

Program Information Document



ICT50220 Diploma of Information Technology (Systems Administration) & (Cloud Engineering)

This qualification comes from a training package developed by the Commonwealth Government for Information and Communications Technology (ICT) defining core and elective competency units. We've chosen specific elective units from the training package, based on input from industry experts, to address South Australia's workforce requirements.

This ICT50220 National Training Package qualification reflects the role of individuals who are job ready and competent in a wide range of information and communications technology (ICT) roles and apply a broad range of skills in varied work contexts, using problem solving skills and effective communication with others.

The skills required for these roles may include, but are not restricted to:

Systems Administration

- > reviewing maintenance procedures
- > support to help troubleshoot system applications

Cloud Engineering

- > building, implementing and managing cloud infrastructure and virtual networks

Employment Opportunities

- > Assistant ICT manager
- > Assistant systems manager
- > Internet/intranet administrator
- > Internet/intranet systems administrator
- > Systems administrator
- > Help Desk Support
- > Cloud engineer
- > ICT manager
- > Network Administrator
- > Senior Systems Engineer
- > Systems Administrator
- > Systems Engineer
- > Network Engineer
- > Assistant Systems Manager

The recommended full-time study plan, see below, will require 12 months of study to complete this qualification.

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Course Admissions Requirements

The formal entry requirement for this course is:

- > Certificate IV in Information Technology (Systems Administration Support)

If you do not have a Certificate IV in Information Technology (Systems Administration Support) but other relevant qualifications or industry experience, you may wish to email admissions@tafesa.edu.au to discuss.

Information on the contents of the Certificate IV in Information Technology (System Administration Support) can be found here:

[Certificate IV in Information Technology \(Systems Administration Support\) Program Information Document](#)

Incidental Costs

You will be required to provide your own access to the following hardware. This hardware costs approximately \$700.00.

- > 1TB SSD portable hard drive
- > Webcam
- > Headset with microphone
- > Raspberry Pi 4 (or higher) Starter Kit with minimum 4GB and minimum 16GB SD card. Accessories required are as following:
 - > PIR Motion Sensor (compatible with your Raspberry Pi)
 - > Raspberry Pi Camera Module 3 with cable suitable for your Pi
 - > Temperature and Humidity Sensor - DHT22 (SEN0137)
 - > Fingerprint Sensor - Basic Fingerprint Sensor with Socket Header Cable (ADA4690)
 - > 150mm Socket to Socket (F to F) Jumper Leads

Note: Students who have access to the Raspberry Pi Kit with PIR motion sensor and camera module, may need only to purchase the temperature and humidity sensor and fingerprint sensor

Software

All software required to complete this course will be available for students at no additional cost.

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Hardware

Access to computer hardware is provided at certain TAFE SA campuses.

It is important to note that for students studying this course and not able to attend a suitable campus it will be assumed that you have the necessary computer hardware to run the required resources. You will need to have a Windows machine with the following as a minimum.

- > Intel i5 CPU (or equivalent AMD), (Intel i7, recommended)
- > 16GB of RAM, (32GB, recommended)
- > 1Tb SSD

Note: Apple MAC notebooks are not compatible with some of the software required for this course and cannot be supported.

Internet

To study away from a campus you will be required to have internet access.

This qualification requires students to use virtual machines for learning activities and assessments. Students will be required to obtain these from either their local campus or from the Internet. Virtual machine file sizes can vary but are generally above 20GB in size. The time to download these virtual machines from the Internet may vary depending on your Internet connection speed.

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Required Competencies

Diploma of Information Technology (Systems Administration) & (Cloud Engineering)
 National Code: ICT50220 TAFE SA Code: TP01273

This table shows the units of competency that you must have on your academic record to achieve this qualification. The National Training Package requires 20 units. The units are listed in the sequence that you should complete them. This is particularly important for part-time students. Standard study plans are provided below. The table also provides details of any assumed knowledge and skills for each unit. You must have these skills before attempting these units.

