

22669VIC Certificate IV in Data Foundations

**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

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Section A – Copyright and course classification information

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2. Address	<p>Deputy CEO Victorian Skills Authority Department of Jobs, Skills, Industries and Regions (DJSIR) GPO Box 4509 MELBOURNE VIC 3001</p> <p>Organisational contact</p> <p>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</p> <p>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</p>
3. Type of submission	This submission is for accreditation of the Certificate IV in Data Foundations
4. Copyright acknowledgement	<p>The following units of competency have been imported from training packages administered by the Commonwealth of Australia:</p> <p>© Commonwealth of Australia</p> <p>BSB Business Services training package:</p> <ul style="list-style-type: none"> • BSBCRT411 Apply critical thinking to work practices • BSBPEF403 Lead personal development • BSBTEC404 Use digital technologies to collaborate in a work environment • BSBXBD402 Test big data samples <p>ICT Information and Communications Technology training package:</p> <ul style="list-style-type: none"> • ICTAII401 Identify opportunities to apply artificial intelligence, machine learning and deep learning • ICTDAT402 Clean and verify data • ICTDSN401 Design digital user interfaces • ICTPRG302 Apply introductory programming techniques • ICTPRG431 Apply query language in relational database • ICTPRG435 Write scripts for software applications.

	<p>22603VIC Certificate IV in Cyber Security:</p> <ul style="list-style-type: none"> • VU23216 Perform basic cyber security data analysis. <p>Copyright of this material is reserved to the Crown in the right of the State of Victoria. © State of Victoria (DJSIR) 2024.</p>
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<p>6. Course accrediting body</p>	<p>Victorian Registration and Qualifications Authority (VRQA)</p>
<p>7. AVETMISS information</p>	<p><i>ANZSCO code – 6 digit</i></p> <ul style="list-style-type: none"> • Australian and New Zealand Standard Classification of Occupations 224114 Data Analyst <p><i>ASCED Code – 4 digit</i></p> <p>Australian Standard Classification of Education</p> <ul style="list-style-type: none"> • Field of Education 0203 Information Systems <p><i>National course code</i></p> <p>22669VIC</p>
<p>8. Period of accreditation</p>	<p>1 July 2024 – 30 June 2029</p>

Section B – Course information

1. Nomenclature	Standard 4.1 and 5.8 AQTF 2021 Standards for Accredited Courses
1.1 Name of the qualification	Certificate IV in Data Foundations
1.2 Nominal duration of the course	Nominal duration of the course is 850 - 910 hours.
2. Vocational or educational outcomes	Standard 5.1 AQTF 2021 Standards for Accredited Courses
2.1 Outcome(s) of the course	<p>This course aims to provide the vocational outcomes required to support the growing industry need for entry level skills in data analytics.</p> <p>The course provides access to skills and knowledge required to support the data analytics function within organisations.</p> <p>The course provides participants with a range of general knowledge and skills to:</p> <ul style="list-style-type: none"> • use digital technologies • apply critical thinking • undertake written and oral communication • prepare reports • prepare presentations • understand the industry • work in an organisational context • work effectively in a team. <p>Technology based knowledge and skills include:</p> <ul style="list-style-type: none"> • entry level programming • understanding database • database query • understanding AI and machine learning • clean, verify and testing data samples • basic cyber security • basic data analytics tools • spreadsheets • understanding converting and formatting of data • basic statistical methods • describing patterns in datasets • applying visualisation tools. <p>Graduates will have career opportunities in typical digital roles including:</p> <ul style="list-style-type: none"> • junior data analyst • data administrator • data officer • reporting analyst • social media analyst • search engine marketer

- product and market researcher
- operations research.

2.2 Course description

The Certificate IV in Data Foundations is designed to support the development of entry level digital workers who perform IT support, basic analysis, administrative, data collation and clerical 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](#) | [Analysis and Policy Observatory](#))
(cited 30 May 2024)*

Industry Adoption: Industries such as finance, healthcare, retail, and telecommunications have been early adopters of data analytics, using it 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: [F6S Community](#))
(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 in providing support for the data function within organisations have emerged.

The Certificate IV in Data Foundations is targeted in providing graduates to operate within these new and emergent roles.

Need for Course

The National Skills Commission had 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 emerging 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 entry-level training that is fast to market and provides practical skill outcomes
- accessible entry courses that will allow for rapid career entry 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 an entry level digital workforce who can support the analytics specialists. These digital workers perform IT support, basic analysis, administrative, data collation and clerical functions.

It is essential that these new digital workers understand the basics of the data analytics processes and tools to support the growth in the demand.

The Certificate IV in Data Foundations provides a career pathway for new workers in this emerging field.

Typical digital roles at this level include:

- **Data Administrator:** Data administrators ensure that data is stored, organised, and accessible in a way that meets the needs of the data scientist/engineers. They implement data backups, data recovery, and monitor data governance to ensure data integrity and compliance with regulations. Data administrators provide the foundational support that enables data scientists/engineers to effectively leverage data for analysis, modelling, and deriving valuable insights.
- **Business Analyst:** Business analysts work closely with data scientists/engineers to understand business needs, define project requirements, and assist in ensuring that data analysis aligns with overall project goals.
- **Project Coordinator:** Project coordinators take on data project coordination responsibilities, ensuring that data-related tasks are completed on time and within budget. They may also facilitate communication between different teams involved in the data projects.
- **Data Officer:** Data officers work on data infrastructure and pipelines, collecting, cleaning, and transforming data to make it suitable for analysis.
- **Statistical Analyst:** Statistical analysts focus on applying statistical techniques to analyse data, build models, and identify correlations that can inform project strategies.
- **Data Visualisation Officer:** Data visualisation officers create graphs, charts, and dashboards to communicate complex information effectively.
- **Quality Assurance Analyst:** Quality assurance analysts perform data validation and verification to maintain data integrity.
- **Risk Analyst:** Risk analysts use data analysis to identify and mitigate risks proactively.

