective consultation process.

Members of the steering committee:

Name	**Organisation**
Adam Dumicich	Founder, Wizand
Andrew Roadknight	Head of Digital Initiatives, Kangan Institute
Dominic Schipano	Communications and Information Technology Training (CITT)
Jess Bird	Data Science Architect, Telstra
Jack Sinclair	Data and Analytics Lead, schooldata.com.au
Laura Hague	Manager Data & Analytics, Greater Western Water
Phil Robinson (Chair)	International Medical Informatics Association
Shannon Ryan	NORTH Link - Data Analytics Hub

In attendance:

Carlo Meneguzzi	Project Manager
Dennis Trevarthen	Lead Instructional Designer / Course writer / Developer
Jennifer Fleischer	Curriculum Maintenance Management Service - Business Industries
Karen Mok	Project Lead
Lyndon Blanchard	Future Skills Organisation
Zahra Abdulla (Minutes)	Project Coordinator

This course:

- does not duplicate, by title or coverage, the outcomes of an endorsed training package qualification
- 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

N/A

4. Course outcomes

Standards 5.5, 5.6 and 5.7 AQTF 2021 Standards for Accredited Courses

4.1 Qualification level

This course is aligned with the Australian Qualifications Framework (AQF) for a Diploma level qualification in that graduates will apply integrated technical and theoretical concepts in a broad range of contexts to undertake advanced skilled work. They will have knowledge and skills including the following:

Knowledge
Graduates will have:

- factual, technical and theoretical knowledge of Australian standards, legislation, codes of practice and industry guidelines related to data analytics

- current industry knowledge related to data models, security, risks, analytics tools and methods.

Skills
Graduates will have:

- advanced cognitive skills to identify, analyse, compare and act on information from a range of sources. This includes identifying and processing data to meet required standards, analysing data to determine insights and comparing outcomes to requirements
- cognitive, technical and communication skills to apply and communicate data analysis solutions of a non-routine or contingency nature to a complex range of problems. This includes applying and adapting methods, processes, and tools to data analysis in a variety of contexts
- specialist and advanced technical skills to complete routine and non-routine tasks and functions, including the use of technical industry software for the processing, analysis and representation of data insights
- communication skills to prepare reports, make presentations and collaborate effectively in a project team environment.

Application of knowledge and skills
Graduates will demonstrate the application of knowledge and skills:

- to specialised tasks and functions, such as sourcing, processing and analysis of datasets, including identifying and reporting on complex trends and patterns
- with responsibility for own functions and outputs, including the selection and application of industry software tools
- with responsibility for the technical work of others, applying integrated technology with work teams and in providing specialist technical support.

The Volume of Learning for the Diploma of Data Analytics is typically in the range 1 - 2 years. This incorporates structured training delivery and opportunities for practice and reinforcement of skills including self-directed study, research, project work and written assignments.

4.2 Foundation skills	Foundation skills essential to performance are embedded within the units of competency within this course. Foundation skill requirements, where not explicit in the performance criteria, are identified in the 'Foundation Skills' field of the units of competency.

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4.3 Recognition given to the course (if applicable)	N/A
4.4 Licensing/regulatory requirements (if applicable)	N/A

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5. Course rules	Standards 5.8 and 5.9 AQTF 2021 Standards for Accredited Courses

5.1 Course structure	To achieve the qualification 22670VIC Diploma of Data Analytics the learner must successfully complete a total of 20 units comprising:
	• 2 core units, plus
	• 18 units which may be selected from:
	  ○ Group A: Data Management (minimum 4 units)
	  ○ Group B: Data Preparation (minimum 4 units)
	  ○ Group C: Data Analysis (minimum 3 units)
	  ○ Group D: Data Reporting (minimum 1 unit)
	  ○ up to 3 imported units initially packaged in an endorsed training package or accredited course at AQF level IV or above.
	
	Imported units must ensure the integrity of the qualification's Australian Qualification Framework (AQF) alignment and contribute to a valid, industry-supported vocational outcome. Imported units selected must not duplicate the outcomes of other units in the qualification.
	
	Where the full qualification is not completed, a VET Statement of Attainment will be issued for each unit successfully completed.

Unit of competency code	Unit of competency title	Field of Education code (six-digit)	Pre-requisite	Nominal hours
CORE UNITS				
VU23686	Monitor and respond to industry trends in data analytics	029999	Nil	40
VU23688	Manage data analytics risks and issues	080315	Nil	60
GROUP A: DATA MANAGEMENT				
VU23687	Evaluate and maintain compliance with data ethics legislation	080307	Nil	60
VU23689	Create data entity model	020301	Nil	100
VU23690	Implement data security protocols	029901	Nil	80
ICTDAT602	Review data lifecycles	020305	Nil	40
ICTDAT603	Assess advanced data processes	020305	Nil	50
GROUP B: DATA PREPARATION				
VU23691	Use remote services to access and retrieve data	020113	Nil	60
VU23692	Design and implement programs to test data validity	020103	Nil	60
ICTAII501	Automate work tasks using machine learning	020119	Nil	60
ICTAII502	Train and evaluate machine learning models	020119	Nil	60
ICTDAT501	Gather, analyse and verify data from different source inputs	020305	Nil	60
ICTDAT503	Use unsupervised learning for clustering	020399	Nil	60
ICTPRG550	Perform ICT data conversions	020103	Nil	20
GROUP C: DATA ANALYSIS				
BSBDAT501	Analyse data	010103	Nil	60
VU23693	Undertake diagnostic, predictive & prescriptive analytics	020307	Nil	100
VU23694	Use AI to suggest industry data patterns and insights	020119	Nil	100
VU23695	Undertake knowledge discovery using data mining techniques	020307	Nil	60
GROUP D: DATA REPORTING				
VU23696	Communicate data insights using visual graphical representations	020307	Nil	80
VU23697	Design and implement a data dashboard	020307	Nil	80
	Total nominal hours			1110 - 1290