Units of Competency (listed in delivery sequence)			
Unit Code	Unit Title	Core/Specialist Elective/Elective	Assumed knowledge & skills
ICTCLD505	Implement cloud infrastructure with code	Specialist Elective	ICTNWK428
ICTCLD507	Build and deploy resources on cloud platforms	Specialist Elective	ICTNWK428
ICTNWK428	Create scripts for networking	Elective	None
BSBXCS402	Promote workplace cyber security awareness and best practices	Core	None
ICTNWK559	Configure and manage advanced virtual computing environments	Elective	None
ICTCYS407	Gather, analyse and interpret threat data	Elective	None
ICTSAS518	Install and upgrade operating systems	Specialist Elective	None
ICTSAS527	Manage client problems	Core	None
ICTSAS524	Develop, implement and evaluate an incident response plan	Specialist Elective	ICTCYS407
ICTICT532	Apply IP, ethics and privacy policies in ICT environments	Core	None
ICTICT517	Match ICT needs with the strategic direction of the organisation	Core	None
ICTIOT501	Install IoT devices and networks	Elective	ICTSAS518
ICTNWK615	Design and configure desktop virtualisation	Specialist Elective	ICTNWK559
BSBXBD403	Analyse big data	Elective	None
ICTCLD506	Implement virtual network in cloud environments	Specialist Elective	None
ICTCLD508	Manage infrastructure in cloud environments	Specialist Elective	None
ICTSAS512	Review and manage delivery of maintenance services	Specialist Elective	None
ICTSAS529	Prioritise ICT change requests	Elective	None
BSBXTW401	Lead and facilitate a team	Core	None
BSBCRT512	Originate and develop concepts	Core	None

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Study Plan for Full-Time Students (12 months)

The following table shows the recommended study plan for the Diploma in Information Technology (System Administration) & (Cloud Engineering). Each stage is one semester (or 6 months) in length. Codes in brackets are the IT Subject names which are described in the Subject table below.

Stage 1	
Term 1	Term 2
ICTCLD505 ICTCLD507 CLD5C2AZA (4)	
ICTNWK559 NWK5C2HVS (2)	
BSBXCS402 XCS402 (2) #	ICTSAS527 SAS527 (2)
ICTCYS407 CYS407SPB (2)	ICTSAS518 SAS518LXA (4)
ICTICT532 ICT532 (2) #	ICTNWK428 NWK428PSS (4)
ICTSAS524 SAS524IRP (2)	
IT Practical (6)	IT Practical (4)
20 hrs / week	20 hrs / week

Stage 2	
Term 1	Term 2
ICTICT517 ICT517 (2)	
ICTIOT501 IOT501 (2)	
ICTNWK615 NWK615DAS (2)	
ICTCLD506 ICTCLD508 CLD5C2ACO (2)	
ICTSAS512 SAS512ISM (2)	ICTSAS529 SAS529ISM (2)
BSBXTW401 XTW401 (2)	BSBCRT512 CRT512 (2) #
BSBXBD403* XBD403PBI (2)	
IT Practical (6)	IT Practical (8)
20 hrs / week	20 hrs / week

Please Note: This program structure is subject to change.

Legend:

- * BSBXBD403 is completed in Certificate IV in Information Technology (Systems Administration Support) so you will get status for this
- # Competencies delivered online are marked with a hash
- () The number in brackets after the subject is the number of hours per week that you would expect to attend class for that subject as a campus or virtual student.

IT Practical sessions provide support to complete subject activities and assessments.

NOTE: The study plan is for a full-time student with class-attendance. This is usually 20 hours a week of attendance. It is expected that an additional 12-15 hours would be required outside of class time to complete activities and assessments.