- **Operations Analyst:** Operations analysts focus on optimising processes and workflows within projects, using data analysis to identify bottlenecks, inefficiencies, and areas for improvement.
- **Market Research Analyst:** For projects involving market analysis or customer behaviour, market research analysts gather and summarise data related to market trends, competitors, and consumer preferences.
- **Financial Analyst:** In projects with financial implications, financial analysts analyse financial data to identify financial risks.
- **Reporting Analyst:** Reporting analysts work closely with data scientists to understand their analysis findings and transform them into clear, concise, and visually appealing reports, dashboards, and presentations.
- **Social Media Analyst:** The social media analyst supports a data scientist/engineer by specialising in the analysis of data derived from social media platforms. They collect, process, and structure vast amounts of social media data, including user interactions, engagement metrics, sentiment analysis and trends.
- **Search Engine Marketer:** The search engine marketer supports a data scientist/engineer by providing valuable data insights related to online advertising campaigns and search engine optimization (SEO) strategies.

Estimated demand

Presently there is a significant gap in demand versus supply of appropriately skilled entrants into the data analytics arena. The Institute of Analytics Professional 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. In the business context, this shortage has also trickled down to those who support the work of data professionals. (Reference: [Skills and Salaries Survey 2023 report](#))
(cited 30 May 2024)

For data analytics support work roles at this level, seek.com.au predicts grow rates over the next five years as:

- data administrator and data officer - 38.9%
- business analyst - 23.2%
- credit analyst - 22.3%
- financial analyst – 32.2%
- social media manager/analyst - 11.4%
- digital marketer/analyst - 11.4%
- market research analyst - 11.4%
- research analyst - 11%

(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 analysis. 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 entry-level data analysis 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 Certificate IV level qualification in that graduates will have:

Knowledge:

Graduates will have broad factual, technical and theoretical knowledge of Australian standards, legislation, codes of practice and industry guidelines related to data analytics.

Skills:

Graduates will have:

- 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 defined range of predictable and unpredictable problems. This includes applying and adapting methods, processes, and tools to data analysis in a variety of contexts.

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- specialist 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 assisting in the sourcing, processing and analysis of data sets, including identifying and reporting on trends and patterns
- with responsibility for own functions and outputs, including the selection and application of industry software tools
- with limited responsibility for the organisation of others, supervising small integrated technology work teams and in providing technical support.

The Volume of Learning for the Certificate IV in Data Foundations is typically in the range 0.5 - 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.
4.3 Recognition given to the course (if applicable)	N/A
4.4 Licensing/regulatory requirements (if applicable)	N/A



5. Course rules	Standards 5.8 and 5.9 AQTF 2021 Standards for Accredited Courses
5.1 Course structure	<p>To achieve the qualification 22669VIC Certificate IV in Data Foundations the learner must successfully complete a total of 20 units comprising:</p> <ul style="list-style-type: none"> • 2 core units, plus • 18 units which may be selected from: <ul style="list-style-type: none"> ○ Group A: Digital Work Practices (minimum 3 units) ○ Group B: Data Preparation (minimum 3 units) ○ Group C: Data Programming (minimum 2 units) ○ Group D: Data Analysis Foundations (minimum 5 units) ○ up to 3 imported units initially packaged in an endorsed training package or accredited course at AQF level IV or above. <p>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.</p> <p>Where the full qualification is not completed, a VET Statement of Attainment will be issued for each unit successfully completed</p>

Unit of competency code	Unit of competency title	Field of Education code (six-digit)	Pre-requisite	Nominal hours
CORE UNITS				
BSBCRT411	Apply critical thinking to work practices	080317	Nil	50
VU23677	Work with data in an industry context	020399	Nil	40
GROUP A: DIGITAL WORK PRACTICES				
BSBTEC404	Use digital technologies to collaborate in a work environment	080399	Nil	50
VU23678	Manage work tasks in a digital team	020399	Nil	30
VU23679	Apply organisational data policies	020399	Nil	40
BSBPEF403	Lead personal development	080305	Nil	40
GROUP B: DATA PREPARATION				
BSBXBD402	Test big data samples	020305	Nil	40
VU23682	Identify and harvest data for analysis	020307	Nil	60
VU23683	Convert and format data for analysis	020111	Nil	60
ICTDAT402	Clean and verify data	020305	Nil	50
GROUP C: DATA PROGRAMMING				
ICTPRG302	Apply introductory programming techniques	020103	Nil	40
ICTPRG431	Apply query language in relational database	020103	Nil	60
ICTPRG435	Write scripts for software applications	020103	Nil	40
GROUP D: DATA ANALYSIS FOUNDATIONS				
VU23680	Apply basic statistical methods for data analytics	010103	Nil	40
VU23681	Identify patterns and trends in data	010103	Nil	50
VU23684	Select and use industry data analytics tools	020307	Nil	40
VU23685	Perform descriptive data analytics	020307	Nil	60
ICTAI401	Identify opportunities to apply artificial intelligence, machine learning and deep learning	020119	Nil	40
VU23216	Perform basic cyber security data analysis	029901	Nil	20
ICTDSN401	Design digital user interfaces	020103	Nil	60
			Total nominal hours	850 - 910

