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.

Program Information Document

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.

Program Information Document

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.

Program Information Document

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	None
ICTCLD507	Build and deploy resources on cloud platforms	Specialist Elective	None
ICTNWK559	Configure and manage advanced virtual computing environments	Elective	None
ICTPRG443	Apply intermediate programming skills in different languages	Elective	None
BSBXCS402	Promote workplace cyber security awareness and best practices	Core	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

Program Information Document

Units of Competency (listed in delivery sequence) cont.			
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

Program Information Document

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)	
ICTPRG443 PRG443PYI (2)	
BSBXCS402 XCS402 (2) #	**ICTSAS527** SAS527 (2)
ICTCYS407 CYS407SPB (2)	**ICTSAS524** SAS524 (2)
ICTSAS518 SAS518LXA (4)	**ICTICT532** ICT532 (2) #
IT Practical (4)	**IT Practical (6)**
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)	
BSBXBD403* XBD403PBI (2)	
ICTSAS512 SAS512ISM (2)	**ICTSAS529** SAS529ISM (2)
BSBXTW401 XTW401 (2)	**BSBCRT512** CRT512 (2) #
IT Practical (6)	**IT Practical (6)**
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.

Program Information Document

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)	
ICTNWK559 NWK5C2HVS (2)	
ICTPRG443 PRG443PYI (2)	
IT Practical (2)	**IT Practical (2)**
10 hrs / week	**10 hrs / week**

Stage 2	
Term 1	**Term 2**
BSBXCS402 XCS402 (2) #	**ICTSAS527** SAS527 (2)
ICTCYS407 CYS407SPB (2)	**ICTSAS524** SAS524 (2)
ICTSAS518 SAS518LXA (4)	**ICTICT532** ICT532 (2) #
IT Practical (2)	**IT Practical (4)**
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 (2)**
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:

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.

Program Information Document

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 CLD5C2**AZA** 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**	This unit describes the skills and knowledge required to create and implement cloud infrastructure as code using cloud platform templates. This includes creating templates, then using the templates to create and update cloud infrastructure. Microsoft **Azure** is the cloud computing platform that will be used to create and implement the cloud IAC. 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 for a business.
ICTCLD507	**CLD5C2AZA**	This unit describes the skills and knowledge required to configure, deploy and monitor a range of technology resources of core cloud computing service on a cloud platform. Microsoft **Azure** is the cloud computing platform that will be used to deploy the cloud services. The unit applies to cloud engineers, cloud systems administrators and those who work within cloud computing operations to provision, implement and maintain cloud computing solutions for a business with little guidance or supervision. These ICT professionals may work from designs developed by cloud architects and focus on operational concerns, including automation and maintaining cloud resources.
ICTNWK559	**NWK5C2HVS**	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** It applies to individuals working in senior networking roles, and responsible for increasing the sustainability of an organisation or similar environment.
ICTPRG443	**PRG443PYI**	This unit describes the skills and knowledge required to carry out **intermediate** programming activities in **Python** involving coding, debugging and testing of code, and creating applications using different programming languages. It applies to those who are programmers in a variety of fields and are required to conduct programming activities and produce software programs.
BSBXCS402	**XCS402**	This unit describes the skills and knowledge required to promote cyber security in a work area. 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.

Program Information Document

Unit Code	IT Studies subject code	Description
ICTSAS527	**SAS527**	This unit describes the skills and knowledge required to liaise and support clients to manage and resolve problems in an Information and Communications Technology (ICT) environment. It applies to individuals who apply high level technical and specialised knowledge in assisting clients to support, manage and resolve problems.
ICTCYS407	**CYS407SPB**	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. 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.
ICTSAS524	**SAS524**	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. It applies to individuals who apply high-level technical skills and specialised knowledge to provide broad systems administration and support functions.
ICTSAS518	**SAS518LXA**	This unit describes the skills and knowledge required to maintain, install new and upgrade existing **Linux** operating systems (OS) in a medium to large organisation. It applies to individuals who apply technical and specialised knowledge to undertake complex support operations.
ICTICT532	**ICT532**	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. 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.
ICTICT517	**ICT517**	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. It applies to individuals whose responsibilities may include improving, evaluating, acquiring, maintaining and supporting ICT for organisations.
ICTIOT501	**IOT501**	This unit describes the skills and knowledge required to install IoT (**Internet of Things**) devices and networks, including connecting, programming and testing the networks and devices for functionality against a given performance objective. It applies to those in roles including software developers, programmers or network engineers, working as embedded systems engineers, IoT developers or senior software developers, and who have basic knowledge of electrical engineering.

Program Information Document

Unit Code	IT Studies subject code	Description
ICTNWK615	**NWK615**	This unit describes the skills and knowledge required to design, and configure, the desktop virtualisation technologies needed to support an enterprise virtualisation business solution. It applies to senior networking staff responsible for increasing the sustainability of an enterprise.
BSBXCS404	**XCS404**	This unit describes the skills and knowledge required to contribute to cyber security risk management, which includes assisting in developing and managing associated risk management strategies. It applies to those working in a broad range of industries and job roles who work alongside technical experts to develop cyber security risk-management strategies.
ICTCLD506	**CLD5C2ACO**	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. 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.
ICTCLD508	**CLD5C2ACO**	This unit describes the skills and knowledge required to configure, monitor, maintain and update resources running in an **Amazon Cloud Services** (AWS) environment. 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.
ICTSAS512	**SAS512ISM**	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. It applies to individuals with managerial experience and responsibility for supervising individuals working under their direct or indirect supervision.
ICTSAS529	**SAS519ISM**	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. 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.
BSBCRT512	**CRT512**	This unit describes the skills and knowledge required to originate and develop concepts for products, programs, processes or services to an operational level. 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.
BSBXTW401	**XTW401**	This unit describes the skills and knowledge required to effectively lead and facilitate a team in a workplace within any industry. 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