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Study Plan for Part-Time Students (24 months)

The following table shows the recommended study plan for studying the Diploma in Information Technology (System Administration) & (Cloud Engineering) as part-time (half-time). If a half-time plan does not meet your needs, you can study more or less subjects per term/semester, but you must follow the recommended sequence in the Required Competencies table above. Each stage is one semester (or 6 months) in length.

Stage 1	
Term 1	Term 2
ICTCLD505 ICTCLD507 CLD5C2AZA (4)	
BSBXCS402 XCS402 (2) #	ICTNWK428 NWK428PSS (4)
ICTICT532 ICT532 (2) #	
IT Practical (2)	IT Practical (2)
10 hrs / week	10 hrs / week

Stage 2	
Term 1	Term 2
ICTNWK559 NWK5C2HVS (2)	
ICTSAS524 SAS524 (2)	ICTSAS527 SAS527 (2)
ICTCYS407 CYS407SPB (2)	ICTSAS518 SAS518LXA (4)
IT Practical (4)	IT Practical (2)
10 hrs / week	10 hrs / week

Stage 3	
Term 1	Term 2
ICTICT517 ICT517 (2)	
ICTIOT501 IOT501 (2)	
ICTNWK615 NWK615DAS (2)	
BSBXBD403* XBD403PBI (2)	
IT Practical (2)	IT Practical (4)
10 hrs / week	10 hrs / week

Stage 4	
Term 1	Term 2
ICTCLD506 ICTCLD508 CLD5C2ACO (2)	
ICTSAS512 SAS512ISM (2)	ICTSAS529 SAS529ISM (2)
BSBXTW401 XTW401 (2)	BSBCRT512 CRT512 (2) #
IT Practical (4)	IT Practical (4)
10 hrs / week	10 hrs / week

Please Note: This program structure is subject to change.

Legend:

- * BSBXBD403 is completed in Certificate IV in Information Technology (Systems Administration Support) so you will get status for this
- # Competencies delivered online are marked with a hash
- () The number in brackets after the subject is the number of hours per week that you would expect to attend class for that subject as a campus or virtual student.

IT Practical sessions provide support to complete subject activities and assessments.

NOTE: The study plan is for a full-time student with class-attendance. This is usually 10 hours a week of attendance. It is expected that an additional 6-10 hours would be required outside of class time to complete activities and assessments.

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IT Studies Subjects

TAFE SA IT Studies uses subject codes to indicate the context that has been chosen for the unit, guided by industry needs in South Australia. For example, **CLD5C2AZA** indicates that the content for delivery of unit **CLD5C2AZA** will include coverage of Microsoft Azure Administrator (**AZA**).

The table below provided information on the context for each unit and provides the subject code that is used. If a subject contains more than one unit delivery and assessment will be done holistically so you will be awarded the same result for all units assessed in that subject that you have enrolled in. Your final official results will refer to the units.

Subject Descriptions

Unit Code	IT Studies subject code	Description
ICTCLD505	CLD5C2AZA	<p>This unit covers the end-to-end skills for developing, deploying, updating and maintaining cloud Infrastructure as Code (IaC) using platform templates—demonstrated with Microsoft Azure—and is aimed at cloud engineers, systems administrators and cloud operations staff.</p> <p>You will identify business benefits of IaC and automation, assess risks and IaC tool compatibility, learn template syntax and structure, review and deploy predefined templates, validate and troubleshoot deployments, develop and parameterise reusable templates to provision compute, storage, networking and identity resources, manage updates and rollbacks, and remove resources safely, and finally produce operational documentation and obtain stakeholder sign-off while managing security, cost and governance risks.</p>
ICTCLD507	CLD5C2AZA	<p>This unit describes the skills and knowledge required to configure, deploy and monitor a range of core cloud computing services on a cloud platform, using Microsoft Azure as the implementation example; it applies to cloud engineers, cloud systems administrators and cloud operations personnel who provision, implement and maintain cloud computing solutions for a business with little guidance or supervision.</p> <p>You will prepare for deployment by confirming tasks against business needs, identifying required cloud resources and organisational policies, and clarifying the purpose and planned use of each resource; you will then deploy and configure resources using repeatable, automatable interfaces and tools, define provisioning steps, document required tests, and implement monitoring. The unit also covers executing test plans to verify that resources meet business requirements, troubleshooting and resolving issues, and finalising work by documenting procedures and results, recommending automation to reduce manual steps, submitting outcomes to relevant personnel, and obtaining final sign-off.</p>
BSBXCS402	XCS402	<p>This unit describes the skills and knowledge required to promote cyber security in a work area.</p> <p>It applies to those working in a broad range of industries who as part of their job role support policies, procedures and practice within an organisation that promote cyber security.</p>
ICTICT532	ICT532	<p>This unit describes the skills and knowledge required to maintain professional and ethical conduct, as well as to ensure that personal information of stakeholders is handled in a confidential and professional manner when dealing with stakeholders in an Information and Communications Technology (ICT) environment.</p> <p>It applies to ICT personnel who are required to gather information to determine the organisation's code of ethics and protect and maintain privacy policies and system security.</p>