Standard 5.11 AQTF 2021 Standards for Accredited Courses	
5.2 Entry requirements	<p>There are no specific entry requirements for this course.</p> <p>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.</p> <p>In addition, alignment with Level 3 of the Digital Literacy Skills Framework is recommended.</p> <p>Applicants with language, literacy, numeracy and digital literacy skills at levels lower than those recommended may require additional support to successfully undertake this course.</p>
Standard 5.12 and 5.14 AQTF 2021 Standards for Accredited Courses	
6. Assessment	
6.1 Assessment strategy	<p>All assessment, including Recognition of Prior Learning (RPL), must be compliant with the requirements of:</p> <ul style="list-style-type: none"> • 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, <p>or</p> <ul style="list-style-type: none"> • the Standards for Registered Training Organisations 2015 (SRTOs), <p>or</p> <ul style="list-style-type: none"> • the relevant standards and Guidelines for RTOs at the time of assessment. <p>Assessment strategies must therefore ensure that:</p> <ul style="list-style-type: none"> • 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. <p>Assessment strategies should be designed to ensure assessments:</p> <ul style="list-style-type: none"> • 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.
7. Delivery	Standards 5.12, 5.13 and 5.14 AQTF 2021 Standards for Accredited Courses
7.1 Delivery modes	<p>The Certificate IV in Data Foundations is suitable for delivery using the following modes:</p> <ul style="list-style-type: none"> • Face-To-Face • Online / eLearning • Blended Learning <p>This course may be delivered either full-time, part-time or self-paced.</p> <p>Related units of competency may be clustered for delivery whilst maintaining the integrity of requirements for each individual unit.</p> <p>In all modes of delivery, work integrated learning is preferable where applicable and practical.</p> <p>Delivery modes should encourage collaborative problem solving incorporating practical applications and outcomes and include team-based exercises where possible.</p>
7.2 Resources	<p>General facilities, equipment and other resources required to deliver the Certificate IV in Data Foundations include:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>Training must be undertaken by a person or persons in accordance with:</p> <ul style="list-style-type: none"> • 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,

	<p>or</p> <ul style="list-style-type: none"> the <i>Standards for Registered Training Organisations 2015 (SRTOs)</i>, <p>or</p> <ul style="list-style-type: none"> the relevant standards and Guidelines for RTOs at the time of course delivery.
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8. Pathways and articulation	Standard 5.10 AQTF 2021 Standards for Accredited Courses
	<p>Currently, there are no formal arrangements for articulation to other accredited courses or higher education qualifications.</p> <p>Credit for units completed may offer pathways into these endorsed qualifications and accredited courses:</p> <ul style="list-style-type: none"> BSB40120 Certificate IV in Business BSB50120 Diploma of Business ICT40120 Certificate IV in Information Technology ICT50220 Diploma in Information Technology 22603VIC Certificate IV in Cyber Security. <p>Graduates may wish to develop their professional career further by undertaking the Diploma of Data Analytics.</p>

9. Ongoing monitoring and evaluation	Standard 5.15 AQTF 2021 Standards for Accredited Courses
	<p>This course will be monitored and maintained by the Curriculum Maintenance Manager (CMM) – Business Industries.</p> <p>A review will take place during the course accreditation period.</p> <p>The review will be informed by feedback from:</p> <ul style="list-style-type: none"> course participants and graduates teaching staff industry representatives. <p>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.</p>

Section C – Units of competency

List of imported units of competency (total 11 units)

From Business Services Training Package:

- BSBCRT411 Apply critical thinking to work practices
- BSBPEF403 Lead personal development
- BSBTEC404 Use digital technologies to collaborate in a work environment
- BSBXBD402 Test big data samples.

From Information and Communications Technology Training Package:

- ICTAIL401 Identify opportunities to apply artificial intelligence, machine learning and deep learning
- ICTDAT402 Clean and verify data
- ICTDSN401 Design digital user interfaces
- ICTPRG302 Apply introductory programming techniques
- ICTPRG431 Apply query language in relational database
- ICTPRG435 Write scripts for software applications.

From Crown Copyright Accredited course:

- VU23216 Perform basic cyber security data analysis.

Units of competency developed for the course which comply with the AQTF 2021 Standards for Accredited Courses – Unit of Competency Template (total 9 units)

- VU23677 Work with data in an industry context
- VU23678 Manage work tasks in a digital team
- VU23679 Apply organisational data policies
- VU23682 Identify and harvest data for analysis
- VU23683 Convert and format data for analysis
- VU23680 Apply basic statistical methods for data analytics
- VU23684 Select and use industry data analytics tools
- VU23681 Identify patterns and trends in data
- VU23685 Perform descriptive data analytics.