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	Standard 5.11 AQTF 2021 Standards for Accredited Courses
5.2 Entry requirements	There are no entry requirements for this course. Applicants are best equipped to achieve the course outcomes if they have as a minimum, language, literacy and numeracy skills that are equivalent to Level 3 of the Australian Core Skill Framework. In addition, alignment with Level 3 of the Digital Literacy Skills Framework is recommended. Applicants with language, literacy, numeracy and digital literacy skills at levels lower than those recommended may require additional support to successfully undertake this course.
6. Assessment	**Standard 5.12 and 5.14 AQTF 2021 Standards for Accredited Courses**
6.1 Assessment strategy	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 ensure assessments: • are valid, reliable, flexible and fair • provide for evidence collection that is sufficient, valid, authentic and current • consistent with the assessment requirements of relevant Training Packages where national endorsed units of competency are used • ensure that workplace and regulatory requirements are met • identify and justify any requirements for workplace and/or simulated assessment • cover the 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 • keep learners informed of the context and purpose of the assessment and the assessment process • provide feedback 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 • assist assessors to interpret evidence consistently • recognise existing skills • be equitable to all learners. Assessment methods may include: • oral and/or written questioning • inspection of final process outcomes • portfolio of documentary workplace evidence • practical demonstration of required tasks • investigative research and case study analysis • other valid methods aligned with the competency requirements and context. Units can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. A holistic approach to assessment is encouraged. This may be achieved by combining the assessment of more than one unit where it better replicates working practice. Assessment of imported units must reflect the Assessment Requirements for the relevant training package or accredited course.
6.2 Assessor competencies	Assessment must be undertaken by a person or persons in accordance with: • 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. Units of competency imported from training packages must reflect the requirements for assessors specified in that training package or accredited course.

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7. Delivery	Standards 5.12, 5.13 and 5.14 AQTF 2021 Standards for Accredited Courses
7.1 Delivery modes	The Diploma of Data Analytics is suitable for delivery using the following modes: • Face-To-Face • Online / eLearning • Blended Learning This course may be delivered either full-time, part-time or self-paced. Related units of competency may be clustered for delivery whilst maintaining the integrity of requirements for each individual unit. In all modes of delivery, work integrated learning is preferable where applicable and practical. Delivery modes should encourage collaborative problem solving incorporating practical applications and outcomes and include team-based exercises where possible.
7.2 Resources	General facilities, equipment and other resources required to deliver the Diploma of Data Analytics include: • training facilities and equipment • access to computers and internet • access to common industry software tools • access to datasets for analytics • industry standards, policies, texts and references • environmental safeguards • health and safety facilities and equipment • workplace or a simulated workplace environment, appropriate to the assessment tasks. The units of competency imported from training packages or accredited courses must reflect the requirements for resources and trainers specified in that training package or accredited course. Training must be undertaken by a person or persons in accordance with: • 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,

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	or • the Standards for Registered Training Organisations 2015 (SRTOs), or • the relevant standards and Guidelines for RTOs at the time of course delivery.
8. Pathways and articulation	**Standard 5.10 AQTF 2021 Standards for Accredited Courses**
	Currently, there are no formal arrangements for articulation to other accredited courses or higher education qualifications. Credit for units completed may offer pathways into these endorsed qualifications and accredited courses: • BSB50120 Diploma of Business • BSB50920 Diploma of Quality Auditing • ICT50220 Diploma of Information Technology • ICT60220 Advanced Diploma of Information Technology. Graduates may wish to develop their professional career further by undertaking relevant tertiary qualifications.
9. Ongoing monitoring and evaluation	**Standard 5.15 AQTF 2021 Standards for Accredited Courses**
	This course will be monitored and maintained by the Curriculum Maintenance Manager (CMM) – Business Industries. A review will take place during the course accreditation period. The review will be informed by feedback from: • course participants and graduates • teaching staff • industry representatives. 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.

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Section C – Units of competency

List of imported units of competency (total 8 units)

From Business Services Training Package:

- BSBDAT501 Analyse data.

From Information and Communications Technology Training Package:

- ICTAII501 Automate work tasks using machine learning
- ICTAII502 Train and evaluate machine learning models
- ICTDAT501 Gather, analyse and verify data from different source inputs
- ICTDAT503 Use unsupervised learning for clustering
- ICTDAT602 Review data lifecycles
- ICTDAT603 Assess advanced data processes
- ICTPRG550 Perform ICT data conversions.

Units of competency developed for the course which comply with the AQTF 2021 Standards for Accredited Courses – Unit of Competency Template (total 12 units)

- VU23686 Monitor and respond to industry trends in data analytics
- VU23687 Evaluate and maintain compliance with data ethics legislation
- VU23688 Manage data analytics risks and issues
- VU23689 Create data entity model
- VU23690 Implement data security protocols
- VU23691 Use remote services to access and retrieve data
- VU23692 Design and implement programs to test data validity
- VU23693 Undertake diagnostic, predictive & prescriptive analytics
- VU23694 Use AI to suggest industry data patterns and insights
- VU23695 Undertake knowledge discovery using data mining techniques
- VU23696 Communicate data insights using visual graphical representations
- VU23697 Design and implement a data dashboard.