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Unit Code	IT Studies subject code	Description
ICTNWK428	NWK428PSS	<p>This unit describes the skills and knowledge required to automate Active Directory and Windows services with PowerShell scripts. This subject is taught using Active Directory and services hosted on MS Windows Server.</p> <p>It applies to those who are responsible for the maintenance and coordination of database operations. They usually work in an organisation providing daily services as database administrators, database developers, database coordinators, or application developers.</p>
ICTNWK559	NWK5C2HVS	<p>This unit describes the skills and knowledge required to develop and implement virtualisation technologies to implement and enhance the efficiency and reliability of the Information and Communications Technology (ICT) environment. The virtualisation technology used will be Hyper-V & vSphere</p> <p>It applies to individuals working in senior networking roles, and responsible for increasing the sustainability of an organisation or similar environment.</p>
ICTSAS524	SAS524	<p>This unit describes the skills and knowledge required to develop and implement an incident response plan. The results of the incident response plan must be evaluated if they affect the mission of the organisation.</p> <p>It applies to individuals who apply high-level technical skills and specialised knowledge to provide broad systems administration and support functions.</p>
ICTCYS407	CYS407SPB	<p>This unit describes the skills and knowledge required to gather data from various sources, analyse, and interpret information for threats, inconsistencies and discrepancies using Splunk software.</p> <p>It applies to individuals who work in information technology security, including network and security specialists, and gather logs from devices, check abnormalities and respond accordingly. These individuals are responsible for supporting and preventing cyber threats attacking data in all business functions and in any industry context.</p>
ICTSAS527	SAS527	<p>This unit focuses on the skills and knowledge needed to work closely with clients to help them manage, troubleshoot, and resolve ICT-related problems. You will learn how to communicate effectively, gather accurate information, provide informed advice, and support clients through the problem-solving process in a professional ICT environment.</p>
ICTSAS518	SAS518LXA	<p>This unit focuses on the skills and knowledge needed to install, upgrade, and maintain Linux operating systems. You will learn how to set up new Linux systems, apply updates, manage system components, and troubleshoot issues to keep environments stable and secure.</p> <p>Throughout the unit, you will work hands-on with Red Hat Enterprise Linux (RHEL) to gain real-world experience performing system administration tasks commonly used in industry.</p>
ICTICT517	ICT517	<p>This unit describes the skills and knowledge required to ensure information and communications technology (ICT) products and systems match the strategic direction of the organisation. Individuals will be working on a cloud based project involving migrating from on-premises to cloud.</p> <p>It applies to individuals whose responsibilities may include improving, evaluating, acquiring, maintaining and supporting ICT for organisations.</p>