VU23677 Work with data in an industry context

Unit code	VU23677
Unit title	Work with data in an industry context
Application	<p>This unit describes the performance outcomes, skills and knowledge required to effectively work with data and stakeholders in an industry context. It includes the ability to determine context and comply with data policies and procedures.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Determine industry context of data projects	1.1	Access and review background information on the organisation's use of data
		1.2	Determine the role of data projects within the organisation's operational model
		1.3	Research and document the industry functions, opportunities and challenges as they apply to data projects
		1.4	Clarify industry and context specific terminologies and processes with stakeholders
		1.5	Determine the impact relevant legislation, industry codes of practice, policy, guidelines and standards have on data projects
		1.6	Confirm data governance framework and cybersecurity policy with industry personnel
		1.7	Identify and comply with work health and safety (WHS) requirements in the workplace
2	Engage with data project stakeholders	2.1	Identify stakeholders and their roles in relation to data projects
		2.2	Clarify the goals and expectations of stakeholders
		2.3	Establish communication channels with stakeholders that support project processes

3	Apply organisational data policies	3.1	Utilise information management processes to support data analytics administration
		3.2	Organise, store and retrieve information in a structured digital environment
		3.3	Identify and protect personally identifiable information (PII) and implement data privacy policy
		3.4	Utilise industry protocols for codification of data assets

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 and interpret organisational policy and planning documentation
Writing skills to:	Communicate effectively with stakeholders using industry terminology
Oral communication skills to:	Ask questions in a professional manner to clarify information
Numeracy skills to:	Calculate and manipulate coding data
Initiative and enterprise skills to:	Act proactively in identifying workplace hazards

Unit Mapping Information	New unit, no equivalent unit
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Assessment Requirements Template

Title	Assessment Requirements for VU23677 Work with data in an industry context
Performance Evidence	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and work with data in an industry context at least once including to:</p> <ul style="list-style-type: none"> prepare a context overview for a workplace data project identifying relevant organisational policy, stakeholders and information processes. identify at least three impacts that current legislation has on the data project specify the roles and responsibilities of five stakeholders in the data project.

Knowledge Evidence	<p>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:</p> <ul style="list-style-type: none"> • organisation types including public company, private company, government, business, not-for-profit and startups • industry sectors classification • organisation structures • common project methodologies • purpose of project and implication of outcome • legislation, policy, codes of practice, guidelines and standards for relevant industries • intellectual properties, privacy, ethics and cyber security considerations • Work Health and Safety (WHS) requirements relevant to the industry sector • basic stakeholder management principles • digital file types including documents, spreadsheets, presentation tools, pdf, images, audio and video • information management processes including key steps of collect, storage, distribution, archiving and destruction. • codification and nomenclature including filename conventions, folder structure and version control.
Assessment Conditions	<p>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.</p> <p>Learners must be provided with the following resources:</p> <ul style="list-style-type: none"> • project information and related datasets • access to, or information related to, project stakeholders • relevant documentation including <ul style="list-style-type: none"> ○ workplace policies ○ codes and standards ○ manuals and reference material. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

VU23678 Manage work tasks in a digital team

Unit code	VU23678
Unit title	Manage work tasks in a digital team
Application	<p>This unit describes the performance outcomes, skills and knowledge required to identify tasks within the scope of a digital project and work collaboratively with team members to complete required tasks. It includes the ability to determine modes of work and plan and track task progress.</p> <p>This unit applies to those who work in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Identify tasks within the project	1.1	Confirm project scope with project manager or team leader
		1.2	Assist with deriving a list of tasks required to be completed and determine dependencies
		1.3	Estimate duration for each task
		1.4	Set priorities and sequencing of tasks
2	Establish mode of work	2.1	Discuss preferred collaboration channels with team members
		2.2	Determine the appropriate communication frequency and set up work platforms
		2.3	Review and select industry tools, methods and protocols
		2.4	Agree on file sharing and version control protocol
		2.5	Identify and comply with work health and safety (WHS) requirements in the workplace
3	Confirm task allocation	3.1	Discuss, agree and assign tasks in collaboration with team members

		3.2	Record task information on shared platform according to organisational procedure
4	Track task progress	4.1	Manage own task completion
		4.2	Conduct regular reviews of team progress and effectiveness of tools, methods and protocols
		4.3	Propose solutions to overcome identified task obstacles
		4.4	Implement improvements to increase effectiveness and efficiency

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 reports, policy and procedures
Numeracy skills to:	Apply basic mathematical calculations to estimate task duration
Learning skills to:	Modify behaviour to apply new tools for collaboration and project management
Digital literacy skills to:	Operate common industry digital search tools to obtain information on tools and processes

Unit Mapping Information

New unit, no equivalent unit.

Assessment Requirements Template

Title	Assessment Requirements for VU23678 Manage work tasks in a digital team
Performance Evidence	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and managed work tasks in a digital team on at least two occasions including to:</p> <ul style="list-style-type: none"> contribute to planning team tasks with team members research and recommend tools, methods and protocols for use by a data project team

	<ul style="list-style-type: none"> • identify task items, assign to team members with associated timeline and register on a shared platform • track progress and implement solutions to meet planning requirements.
Knowledge Evidence	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • digital team characteristics • time management techniques • common project management methods • governance frameworks • Work Health and Safety (WHS) requirements relevant to the industry sector • basic principles of waterfall methodology including: <ul style="list-style-type: none"> ○ Work Breakdown Structure (WBS) ○ gantt chart • basic AGILE methodology including: <ul style="list-style-type: none"> ○ sprint planning ○ daily stand-ups ○ retrospectives • features and functions of common digital tools used for: <ul style="list-style-type: none"> ○ collaboration ○ project management ○ tasks tracking.
Assessment Conditions	<p>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.</p> <p>Learners must be provided with the following resources:</p> <ul style="list-style-type: none"> • collaboration platform or software • access to, or information related to, team members • project management tools • project brief and timeline • relevant documentation including: <ul style="list-style-type: none"> ○ workplace policies ○ codes and standards • manuals and reference material.