VU23686 Monitor and respond to industry trends in data analytics

Unit code	VU23686
Unit title	Monitor and respond to industry trends in data analytics
Application	This unit describes the performance outcomes, skills and knowledge required to successfully identify current data analytics trends and their application. It includes the ability to identify, evaluate, respond and monitor industry trends in data analytics. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Identify industry trends	1.1	Research and analyse current data analytics trends relevant to the industry and data analytics projects
		1.2	Monitor emerging technologies relevant to data analytics and their impact on organisational strategy
		1.3	Identify key players and influencers in the data analytics field and their impact on industry practice
2	Evaluate impacts on organisation	2.1	Assess how industry trends may impact organisational work processes
		2.2	Evaluate potential benefits and risks associated with emerging data analytics trends
		2.3	Determine ethical implications of new industry developments on analytical projects
		2.4	Communicate industry trends and their implications to stakeholders
3	Respond to industry trends	3.1	Modify work processes to reflect changes and trends in in data analytics tools and methods
		3.2	Determine opportunities for integrating new trends into organisational strategy
		3.3	Recommend changes in response to identified trends
		3.4	Identify skill gaps in relation to new industry trends
		3.5	Complete professional development and training programs to meet identified skill needs

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Writing skills to:	Summarise industry trends for review by others
Oral communication skills to:	Engage with other professionals in data analytics and related industry
Digital literacy skills to:	Navigate the internet to find relevant information

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23686 Monitor and respond to industry trends in data analytics
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and monitor and respond to industry trends in data analytics at least once including to: • access at least three industry publications and summarise the current impacts on data analytic projects • identify new industry trends in data analytics and how they impact on organisational data policy • evaluate a vendor-based training module and report on product characteristics that can assist with a data analytics project • modify a data analytics work process to align with an identified industry trend.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• concepts in data analytics, including statistical methods, data pre-processing and basic machine learning principles
	• research methods to identify and analyse data analytics trends, impacts and consequences
	• common industry data analytics and visualisation tools
	• artificial intelligence and applications in data analytics
	• programming languages used in data analytics
	• cloud-based data analytics platforms and services
	• data privacy regulations and ethical considerations
	• cyber security principles
	• data governance principles
	• applications of industry data analytics trends, including:
	  ○ influence on marketing strategy and competitor analysis
	  ○ updating of computing software and equipment
	  ○ upskilling requirements
	  ○ organisation finance, human resources, enterprise resources planning, point of sales and customer management systems.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources:

	• computer hardware, software and tools • access to, or information related to, organisational and other stakeholders • internet access • organisation strategy, policy and processes. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23687 Evaluate and maintain compliance with data ethics legislation

Unit code	VU23687
Unit title	Evaluate and maintain compliance with data ethics legislation
Application	This unit describes the performance outcomes, skills and knowledge required to evaluate and maintain compliance with data ethics legislation. It includes the ability to identify, review, evaluate and maintain compliance with data ethics legislation. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Identify relevant data ethics legislation	1.1	Identify current industry data ethics legislation that impact on organisational processes
		1.2	Review the role of regulations, standards and codes of practice that derive from data ethics legislation
2	Evaluate compliance against data ethics legislation	2.1	Evaluate organisational data governance policies against relevant legislation and associated regulations
		2.2	Document sensitive and protected attributes within datasets
		2.3	Conduct compliance audit on data processing activities and data handling practices
		2.4	Report on areas of compliance and areas requiring corrective actions
		2.5	Recommend adjustments to processes and policies to comply will data ethics legislation
3	Maintain compliance	3.1	Communicate data governance policies to stakeholders
		3.2	Implement informed consent procedures for collecting and processing personal data
		3.3	Adhere to security processes for protection of data assets
		3.4	Monitor and respond to changes in data ethics legislation changes

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Interpret written documents including legislation, guidelines and codes of practice
Oral communication skills to:	Seek clarification from legal professionals
Numeracy skills to:	Calculate data to evaluate compliance with data ethics legislation
Digital literacy skills to:	Identify reliable sources of information on internet

Unit Mapping Information	New unit, no equivalent unit.

Assessment Requirements Template

Title	Assessment Requirements for VU23687 Evaluate and maintain compliance with data ethics legislation
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and evaluated and maintained compliance with data ethics legislation on at least one occasion including to: • evaluate and document the organisational implications of data ethics legislation on the collection, processing, storage and sharing of personal and sensitive information • plan, conduct and report in writing a compliance audit report and address any gaps with data ethical legislative requirements • assess the impact of a data ethics breach on an organisation's operations.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• nature and types of data, including:
	  ○ public
	  ○ enterprise
	  ○ sensitive
	  ○ personal data
	• data related legislation, including:
	  ○ data protection
	  ○ intellectual property

	○ privacy ○ freedom of information ○ anti-discrimination ○ data security ○ breach notification laws • informed consent legislative obligations when collecting and processing personal data • data handling processes, including: ○ data collection ○ data processing ○ storage ○ sharing • concepts of bias and fairness in data analytics process • data security measures, including: ○ encryption ○ access controls ○ security audits.
Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • datasets • organisational documentation including data governance policy, data handling processes • access to, or information related to, organisational and other stakeholders • computer software and tools. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23688 Manage data analytics risks and issues

Unit code	VU23688
Unit title	Manage data analytics risks and issues
Application	This unit describes the performance outcomes, skills and knowledge required to identify and manage risks and issues associated with data analytics processes. It includes the ability to identify, respond, monitor and review data analytics risks and issues. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Identify data analytics risks and issues	1.1	Research and identify organisational and industry requirements for risk management
		1.2	Evaluate potential risks associated with data analytics activities
		1.3	Identify current issues that are impacting the effectiveness of data analytics processes
		1.4	Assess and rank the potential probability and impact of data analytics risks on the organisation
2	Develop risk response strategies	2.1	Develop strategies to respond to identified risks in data analytics with stakeholders
		2.2	Document contingency plans to address potential issues and disruptions
		2.3	Communicate risk response strategies to stakeholders
3	Monitor and review data analytics processes	3.1	Implement monitoring mechanisms to track data analytics issues
		3.2	Review the effectiveness of risk response strategies
		3.3	Update risk management plans based on the changing data analytics environment
		3.4	Promote a culture of risk awareness and responsibility within the organisation

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Interpret data legislation framework
Oral communication skills to:	Discuss information regarding risk response strategies
Numeracy skills to:	Estimate financial consequences to organisation of non-compliance with legislation
Learning skills to:	Adapt to changes in the data analytics industry

Unit Mapping Information	New unit, no equivalent unit.