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Unit Code	IT Studies subject code	Description
ICTIOT501	IOT501	<p>This unit describes the skills and knowledge required to install Internet of Things (IoT) devices and networks, including connecting, programming and testing devices and networks to meet specified performance objectives; it is intended for software developers, programmers and network engineers working as embedded systems engineers, IoT developers or senior software developers who possess basic electrical engineering knowledge, and the knowledge obtained may also apply to Security Analysts responsible for protecting IoT devices.</p> <p>You will prepare for installation by establishing and confirming task requirements, documenting environmental factors for sensor and device deployment, gathering programming requirements and organisational security needs, identifying remaining networking, software and installation architecture requirements, and lodging all preparatory documentation according to organisational procedures.</p> <p>During installation, you will set up networks to technical specifications, connect IoT devices to those networks, and configure sensors and device operational parameters aligned to specifications.</p> <p>Finalisation covers testing network and device connectivity against technical requirements, securing the devices, troubleshooting and resolving issues, documenting required system upgrades and installation outcomes, and lodging final documentation and reports per organisational requirements to obtain sign-off.</p>
ICTNWK615	NWK615	<p>This unit describes the skills and knowledge required to design, and configure, the desktop virtualisation technologies needed to support an enterprise virtualisation business solution.</p> <p>It applies to senior networking staff responsible for increasing the sustainability of an enterprise.</p>
BSBXBD403	XBD403PBI	<p>This unit describes the skills and knowledge required to analyse transactional and non-transactional big data using Power BI to provide insights that are used in an organisation. It involves identifying trends and relationships within big data and establishing data acceptability. It also involves forming recommendations based on the analysis and reporting on analysis findings.</p> <p>It applies to those who work in a broad range of industries and job roles using big data analysis techniques in their day-to-day work.</p>
ICTCLD506	CLD5C2ACO	<p>This unit describes the skills and knowledge required to design and configure a virtual network according to networking requirements for a multi-tiered application on an Amazon Cloud Services (AWS) platform.</p> <p>The unit applies to cloud engineers, cloud systems administrators and those who work within cloud computing operations to program, implement and maintain cloud computing solutions to support a business.</p>
ICTCLD508	CLD5C2ACO	<p>This unit describes the skills and knowledge required to configure, monitor, maintain and update resources running in an Amazon Cloud Services (AWS) environment.</p> <p>It applies to cloud engineers, cloud systems administrators and those who work within cloud computing environments and responsible for the day-to-day running of cloud resources.</p>
ICTSAS512	SAS512ISM	<p>This unit describes the skills and knowledge required to review and manage the delivery of maintenance services using ITSM (ISM) methodology based on ITIL framework.</p> <p>It applies to individuals with managerial experience and responsibility for supervising individuals working under their direct or indirect supervision.</p>

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ICTSAS529	SAS519ISM	<p>This unit describes the skills and knowledge required to analyse and prioritise change requests as part of managing Information and Communications Technology (ICT) systems that undergo continual change. ITIL framework will be used to implement ITSM (ISM) for change requests.</p> <p>It applies to experienced individuals who provide technical advice, guidance and leadership in the resolution of specified problems and may have responsibility for organising others.</p>
BSBXTW401	XTW401	<p>This unit describes the skills and knowledge required to effectively lead and facilitate a team in a workplace within any industry.</p> <p>This unit has a specific focus on the teamwork skills required for team leader or supervisor level (depending on organisational structure) workers with responsibility for others or teams</p>
BSBCRT512	CRT512	<p>This unit describes the skills and knowledge required to originate and develop concepts for products, programs, processes or services to an operational level. You will have a choice from two given scenarios to use your critical thinking, IT skills and software of your choice to provide a software solution as a project for this subject.</p> <p>The unit applies to individuals who develop concepts for any business or community activity or process. This may include marketing and advertising campaigns, staff development programs, information technology and communication systems, radio and television programs and entertainment events. These individuals operate with a high degree of autonomy and also collaborate with others to generate ideas and refine concepts for implementation.</p>