Assessor requirements

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

VU23679 Apply organisational data policies

Unit code	VU23679
Unit title	Apply organisational data policies
Application	<p>This unit describes the performance outcomes, skills and knowledge required to apply organisational data policies effectively in the context of data analytics projects. It includes understanding organisational data policies, implementing data governance practices, and ensuring compliance with relevant legislative requirements.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Identify organisational data policies	1.1	Identify and review organisational data policies and procedures
		1.2	Identify the key principles and objectives of the organisational data policies
		1.3	Interpret the legislative, industry and ethical basis for the

			organisations' data policies
2	Implement data governance practices	2.1	Establish checklists for data governance within the context of data analytics projects and tasks
		2.2	Communicate data governance practices to project stakeholders
		2.3	Monitor and ensure data quality standards as per organisational policies are maintained
3	Ensure compliance with legislative requirements	3.1	Monitor government and industry publications to stay informed about current legislative data protection and privacy regulations
		3.2	Interpret and apply relevant legislative regulations to data analytics procedures in conjunction with legal advisors
		3.3	Implement regular reviews to ensure ongoing compliance with data regulations in data analytics projects and tasks
4	Report on data policy compliance	4.1	Update risk and issues databases to reflect data compliance events
		4.2	Audit compliance data to identify level of adherence to organisational data policies
		4.3	Generate event reports and document a review of the status of compliance within data analytics project

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:	Discuss compliance requirements with other team members
Numeracy skills to:	Calculate discrepancies in data when they impact compliance
Initiative and enterprise skills to:	Identify risks and issues associated with data compliance

Digital literacy skills to:	Operate common internet tools to key up to date with industry changes
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Unit Mapping Information	New unit, no equivalent unit.
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Assessment Requirements Template

<p>Title</p>	<p>Assessment Requirements for VU23679 Apply organisational data policies</p>
<p>Performance Evidence</p>	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and applied organisational data policies at least once including to:</p> <ul style="list-style-type: none"> • prepare a checklist to show how data compliant policies can be implemented in a workplace data analytics project • determine at least three cases where workplace data policies can be breached and recommend ways to ensure compliance • establish a workplace resource of current legislative requirements for data analytics projects and tasks.
<p>Knowledge Evidence</p>	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role.</p> <p>This includes knowledge of:</p> <ul style="list-style-type: none"> • organisation data policies, including those found in: <ul style="list-style-type: none"> ○ employee operational manuals ○ codes of conduct ○ data governance framework ○ IT policy and procedures manual ○ privacy policy ○ data security policy ○ confidentiality agreements ○ training materials ○ intranet and internet portals ○ risk management plans ○ contracts and agreements ○ communication and email policies. • key data policy principles, including: <ul style="list-style-type: none"> ○ data privacy



- data security
 - data integrity
 - transparency
 - consent management
 - data governance
 - legislative compliance
 - data ethics
 - data accuracy and quality
 - data access control
 - retention and disposal
 - data life cycle management.
- current legislative, industry and ethical basis of data policies, including for:
 - privacy
 - notifiable data breaches
 - health records
 - telecommunications
 - business operations
 - cyber security
 - electronic transactions
 - criminal code
 - spam
 - surveillance devices
 - consumer data rights.

**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:

- organisational data policy documents for a data project
- relevant and current data legislation and regulation documents
- access to, or information related to, organisational and other stakeholders
- computer hardware and business software tools
- internet search facility
- issues and risk databases for at least two data projects.

Assessor requirements

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

VU23682 Identify and harvest data for analysis

Unit code	VU23682
Unit title	Identify and harvest data for analysis
Application	<p>This unit describes the performance outcomes, skills and knowledge required to identify and harvest relevant data for use in data analytics analysis. It includes understanding the data requirements, selecting appropriate data sources, and employing effective data harvesting techniques in compliance with relevant legislation and codes of practice.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Define data requirements	1.1	Analyse the purpose and objectives of the data analysis
		1.2	Identify the specific data requirements for the analysis
		1.3	Apply ethical and legal implications in defining data requirements
2	Select data sources	2.1	Identify potential data sources relevant to the analysis
		2.2	Evaluate the quality, reliability, and relevance of potential data sources
		2.3	Apply data security and privacy requirements when selecting sources

3	Ensure compliance	3.1	Adhere to relevant legislative data protection and privacy regulations
		3.2	Implement security measures to protect harvested data from unauthorised access
		3.3	Obtain necessary permissions and consents for data harvesting activities
4	Conduct data harvesting	4.1	Select the tools and technologies needed for data harvesting
		4.2	Identify and mitigate potential risks associated with data harvesting
		4.3	Undertake data harvesting according to established procedures and organisational protocol
		4.4	Monitor and adjust data harvesting processes to ensure accuracy and completeness
5	Evaluate and report on processes	5.1	Evaluate the quality and integrity of harvested data
		5.2	Identify and address issues and discrepancies in the harvested data
		5.3	Document findings and provide recommendations for improvement

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 task briefs and instructions
Numeracy skills to:	Identify and compare harvested data for integrity

Learning skills to:	Reflect and improve on processes
Digital literacy skills to:	Use general business digital tools in the workplace

Unit Mapping Information	New unit, no equivalent unit.
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Assessment Requirements Template

<p>Title</p>	<p>Assessment Requirements for VU23682 Identify and harvest data for analysis</p>
<p>Performance Evidence</p>	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and identified and harvested data for analysis at least once including to:</p> <ul style="list-style-type: none"> • prepare a specification for a data harvesting activity • harvest data from at least two data sources • establish measures to maintain security of data and protect privacy • assess harvested data for discrepancies and recommend solutions to improve quality of data • prepare a report on harvesting processes and findings.
<p>Knowledge Evidence</p>	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role.</p> <p>This includes knowledge of:</p> <ul style="list-style-type: none"> • data harvesting technologies, including: <ul style="list-style-type: none"> ○ manual processes ○ automated processes ○ web scraping ○ search bots ○ pattern matching ○ text analysis. • sources of data, including: <ul style="list-style-type: none"> ○ customer data ○ social media platforms ○ web data ○ financial data ○ sales and revenue data ○ organisation systems



- supply chain
- industry reports
- competitor analysis
- historical and real time data.