Assessment Requirements Template	
Title	Assessment Requirements for VU23688 Manage data analytics risks and issues
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and managed data analytics risks and issues at least once including to: • develop a risk management plan within an organisation context • accurately maintain communication logs regarding data analytics risks and issue resolution.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• types of data analytics risks, including:
	  ○ data privacy concerns
	  ○ bias in algorithms
	  ○ data quality issues
	  ○ model accuracy
	• organisational and regulatory frameworks relevant to data analytics
	• data analytics principles and processes
	• ethical use of data
	• use of models, including:
	  ○ accurate result interpretation
	  ○ over and underfitting
	  ○ monitoring and maintenance
	• human oversight for making recommendations based on data modelling
	• risk management principles and methodologies, including national and international standards.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • data analytic project datasets • organisational policies and procedures • access to, or information related to, organisational and other stakeholders • legislation and regulatory documentation

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	• computer software and tools. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

OFFICIAL

VU23689 Create data entity model

Unit code	VU23689
Unit title	Create data entity model
Application	This unit describes the performance outcomes, skills and knowledge required to create a data entity model, encompassing the identification, definition, and representation of data entities and their relationships. It involves using recognised data modelling techniques to design a structured and cohesive representation of an organisation's data. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		**Performance Criteria**	
1	Define data entities and attributes	1.1	Research and analyse business requirements and identify data entities relevant to data modelling
		1.2	Define attributes for each data entity based on business function
		1.3	Review and ensure that data entities and attributes align with business requirements
2	Establish relationships between data entities	2.1	Identify and define relationships between data entities
		2.2	Classify relationships as one-to-one, one-to-many, or many-to-many based on business function
		2.3	Review and ensure that relationships support the accurate representation of business processes

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3	Apply data modelling standards	3.1	Apply recognised data modelling standards to the development of a data entity model
		3.2	Maintain consistency and clarity in the representation of data entities and relationships
		3.3	Apply naming conventions and documentation standards for clear communication
4	Validate and refine data model	4.1	Validate the data entity model with stakeholders to ensure alignment with business requirements
		4.2	Incorporate feedback and make adjustments to refine the data model
		4.3	Review and ensure that the data model adheres to industry best practices and standards
5	Document data entity model	5.1	Prepare an accurately documented data entity model
		5.2	Communicate the purpose and usage of the data entity model to stakeholders
		5.3	Update documentation to reflect changes and enhancements to the data model

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Comprehend technical data modelling documentation and standards
Writing skills to:	Prepare reports regarding data entity modelling
Oral communication skills to:	Discuss business requirements with stakeholders
Numeracy skills to:	Calculate measures and impact metrics of data entity models
Problem-solving skills to:	Identify inconsistencies in data model and propose improvements

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23689 Create data entity model
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and create a data entity model at least once including to: • prepare a table of data entities and attributes based on business requirements for an organisation • describe the relationships between data entities, showing the business relationship and their role within the organisation • prepare three examples that apply recognised data modelling standards and conventions • validate and refine the data entity relationships with business stakeholders • document a data entity model utilising descriptive and graphical representations for clarity.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• data entity model concepts, including:
	  ○ entity definitions
	  ○ attribute details
	  ○ relationship descriptions
	  ○ normalisation to eliminate redundancy
	• data modelling standards, including:
	  ○ Entity-Relationship Diagrams (ERD)
	  ○ Unified Modelling Language (UML)
	• data governance and standards, including:
	  ○ naming conventions
	  ○ meta data management
	  ○ data quality standards.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • industry standard computer hardware and software • access to data modelling tools, including:

	○ Entity Relationship Diagram ○ Unified Modelling Language • industry best practices and standards references • business requirements and data • access to, or information related to, organisational and other stakeholders • documentation of organisational data modelling standards and conventions. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23690 Implement data security protocols

Unit code	VU23690
Unit title	Implement data security protocols
Application	This unit describes the performance outcomes, skills and knowledge required to implement data security protocols within an organisation. It involves interpreting data security requirements, selecting and configuring security measures, and monitoring and maintaining data security to protect against unauthorised access and data breaches. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		**Performance Criteria**	
1	Analyse data security requirements	1.1	Review organisational policies and legal requirements related to data security
		1.2	Identify and analyse data assets, potential threats, and vulnerabilities
		1.3	Determine data security requirements based on the sensitivity and criticality of data
		1.4	Identify and comply with personally identifiable information (PII) requirements
2	Select and configure security measures	2.1	Evaluate and select security measures based on data security requirements
		2.2	Configure mechanisms to safeguard data
		2.3	Implement security protocols for data in transit and data

			at rest
3	Monitor data security	3.1	Establish monitoring mechanisms to detect and respond to security incidents
		3.2	Review access logs and audit trails to identify unauthorised access
		3.3	Implement intrusion detection and prevention systems to enhance data security
4	Maintain data security protocols	4.1	Conduct security assessments and vulnerability scans
		4.2	Recommend patches and updates to address identified security vulnerabilities
		4.3	Review and update data security protocols in response to changes in the threat landscape
5	Educate and train users	5.1	Develop and deliver training programs to educate users about data security protocols
		5.2	Communicate and reinforce security policies and procedures with stakeholders
		5.3	Provide guidance on secure data handling practices and awareness of social engineering threats

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Interpret organisation documentation related to security protocols
Oral communication skills to:	Present security requirements to associates and stakeholders
Numeracy skills to:	Monitor metrics on audit reports and calculate variations

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23690 Implement data security protocols
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and implemented data security protocols at least once including to: • analyse data security requirements and identify potential threats and vulnerabilities in an organisational context • select and configure at least three different security measures based on organisational needs • prepare a plan for monitoring data security • implement data security monitoring plan and provide a response for at least two security incidents • prepare and deliver basic training program to communicate and educate users on data security protocols and best practice within an organisation.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• mechanisms to safeguard data, including:
	  ○ access controls
	  ○ encryption
	  ○ authentication
	  ○ data in transit
	• data security principles, including:
	  ○ confidentiality
	  ○ integrity
	  ○ availability
	• regulatory compliance, including:
	  ○ General Data Protection Regulation (GDPR)
	  ○ privacy
	• industry monitoring and response tools, including:
	  ○ detection and response to security incidents
	  ○ incident response procedures
	• network security, including:
	  ○ net security principles
	  ○ cloud and virtual private networks