- data characteristics, including:
 - quality
 - reliability
 - relevance.

- data security and privacy requirements, including:
 - legislation
 - PII (personally identifiable information)
 - industry codes of practice
 - ethical and cultural expectations
 - consent and permission processes and requirements.

- commercial and open-source data harvesting tools and technologies.

**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:

- sources of data for harvesting
- computer hardware and software
- project and task documentation
- data harvesting tools and technologies.

Assessor requirements

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

VU23683 Convert and format data for analysis

Unit code	VU23683
Unit title	Convert and format data for analysis
Application	<p>This unit describes the performance outcomes, skills and knowledge required to clarify data conversion instructions, work to agreed acceptance criteria, select and apply suitable data conversion and formatting tools and process, test data for validity and integrity, and present reports on conversion processes and outcomes.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Clarify work instructions	1.1	Identify business context for data formatting tasks from organisational plans
		1.2	Review and confirm project brief and associated task instructions
		1.3	Identify acceptable criteria for completion time, error and data validity
2	Access data sources	2.1	Determine sources of data to be formatted
		2.2	Implement processes and procedures required to obtain access to data

		2.3	Determine levels of security and compliance required for working with the data
		2.4	Obtain raw data and secure in accordance with organisation and compliance requirements
3	Select and apply processes and tools	3.1	Determine methods for data conversion in consideration of the data type and acceptance criteria
		3.2	Access and use industry tools for data conversion and formatting
4	Undertake data conversion and formatting	4.1	Prepare working copy of data and isolate and store original raw data
		4.2	Apply tools and methods to working copy of data for conversion and formatting tasks
		4.3	Review sample data to confirm success of processes
5	Test and prepare converted data	5.1	Select industry standard methods and tools to confirm validity and integrity of data
		5.2	Apply tests to converted data and report against acceptance criteria
		5.3	Complete additional conversion and formatting process to meet requirements
		5.4	Encrypt and secure completed and tested data to meet organisation and compliance requirements
6	Complete and report conversion process	6.1	Prepare data conversion report to meet audit requirements
		6.2	Document tasks completed and methods used to ensure traceability

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 and apply work instructions for data conversion tasks
Oral communication skills to:	Seek clarification relating to work instructions and task performance requirements
Numeracy skills to:	Calculate data to verify and determine accuracy
Teamwork skills to:	Collaborate with team members to ensure common understanding of task requirements

Unit Mapping Information	New unit, no equivalent unit.
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Assessment Requirements Template

<p>Title</p> <p>Performance Evidence</p>	<p>Assessment Requirements for VU23683 Convert and format data for analysis</p> <p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and converted and formatted data for analysis at least once including to:</p> <ul style="list-style-type: none"> • access data from at least two different sources and data formats • use software tools to convert and merge data into a common format • test merged data for validity and integrity • maintain data security and compliance with policy and procedures • prepare a written report on conversion and formatting operations undertaken.
<p>Knowledge Evidence</p>	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in the elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • current industry data conversion and formatting tools, including: <ul style="list-style-type: none"> ○ electronic spreadsheet ○ Python ○ R ○ SQL. • integrated data management tools for extraction, loading and transformation • common industry data formats, including: <ul style="list-style-type: none"> ○ structured and unstructured text ○ numerical data ○ flat file and relational databases ○ XML ○ JSON. • version control systems • industry and organisational operating procedures, including: <ul style="list-style-type: none"> ○ compliance with current legislation impacting on data access, use and storage ○ security ○ filename conventions.

**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:

- at least two raw datasets
- computing equipment with data processing capability
- software tools for data access and management
- software tools for processing:
 - cleaning
 - verifying
 - transforming
- internet services
- data management policy and procedures.

Assessor requirements

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

VU23680 Apply basic statistical methods for data analytics

Unit code	VU23680		
Unit title	Apply basic statistical methods for data analytics		
Application	<p>This unit describes the performance outcomes, skills and knowledge required to apply basic statistical methods to data to draw meaningful insights and conclusion to support decision making. It includes the ability to summarise the features of a dataset and draw conclusions based on a given sample.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>		
Pre-requisite Unit(s)	N/A		
Competency Field	N/A		
Unit Sector	N/A		
Element	Performance Criteria		
1	Examine dataset and prepare for analysis	1.1	Confirm business problem with stakeholders
		1.2	Review the dataset and sampling technique to identify limitations and potential biases for valid analysis
		1.3	Assess suitability and select basic statistical methods aligned to the business problem and dataset characteristics
		1.4	Pre-process data for selected statistical methods
2	Apply statistical data analysis	2.1	Apply basic statistical methods, including measures of central tendency, dispersion, and correlation
		2.2	Create basic graphical representations to explore data patterns
		2.3	Make inference based on sample data to address the business problem
		2.4	Consult with subject matter expert to validate findings
3	Produce insights from data	3.1	Draw conclusions and make recommendations based on data analysis
		3.2	Document and convey findings to support decision making

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:	Document statistical project reports and findings clearly
Oral communication skills to:	Provide verbal explanations relating to data and insights

Unit Mapping Information	New unit, no equivalent unit.
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Assessment Requirements Template

Title	Assessment Requirements for VU23680 Apply basic statistical methods for data analytics
Performance Evidence	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and applied basic statistical methods for data analytics on at least two occasions including to:</p> <ul style="list-style-type: none"> • complete basic statistical data analysis tasks demonstrating the application of basic statistical methods • prepare a graphical representation of findings relevant to a business problem • communicate results of basic statistical analysis in written or verbal format.
Knowledge Evidence	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • data sampling methods, sample size and implications • descriptive statistics for summarising characteristics of data, including: <ul style="list-style-type: none"> ○ central tendency of the dataset (mean, median, mode) ○ dispersion of the dataset (standard deviation, variance). • graphical representation methods, including:

	<ul style="list-style-type: none">○ histograms○ scatter plots○ frequency distribution.
Assessment Conditions	<p>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.</p> <p>Learners must be provided with the following resources:</p> <ul style="list-style-type: none">• datasets for analysis• access to stakeholders• tools for statistical analysis• relevant documentation including<ul style="list-style-type: none">○ workplace procedures○ codes and standards○ manuals and reference material. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

VU23684 Select and use industry data analytics tools

Unit code	VU23684		
Unit title	Select and use industry data analytics tools		
Application	<p>This unit describes the performance outcomes, skills and knowledge required to select and apply appropriate industry tools to datasets. It includes the ability to identify task requirements, select suitable analytics tools and review the effectiveness of the tools.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>		
Pre-requisite Unit(s)	N/A		
Competency Field	N/A		
Unit Sector	N/A		
Element	Performance Criteria		
1	Identify data analytics tasks that require tools	1.1	Confirm requirements of the data analytics tasks
		1.2	Clarify the expected outcome of the tasks
		1.3	Assess and document privacy, security, duration and budget constraints
2	Select industry tool	2.1	Research and identify data analytics tools that are suitable for each task
		2.2	Compare and select suitable tools for the task requirements and expected outcomes
		2.3	Consult with key stakeholder for approval
		2.4	Acquire or access the tools according to copyright, licensing or purchasing arrangements
3	Apply the selected tools	3.1	Apply the selected tools to the analytics tasks
		3.2	Obtain feedback from stakeholders and assess the functionality of the tools
		3.3	Review and make modification to documented processes for future improvement

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:	Use clear language, listening and questioning techniques to confirm requirements, seek approval and obtain feedback

Unit Mapping Information	New unit, no equivalent unit.
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Assessment Requirements Template

Title	Assessment Requirements for VU23684 Select and use industry data analytics tools
Performance Evidence	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and selected and used industry data analytics tools at least once including to:</p> <ul style="list-style-type: none"> • select and use industry data analytics tools for one data set that includes: <ul style="list-style-type: none"> ○ dataset manipulation ○ data visualisation ○ reporting insights. • apply the tools to: <ul style="list-style-type: none"> ○ processing the dataset and performing analysis ○ producing graphs and charts to illustrate complex information in a coherent format ○ assisting in communicating with stakeholders on the selection and use of tools.
Knowledge Evidence	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • common data formats, including: <ul style="list-style-type: none"> ○ spreadsheet

	<ul style="list-style-type: none">○ CSV files○ databases. • commercial and open-source tools related to data analytics• features, functions and limitations of data analytics tools• data manipulation process including data cleaning and converting formats• common graphical representations produced by visualisation tools.
Assessment Conditions	<p>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.</p> <p>Learners must be provided with the following resources:</p> <ul style="list-style-type: none">• common industry data analytics tools• computer hardware and software• access to data scenarios• access to data analytics task stakeholders• relevant documentation including<ul style="list-style-type: none">○ workplace procedures○ codes and standards○ manuals and reference material. <p>Assessor requirements</p> <p>No specialist vocational competency requirements for assessors apply to this unit.</p>

VU23681 Identify patterns and trends in data

Unit code	VU23681
Unit title	Identify patterns and trends in data
Application	<p>This unit describes the performance outcomes, skills and knowledge required to undertake basic analysis of datasets and identify patterns and trends, working within project parameters. It includes the ability to select and apply suitable methods and tools, review patterns and trends for validity, and present reports on processes and outcomes.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Identify purpose and context of analysis	1.1	Research and identify business context for analysis project and data source
		1.2	Obtain task instructions and identify potential application of findings
		1.3	Review and confirm clarification of tasks required
		1.4	Identify acceptance criteria for completion time, error tolerance, reliability and data quality
2	Confirm reliability of dataset	2.1	Identify origin of dataset and evaluate level of reputational trust in data quality
		2.2	Access and review the dataset to identify variables and assess data quality
		2.3	Apply data cleaning and preprocessing techniques to ensure data integrity

		2.4	Evaluate dataset for completeness, consistency and accuracy to meet task requirements
3	Select methods and tools	3.1	Evaluate alternative methods to identify patterns and trends in the dataset
		3.2	Select suitable industry tools to conduct analysis
		3.3	Access and use industry tools for identifying patterns and trends in datasets
4	Determine patterns and trends	4.1	Select and apply basic statistical tools to establish volume and frequency of repetitions against targeted time scales
		4.2	Identify and apply data visualisation techniques to represent identified patterns
		4.3	Interpret and document findings within the context of task instructions and potential applications
		4.4	Identify ethical considerations and potential bias in findings
5	Report on patterns and trends in data	5.1	Adapt communication style for both technical and non-technical respondents
		5.2	Report on tasks, tools, methods and outcomes achieved against task requirements

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 work task documentation
Oral communication skills to:	Seek verbal clarification regarding tasks from team members and leaders
Digital literacy skills to:	Research online using common industry hardware and software tools
Unit Mapping Information	New unit, no equivalent unit.