	• data security and auditing requirements, including:
	  ○ auditing processes and trails
	  ○ compliance reporting requirements
	• incident response protocols
	• basic industry training methods and processes.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • common industry hardware and software • data security tools and technologies • live data, case studies or scenarios for practical application • access to, or information related to, organisational and other stakeholders • documentation of organisational data security policies and legal requirements. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23691 Use remote services to access and retrieve data

Unit code	VU23691
Unit title	Use remote services to access and retrieve data
Application	This unit describes the performance outcomes, skills and knowledge required to use remote services to access and retrieve data. It involves determining remote access protocols, configuring access settings, securely retrieving data, and troubleshooting common issues that may arise during remote data retrieval processes. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		**Performance Criteria**	
1	Identify remote access protocols	1.1	Research and identify the organisation security, policy and requirements for data access retrieval
		1.2	Select the remote access protocols relevant to the requirements
		1.3	Comply with security considerations associated with remote data access and storage
		1.4	Determine the impact of latency on remote data access and retrieval
2	Configure remote access settings	2.1	Configure remote access settings based on organisational policies and security requirements
		2.2	Set up authentication mechanisms for secure remote access
		2.3	Establish connection profiles for different remote access environments

3	Ensure data security and compliance	3.1	Utilise security measures to protect data during remote access and after access as required by organisational and governmental policies
		3.2	Verify and document compliance with data security policies and regulations
4	Access and retrieve data remotely	4.1	Utilise remote services to establish a secure connection to data repositories
		4.2	Navigate and search for data within remote environments
		4.3	Retrieve data efficiently and securely using remote access protocols
		4.4	Securely disconnect from remote services after data retrieval activities
		4.5	Securely store data in accordance with organisational policies
5	Troubleshoot remote data access issues	5.1	Identify, diagnose and document common issues related to remote data access and retrieval
		5.2	Implement troubleshooting strategies to resolve connectivity problems
		5.3	Collaborate with relevant support personnel to address remote access issues

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy skills to:	Configure authentication environment
Initiative and enterprise skills to:	Ensure remote access remains compliant with policy and regulations

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template

Title	Assessment Requirements for VU23691 Use remote services to access and retrieve data
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and used remote services to access and retrieve data at least twice, including to: • apply security controls when utilising remote access protocols • configure remote access settings • successfully access and retrieve data using remote services end to end • provide resolution to three common issues related to remote data access • document the data security and compliance requirements needed during remote data retrieval.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• organisation data policies
	• legislation and regulations, including:
	  ○ Privacy Act
	  ○ Notifiable Data Breaches Scheme
	  ○ Telecommunications Act
	  ○ Australian Signals Directorate Guidelines
	• remote access protocol, including:
	  ○ SSH (Secure Shell Protocol)
	  ○ VPN (Virtual Private Network)
	  ○ RDP (Remote Desktop Protocol)
	  ○ HTTPS (Hypertext Transfer Protocol Secure)
	  ○ SFTP (Secure File Transfer Protocol)
	• basic networking concepts, including:
	  ○ IP addresses
	  ○ subnets
	  ○ routers
	  ○ firewalls
	  ○ TCP/IP protocols
	  ○ anti-virus software
	• remote access security methods, including:
	  ○ authentication methods

	○ SSL (Secure Socket Layer) ○ data in transit using encrypted security methods.
Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • common industry computer hardware and software • access to remote access tools and technologies • live remote access environment for practical application • access to, or information related to, organisational and other stakeholders • documentation of organisational remote access policies and security requirements • telecommunications legislation and regulation documentation. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23692 Design and implement programs to test data validity

Unit code	VU23692
Unit title	Design and implement programs to test data validity
Application	This unit describes the performance outcomes, skills and knowledge required to design and implement programs for testing data validity. It involves determining data validation requirements, developing testing programs, executing tests, and analysing results to ensure the accuracy and integrity of organisational data. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Analyse data validation requirements	1.1	Review and determine data validation requirements based on organisational needs
		1.2	Identify the key data elements and criteria for data validity testing
		1.3	Adopt industry standards and codes of practice in data validation
2	Design data validity testing program	2.1	Develop a comprehensive plan for data validity testing, outlining test objectives and scope
		2.2	Design test scenarios and cases to cover data validation conditions
		2.3	Specify input data, expected outcomes, and criteria for determining data validity
3	Implement data validity	3.1	Select and configure testing tools and environments

	testing programs		
		3.2	Develop and implement programs and scripts for data validity testing
		3.3	Execute data validity tests according to the defined plan and schedule
4	Monitor and analyse test results	4.1	Monitor and log test execution results, including identified issues and anomalies
		4.2	Analyse test results to determine the validity of data based on predefined criteria
		4.3	Document and communicate findings to stakeholders
5	Implement corrective actions	5.1	Identify root causes of data validity issues based on test results
		5.2	Develop and implement corrective actions to address identified issues
		5.3	Verify the effectiveness of corrective actions through retesting
6	Document testing processes and outcomes	6.1	Document the testing processes, including test plans, scenarios, and scripts
		6.2	Record and archive test results, issues, and corrective actions
		6.3	Communicate testing outcomes to stakeholders in a clear manner

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Interpret data validation requirements from organisational documents

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23692 Design and implement programs to test data validity
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and designed and implemented programs to test data validity at least twice, including to: • analyse data validation requirements and design testing programs for data analytics projects within an organisation • implement at least two data validity testing programs using tools and scripts • prepare and implement a monitoring plan to analyse test results to ensure data validity • implement corrective actions based on identified issues in at least two instances • document a testing process that communicates process and outcomes clearly for both technical and non-technical stakeholders.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• current industry standards and codes of practice for data testing
	• organisational data, including:
	  ○ data sources
	  ○ data flow
	  ○ data entity specifications
	• data quality concepts, including:
	  ○ accuracy
	  ○ completeness
	  ○ consistency
	  ○ reliability
	  ○ currency
	• data validation methods, including:
	  ○ format checks
	  ○ range checks
	  ○ value checks
	• organisational business rules and requirements related to data modelling, including:

	○ data entity modelling structure ○ entity relationships • test tools and techniques, including: ○ data profiling ○ scripting languages used for data interrogation ○ database query language • root cause analysis for investigating discrepancies and anomalies.
Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • common industry computer hardware and software • access to organisational or facsimile data analytics project • access to, or information related to, organisational and other stakeholders • access to data validation tools and testing environments • documentation of industry standards and codes of practice in data validation. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23693 Undertake diagnostic, predictive and prescriptive analytics

Unit code	VU23693
Unit title	Undertake diagnostic, predictive and prescriptive analytics
Application	This unit describes the performance outcomes, skills and knowledge required to perform diagnostic, predictive and prescriptive analytics. It includes the ability to identify trends in data, make predictions using data, conduct comparative data analysis, use predictive algorithms and create data models to assist decision making. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Prepare dataset	1.1	Summarise a historical dataset to provide meaningful metrics
		1.2	Identify trends, patterns and outliers in the dataset
		1.3	Represent data visually using charts, graphs and dashboards
2	Undertake diagnostic analytics	2.1	Measure past performance against predetermined metrics
		2.2	Identify underlying factors that influence outcomes to determine the likely causes of an observation
		2.3	Uncover recurring patterns within the data to provide insights and correlations between variables
		2.4	Perform comparative analysis to assess performance against historical data and specific criteria
		2.5	Utilise findings to determine actions for improving outcome
3	Undertake predictive analytics	3.1	Select statistical algorithms and machine learning models
		3.2	Prepare high-quality data for input as testing and training data
		3.3	Apply predictive model to generate forecast of future outcomes based on historical data patterns
		3.4	Fine-tune parameters to improve accuracy and reliability of the model
4	Undertake prescriptive analytics	4.1	Create models to support decision-making process
		4.2	Optimise the model to make improved data-driven decisions
		4.3	Represent alternative options in an interactive dashboards format
		4.4	Document actionable recommendations and insights

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning skills to:	Adapt communications to use industry or domain-specific terminology

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23693 Undertake diagnostic, predictive and prescriptive analytics
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and undertaken diagnostic, predictive and prescriptive analytics at least once, including to: • perform diagnostic analytics on at least two datasets that are in common use in industry • perform predictive and associated prescriptive analytics on at least one dataset that is in common use in industry • present documented recommendations based on data and performed analytics.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• data analytical tools, including:
	  ○ R
	  ○ Python
	  ○ statistical software packages
	• awareness of ethical considerations in data analytics, including:
	  ○ privacy
	  ○ confidentiality
	  ○ responsible use of data
	• concepts of data warehouses and data lakes
	• statistical methods, including:
	  ○ mean
	  ○ median
	  ○ mode
	  ○ standard deviation
	  ○ variance
	  ○ correlation
	  ○ hypothesis testing
	  ○ regression analysis
	• exploratory data analysis (EDA), including:
	  ○ patterns
	  ○ trends
	  ○ outliers in data

	• data cleaning and preprocessing techniques
	• data visualisation
	• database structures
	• SQL for extracting, querying, and manipulating data
	• diagnostic analytics, including:
	  ○ metrics from aggregated raw data, including:
	  ▪ averages
	  ▪ totals
	  ▪ percentages
	  ▪ frequency distributions
	  ○ predetermined metrics, including:
	  ▪ benchmarks
	  ▪ key performance indictors (KPIs)
	• predictive analytics, including:
	  ○ mathematical modelling techniques for representing relationships between variables
	  ○ machine learning algorithms, including:
	  ▪ consideration of strengths
	  ▪ limitations for different types of tasks
	  ○ factors that influence model's effectiveness, including:
	  ▪ key variables
	  ▪ business processes
	  ▪ contextual factors
	  ○ validation techniques
	• prescriptive analytics, including:
	  ○ comparative analysis, including:
	  ▪ contrasting different datasets
	  ▪ time periods and segments to identify variations and similarities
	  ○ decision models including:
	  ▪ rules
	  ▪ constraints
	  ▪ optimisation criteria
	  ○ financial and operational impact of decisions on the organisation.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment.

	Learners must be provided with the following resources: • datasets • industry or organisational standards, processes and policies • access to, or information related to, organisational and other stakeholders • computer hardware, software and tools Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23694 Use AI to suggest industry data patterns and insights

Unit code	VU23694
Unit title	Use AI to suggest industry data patterns and insights
Application	This unit describes the performance outcomes, skills and knowledge required to effectively apply artificial intelligence (AI) techniques to analyse industry data, uncover patterns and derive meaningful insights. It includes the ability to identify suitable AI algorithms, prepare and process data, and interpret AI-generated insights to inform decision-making within an industry context. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Identify suitable AI algorithms	1.1	Review data characteristics and industry context
		1.2	Identify AI algorithms suitable for analytic tasks with the data
		1.3	Evaluate the ethical considerations and limitations of different AI algorithms
		1.4	Propose new task procedure and confirm with required personnel
2	Preprocess industry data for AI analysis	2.1	Perform data cleaning to address inconsistencies and enhance algorithmic performance
		2.2	Apply relevant data transformation techniques to optimise data for AI analysis
3	Implement AI tools for data pattern recognition	3.1	Select and configure AI tools and platforms
		3.2	Train AI models to recognise patterns and generate insights from industry-specific datasets
		3.3	Optimise AI models for efficiency and accuracy in identifying relevant data patterns
4	Interpret AI generated insights	4.1	Analyse and interpret insights generated by AI algorithms within the context of industry requirements
		4.2	Verify the reliability and relevance of AI-generated insights through validation processes
		4.3	Communicate findings and insights to stakeholders