Assessment Requirements Template

<p>Title</p> <p>Performance Evidence</p>	<p>Assessment Requirements for VU23681 Identify patterns and trends in data</p> <p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit and identified data patterns and trends on at least two occasions including to:</p> <ul style="list-style-type: none"> • evaluate a dataset for reliability when used to determine patterns and trends • conduct basic data processing to prepare a dataset for analysis • perform statistical analysis on a dataset using at least two of the following tools: <ul style="list-style-type: none"> ○ dispersion ○ central tendency ○ regression analysis. • present patterns and trends identified in a dataset using at least two of these tools: <ul style="list-style-type: none"> ○ chart ○ table ○ plot ○ diagram.
<p>Knowledge Evidence</p>	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in the elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • common industry project and task acceptance criteria for: <ul style="list-style-type: none"> ○ time ○ scope ○ quality. • the characteristics of reliable data, including: <ul style="list-style-type: none"> ○ accuracy ○ completeness ○ relevance ○ timeliness. • types, structure and sizes of datasets found in industry • basic statistical methods, including: <ul style="list-style-type: none"> ○ measures of central tendency ○ dispersion ○ regression analysis ○ hypothesis testing. • programming languages and data analysis libraries to manipulate and analyse large datasets, including:

- Python
- R.
- common industry data visualisation tools, including:
 - tables
 - charts, including pie, bar, line, area, cone, bullet
 - diagrams
 - plots
 - geospatial
 - maps
 - dashboards.
- common industry commercial and open-source software, including for:
 - identifying patterns and trends
 - preparing data visualisations.

**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:

- at least two datasets for analysis
- computer hardware and software
- project and task documentation
- access to, or information on, project stakeholders
- statistical analysis software and tools
- data visualisation software and tools.

Assessor requirements

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

VU23685 Perform descriptive data analytics

Unit code	VU23685
Unit title	Perform descriptive data analytics
Application	<p>This unit describes the performance outcomes, skills and knowledge required to perform the full spectrum of tasks using empirical data. This includes the ability to collect and clean data and determine insights using descriptive data analytics. Findings are presented using verbal, written and visualisation tools, and processes are reviewed for continuous improvements.</p> <p>This unit applies to those who work individually or in a team on medium to large scale data analytics projects. They work as support for data engineers, data scientists and for project teams engaged in business or organisational operations.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Pre-requisite Unit(s)	N/A
Competency Field	N/A
Unit Sector	N/A

Element		Performance Criteria	
1	Preprocess data for analysis	1.1	Identify business requirements and relevant data sources for descriptive analysis
		1.2	Collect and convert raw data into usable format
		1.3	Clean the datasets according to organisational and industry standards
		1.4	Document transformation and modifications made to the data for audit
2	Perform exploratory data analysis	2.1	Conduct basic statistical analysis to reveal characteristics of dataset
		2.2	Develop visual representations for data interpretation
		2.3	Analyse data using industry tools to identify patterns and trends
		2.4	Detect outliers and recommend further analysis
		2.5	Document steps taken, assumptions made and decisions in the process
3	Provide insights to address the business problem	3.1	Interpret data patterns and trends against business requirements to reveal insights
		3.2	Present summary of findings in a clear manner
		3.3	Prepare report to communicate insights to both technical and non-technical stakeholders

4	Contribute to quality assurance and continuous improvement	4.1	Perform checks to maintain data quality, consistency and integrity throughout the process
		4.2	Incorporate feedback for refining analysis, visualisation and reports
		4.3	Incorporate lessons learned in planning for improvement in future descriptive analysis

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 instructions and requirements associated with the analytics tasks

Unit Mapping Information	New unit, no equivalent unit.
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Assessment Requirements Template

<p>Title</p>	<p>Assessment Requirements for VU23685 Perform descriptive data analytics</p>
<p>Performance Evidence</p>	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit, and performed descriptive data analytics at least twice including to:</p> <ul style="list-style-type: none"> • complete the descriptive data analytics process in a project using industry tools • document procedures used in the collection, formatting and cleaning of source data • prepare a written descriptive analytics report.
<p>Knowledge Evidence</p>	<p>The learner must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the tasks and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • Exploratory Data Analysis (EDA), including: <ul style="list-style-type: none"> ○ summary statistics including key characteristics of a dataset ○ data visualisation including creating basic charts and plots ○ correlation analysis. • data cleaning process, including: <ul style="list-style-type: none"> ○ duplicates removal ○ handling missing or inconsistent data points. • data types, including: <ul style="list-style-type: none"> ○ numeric ○ categorical ○ time-series. • basic data analytics tools, including: <ul style="list-style-type: none"> ○ spreadsheet ○ statistical software ○ 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:

- datasets for two different projects
- data analysis and presentation tools
- access to common industry hardware and software
- access to, or information on, project stakeholders

Assessor requirements

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