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Review documented procedures and processes
Writing skills to:	Document outcomes and recommendations
Oral communication skills to:	Exchange technical ideas with stakeholders

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23694 Use AI to suggest industry data patterns and insights
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and used AI to suggest industry data patterns and insights at least twice, including to: • implement and optimise AI tools for data pattern recognition on an industry dataset • interpret and communicate AI-generated insights within an industry context.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• principles and classifications of AI algorithms
	• data characteristics, including:
	  ○ structured vs unstructured data
	  ○ labelled vs unlabelled
	  ○ randomised
	  ○ biased
	• machine learning, including:
	  ○ supervised
	  ○ semi-supervised
	  ○ unsupervised
	  ○ reinforcement learning
	• Natural Language Processing (NLP)
	• time series analytics for temporal data
	• deep learning models and neural networks
	• data mining methods for classification and regression
	• prompt engineering
	• cross-industry standard process for data mining (CRISP-DM)
	• validation of AI processes, including:
	  ○ accountability
	  ○ inclusiveness
	  ○ reliability
	  ○ fairness and transparency
	  ○ privacy and security

	• common types of data pattern recognition, including:
	  ○ central tendency
	  ○ variability
	  ○ correlation
	  ○ clustering
	  ○ classification
	  ○ anomaly detection.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • datasets • industry-recognised AI tools and platforms • computing hardware and software • access to, or information related to, organisational and other stakeholders • organisational policies, procedures and ethical guidelines related to AI in the industry. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23695 Undertake knowledge discovery using data mining techniques

Unit code	VU23695
Unit title	Undertake knowledge discovery using data mining techniques
Application	This unit describes the performance outcomes, skills and knowledge required to apply data mining to large datasets for knowledge discovery. It includes the ability to clarify data mining objectives, source and prepare data, apply data mining techniques, interpret and communicate findings. This unit applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Define data mining objectives and scope	1.1	Clarify the purpose of data mining activities
		1.2	Integrate relevant business objectives and research goals
		1.3	Define the scope of knowledge discovery
		1.4	Establish success criteria for activities
2	Collect and prepare data for analysis	2.1	Identify and access relevant data sources for knowledge discovery
		2.2	Clean and preprocess data to ensure quality and consistency
		2.3	Integrate multiple datasets and select relevant information for analysis
		2.4	Transform data into a suitable format considering data mining techniques
3	Apply data mining techniques	3.1	Select appropriate data mining algorithms based on defined objectives
		3.2	Implement data mining techniques to uncover patterns, trends, and insights
		3.3	Evaluate the results of data mining analyses to ensure relevance and accuracy
4	Interpret and communicate findings	4.1	Interpret and analyse data mining results in the context of defined objectives
		4.2	Communicate findings through clear and concise reports, visualisations and presentations
		4.3	Collaborate with stakeholders to validate and refine insights
		4.4	Identify opportunities for model improvement and refinement.

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Interpret resources used during the data mining process
Oral communication skills to:	Convey findings to diverse stakeholders
Digital literacy skills to:	Search and monitor industry trends online

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23695 Undertake knowledge discovery using data mining techniques
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and undertaken knowledge discovery using data mining techniques at least twice, including to: • apply data mining algorithms on a dataset and uncover embedded patterns and rules • prepare documentation for data mining objectives, scope and success criteria • create a report on data mining results and relevant insights.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• types of data mining algorithms and techniques, including:
	  ○ classification
	  ○ clustering
	  ○ association
	  ○ anomaly detection
	  ○ decision trees
	  ○ neural networks
	  ○ support vector machines
	• data preprocessing and cleaning methods
	• data visualisation tools and techniques
	• ethical considerations in data mining
	• industry-specific applications of knowledge discovery
	• application of data mining techniques, including:
	  ○ knowledge extractions
	  ○ pattern analysis
	  ○ information harvesting
	  ○ business intelligence.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • datasets • industry-recognised data mining tools and platforms

	• access to, or information related to, organisational and other stakeholders • computing hardware and software. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23696 Communicate data insights using visual graphical representations

Unit code	VU23696
Unit title	Communicate data insights using visual graphical representations
Application	This unit describes the performance outcomes, skills and knowledge required to effectively communicate data insights using visual graphical representation techniques. It includes the ability to select appropriate visualisation tools, interpret data patterns, and create visually compelling representations to convey insights to stakeholders. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		**Performance Criteria**	
1	Identify data visualisation requirements	1.1	Review documentation to determine the organisational need, value and usage for visualisations
		1.2	Determine the suitability of different types of visualisations for presenting organisational data
		1.3	Determine who is accessing the data visualisation, how they will access, from where and how frequently
		1.4	Identify intended audience characteristics in order to align visualisation type and function
2	Select appropriate visualisation tools	2.1	Evaluate and select data visualisation tools based on the data characteristics and intended audience
		2.2	Configure and customise visualisation tools to enhance their effectiveness for organisational needs
		2.3	Monitor and apply emerging trends and advancements in data visualisation technologies

3	Interpret data patterns and trends	3.1	Analyse data to identify relevant patterns, trends, and insights
		3.2	Apply statistical and analytical techniques to validate data insights
		3.3	Determine and document key messages and findings derived from the data analysis relevant to stakeholders of differing technical abilities
4	Create visual graphical representations	4.1	Develop visual graphical representations that effectively communicate data insights
		4.2	Choose appropriate visualisation types based on the characteristics of the data and the intended message.
		4.3	Incorporate design principles for visual clarity that incorporate accessibility standards
5	Customise communication to stakeholder needs	5.1	Identify and incorporate the needs and preferences of different stakeholders
		5.2	Adapt visual graphical representations to suit the technical expertise and understanding of the target audience
		5.3	Provide context and explanations to enhance stakeholder comprehension of data insights

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication skills to:	Explain graphical reports to stakeholders verbally

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template

Title	Assessment Requirements for VU23696 Communicate data insights using visual graphical representations
Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and communicated data insights using graphical representations at least twice, including to: • apply the principles of data visualisation effectively to an organisational context • select and configure an appropriate data visualisation tool to meet organisational requirements • interpret data patterns and trends accurately, accompanied with suitable explanation for an organisational audience • create graphical representations that demonstrate data insights using three different visualisation types.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	
	• data analysis concepts, including:
	  ○ descriptive statistics
	  ○ inferential statistics
	  ○ data modelling
	
	• data visualisation principles, including:
	  ○ choice of chart types
	  ○ colour usage
	  ○ layout design
	
	• graphical representation techniques, including:
	  ○ bar charts
	  ○ line charts
	  ○ pie charts
	  ○ scatter plots
	  ○ heatmaps
	
	• common commercial and open-source visualisation tools
	
	• commonly found patterns, trends, and anomalies in data
	
	• data storytelling techniques, including:
	  ○ structure of narrative around data insights
	  ○ creating compelling stories
	  ○ guiding an audience through the visualisations to convey a clear message
	
	• ethical considerations when visualising data, including:
	  ○ avoiding misrepresentation
	  ○ ensuring data privacy
	  ○ providing accurate context
	
	• accessibility standards, including:
	  ○ colour-blindness
	  ○ readability
	  ○ usability.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • common industry computer hardware and graphical software applications • data visualisation tools and technologies • organisational data visualisation requirements • access to, or information related to, organisational and other stakeholders • datasets for practical application • documentation on design principles and best practices in data visualisation. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.

VU23697 Design and implement a data dashboard

Unit code	VU23697
Unit title	Design and implement a data dashboard
Application	This unit describes the performance outcomes, skills and knowledge required to design and implement a data dashboard for effective data visualisation and decision support. It includes the ability to apply data visualisation principles, select appropriate data sources, design user-friendly features, and implement interactive components. It applies to those who work individually or in a team on medium to large data analytics projects. They may work as support for data engineers and/or data scientists or to project teams engaged in business or organisational operations. No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		**Performance Criteria**	
1	Determine function and purpose of data dashboard	1.1	Review organisational and project objectives for data dashboard
		1.2	Consult stakeholders to establish role of data dashboard in decision support
		1.3	Assess the effectiveness and completeness of existing data presentation methods
2	Select data sources for dashboard	2.1	Evaluate and select relevant data sources based on the informational needs of stakeholders
		2.2	Evaluate data quality requirements and ensure data integrity for dashboard implementation
		2.3	Ensure ethical considerations and privacy requirements

			are applied to data selection
3	Design user-friendly dashboard	3.1	Identify key considerations for designing visualisations that convey meaningful insights
		3.2	Determine user requirements and expectations for the data dashboard
		3.3	Review and select available industry dashboard technologies that suit the dashboard objectives
		3.4	Design an intuitive user interface with clear navigation and information hierarchy
		3.5	Incorporate principles of user interface design for effective communication
4	Implement interactive features	4.1	Select and integrate appropriate interactive features to enhance user engagement
		4.2	Implement drill-down and filtering functionalities for detailed data exploration
		4.3	Review and adjust for responsiveness and compatibility with viewing devices and screen sizes
5	Test and validate dashboards	5.1	Conduct usability testing to ensure the dashboard meets user needs
		5.2	Validate data accuracy and reliability through testing and validation processes
		5.3	Gather feedback from stakeholders and make necessary adjustments to improve the dashboard performance
6	Deploy and maintain dashboards	6.1	Develop a deployment plan for the data dashboard
		6.2	Implement security measures to protect sensitive data within the dashboard
		6.3	Establish a maintenance schedule for regular updates and improvements

Range of Conditions

N/A

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading skills to:	Review organisation requirements for data and dashboard development
Writing skills to:	Develop a dashboard deployment plan for stakeholders
Oral communication skills to:	Discuss dashboard requirements with stakeholders
Numeracy skills to:	Perform statistical calculations to test dashboard validity

Unit Mapping Information	New unit, no equivalent unit

Assessment Requirements Template	
Title	Assessment Requirements for VU23697 Design and implement a data dashboard

Performance Evidence	There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and designed and implemented a data dashboard at least once, including to:
	• design a user-friendly dashboard interface, including:
	  ○ applying principles of data visualisation and user interface design
	  ○ selecting and applying organisational datasets
	  ○ utilising interactive features to enhance dashboard usability
	• prepare and apply a dashboard test plan to confirm operational functions, usability and accuracy.

Knowledge Evidence	The learner must be able to demonstrate essential knowledge required to effectively do the tasks outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:
	• data visualisation principles, including:
	  ○ chart types
	  ○ colour usage
	  ○ layout design
	  ○ clarity
	  ○ accuracy
	• user requirements analysis, including:
	  ○ gathering user requirements
	  ○ analysing user requirements
	  ○ use case analysis
	• data sources and integration, including:
	  ○ data integration techniques
	  ○ cleaning and pre-processing data
	• data quality assessment, including:
	  ○ addressing inconsistencies
	  ○ errors
	  ○ missing values
	• user interface design, including:
	  ○ navigation
	  ○ menus
	  ○ drill down features
	  ○ filters
	  ○ accessibility standards

	• data security and privacy, including:
	  ○ organisational and legislation compliance
	  ○ access controls
	  ○ restricting or limiting access to private and personally identifiable data
	• usability methods and techniques, including:
	  ○ domain specific language and terminology
	  ○ data storytelling
	• uses, features and capabilities of common industry data visualisation tools.

Assessment Conditions	This unit can be assessed either in the workplace or in a simulated workplace environment. Where the assessment is conducted in a simulated workplace then the context must reflect a realistic workplace environment. Learners must be provided with the following resources: • common industry hardware and software • access to data sources and relevant datasets for practical application • access to, or information related to, organisational and other stakeholders • data visualisation tools and technologies • documentation on data quality requirements, privacy and ethical considerations. Assessor requirements No specialist vocational competency requirements for assessors apply to this unit.